June 13th, 2023

Riverain Developments Inc.
109 Atlantic Avenue, Suite 302B
Toronto, Ontario
M6K 1X4

Attn: Emily Roukhkian, Director of Development
emily@mainandmain.ca

Dear Ms. Roukhkian:

Re: Traffic Noise Addendum Letter
2 Montreal Road, 280 Montgomery Street, 300 Montgomery Street and 3 Selkirk Street, Ottawa ON
GWE File No.: 20-077 – Noise Addendum Letter

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Riverain Developments Inc. to undertake a roadway traffic noise assessment for a proposed multi-phase mixed-use development located at 2 Montreal Road, 280 Montgomery Street, 300 Montgomery Street and 3 Selkirk Street in Ottawa, Ontario. This addendum memo is supplemental to our roadway traffic noise report (ref. Gradient Wind report #20-077 – Traffic Noise, dated April 25, 2022), to address the update to the site plan drawings of Phase 3, referred to as Tower C.

Gradient Wind received updated site plan drawings dated May 30th, 2023. A review of these drawings depicts a few changes; mainly:

- A rectangular notch applied at the southwest corner of the 3-storey podium.
- Minor changes in the podium floorplate width and length (a reduction of less than 1 m).
- A reduction of approximately 1.5 m of the maximum building height.

The drawings indicate no significant changes in the building's massing or setback distance from the relevant sources of roadway noise. Therefore, noise levels at the building facades are not expected to

differ from the values mentioned in Gradient Wind's noise assessment. The conclusions of our report remain unchanged.

This concludes our response and review of the design changes for 2 Montreal Road, 280 Montgomery Street, 300 Montgomery Street and 3 Selkirk Street in Ottawa, Ontario. Please advise the undersigned of any questions or concerns.

Sincerely,

Gradient Wind Engineering Inc.

Essraa Alqassab, BASc
Junior Environmental Scientist

Joshua Foster, P.Eng.
Lead Engineer

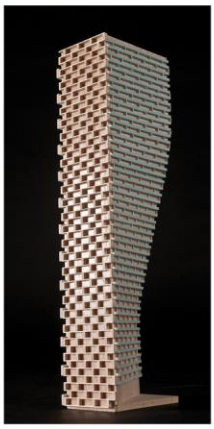
Gradient Wind File #20-077 – Addendum Memo

GRADIENTWIND
ENGINEERS & SCIENTISTS

ROADWAY TRAFFIC NOISE ASSESSMENT

3-33 Selkirk Street
Ottawa, Ontario

Report: 20-077–Traffic Noise



April 25, 2022

APPENDIX A

PREPARED FOR
Selkirk & Main Developments Inc.
109 Atlantic Avenue, Suite 302B
Toronto, ON M6K 1X4

PREPARED BY
Efser Kara, MSc, LEED GA, Acoustic Scientist
Joshua Foster, P.Eng., Lead Engineer

EXECUTIVE SUMMARY

This report describes a roadway traffic noise assessment undertaken in support of a Site Plan Control (SPA) application submission for a proposed development located at 3-33 Selkirk Street in Ottawa, Ontario. The development comprises three residential towers: Tower A (22 storeys) rising on a 3-storey podium, Tower B (32 storeys) rising on a 1-storey podium, and Tower C (28 storeys) rising on a 2-storey podium. The primary sources of traffic noise impacting the development are Montreal Road and North River Road. Figure 1 illustrates a complete site plan with the surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings prepared by RLA / Architecture, dated March 11, 2022.

The results of the current analysis indicate that noise levels at plane of window receptors will range between 59 and 70 dBA during the daytime period (07:00-23:00) and between 51 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the northwest façade of the podium, which is nearest and most exposed to Montreal Road.

The results indicate that upgraded building components and central air conditioning or a similar mechanical system, which will allow occupants to keep windows closed and maintain a comfortable living environment, will be required for Tower A and Tower B podium. For Tower B and Tower C, forced air heating with provision for central air conditioning will be required.

As the high-rise buildings are anticipated to be designed with central air conditioning or a similar mechanical system that will allow the windows to be kept closed, a Type D Warning Clause will be required in all Lease, Purchase and Sale Agreements, as summarized in Section 6.

The noise levels at the OLA receptors of podium terraces (Receptors 12, 13, 14, and 17) do not exceed the ENCG criteria with a 0.9-metre tall parapet wall surrounding the terraces (see Section 4.2.2. Theoretical Roadway Noise Predictions). Noise screens above the height recommended will not be architecturally feasible as they will impact terrace views. The parapet wall should have a minimum surface mass density of 20 kg/m^2 (4 lbs/ft^2) and be built without any gaps. A Type B Warning Clause will also be required in all lease and purchase agreements, as summarized in Section 6.

With regard to stationary noise impacts on-site, the study site is surrounded by low-rise residential and commercial buildings from the north to the east, mid-rise buildings to the southeast and high-rise buildings immediately to the south, which either do not contain any visible mechanical equipment or small mechanical equipment on the rooftop as observed from the satellite view of the surrounding site. Therefore, the noise generated by the units is not anticipated to impact the proposed development.

For off-site impacts, 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 NPC-300 limits. Generally, off-site noise impacts of the stationary noise sources can be minimized by judicious selection and placement of the proposed equipment to limit direct line of sight with nearby noise-sensitive properties.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Selkirk & Main Developments Inc. to undertake a roadway traffic noise assessment in support of a Site Plan Control (SPA) application submission for a proposed development at 3-33 Selkirk Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

Our work is based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings prepared by RLA / Architecture dated March 11, 2022, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The proposed mixed-use development is located on an irregular parcel of land at 3-33 Selkirk Street in Ottawa, Ontario. The subject site is bounded by Montreal Road to the north, Montgomery Street to the east, Selkirk Street to the south, and North River Road to the west.

Architectural Rendering, Northeast Perspective (Courtesy of RLA / Architecture)

The subject site comprises three buildings that rise on irregular-shaped podia with rectangular planforms; Tower A (22 storeys) rising on a 3-storey podium, Tower B (32 storeys) rising on a 1-storey podium, and Tower C (28 storeys) rising on a 2-storey podium. Tower A is located to the north, Tower B is located to the southwest and Tower C is located to the southeast of the study site. The towers will be built in three phases; Phase 1 consists of Tower A, Phase 2 consists of Tower B, and Phase 3 consists of Tower C.

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

This study assesses the traffic noise levels at the whole study site focusing more on Phase 1 - Tower A, subject of the present SPA submission.

Tower A is served by two levels of underground parking The ground floor of Tower A comprises commercial spaces, a residential lobby, service areas such as commercial and residential garbage rooms and a mail delivery room. Level 2 comprises residential units while Level 3 comprises indoor and outdoor amenity spaces beside the residential units. The outdoor amenity space is located to the south of the L-shaped podium of the tower secluded from the roadways by the surrounding indoor amenity areas. Therefore, this terrace was not considered in the calculations. Instead, the Level 4 terrace on the rooftop of the podium was calculated as the area is more exposed to the roadway traffic noise. Level 4 and above the tower rises to the 22nd floor with a rectangular shape consisting of residential units. The tower is topped by a mechanical penthouse.

The site is surrounded by low-rise residential and commercial buildings from the north to the east clockwise, the Rideau River to the west, mid-rise buildings to the southeast and high-rise building immediately to the south.

The primary sources of traffic noise are Montreal Road to the north and North River Road to the west. Although McArthur Street and Vanier Parkway located south and east of the site, respectively, are nearby arterial roadways, they are located beyond 100 metres of the study site and therefore are not anticipated to be a significant source of noise. Figure 1 illustrates a complete site plan with the 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 50, 45 and 40 dBA for retail stores, living rooms and sleeping quarters respectively for roadway as listed in Table 1.

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

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

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

The sound level criterion for outdoor living areas (OLA) is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA but are less than 60 dBA, mitigation should be considered to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. Where noise levels exceed 60 dBA noise mitigation is required. If these measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause.

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

4.2.2 Theoretical Roadway Noise Predictions

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

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

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split for all streets was taken to be 92%/8%, respectively.
- Ground surfaces were taken to be reflective due to the presence of hard (paved) ground.
- Topography was assumed to be a flat/gentle slope surrounding the study building.
- The high-rise buildings at 333 and 355 North River Road to the south were considered noise barriers with a height of 60 metres.
- For select sources, where appropriate, the proposed buildings and podium were considered barriers that block noise exposure partially or fully.
- For Tower A (Phase 1), Towers B and D were not considered barriers, while for Tower B (Phase 2), Tower A, and for Tower C (Phase 3), Towers A and B were considered barriers that are partially or fully obstructing exposure.
- A 0.9-metre tall parapet wall (having a minimum surface mass density of 20 kg/m^2 (4 lbs/ft^2) and without any gaps) is assumed to surround the perimeter of the terraces.
- Noise receptors were strategically placed at seventeen (17) locations around the study area (see Figure 2).
- Exposure angles of the receptors to the roadway traffic noise sources and receptor-to-source distances are illustrated in Figures 3-9.

4.2.3 Roadway Traffic Volumes

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

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Data	Speed Limit (km/h)	Traffic Volumes
Montreal Road	4-Lane Urban Arterial Undivided (4-UAU)	50	**30,000**
North River Road (South of Montreal Road)	2-Lane Urban Arterial (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 (2020) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, concrete and masonry walls can achieve STC 50 or more. Curtainwall systems typically provide around STC 35, depending on the glazing elements. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40 depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

According to the NPC-300 and ENCG, when daytime noise levels (from roadway sources) at the plane of the window exceed 65 dBA, calculations must be performed to evaluate the sound transmission quality

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

of the building components to ensure acceptable indoor noise levels. The calculation procedure[8] considers:

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

Based on published research[9], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, which was prepared for a Site Plan Control Application (SPA), final detailed floor layouts and building elevations were unavailable and 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.

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

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	10	POW – Tower A Podium, Level 3 Northwest Façade	70	62
2	10	POW – Tower A Podium, Level 3 Northeast Façade	69	61
3	67	POW – Tower A, Level 22 Northwest Façade	68	61
4	67	POW – Tower A, Level 22 Southwest Façade	61	54
5	67	POW – Tower A, Level 22 Northeast Façade	65	58
6	67	POW – Tower A, Level 22 Northwest Façade	59	52
7	3	POW – Tower B Podium, Level 1 West Façade	68	60
8	97	POW – Tower B, Level 32 Northwest Façade	64	56
9	97	POW – Tower B, Level 32 Southwest Façade	65	57
10	85	POW – Tower C, Level 28 Northwest Façade	61	54
11	6	POW – Tower C Podium, Level 2 Northwest Façade	60	52
12	13	OLA – Podium Terrace, Northwest of Tower A	54*	N/A**
13	9	OLA – Podium Terrace, Southeast of Tower A	57*	N/A**
14	6	OLA – Podium Terrace, Northwest of Tower B	59*	N/A**
15	9	OLA – Podium Terrace, West of Tower C	55*	N/A**
16	97	POW – Tower B, Level 32 Northeast Façade	59	51
17	9	OLA – Podium Terrace, Northeast of Tower C	56*	N/A**

* With the 0.9-metre tall parapet wall (see Section 4.2.2. Theoretical Roadway Noise Predictions)
** Nighttime noise levels are not considered at OLA receptors as per ENCG requirements.

The results of the current analysis indicate that noise levels at plane of window receptors will range between 59 and 70 dBA during the daytime period (07:00-23:00) and between 51 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the northwest façade of the podium, which is nearest and most exposed to Montreal Road. Upgraded building components with a higher Sound Transmission Class (STC) rating will be required where exterior noise levels exceed 65 dBA to ensure the indoor sound levels meet the ENCG criteria.

5.2 Noise Control Measures

The roadway traffic noise levels exceed the criteria listed in Section 4.2 for building components at the northwest and northeast façades of Tower A and the west façade of Tower B podium. 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 NPC-300 requirements, detailed STC calculations will be required to be completed prior to the building permit application for each unit type. The STC requirements for the windows are summarized below for various units within the development (see Figure 10):

- **Bedroom Windows**

(i) Bedroom windows of Tower A podium facing northwest and northeast will require a minimum STC of 33

(ii) Bedroom windows of Tower A facing northwest and northeast, and Tower B podium facing west will require a minimum STC of 31

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

- **Living Room/Office Windows**

(i) Living room windows of Tower A podium facing northwest and northeast will require a minimum STC of 28.

(ii) Living room windows of Tower A facing northwest and northeast, and Tower B podium facing west will require a minimum STC of 26.

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

- **Exterior Walls**

(i) Exterior wall components on the Tower A podium northwest and northeast façades, Tower A northwest and northeast façades, and Tower B podium west façade will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10]

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

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

The noise levels at the OLA receptors of podium terraces (Receptors 12, 13, 14, and 17) do not exceed the ENCG criteria with a 0.9-metre tall parapet wall surrounding the terraces (see Section 4.2.2. Theoretical Roadway Noise Predictions).

The results indicate that upgraded building components and central air conditioning or a similar system, which will allow occupants to keep windows closed and maintain a comfortable living environment, will be required for Tower A and Tower B podium. For Tower B and Tower C, forced air heating with provision for central air conditioning will be required. However, it is anticipated that the buildings will be designed with central air conditioning or a similar mechanical system.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels at plane of window receptors will range between 59 and 70 dBA during the daytime period (07:00-23:00) and between 51 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs at the northwest façade of the podium, which is nearest and most exposed to Montreal Road.

The results indicate that upgraded building components and central air conditioning or a similar mechanical system, which will allow occupants to keep windows closed and maintain a comfortable living environment, will be required for Tower A and Tower B podium. For Tower B and Tower C, forced air heating with provision for central air conditioning will be required.

As the high-rise buildings are anticipated to be designed with central air conditioning or a similar mechanical system that will allow the windows to be kept closed. A Type D Warning Clause will be required in all lease, purchase and sale agreements, as summarized below:

> *"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."*

The noise levels at the OLA receptors of podium terraces (Receptors 12, 13, 14, and 17) do not exceed the ENCG criteria with a 0.9-metre tall parapet wall surrounding the terraces (see Section 4.2.2. Theoretical Roadway Noise Predictions). Noise screens above the height recommended will not be architecturally feasible as they will impact terrace views. The parapet wall should have a minimum surface mass density of 20 kg/m^2 (4 lbs/ft^2) and be built without any gaps. A Type B Warning Clause will also be required in all lease and purchase agreements, as summarized below:

> *"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing 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."*

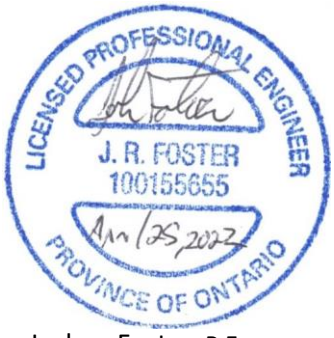
With regard to stationary noise impacts on-site, the study site is surrounded by low-rise residential and commercial buildings from the north to the east, mid-rise buildings to the southeast and high-rise buildings immediately to the south, which either do not contain any visible mechanical equipment or small mechanical equipment on the rooftop as observed from the satellite view of the surrounding site. Therefore, the noise generated by the units is not anticipated to impact the proposed development.

For off-site impacts, 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 NPC-300 limits. Generally, off-site noise impacts of the stationary noise sources can be minimized by judicious selection and placement of the proposed equipment to limit direct line of sight with nearby noise-sensitive properties.

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,

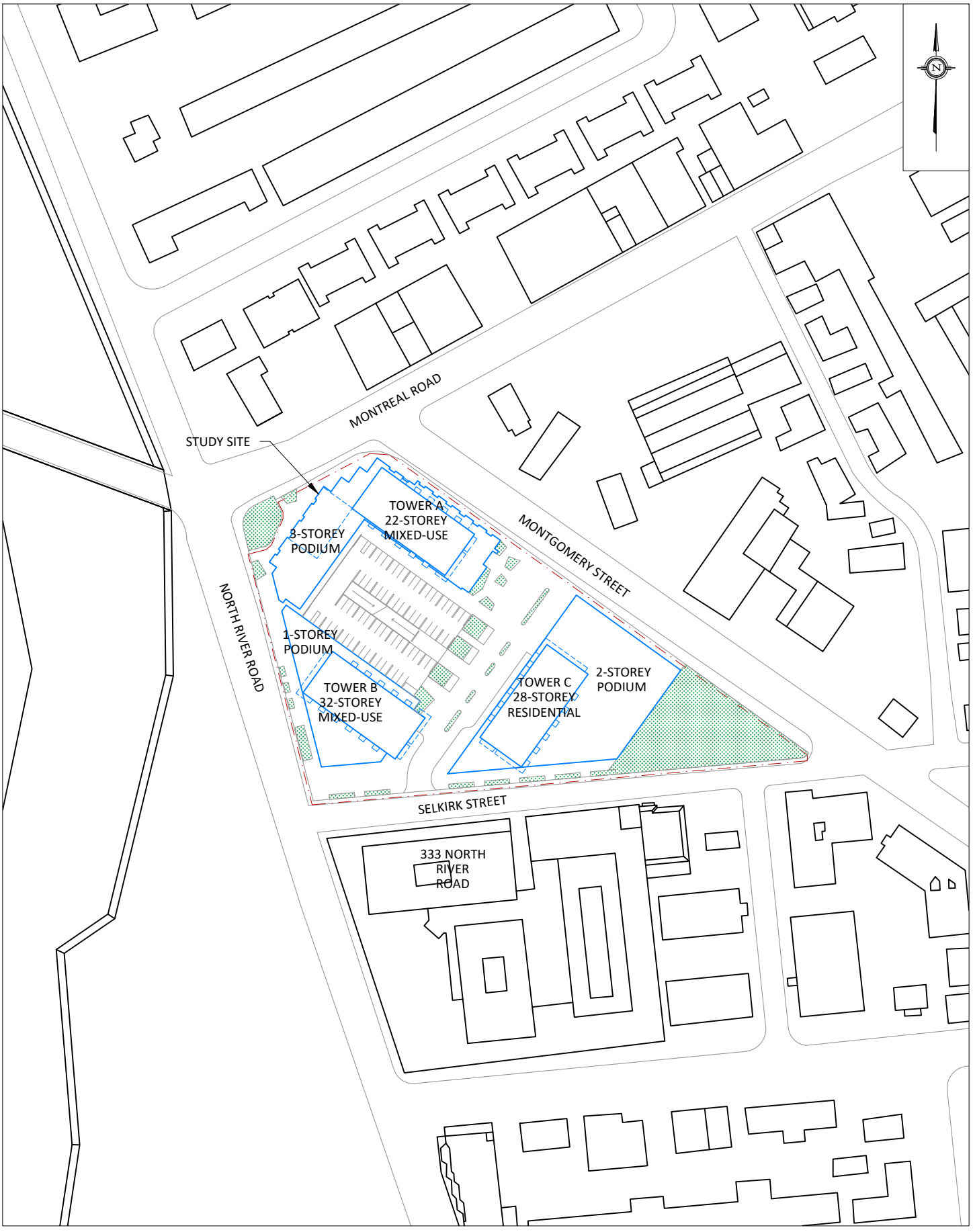
Gradient Wind Engineering Inc.



Efser Kara, MSc, LEED GA
Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #20-077 – Traffic Noise



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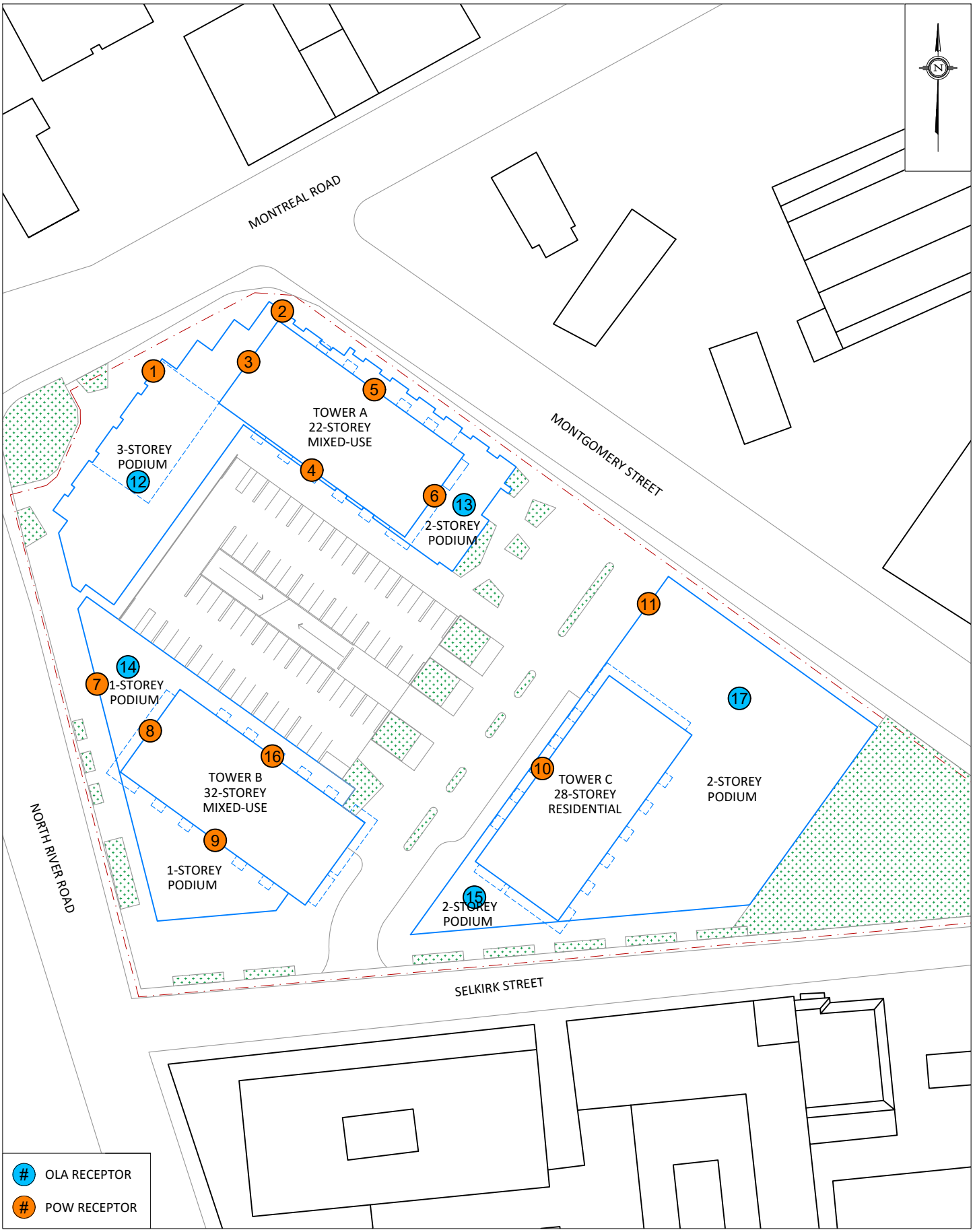
127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:2000 (APPROX.)
DRAWING NO.	20-077-1
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



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127 WALGREEN ROAD , OTTAWA, ON
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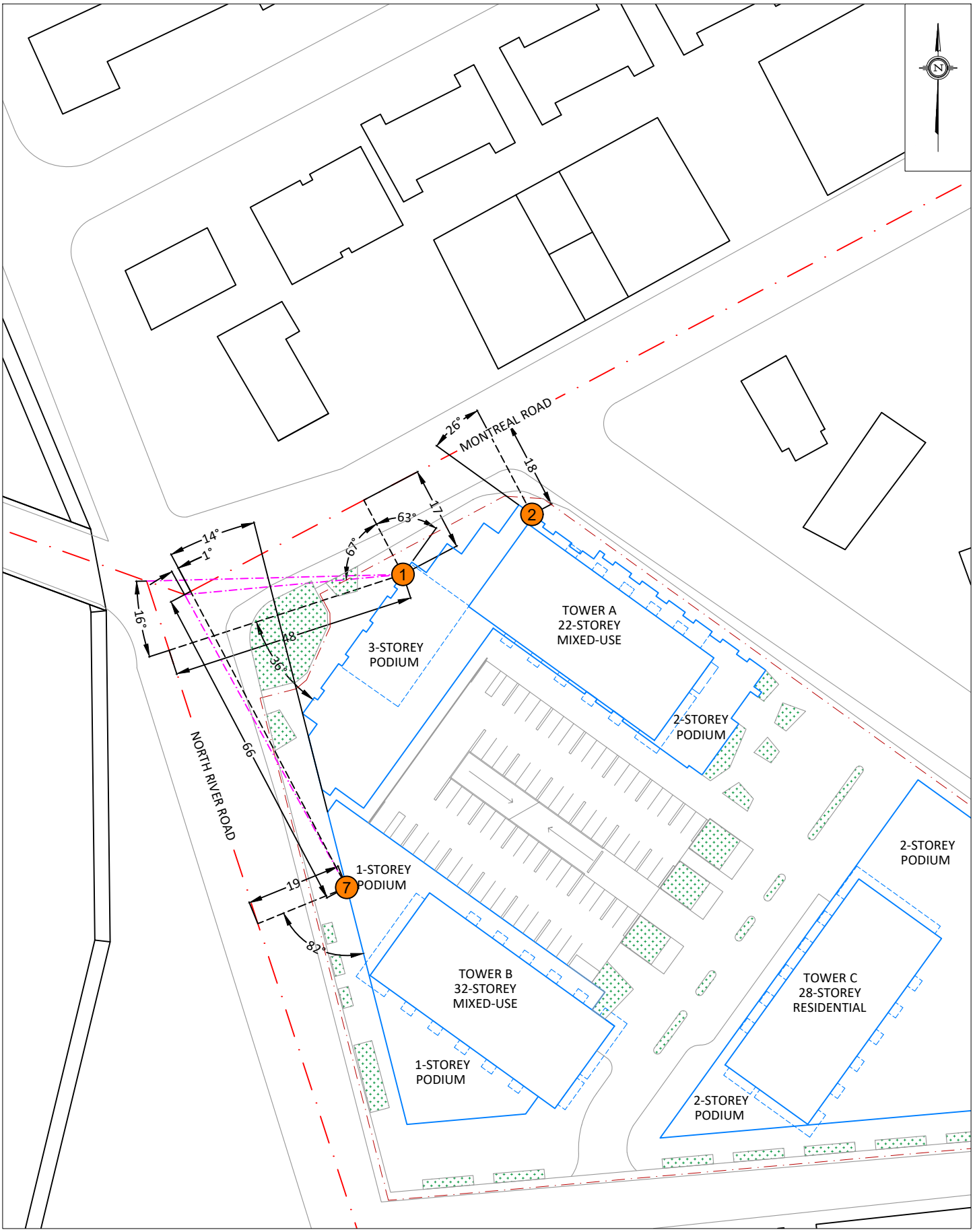
PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-2
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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127 WALGREEN ROAD , OTTAWA, ON
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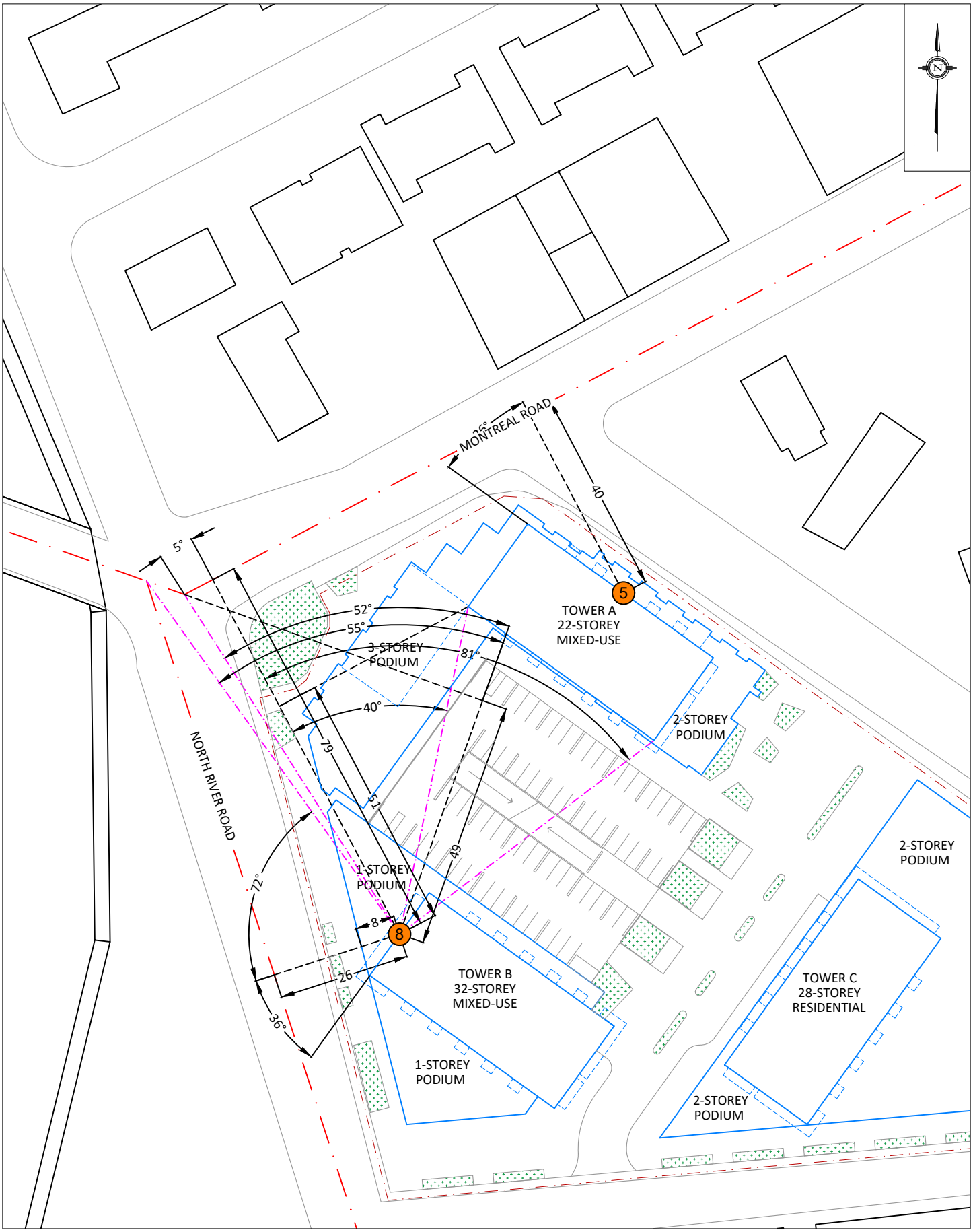
PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-3
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 3:
STAMSON INPUT PARAMETERS
RECEPTORS 1, 2, & 7



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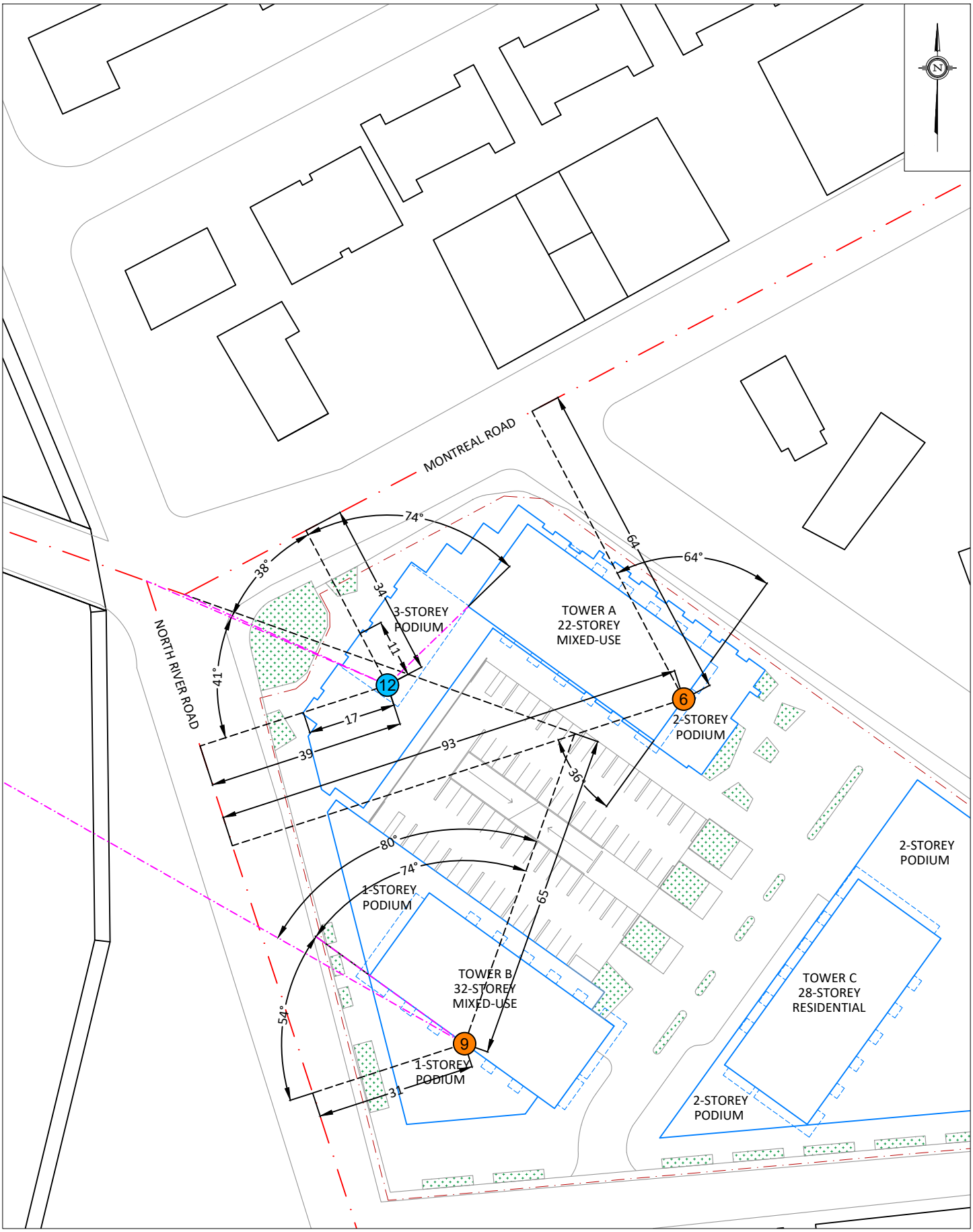
	SCALE: 1:1000 (APPROX.)	DRAWING NO.: 20-077-4	
	DATE: APRIL 19, 2022	DRAWN BY: E.K.	



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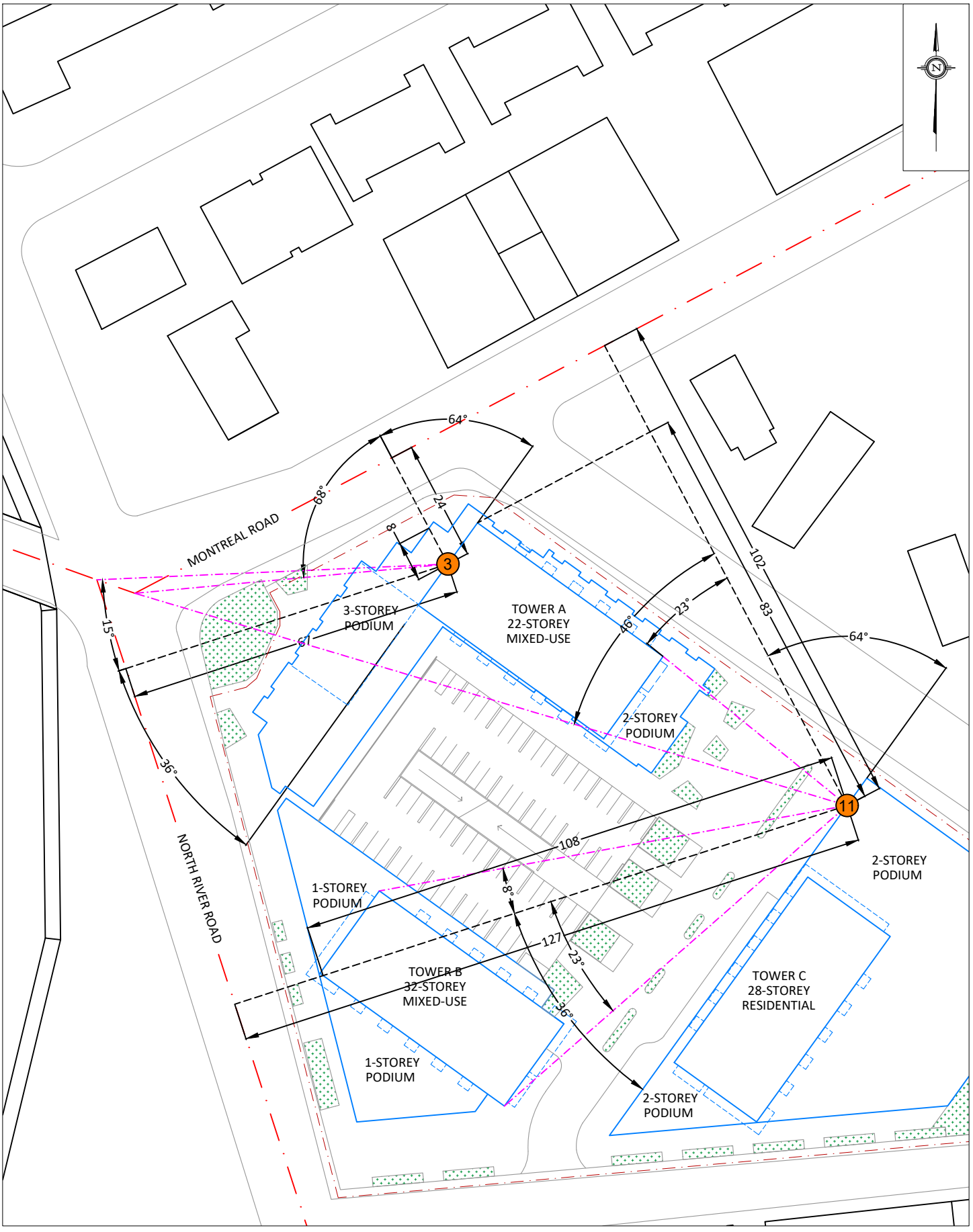
127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-5
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 5:
STAMSON INPUT PARAMETERS
RECEPTORS 6, 9, & 12



..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
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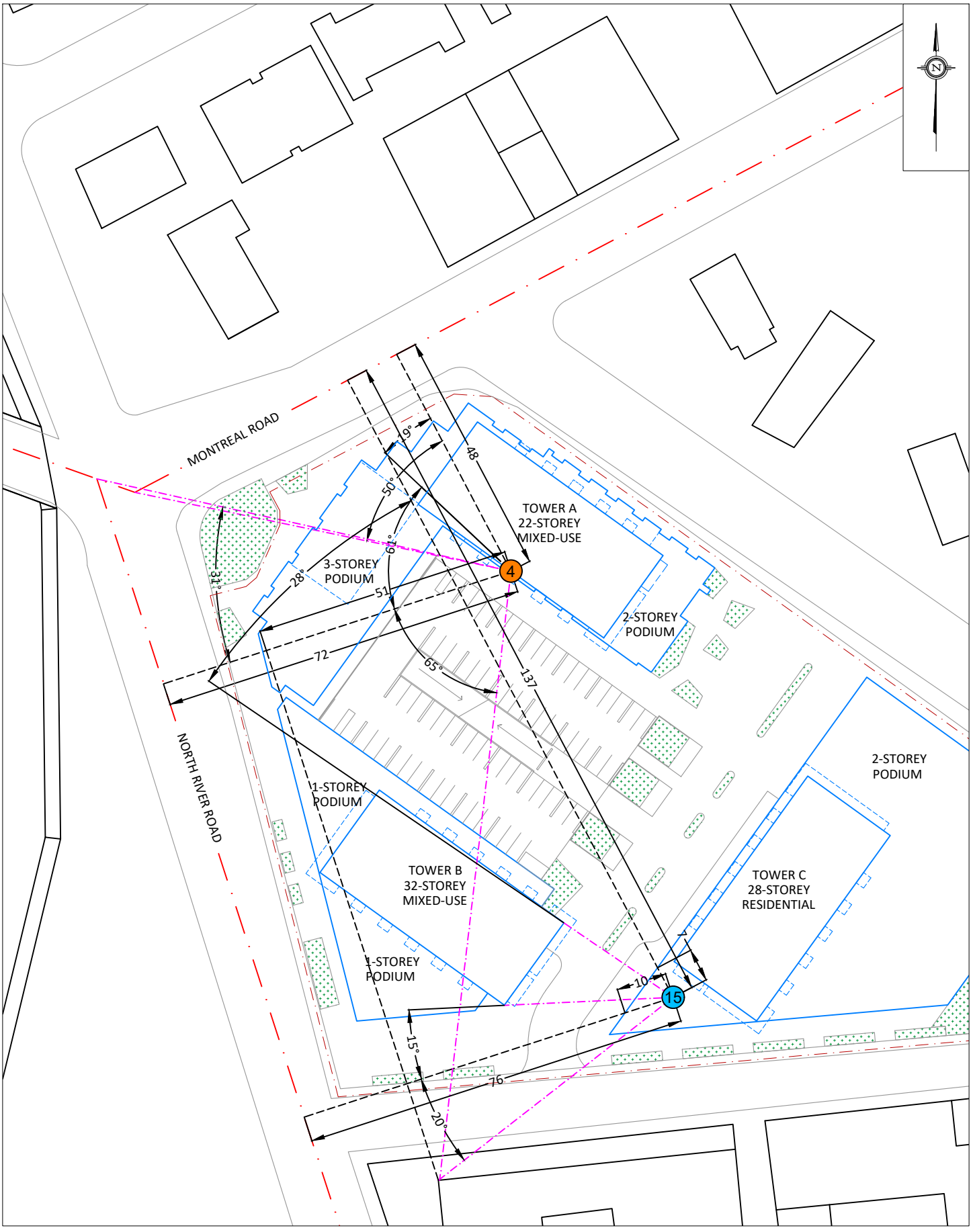
PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-6
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 6:
STAMSON INPUT PARAMETERS
RECEPTORS 3 & 11



..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
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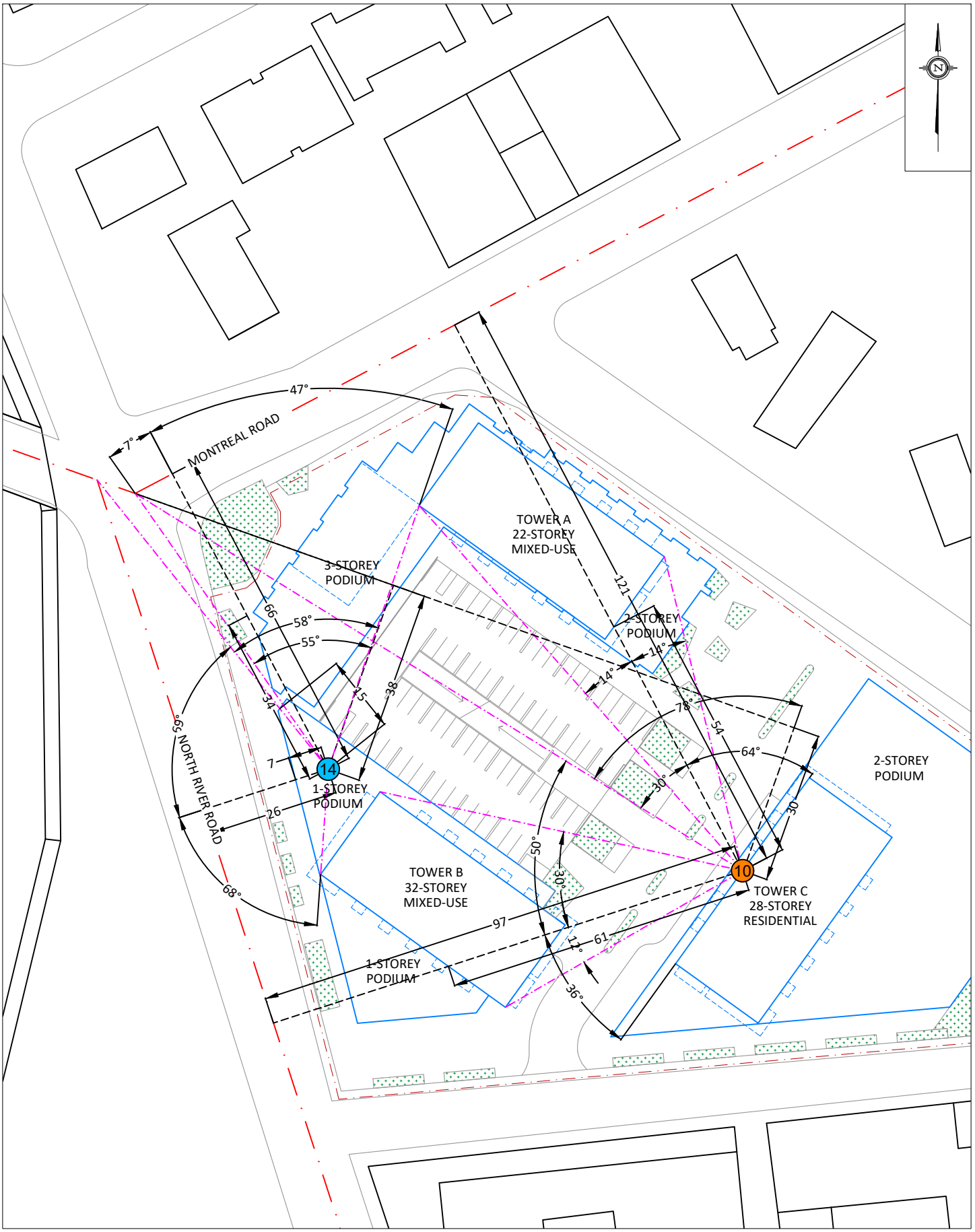
PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-7
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 7:
STAMSON INPUT PARAMETERS
RECEPTORS 4 & 15



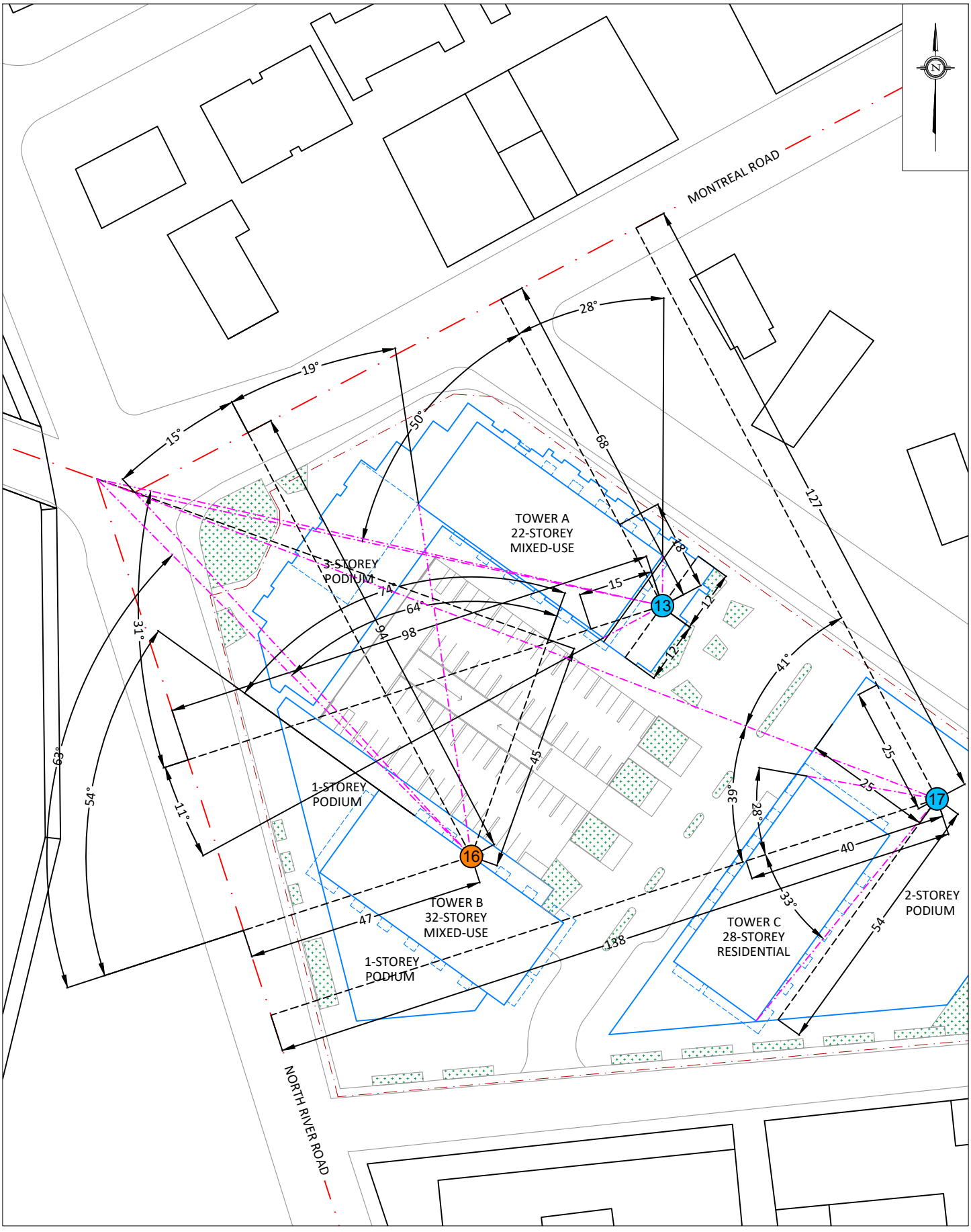
..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-8
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 8:
STAMSON INPUT PARAMETERS
RECEPTORS 10 & 14



..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-9
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 9:
STAMSON INPUT PARAMETERS
RECEPTORS 13, 16, & 17

..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
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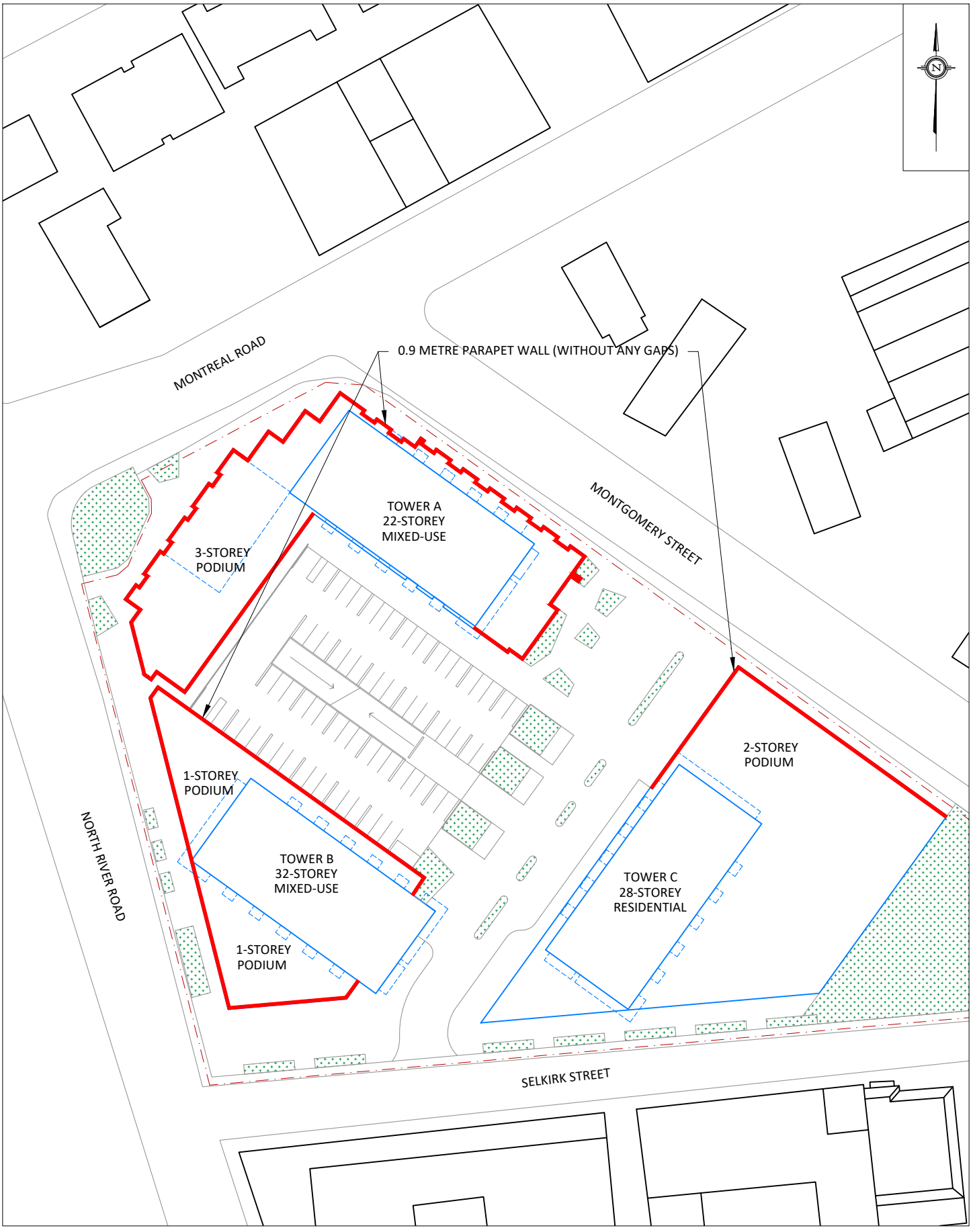
PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-10
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 10:
STC REQUIREMENTS



..\..\..\..\Gradient_Wind_Logo_ES_PMS.png

127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

PROJECT	3-33 SELKIRK STREET, OTTAWA ROADWAY TRAFFIC NOISE ASSESSMENT
SCALE	1:1000 (APPROX.)
DRAWING NO.	20-077-11
DATE	APRIL 19, 2022
DRAWN BY	E.K.

DESCRIPTION

FIGURE 11:
NOISE BARRIER LOCATIONS

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: 19-04-2022 17:19:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -67.00 deg   63.00 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           :  10.00 / 10.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -36.00 deg   16.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  10.00 / 10.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 69.53 + 0.00) = 69.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -67     63   0.00  71.49   0.00  -0.54  -1.41   0.00   0.00   0.00  69.53
-------------------------------------------------------------------------------

Segment Leq : 69.53 dBA

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

Source height = 1.50 m

ROAD (0.00 + 58.04 + 0.00) = 58.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     16   0.00  68.48   0.00  -5.05  -5.39   0.00   0.00   0.00  58.04
-------------------------------------------------------------------------------

Segment Leq : 58.04 dBA

Total Leq All Segments: 69.83 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 61.94 + 0.00) = 61.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -67     63   0.00  63.89   0.00  -0.54  -1.41   0.00   0.00   0.00  61.94
-------------------------------------------------------------------------------

Segment Leq : 61.94 dBA


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

Source height = 1.50 m

ROAD (0.00 + 50.44 + 0.00) = 50.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     16   0.00  60.88   0.00  -5.05  -5.39   0.00   0.00   0.00  50.44
-------------------------------------------------------------------------------

Segment Leq : 50.44 dBA

Total Leq All Segments: 62.24 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 69.83
                           (NIGHT): 62.24
```

STAMSON 5.0 NORMAL REPORT Date: 19-04-2022 17:22:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -27.00 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           :  10.00 / 10.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 68.83 + 0.00) = 68.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -27     90   0.00  71.49   0.00  -0.79  -1.87   0.00   0.00   0.00  68.83
-------------------------------------------------------------------------------

Segment Leq : 68.83 dBA

Total Leq All Segments: 68.83 dBA


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

Source height = 1.50 m

ROAD (0.00 + 61.23 + 0.00) = 61.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -27     90   0.00  63.89   0.00  -0.79  -1.87   0.00   0.00   0.00  61.23
-------------------------------------------------------------------------------

Segment Leq : 61.23 dBA

Total Leq All Segments: 61.23 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 68.83
                           (NIGHT): 61.23
```

STAMSON 5.0 NORMAL REPORT Date: 19-04-2022 17:56:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -68.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  24.00 / 24.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -36.00 deg   15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  67.00 / 67.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 68.10 + 0.00) = 68.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     64   0.00  71.49   0.00  -2.04  -1.35   0.00   0.00   0.00  68.10
-------------------------------------------------------------------------------

Segment Leq : 68.10 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.50 + 0.00) = 56.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     15   0.00  68.48   0.00  -6.50  -5.48   0.00   0.00   0.00  56.50
-------------------------------------------------------------------------------

Segment Leq : 56.50 dBA

Total Leq All Segments: 68.39 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 60.51 + 0.00) = 60.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     64   0.00  63.89   0.00  -2.04  -1.35   0.00   0.00   0.00  60.51
-------------------------------------------------------------------------------

Segment Leq : 60.51 dBA


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

Source height = 1.50 m

ROAD (0.00 + 48.91 + 0.00) = 48.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     15   0.00  60.88   0.00  -6.50  -5.48   0.00   0.00   0.00  48.91
-------------------------------------------------------------------------------

Segment Leq : 48.91 dBA

Total Leq All Segments: 60.80 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 68.39
                           (NIGHT): 60.80
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 16:01:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -50.00 deg   -27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  48.00 / 48.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   31.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  72.00 / 72.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -65.00 deg
Barrier height            :  60.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 57.50 + 0.00) = 57.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50    -27   0.00  71.49   0.00  -5.05  -8.94   0.00   0.00   0.00  57.50
-------------------------------------------------------------------------------

Segment Leq : 57.50 dBA


Results segment # 2: River (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 !       67.00 !       20.60 !        20.60

ROAD (0.00 + 35.39 + 58.94) = 58.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -65   0.00  68.48   0.00  -6.81  -8.57   0.00   0.00 -17.70  35.39
-------------------------------------------------------------------------------
   -65     31   0.00  68.48   0.00  -6.81  -2.73   0.00   0.00   0.00  58.94
-------------------------------------------------------------------------------

Segment Leq : 58.96 dBA

Total Leq All Segments: 61.30 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 49.91 + 0.00) = 49.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50    -27   0.00  63.89   0.00  -5.05  -8.94   0.00   0.00   0.00  49.91
-------------------------------------------------------------------------------

Segment Leq : 49.91 dBA


Results segment # 2: River (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 !       67.00 !       20.60 !        20.60

ROAD (0.00 + 27.79 + 51.34) = 51.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -65   0.00  60.88   0.00  -6.81  -8.57   0.00   0.00 -17.70  27.79
-------------------------------------------------------------------------------
   -65     31   0.00  60.88   0.00  -6.81  -2.73   0.00   0.00   0.00  51.34
-------------------------------------------------------------------------------

Segment Leq : 51.36 dBA

Total Leq All Segments: 53.71 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 61.30
                           (NIGHT): 53.71
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 11:39:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -26.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 65.32 + 0.00) = 65.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -26     90   0.00  71.49   0.00  -4.26  -1.91   0.00   0.00   0.00  65.32
-------------------------------------------------------------------------------

Segment Leq : 65.32 dBA

Total Leq All Segments: 65.32 dBA


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

Source height = 1.50 m

ROAD (0.00 + 57.73 + 0.00) = 57.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -26     90   0.00  63.89   0.00  -4.26  -1.91   0.00   0.00   0.00  57.73
-------------------------------------------------------------------------------

Segment Leq : 57.73 dBA

Total Leq All Segments: 57.73 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 65.32
                           (NIGHT): 57.73
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 11:55:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           :  64.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  64.00 / 64.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   -36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  93.00 / 93.00  m
Receiver height           :  67.00 / 67.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 56.79 + 0.00) = 56.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    64     90   0.00  71.49   0.00  -6.30  -8.40   0.00   0.00   0.00  56.79
-------------------------------------------------------------------------------

Segment Leq : 56.79 dBA


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

Source height = 1.50 m

ROAD (0.00 + 55.33 + 0.00) = 55.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -36   0.00  68.48   0.00  -7.92  -5.23   0.00   0.00   0.00  55.33
-------------------------------------------------------------------------------

Segment Leq : 55.33 dBA

Total Leq All Segments: 59.13 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 49.19 + 0.00) = 49.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    64     90   0.00  63.89   0.00  -6.30  -8.40   0.00   0.00   0.00  49.19
-------------------------------------------------------------------------------

Segment Leq : 49.19 dBA


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

Source height = 1.50 m

ROAD (0.00 + 47.73 + 0.00) = 47.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -36   0.00  60.88   0.00  -7.92  -5.23   0.00   0.00   0.00  47.73
-------------------------------------------------------------------------------

Segment Leq : 47.73 dBA

Total Leq All Segments: 51.53 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 59.13
                           (NIGHT): 51.53
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 17:15:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

```
Road data, segment # 1: River (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: River (day/night)
---------------------------------------
Angle1   Angle2           : -82.00 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           :   3.00 / 3.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: Montreal (day/night)
------------------------------------------
Angle1   Angle2           :  -1.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   3.00 / 3.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 67.26 + 0.00) = 67.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82     90   0.00  68.48   0.00  -1.03  -0.20   0.00   0.00   0.00  67.26
-------------------------------------------------------------------------------

Segment Leq : 67.26 dBA


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

Source height = 1.50 m

ROAD (0.00 + 54.26 + 0.00) = 54.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -1     14   0.00  71.49   0.00  -6.43 -10.79   0.00   0.00   0.00  54.26
-------------------------------------------------------------------------------

Segment Leq : 54.26 dBA

Total Leq All Segments: 67.47 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 59.66 + 0.00) = 59.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82     90   0.00  60.88   0.00  -1.03  -0.20   0.00   0.00   0.00  59.66
-------------------------------------------------------------------------------

Segment Leq : 59.66 dBA


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

Source height = 1.50 m

ROAD (0.00 + 46.67 + 0.00) = 46.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -1     14   0.00  63.89   0.00  -6.43 -10.79   0.00   0.00   0.00  46.67
-------------------------------------------------------------------------------

Segment Leq : 46.67 dBA

Total Leq All Segments: 59.87 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 67.47
                           (NIGHT): 59.87
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 12:19:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal-1 (day/night)
---------------------------------------------
Angle1   Angle2           :  -5.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  79.00 / 79.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -5.00 deg   Angle2 : 90.00 deg
Barrier height            :  70.00 m
Barrier receiver distance :  51.00 / 51.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: Montreal-2 (day/night)
--------------------------------------------
Angle1   Angle2           : -55.00 deg   -52.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  49.00 / 49.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: River (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: River (day/night)
---------------------------------------
Angle1   Angle2           : -36.00 deg   72.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -36.00 deg   Angle2 : 72.00 deg
Barrier height            :   5.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       97.00 !       35.35 !        35.35

ROAD (0.00 + 42.91 + 0.00) = 42.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -5     90   0.00  71.49   0.00  -7.22  -2.78   0.00   0.00 -18.59  42.91
-------------------------------------------------------------------------------

Segment Leq : 42.91 dBA


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

Source height = 1.50 m

ROAD (0.00 + 48.57 + 0.00) = 48.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55    -52   0.00  71.49   0.00  -5.14 -17.78   0.00   0.00   0.00  48.57
-------------------------------------------------------------------------------

Segment Leq : 48.57 dBA
```

```
Results segment # 3: River (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 !       97.00 !       67.61 !         67.61

ROAD (0.00 + 63.87 + 0.00) = 63.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     72   0.00  68.48   0.00  -2.39  -2.22   0.00   0.00   0.00  63.87*
   -36     72   0.00  68.48   0.00  -2.39  -2.22   0.00   0.00   0.00  63.87
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 63.87 dBA

Total Leq All Segments: 64.03 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       97.00 !       35.35 !        35.35

ROAD (0.00 + 35.32 + 0.00) = 35.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -5     90   0.00  63.89   0.00  -7.22  -2.78   0.00   0.00 -18.59  35.32
-------------------------------------------------------------------------------

Segment Leq : 35.32 dBA
Results segment # 2: Montreal-2 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 40.97 + 0.00) = 40.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55    -52   0.00  63.89   0.00  -5.14 -17.78   0.00   0.00   0.00  40.97
-------------------------------------------------------------------------------

Segment Leq : 40.97 dBA
```

```
Results segment # 3: River (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 !       97.00 !       67.61 !         67.61

ROAD (0.00 + 56.28 + 0.00) = 56.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     72   0.00  60.88   0.00  -2.39  -2.22   0.00   0.00   0.00  56.28*
   -36     72   0.00  60.88   0.00  -2.39  -2.22   0.00   0.00   0.00  56.28
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 56.28 dBA

Total Leq All Segments: 56.44 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 64.03
                           (NIGHT): 56.44
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 12:27:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -80.00 deg   -74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  65.00 / 65.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (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  :  31.00 / 31.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 50.35 + 0.00) = 50.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80    -74   0.00  71.49   0.00  -6.37 -14.77   0.00   0.00   0.00  50.35
-------------------------------------------------------------------------------

Segment Leq : 50.35 dBA


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

Source height = 1.50 m

ROAD (0.00 + 64.36 + 0.00) = 64.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     54   0.00  68.48   0.00  -3.15  -0.97   0.00   0.00   0.00  64.36
-------------------------------------------------------------------------------

Segment Leq : 64.36 dBA

Total Leq All Segments: 64.53 dBA
```

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

Source height = 1.50 m

ROAD (0.00 + 42.75 + 0.00) = 42.75 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -80    -74   0.00  63.89   0.00  -6.37 -14.77   0.00   0.00   0.00  42.75
-------------------------------------------------------------------------------

Segment Leq : 42.75 dBA


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

Source height = 1.50 m

ROAD (0.00 + 56.76 + 0.00) = 56.76 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     54   0.00  60.88   0.00  -3.15  -0.97   0.00   0.00   0.00  56.76
-------------------------------------------------------------------------------

Segment Leq : 56.76 dBA

Total Leq All Segments: 56.93 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 64.53
                           (NIGHT): 56.93
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 13:14:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

```
Road data, segment # 1: Montreal1 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Montreal1 (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   -78.00 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           :  85.00 / 85.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Montreal2 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Montreal2 (day/night)
-------------------------------------------
Angle1   Angle2           : -30.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 121.00 / 121.00 m
Receiver height           :  85.00 / 85.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -14.00 deg   Angle2 : 14.00 deg
Barrier height            :  70.00 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: River (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: River (day/night)
---------------------------------------
Angle1   Angle2           : -36.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  97.00 / 97.00  m
Receiver height           :  85.00 / 85.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -12.00 deg   Angle2 : 30.00 deg
Barrier height            : 100.00 m
Barrier receiver distance :  61.00 / 61.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Montreal1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.72 + 0.00) = 56.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -78   0.00  71.49   0.00  -3.01 -11.76   0.00   0.00   0.00  56.72
-------------------------------------------------------------------------------

Segment Leq : 56.72 dBA


Results segment # 2: Montreal2 (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 !       85.00 !       47.73 !        47.73

ROAD (51.91 + 34.34 + 56.86) = 58.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -30    -14   0.00  71.49   0.00  -9.07 -10.51   0.00   0.00   0.00  51.91
-------------------------------------------------------------------------------
   -14     14   0.00  71.49   0.00  -9.07  -8.08   0.00   0.00 -20.00  34.34
-------------------------------------------------------------------------------
    14     64   0.00  71.49   0.00  -9.07  -5.56   0.00   0.00   0.00  56.86
-------------------------------------------------------------------------------

Segment Leq : 58.08 dBA
```

```
Results segment # 3: River (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 !       85.00 !       32.49 !        32.49

ROAD (51.62 + 34.05 + 50.83) = 54.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -12   0.00  68.48   0.00  -8.11  -8.75   0.00   0.00   0.00  51.62
-------------------------------------------------------------------------------
   -12     30   0.00  68.48   0.00  -8.11  -6.32   0.00   0.00 -20.00  34.05
-------------------------------------------------------------------------------
    30     50   0.00  68.48   0.00  -8.11  -9.54   0.00   0.00   0.00  50.83
-------------------------------------------------------------------------------

Segment Leq : 54.30 dBA

Total Leq All Segments: 61.40 dBA


Results segment # 1: Montreal1 (night)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.12 + 0.00) = 49.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -78   0.00  63.89   0.00  -3.01 -11.76   0.00   0.00   0.00  49.12
-------------------------------------------------------------------------------

Segment Leq : 49.12 dBA
```

```
Results segment # 2: Montreal2 (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 !       85.00 !       47.73 !         47.73

ROAD (44.32 + 26.75 + 49.26) = 50.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -30    -14   0.00  63.89   0.00  -9.07 -10.51   0.00   0.00   0.00  44.32
-------------------------------------------------------------------------------
   -14     14   0.00  63.89   0.00  -9.07  -8.08   0.00   0.00 -20.00  26.75
-------------------------------------------------------------------------------
    14     64   0.00  63.89   0.00  -9.07  -5.56   0.00   0.00   0.00  49.26
-------------------------------------------------------------------------------

Segment Leq : 50.49 dBA
```

```
Results segment # 3: River (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 !       85.00 !       32.49 !        32.49

ROAD (44.03 + 26.46 + 43.23) = 46.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36    -12   0.00  60.88   0.00  -8.11  -8.75   0.00   0.00   0.00  44.03
-------------------------------------------------------------------------------
   -12     30   0.00  60.88   0.00  -8.11  -6.32   0.00   0.00 -20.00  26.46
-------------------------------------------------------------------------------
    30     50   0.00  60.88   0.00  -8.11  -9.54   0.00   0.00   0.00  43.23
-------------------------------------------------------------------------------

Segment Leq : 46.70 dBA

Total Leq All Segments: 53.81 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 61.40
                           (NIGHT): 53.81
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 14:12:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -46.00 deg   64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 102.00 / 102.00 m
Receiver height           :   6.00 / 6.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -46.00 deg   Angle2 : -23.00 deg
Barrier height            :  70.00 m
Barrier receiver distance :  83.00 / 83.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -36.00 deg   8.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 127.00 / 127.00 m
Receiver height           :   6.00 / 6.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -36.00 deg   Angle2 : 8.00 deg
Barrier height            : 100.00 m
Barrier receiver distance : 108.00 / 108.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Montreal (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 !        6.00 !        2.33 !         2.33

ROAD (0.00 + 34.23 + 60.01) = 60.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46    -23   0.00  71.49   0.00  -8.33  -8.94   0.00   0.00 -20.00  34.23
-------------------------------------------------------------------------------
   -23     64   0.00  71.49   0.00  -8.33  -3.16   0.00   0.00   0.00  60.01
-------------------------------------------------------------------------------

Segment Leq : 60.02 dBA


Results segment # 2: River (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 !        6.00 !        2.17 !         2.17

ROAD (0.00 + 33.08 + 0.00) = 33.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36      8   0.00  68.48   0.00  -9.28  -6.12   0.00   0.00 -20.00  33.08
-------------------------------------------------------------------------------

Segment Leq : 33.08 dBA

Total Leq All Segments: 60.03 dBA
```

```
Results segment # 1: Montreal (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 !        6.00 !        2.33 !         2.33

ROAD (0.00 + 26.63 + 52.41) = 52.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -46    -23   0.00  63.89   0.00  -8.33  -8.94   0.00   0.00 -20.00  26.63
-------------------------------------------------------------------------------
   -23     64   0.00  63.89   0.00  -8.33  -3.16   0.00   0.00   0.00  52.41
-------------------------------------------------------------------------------

Segment Leq : 52.42 dBA


Results segment # 2: River (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 !        6.00 !        2.17 !         2.17

ROAD (0.00 + 25.49 + 0.00) = 25.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36      8   0.00  60.88   0.00  -9.28  -6.12   0.00   0.00 -20.00  25.49
-------------------------------------------------------------------------------

Segment Leq : 25.49 dBA

Total Leq All Segments: 52.43 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 60.03
                           (NIGHT): 52.43
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 20:28:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -38.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  34.00 / 34.00  m
Receiver height           :  13.00 / 13.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -38.00 deg   Angle2 : 74.00 deg
Barrier height            :  12.40 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: River (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   41.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  39.00 / 39.00  m
Receiver height           :  13.00 / 13.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 41.00 deg
Barrier height            :  12.40 m
Barrier receiver distance :  17.00 / 17.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        9.28 !         9.28

ROAD (0.00 + 51.89 + 0.00) = 51.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -38     74   0.00  71.49   0.00  -3.55  -2.06   0.00   0.00 -13.99  51.89
-------------------------------------------------------------------------------

Segment Leq : 51.89 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        7.99 !         7.99

ROAD (0.00 + 48.88 + 0.00) = 48.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     41   0.00  68.48   0.00  -4.15  -1.38   0.00   0.00 -14.07  48.88
-------------------------------------------------------------------------------

Segment Leq : 48.88 dBA

Total Leq All Segments: 53.65 dBA
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        9.28 !         9.28

ROAD (0.00 + 44.29 + 0.00) = 44.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -38     74   0.00  63.89   0.00  -3.55  -2.06   0.00   0.00 -13.99  44.29
-------------------------------------------------------------------------------

Segment Leq : 44.29 dBA


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

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        7.99 !         7.99

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     41   0.00  60.88   0.00  -4.15  -1.38   0.00   0.00 -14.07  41.29
-------------------------------------------------------------------------------

Segment Leq : 41.29 dBA

Total Leq All Segments: 46.05 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 53.65
                           (NIGHT): 46.05
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 20:29:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

```
Road data, segment # 1: Montreal1 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Montreal1 (day/night)
----------------------------------------------
Angle1   Angle2           : -50.00 deg   28.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -50.00 deg   Angle2 : 28.00 deg
Barrier height            :  70.00 m
Barrier receiver distance :  18.00 / 18.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: River1 (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: River1 (day/night)
----------------------------------------
Angle1   Angle2           : -11.00 deg   31.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  98.00 / 98.00  m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -11.00 deg   Angle2 : 31.00 deg
Barrier height            :  70.00 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Montreal2 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Montreal2 (day/night)
-------------------------------------------
Angle1   Angle2           :  28.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  68.00 / 68.00  m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  28.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.40 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: River2 (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 # 4: River2 (day/night)
----------------------------------------
Angle1   Angle2           : -90.00 deg   -11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  98.00 / 98.00  m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -11.00 deg
Barrier height            :   8.40 m
Barrier receiver distance :  12.00 / 12.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Montreal1 (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 !        9.00 !        7.01 !         7.01

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     28   0.00  71.49   0.00  -6.56  -3.63   0.00   0.00 -20.00  41.29
-------------------------------------------------------------------------------

Segment Leq : 41.29 dBA


Results segment # 2: River1 (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 !        9.00 !        7.85 !         7.85

ROAD (0.00 + 34.01 + 0.00) = 34.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -11     31   0.00  68.48   0.00  -8.15  -6.32   0.00   0.00 -20.00  34.01
-------------------------------------------------------------------------------

Segment Leq : 34.01 dBA
```

```
Results segment # 3: Montreal2 (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 !        9.00 !        7.68 !         7.68

ROAD (0.00 + 54.67 + 0.00) = 54.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    28     90   0.00  71.49   0.00  -6.56  -4.63   0.00   0.00  -5.62  54.67
-------------------------------------------------------------------------------

Segment Leq : 54.67 dBA


Results segment # 4: River2 (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 !        9.00 !        8.08 !         8.08

ROAD (0.00 + 51.61 + 0.00) = 51.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -11   0.00  68.48   0.00  -8.15  -3.58   0.00   0.00  -5.15  51.61
-------------------------------------------------------------------------------

Segment Leq : 51.61 dBA

Total Leq All Segments: 56.57 dBA
```

```
Results segment # 1: Montreal1 (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 !        9.00 !        7.01 !         7.01

ROAD (0.00 + 33.70 + 0.00) = 33.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -50     28   0.00  63.89   0.00  -6.56  -3.63   0.00   0.00 -20.00  33.70
-------------------------------------------------------------------------------

Segment Leq : 33.70 dBA


Results segment # 2: River1 (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 !        9.00 !        7.85 !         7.85

ROAD (0.00 + 26.41 + 0.00) = 26.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -11     31   0.00  60.88   0.00  -8.15  -6.32   0.00   0.00 -20.00  26.41
-------------------------------------------------------------------------------

Segment Leq : 26.41 dBA
```

```
Results segment # 3: Montreal2 (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 !        9.00 !        7.68 !         7.68

ROAD (0.00 + 47.08 + 0.00) = 47.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    28     90   0.00  63.89   0.00  -6.56  -4.63   0.00   0.00  -5.62  47.08
-------------------------------------------------------------------------------

Segment Leq : 47.08 dBA


Results segment # 4: River2 (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 !        9.00 !        8.08 !         8.08

ROAD (0.00 + 44.01 + 0.00) = 44.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -11   0.00  60.88   0.00  -8.15  -3.58   0.00   0.00  -5.15  44.01
-------------------------------------------------------------------------------

Segment Leq : 44.01 dBA

Total Leq All Segments: 48.98 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 56.57
                           (NIGHT): 48.98
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 20:40:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

```
Road data, segment # 1: Montreal1 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Montreal1 (day/night)
----------------------------------------------
Angle1   Angle2           : -58.00 deg   -55.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   6.00 / 6.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -58.00 deg   Angle2 : -55.00 deg
Barrier height            :   5.40 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -68.00 deg   69.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  26.00 / 26.00  m
Receiver height           :   6.00 / 6.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 69.00 deg
Barrier height            :   5.40 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Montreal2 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Montreal2 (day/night)
-------------------------------------------
Angle1   Angle2           :  -7.00 deg   47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   6.00 / 6.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -7.00 deg   Angle2 : 47.00 deg
Barrier height            :  11.50 m
Barrier receiver distance :  34.00 / 34.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Montreal1 (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 !        6.00 !        4.22 !         4.22

ROAD (0.00 + 42.80 + 0.00) = 42.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58    -55   0.00  71.49   0.00  -4.04 -17.78   0.00   0.00  -6.87  42.80
-------------------------------------------------------------------------------

Segment Leq : 42.80 dBA


Results segment # 2: River (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 !        6.00 !        4.79 !         4.79

ROAD (0.00 + 58.61 + 0.00) = 58.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     69   0.00  68.48   0.00  -2.39  -1.19   0.00   0.00  -6.29  58.61
-------------------------------------------------------------------------------

Segment Leq : 58.61 dBA
```

```
Results segment # 3: Montreal2 (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 !        6.00 !        3.68 !         3.68

ROAD (0.00 + 40.16 + 0.00) = 40.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7     47   0.00  71.49   0.00  -6.43  -5.23   0.00   0.00 -19.66  40.16
-------------------------------------------------------------------------------

Segment Leq : 40.16 dBA

Total Leq All Segments: 58.78 dBA


Results segment # 1: Montreal1 (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 !        6.00 !        4.22 !         4.22

ROAD (0.00 + 35.20 + 0.00) = 35.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58    -55   0.00  63.89   0.00  -4.04 -17.78   0.00   0.00  -6.87  35.20
-------------------------------------------------------------------------------

Segment Leq : 35.20 dBA
```

```
Results segment # 2: River (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 !        6.00 !        4.79 !         4.79

ROAD (0.00 + 51.02 + 0.00) = 51.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     69   0.00  60.88   0.00  -2.39  -1.19   0.00   0.00  -6.29  51.02
-------------------------------------------------------------------------------

Segment Leq : 51.02 dBA


Results segment # 3: Montreal2 (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 !        6.00 !        3.68 !         3.68

ROAD (0.00 + 32.57 + 0.00) = 32.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -7     47   0.00  63.89   0.00  -6.43  -5.23   0.00   0.00 -19.66  32.57
-------------------------------------------------------------------------------

Segment Leq : 32.57 dBA

Total Leq All Segments: 51.19 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 58.78
                           (NIGHT): 51.19
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 20:42:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -28.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 137.00 / 137.00 m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -28.00 deg   Angle2 : 0.00 deg
Barrier height            :   8.40 m
Barrier receiver distance :   7.00 / 7.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

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

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

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

Data for Segment # 2: River (day/night)
---------------------------------------
Angle1   Angle2           : -20.00 deg   15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  76.00 / 76.00  m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 15.00 deg
Barrier height            :   8.40 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: Montreal (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 !        9.00 !        8.62 !         8.62

ROAD (0.00 + 53.80 + 0.00) = 53.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28      0   0.00  71.49   0.00  -9.61  -8.08   0.00   0.00  -4.82  48.98*
   -28      0   0.00  71.49   0.00  -9.61  -8.08   0.00   0.00   0.00  53.80
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 53.80 dBA


Results segment # 2: River (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 !        9.00 !        8.01 !         8.01

ROAD (0.00 + 48.89 + 0.00) = 48.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     15   0.00  68.48   0.00  -7.05  -7.11   0.00   0.00  -5.43  48.89
-------------------------------------------------------------------------------

Segment Leq : 48.89 dBA

Total Leq All Segments: 55.02 dBA
```

```
Results segment # 1: Montreal (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 !        9.00 !        8.62 !         8.62

ROAD (0.00 + 46.21 + 0.00) = 46.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -28      0   0.00  63.89   0.00  -9.61  -8.08   0.00   0.00  -4.82  41.39*
   -28      0   0.00  63.89   0.00  -9.61  -8.08   0.00   0.00   0.00  46.21
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 46.21 dBA


Results segment # 2: River (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 !        9.00 !        8.01 !         8.01

ROAD (0.00 + 41.29 + 0.00) = 41.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -20     15   0.00  60.88   0.00  -7.05  -7.11   0.00   0.00  -5.43  41.29
-------------------------------------------------------------------------------

Segment Leq : 41.29 dBA

Total Leq All Segments: 47.42 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 55.02
                           (NIGHT): 47.42
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 17:54:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

```
Road data, segment # 1: River (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: River (day/night)
---------------------------------------
Angle1   Angle2           :  54.00 deg   63.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.00 / 47.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: Montreal1 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Montreal1 (day/night)
-------------------------------------------
Angle1   Angle2           : -15.00 deg   19.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  94.00 / 94.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Montreal2 (day/night)
----------------------------------------------
Car traffic volume  : 24288/2112  veh/TimePeriod  *
Medium truck volume :  1932/168   veh/TimePeriod  *
Heavy truck volume  :  1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 3: Montreal2 (day/night)
-------------------------------------------
Angle1   Angle2           : -74.00 deg   -64.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  45.00 / 45.00  m
Receiver height           :  97.00 / 97.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 50.51 + 0.00) = 50.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    54     63   0.00  68.48   0.00  -4.96 -13.01   0.00   0.00   0.00  50.51
-------------------------------------------------------------------------------

Segment Leq : 50.51 dBA


Results segment # 2: Montreal1 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.28 + 0.00) = 56.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15     19   0.00  71.49   0.00  -7.97  -7.24   0.00   0.00   0.00  56.28
-------------------------------------------------------------------------------

Segment Leq : 56.28 dBA
```

```
Results segment # 3: Montreal2 (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74    -64   0.00  71.49   0.00  -4.77 -12.55   0.00   0.00   0.00  54.17
-------------------------------------------------------------------------------

Segment Leq : 54.17 dBA

Total Leq All Segments: 59.02 dBA


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

Source height = 1.50 m

ROAD (0.00 + 42.91 + 0.00) = 42.91 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    54     63   0.00  60.88   0.00  -4.96 -13.01   0.00   0.00   0.00  42.91
-------------------------------------------------------------------------------

Segment Leq : 42.91 dBA
```

```
Results segment # 2: Montreal1 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.69 + 0.00) = 48.69 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15     19   0.00  63.89   0.00  -7.97  -7.24   0.00   0.00   0.00  48.69
-------------------------------------------------------------------------------

Segment Leq : 48.69 dBA


Results segment # 3: Montreal2 (night)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.57 + 0.00) = 46.57 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -74    -64   0.00  63.89   0.00  -4.77 -12.55   0.00   0.00   0.00  46.57
-------------------------------------------------------------------------------

Segment Leq : 46.57 dBA

Total Leq All Segments: 51.43 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 59.02
                           (NIGHT): 51.43
```

STAMSON 5.0 NORMAL REPORT Date: 21-04-2022 20:41:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

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

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

Data for Segment # 1: Montreal (day/night)
----------------------------------------------
Angle1   Angle2           : -41.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 127.00 / 127.00 m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -41.00 deg   Angle2 : 90.00 deg
Barrier height            :   8.40 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
```

```
Road data, segment # 2: River1 (day/night)
------------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: River1 (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  : 138.00 / 138.00 m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -33.00 deg
Barrier height            :   8.40 m
Barrier receiver distance :  54.00 / 54.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: River2 (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: River2 (day/night)
----------------------------------------
Angle1   Angle2           :  28.00 deg   39.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 138.00 / 138.00 m
Receiver height           :   9.00 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  28.00 deg   Angle2 : 39.00 deg
Barrier height            :   8.40 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: Montreal (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 !        9.00 !        7.52 !         7.52

ROAD (0.00 + 55.15 + 0.00) = 55.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41     90   0.00  71.49   0.00  -9.28  -1.38   0.00   0.00  -5.68  55.15
-------------------------------------------------------------------------------

Segment Leq : 55.15 dBA


Results segment # 2: River1 (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 !        9.00 !        6.06 !         6.06

ROAD (0.00 + 47.25 + 0.00) = 47.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -33   0.00  68.48   0.00  -9.64  -4.99   0.00   0.00  -6.60  47.25
-------------------------------------------------------------------------------

Segment Leq : 47.25 dBA
```

```
Results segment # 3: River2 (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 !        9.00 !        7.64 !         7.64

ROAD (0.00 + 41.11 + 0.00) = 41.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    28     39   0.00  68.48   0.00  -9.64 -12.14   0.00   0.00  -5.59  41.11
-------------------------------------------------------------------------------

Segment Leq : 41.11 dBA

Total Leq All Segments: 55.95 dBA


Results segment # 1: Montreal (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 !        9.00 !        7.52 !         7.52

ROAD (0.00 + 47.56 + 0.00) = 47.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -41     90   0.00  63.89   0.00  -9.28  -1.38   0.00   0.00  -5.68  47.56
-------------------------------------------------------------------------------

Segment Leq : 47.56 dBA
```

```
Results segment # 2: River1 (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 !        9.00 !        6.06 !         6.06

ROAD (0.00 + 39.66 + 0.00) = 39.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -33   0.00  60.88   0.00  -9.64  -4.99   0.00   0.00  -6.60  39.66
-------------------------------------------------------------------------------

Segment Leq : 39.66 dBA


Results segment # 3: River2 (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 !        9.00 !        7.64 !         7.64

ROAD (0.00 + 33.52 + 0.00) = 33.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    28     39   0.00  60.88   0.00  -9.64 -12.14   0.00   0.00  -5.59  33.52
-------------------------------------------------------------------------------

Segment Leq : 33.52 dBA

Total Leq All Segments: 48.36 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 55.95
                           (NIGHT): 48.36
```