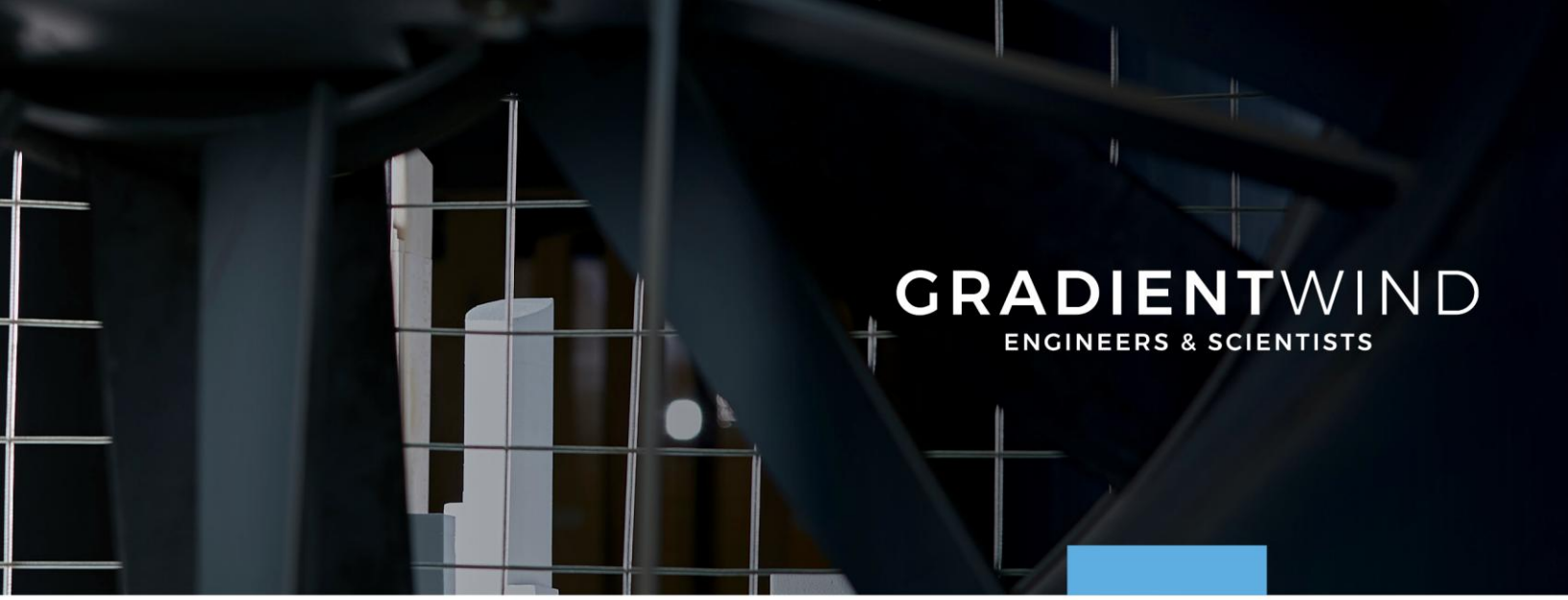

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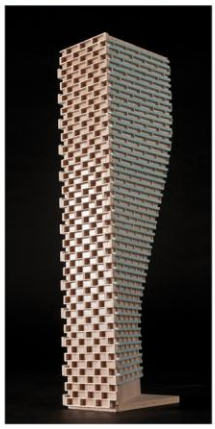
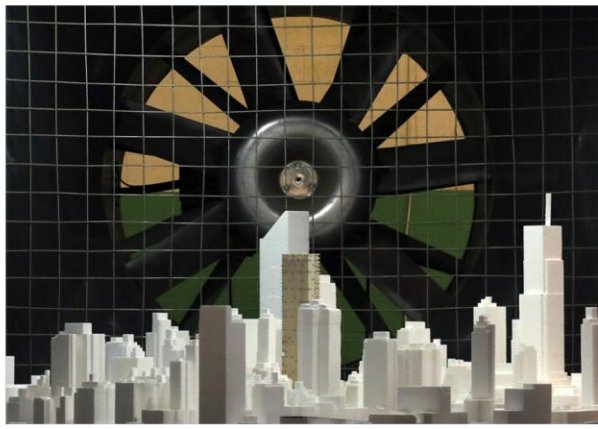
ENGINEERS & SCIENTISTS

TRANSPORTATION NOISE ASSESSMENT

1533/1541 St Joseph Boulevard
Ottawa, Ontario

Report: 25-082 – Transportation Noise





October 14, 2025

PREPARED FOR

Sienna Senior Living
302 Town Center Boulevard, Suite 300
Markham, ON
L3R 0E8

PREPARED BY

Doryan Saavedra, B.Eng., Junior Acoustic Scientist
Joshua Foster, P.Eng., Lead Engineer

EXECUTIVE SUMMARY

This report describes a transportation noise assessment for the proposed redevelopment located at 1533/1541 St Joseph Boulevard in Ottawa, Ontario. The proposed redevelopment comprises an existing three-storey building with a wide 'U' shaped planform, and a two-storey 'T' shaped addition to the southwest. Both buildings feature sleeping quarters and shared living rooms on all levels. Offices are featured on Level 1 of the new building and on all levels of the existing building. The dominant sources of roadway traffic noise impacting the development is St Joseph Boulevard located directly south, and Highway 174 located northwest of the subject site. Figure 1 illustrates a site plan with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP), and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) architectural drawings provided by Hobin Architecture in September 2025.

The results of the current analysis indicate that noise levels will range between 54 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the south façade of both the new and existing buildings which are nearest and most exposed to St Joseph Boulevard.

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required on both the new and existing buildings where noise levels exceed 65 dBA, as discussed in Section 4.2.1. Noise control requirements are specified in Section 5.2 and Figure 3. Results of the calculations also indicate that both buildings of the development will require air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, a Type D Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6 of this report.

Noise levels at the at-grade outdoor amenity are expected to fall below 55 dBA during the daytime period. As such, noise barriers are not required.

A review of satellite imagery confirmed there are no significant sources of stationary noise surrounding the site. The dominant source of noise impacting the development is from transportation noise sources.

The development's own mechanical equipment has the potential to generate noise off-site at surrounding noise sensitive (residential) developments and on the development itself. Any potential impacts can be minimized by judicious selection of mechanical equipment and its location. These systems will be designed to comply with the ENCG sound level limits. A review by a qualified acoustic consultant is recommended once the mechanical design of the building has developed.

TABLE OF CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Sienna Senior Living to undertake a transportation noise assessment for a proposed redevelopment located at 1533/1541 St Joseph Boulevard in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

This assessment is based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300[1] and City of Ottawa Environmental Noise Control Guidelines (ENCG)[2] guidelines. Noise calculations were based on architectural drawings provided by Hobin Architecture, received in September 2025, with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The subject site is located at 1533/1541 St Joseph Boulevard in Ottawa, Ontario. The site is located on a parcel of land bordered by St Joseph Boulevard to the south and privately owned land to the east, west, and north. The proposed redevelopment comprises an existing three-storey building with a wide 'U' shaped planform, and a two-storey 'T' shaped addition to the southwest. Both buildings feature sleeping quarters and shared living rooms on all levels. Offices are featured on Level 1 of the new building and on all levels of the existing building. The relevant source of roadway traffic noise is St Joseph Boulevard to the south and Highway 174 located to the northwest of the subject site. Figure 1 illustrates a site plan with surrounding context.

There are potential stationary noise impacts onto neighbouring dwellings and the subject site itself due to rooftop equipment on the new and existing buildings. Once the design of the site develops further and equipment is selected, a stationary noise study will be performed to ensure on-site and off-site noise levels fall below ENCG criteria. A review of aerial imagery shows that the surroundings comprise mainly

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

of green space and low-rise residential buildings which are of no concern in terms of noise impacts onto the development. As such, no significant existing stationary sources of noise were identified.

3. OBJECTIVES

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

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

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

(that is relevant to this study) is 50, 45 and 40 dBA for offices, living rooms and sleeping quarters respectively, 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].

For designated Outdoor Living Areas (OLAs), the sound level limit is 55 dBA during the daytime period. An excess above the limit is acceptable only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons.

[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 Roadway Traffic Volumes

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

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Traffic Classification	Speed Limit (km/h)	Traffic Volumes
Highway 174	Highway – 4 Lanes	100	**73,332**
St Joseph Boulevard	4-Lane Urban Arterial – Divided (4-UAD)	70	**35,000**

4.2.3 Theoretical Roadway Traffic Noise Predictions

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

Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise, and by using existing building locations as noise barriers. 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 roadways was taken to be 92%/8%, respectively.
- Ground surfaces for receptors modelling Highway 174 noise were taken to be absorptive due to the presence of grass and soil.
- Ground surfaces for receptors modelling noise from St Joseph Boulevard were taken to be reflective due to the presence of hard (paved) ground.

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

- Topography was assumed to be relatively flat near the study site with grading obtained from the architectural drawings provided by Hobin Architecture.
- Highway 174 was assumed to have a grade of 55 m.
- Noise receptors were strategically placed at 10 locations around the study area (see Figure 2).

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 (2024) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick veneer walls can achieve STC 50 or more. Standard commercially sided exterior metal stud walls have around STC 45. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

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

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

Based on published research[9], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, detailed floor layouts and building elevations have not been

[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

finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor).

5. RESULTS

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. The results of the current analysis indicate that noise levels will range between 54 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the south façade of both the new and existing buildings which are nearest and most exposed to St Joseph Boulevard.

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required on both the new and existing buildings where noise levels exceed 65 dBA, as discussed in Section 4.2.1. Noise control requirements are specified in Section 5.2 and Figure 3. Results of the calculations also indicate that both buildings of the development will require air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, a Type D Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6 of this report.

Noise levels at the at-grade outdoor amenity are expected to fall below 55 dBA during the daytime period. As such, noise barriers are not required.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC

Receptor Number / Type	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
NEW BUILDING				
R1 / POW	5.1	Level 2 – South Façade	71	63
R2 / POW	5.1	Level 2 – North Façade	60	52
R3 / POW	5.1	Level 2 – West Façade	64	56
R4 / OLA	1.5	At-grade – Outdoor Amenity	54	N/A*
EXISTING BUILDING				
R5 / POW	10.1	Level 3 – East Façade	68	61
R6 / POW	10.1	Level 3 – South Façade	71	64
R7 / POW	10.1	Level 3 – Southwest Façade	70	63
R8 / POW	10.1	Level 3 – Southwest Façade	67	59
R9 / POW	10.1	Level 3 – Northwest Façade	62	54
R10 / POW	10.1	Level 3 – Northeast Façade	62	54

*Noise levels during the nighttime are not considered for OLAs

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. As discussed in Section 4.3, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = outdoor noise level – targeted indoor noise levels + safety factor). Figure 3 outlines the required office, bedroom and living room window STC's for all facades of the development. The STC requirements are summarized below for various units within the development:

- **Bedroom Windows**

(i) Bedroom windows on the new building facing south will require a minimum STC of 35.

(ii) Bedroom windows on the existing building facing south, east, and southwest will require a minimum STC of 35.

(iii) All other bedroom windows are to satisfy Ontario Building Code (OBC 2024) requirements.

- **Living Room Windows**

(i) Living room windows on the new building facing south and east will require a minimum STC of 30.

(ii) Living room windows on the existing building facing south, east, and southwest will require a minimum STC of 30.

(iii) All other living room windows are to satisfy Ontario Building Code (OBC 2024) requirements.

- **Office Windows**

(iv) Office windows on the new and existing building facing south will require a minimum STC of 30.

(v) All other Office windows are to satisfy Ontario Building Code (OBC 2024) requirements.

- **Exterior Walls**

(i) Exterior wall components on the south façade of the new building and the south, east, and southwest façade of the existing building will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[10].

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

Results of the calculations also indicate that both buildings of the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living

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

environment. In addition to ventilation requirements, Warning Clauses will also be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 54 and 71 dBA during the daytime period (07:00-23:00) and between 52 and 64 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 71 dBA) occurs along the south façade of both the new and existing buildings which are nearest and most exposed to St Joseph Boulevard.

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Upgraded building components, including STC rated glazing elements and exterior walls, will be required on both the new and existing buildings where noise levels exceed 65 dBA, as discussed in Section 4.2.1. Noise control requirements are specified in Section 5.2 and Figure 3. Results of the calculations also indicate that both buildings of the development will require air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, a Type D Warning Clause will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized below.

Type D:

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

Noise levels at the at-grade outdoor amenity are expected to fall below 55 dBA during the daytime period. As such, noise barriers are not required.

A review of satellite imagery confirmed there are no significant sources of stationary noise surrounding the site. The dominant source of noise impacting the development is from transportation noise sources.

The development's own mechanical equipment has the potential to generate noise off-site at surrounding noise sensitive (residential) developments and on the development itself. Any potential impacts can be minimized by judicious selection of mechanical equipment and its location. These systems will be designed

to comply with the ENCG sound level limits. A review by a qualified acoustic consultant is recommended once the mechanical design of the building has developed.

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

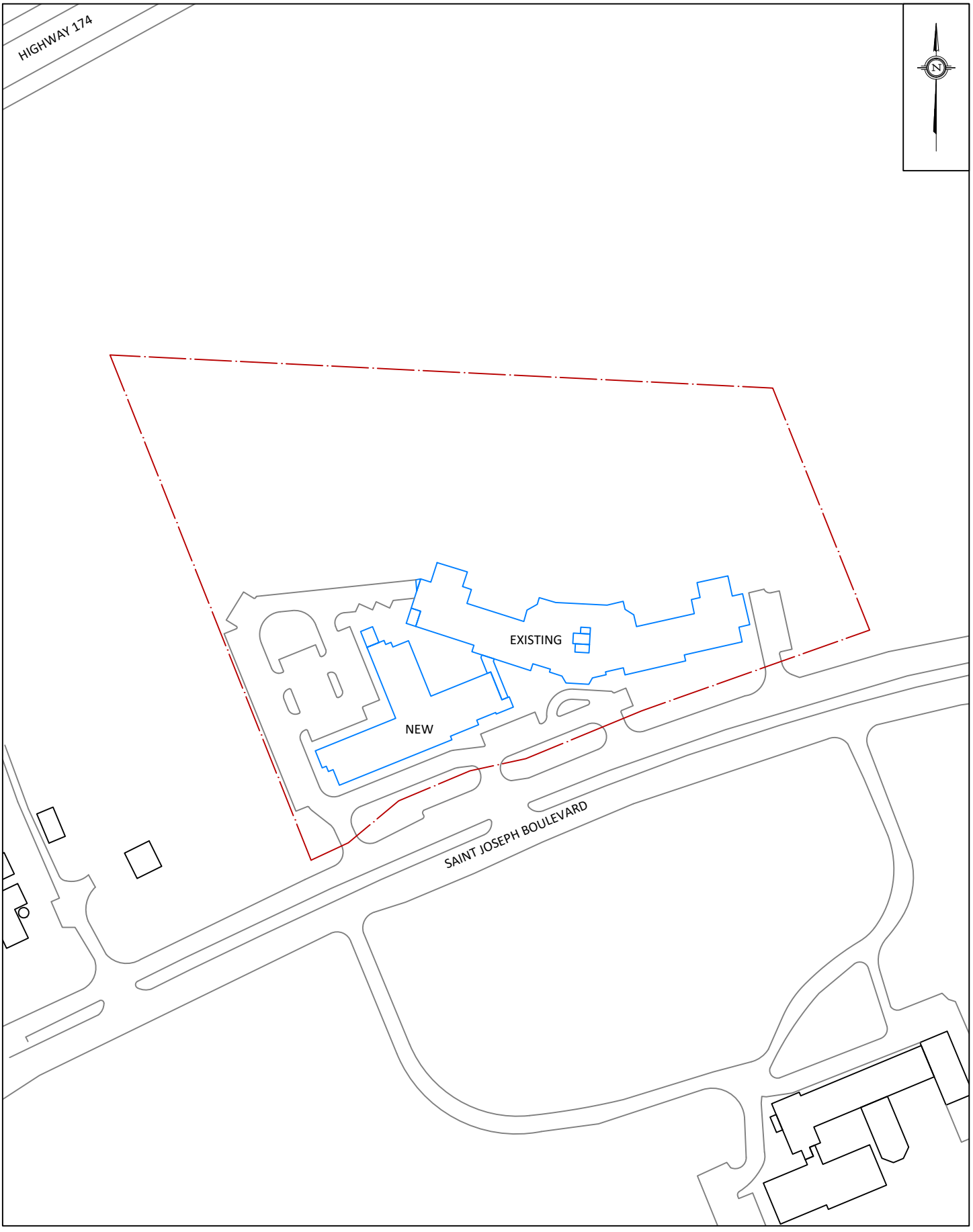
Sincerely,

Gradient Wind Engineering Inc.

Doryan Saavedra, B.Eng.
Junior Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #25-082 – Transportation Noise



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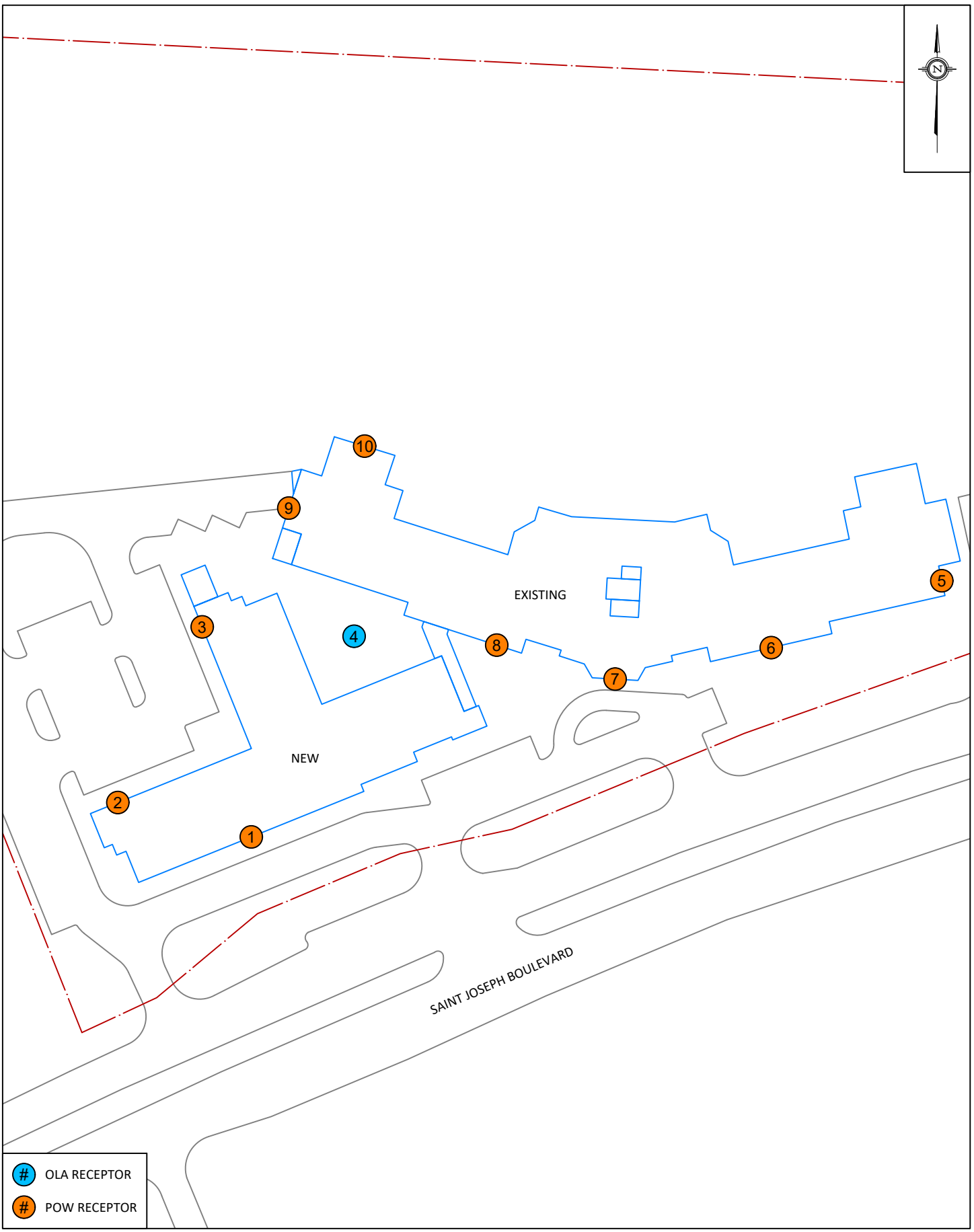
PROJECT	1533/1541 SAINT JOSEPH BOULEVARD, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO.	25-083-1
DATE	OCTOBER 6, 2025	DRAWN BY	T.K.

FIGURE 1:
PROPERTY LINE AND SURROUNDING CONTEXT



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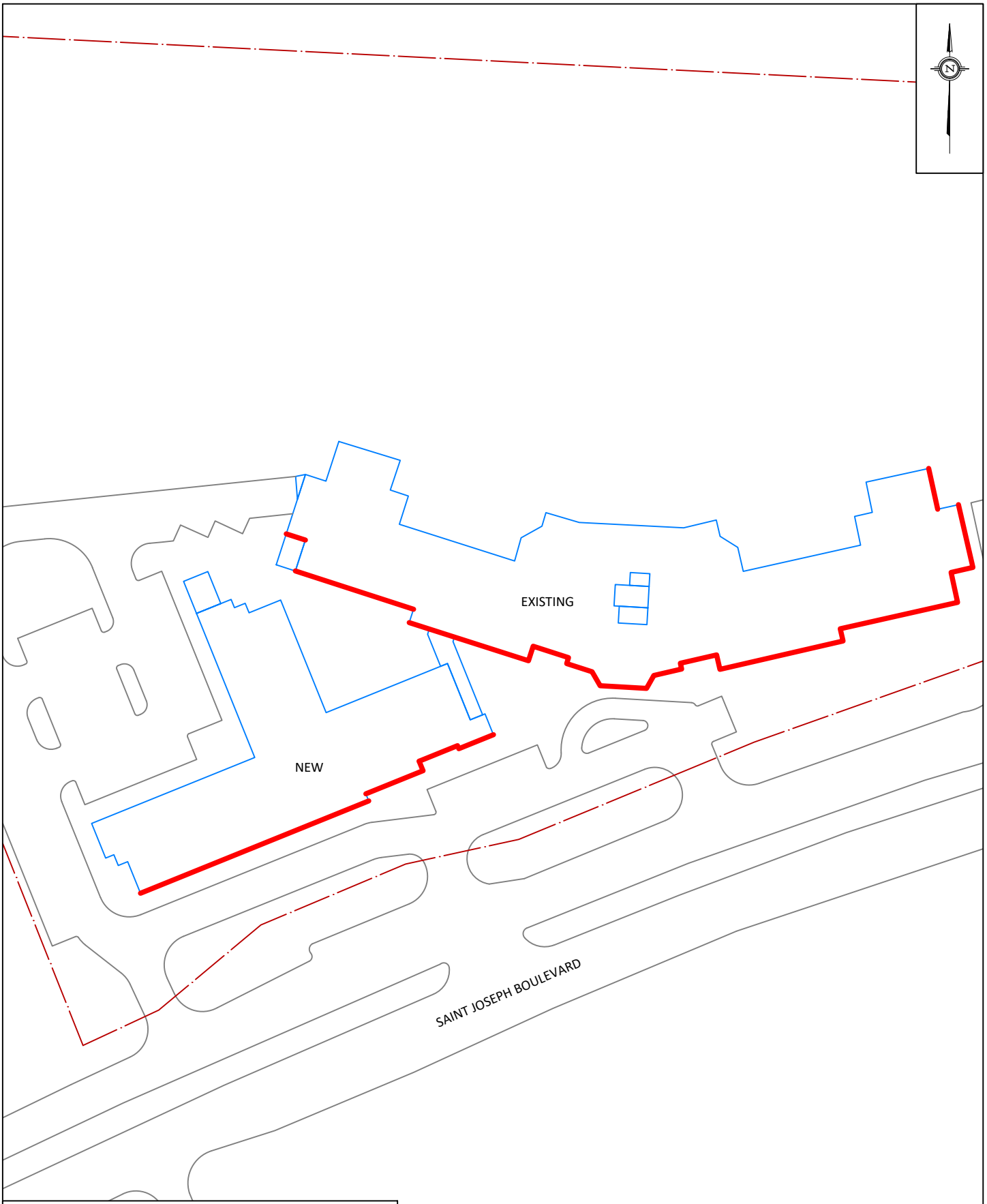
PROJECT	1533/1541 SAINT JOSEPH BOULEVARD, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO. 25-083-2	FIGURE 2: RECEPTOR LOCATIONS
DATE	OCTOBER 6, 2025	DRAWN BY T.K.	



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PROJECT	1533/1541 SAINT JOSEPH BOULEVARD, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	25-083-3
DATE	OCTOBER 6, 2025	DRAWN BY	T.K.

FIGURE 3:
WINDOW STC REQUIREMENTS

APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:09:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description: POW - NEW - Level 2 South Facade

```
Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  38.00 / 38.00  m
Receiver height           :   5.10 / 5.10   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 70.96 + 0.00) = 70.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  75.00   0.00  -4.04   0.00   0.00   0.00   0.00  70.96
-------------------------------------------------------------------------------

Segment Leq : 70.96 dBA

Total Leq All Segments: 70.96 dBA

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

Source height = 1.50 m

ROAD (0.00 + 63.36 + 0.00) = 63.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.40   0.00  -4.04   0.00   0.00   0.00   0.00  63.36
-------------------------------------------------------------------------------

Segment Leq : 63.36 dBA

Total Leq All Segments: 63.36 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.96
                           (NIGHT): 63.36
```

STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:09:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te Time Period: Day/Night 16/8 hours
Description: POW - NEW - Level 2 North Facade

```
Road data, segment # 1: HWY 174 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: HWY 174 (day/night)
-----------------------------------------
Angle1   Angle2           : -85.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 296.00 / 296.00 m
Receiver height           :   5.10 / 5.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  48.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.64 m
Barrier receiver distance :  28.00 / 28.00  m
Source elevation          :  55.00 m
Receiver elevation        :  79.20 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

```
Results segment # 1: HWY 174 (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 !        5.10 !        2.47 !        81.67

ROAD (59.20 + 50.73 + 0.00) = 59.78 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85     48   0.55  81.40   0.00 -20.10  -2.09   0.00   0.00   0.00  59.20
-------------------------------------------------------------------------------
    48     90   0.09  81.40   0.00 -14.17  -6.85   0.00   0.00  -9.65  50.73
-------------------------------------------------------------------------------

Segment Leq : 59.78 dBA

Total Leq All Segments: 59.78 dBA

Results segment # 1: HWY 174 (night)
------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !        5.10 !        2.47 !        81.67

ROAD (51.60 + 43.14 + 0.00) = 52.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -85     48   0.55  73.80   0.00 -20.10  -2.09   0.00   0.00   0.00  51.60
-------------------------------------------------------------------------------
    48     90   0.09  73.80   0.00 -14.17  -6.85   0.00   0.00  -9.65  43.14
-------------------------------------------------------------------------------

Segment Leq : 52.18 dBA

Total Leq All Segments: 52.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.78
                           (NIGHT): 52.18
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-10-2025 11:10:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te                Time Period: Day/Night 16/8 hours
Description: POW - NEW - Level 2 West Facade


Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           :   1.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  80.00 / 80.00  m
Receiver height           :   5.10 / 5.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  54.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.64 m
Barrier receiver distance :  26.00 / 26.00  m
Source elevation          :  79.20 m
Receiver elevation        :  79.20 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

```
Road data, segment # 2: HWY 174 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: HWY 174 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 274.00 / 274.00 m
Receiver height           :   5.10 / 5.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 7.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          :  55.00 m
Receiver elevation        :  79.20 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

```
Results segment # 1: St Joseph (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 !        5.10 !        3.93 !        83.13

ROAD (62.42 + 52.14 + 0.00) = 62.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     1     54   0.00  75.00   0.00  -7.27  -5.31   0.00   0.00   0.00  62.42
-------------------------------------------------------------------------------
    54     90   0.00  75.00   0.00  -7.27  -6.99   0.00   0.00  -8.59  52.14
-------------------------------------------------------------------------------

Segment Leq : 62.80 dBA

Results segment # 2: HWY 174 (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 !        5.10 !        5.10 !        84.30

ROAD (0.00 + 57.96 + 0.00) = 57.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      7   0.55  81.40   0.00 -19.58  -3.85   0.00   0.00  -0.02  57.95*
   -90      7   0.55  81.40   0.00 -19.58  -3.85   0.00   0.00   0.00  57.96
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.96 dBA

Total Leq All Segments: 64.03 dBA
```

```
Results segment # 1: St Joseph (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 !        5.10 !        3.93 !        83.13

ROAD (54.82 + 44.54 + 0.00) = 55.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     1     54   0.00  67.40   0.00  -7.27  -5.31   0.00   0.00   0.00  54.82
-------------------------------------------------------------------------------
    54     90   0.00  67.40   0.00  -7.27  -6.99   0.00   0.00  -8.59  44.54
-------------------------------------------------------------------------------

Segment Leq : 55.21 dBA

Results segment # 2: HWY 174 (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !        5.10 !        5.10 !        84.30

ROAD (0.00 + 50.36 + 0.00) = 50.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      7   0.55  73.80   0.00 -19.58  -3.85   0.00   0.00  -0.02  50.35*
   -90      7   0.55  73.80   0.00 -19.58  -3.85   0.00   0.00   0.00  50.36
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 50.36 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: 08-10-2025 11:10:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te Time Period: Day/Night 16/8 hours
Description: OLA - NEW - Outdoor Amenity

```
Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  66.00 / 66.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.64 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  79.20 m
Receiver elevation        :  79.20 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

```
Road data, segment # 2: HWY 174 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: HWY 174 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 290.00 / 290.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.64 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :  55.00 m
Receiver elevation        :  79.20 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        80.70

ROAD (0.00 + 52.64 + 0.00) = 52.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  75.00   0.00  -6.43   0.00   0.00   0.00 -15.92  52.64
-------------------------------------------------------------------------------

Segment Leq : 52.64 dBA

Results segment # 2: HWY 174 (day)
---------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        0.67 !        79.87

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     90   0.20  81.40   0.00 -15.46  -0.54   0.00   0.00 -16.28  49.12
-------------------------------------------------------------------------------

Segment Leq : 49.12 dBA

Total Leq All Segments: 54.24 dBA
```

```
Results segment # 1: St Joseph (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        80.70

ROAD (0.00 + 45.04 + 0.00) = 45.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.40   0.00  -6.43   0.00   0.00   0.00 -15.92  45.04
-------------------------------------------------------------------------------

Segment Leq : 45.04 dBA

Results segment # 2: HWY 174 (night)
-------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !        1.50 !        0.67 !        79.87

ROAD (0.00 + 41.52 + 0.00) = 41.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.20  73.80   0.00 -15.46  -0.54   0.00   0.00 -16.28  41.52
-------------------------------------------------------------------------------

Segment Leq : 41.52 dBA

Total Leq All Segments: 46.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.24
                           (NIGHT): 46.64
```

STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:11:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 East Facade

```
Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -86.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  36.00 / 36.00  m
Receiver height           :  10.08 / 10.08  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 68.23 + 0.00) = 68.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86      5   0.00  75.00   0.00  -3.80  -2.96   0.00   0.00   0.00  68.23
-------------------------------------------------------------------------------

Segment Leq : 68.23 dBA

Total Leq All Segments: 68.23 dBA

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

Source height = 1.50 m

ROAD (0.00 + 60.63 + 0.00) = 60.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -86      5   0.00  67.40   0.00  -3.80  -2.96   0.00   0.00   0.00  60.63
-------------------------------------------------------------------------------

Segment Leq : 60.63 dBA

Total Leq All Segments: 60.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.23
                           (NIGHT): 60.63
```

STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:11:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6.te Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 South Facade

```
Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -83.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  10.08 / 10.08  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 71.14 + 0.00) = 71.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     90   0.00  75.00   0.00  -3.68  -0.17   0.00   0.00   0.00  71.14
-------------------------------------------------------------------------------

Segment Leq : 71.14 dBA

Total Leq All Segments: 71.14 dBA

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

Source height = 1.50 m

ROAD (0.00 + 63.55 + 0.00) = 63.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -83     90   0.00  67.40   0.00  -3.68  -0.17   0.00   0.00   0.00  63.55
-------------------------------------------------------------------------------

Segment Leq : 63.55 dBA

Total Leq All Segments: 63.55 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.14
                           (NIGHT): 63.55
```

```
STAMSON 5.0        NORMAL REPORT        Date: 08-10-2025 11:12:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te                Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 Southwest Facade


Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -66.00 deg   90.00 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           :  10.08 / 10.08  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 70.22 + 0.00) = 70.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.00  75.00   0.00  -4.15  -0.62   0.00   0.00   0.00  70.22
-------------------------------------------------------------------------------

Segment Leq : 70.22 dBA

Total Leq All Segments: 70.22 dBA

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

Source height = 1.50 m

ROAD (0.00 + 62.63 + 0.00) = 62.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -66     90   0.00  67.40   0.00  -4.15  -0.62   0.00   0.00   0.00  62.63
-------------------------------------------------------------------------------

Segment Leq : 62.63 dBA

Total Leq All Segments: 62.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.22
                           (NIGHT): 62.63
```

STAMSON 5.0 NORMAL REPORT Date: 09-10-2025 16:14:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8.te Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 Southwest Facade

```
Road data, segment # 1: St Joseph (day/night)
-----------------------------------------------
Car traffic volume  : 28336/2464  veh/TimePeriod  *
Medium truck volume :  2254/196   veh/TimePeriod  *
Heavy truck volume  :  1610/140   veh/TimePeriod  *
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  35000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: St Joseph (day/night)
-----------------------------------------------
Angle1   Angle2           : -52.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  54.00 / 54.00  m
Receiver height           :  10.08 / 10.08  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  27.00 deg   Angle2 : 90.00 deg
Barrier height            :   7.64 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  78.05 m
Receiver elevation        :  78.05 m
Barrier elevation         :  79.20 m
Reference angle           :   0.00
```

```
Results segment # 1: St Joseph (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 !       10.08 !        6.70 !        85.90

ROAD (65.86 + 58.93 + 0.00) = 66.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52     27   0.00  75.00   0.00  -5.56  -3.58   0.00   0.00   0.00  65.86
-------------------------------------------------------------------------------
    27     90   0.00  75.00   0.00  -5.56  -4.56   0.00   0.00  -5.94  58.93
-------------------------------------------------------------------------------

Segment Leq : 66.66 dBA

Total Leq All Segments: 66.66 dBA

Results segment # 1: St Joseph (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 !       10.08 !        6.70 !        85.90

ROAD (58.26 + 51.33 + 0.00) = 59.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -52     27   0.00  67.40   0.00  -5.56  -3.58   0.00   0.00   0.00  58.26
-------------------------------------------------------------------------------
    27     90   0.00  67.40   0.00  -5.56  -4.56   0.00   0.00  -5.94  51.33
-------------------------------------------------------------------------------

Segment Leq : 59.06 dBA

Total Leq All Segments: 59.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.66
                           (NIGHT): 59.06
```

STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:12:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 Northwest Facade

```
Road data, segment # 1: HWY 174 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: HWY 174 (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 262.00 / 262.00 m
Receiver height           :  10.08 / 10.08  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 47.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          :  55.00 m
Receiver elevation        :  78.05 m
Barrier elevation         :  78.05 m
Reference angle           :   0.00
```

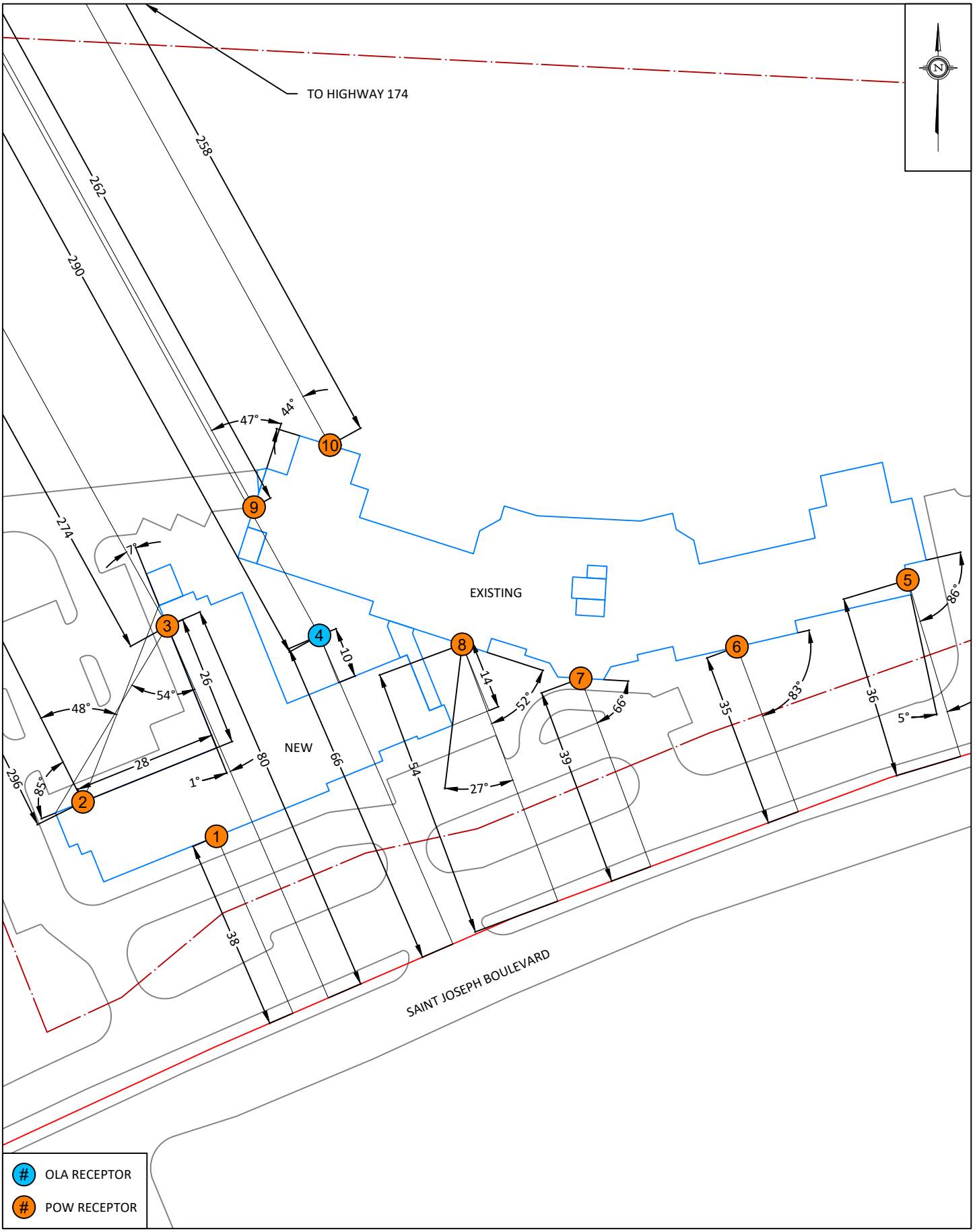
```
Results segment # 1: HWY 174 (day)
----------------------------------

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 !       10.08 !       10.08 !        88.13

ROAD (0.00 + 62.08 + 0.00) = 62.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     47   0.40  81.40   0.00 -17.42  -1.89   0.00   0.00  -0.01  62.08*
   -90     47   0.40  81.40   0.00 -17.42  -1.89   0.00   0.00   0.00  62.08
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.08 dBA

Total Leq All Segments: 62.08 dBA

Results segment # 1: HWY 174 (night)
------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       10.08 !       10.08 !        88.13

ROAD (0.00 + 54.49 + 0.00) = 54.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     47   0.40  73.80   0.00 -17.43  -1.89   0.00   0.00  -0.01  54.48*
   -90     47   0.40  73.80   0.00 -17.43  -1.89   0.00   0.00   0.00  54.49
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.49 dBA

Total Leq All Segments: 54.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.08
                           (NIGHT): 54.49
```

STAMSON 5.0 NORMAL REPORT Date: 08-10-2025 11:13:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te Time Period: Day/Night 16/8 hours
Description: POW - EXISTING - Level 3 Northeast Facade

```
Road data, segment # 1: HWY 174 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  73332
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: HWY 174 (day/night)
-----------------------------------------
Angle1   Angle2           : -44.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 258.00 / 258.00 m
Receiver height           :  10.08 / 10.08  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -44.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          :  55.00 m
Receiver elevation        :  78.05 m
Barrier elevation         :  78.05 m
Reference angle           :   0.00
```

```
Results segment # 1: HWY 174 (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 !       10.08 !       10.08 !        88.13

ROAD (0.00 + 62.08 + 0.00) = 62.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -44     90   0.40  81.40   0.00 -17.33  -1.99   0.00   0.00  -0.01  62.07*
   -44     90   0.40  81.40   0.00 -17.33  -1.99   0.00   0.00   0.00  62.08
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 62.08 dBA

Total Leq All Segments: 62.08 dBA

Results segment # 1: HWY 174 (night)
------------------------------------

Source height = 1.49 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.49 !       10.08 !       10.08 !        88.13

ROAD (0.00 + 54.48 + 0.00) = 54.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -44     90   0.40  73.80   0.00 -17.33  -1.99   0.00   0.00  -0.01  54.48*
   -44     90   0.40  73.80   0.00 -17.33  -1.99   0.00   0.00   0.00  54.48
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 54.48 dBA

Total Leq All Segments: 54.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.08
                           (NIGHT): 54.48
```



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PROJECT	1533/1541 SAINT JOSEPH BOULEVARD, OTTAWA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION
SCALE	1:1000 (APPROX.)	DRAWING NO.	25-083-A1
DATE	OCTOBER 6, 2025	DRAWN BY	T.K.

FIGURE A1:
STAMSON INPUT PARAMETERS