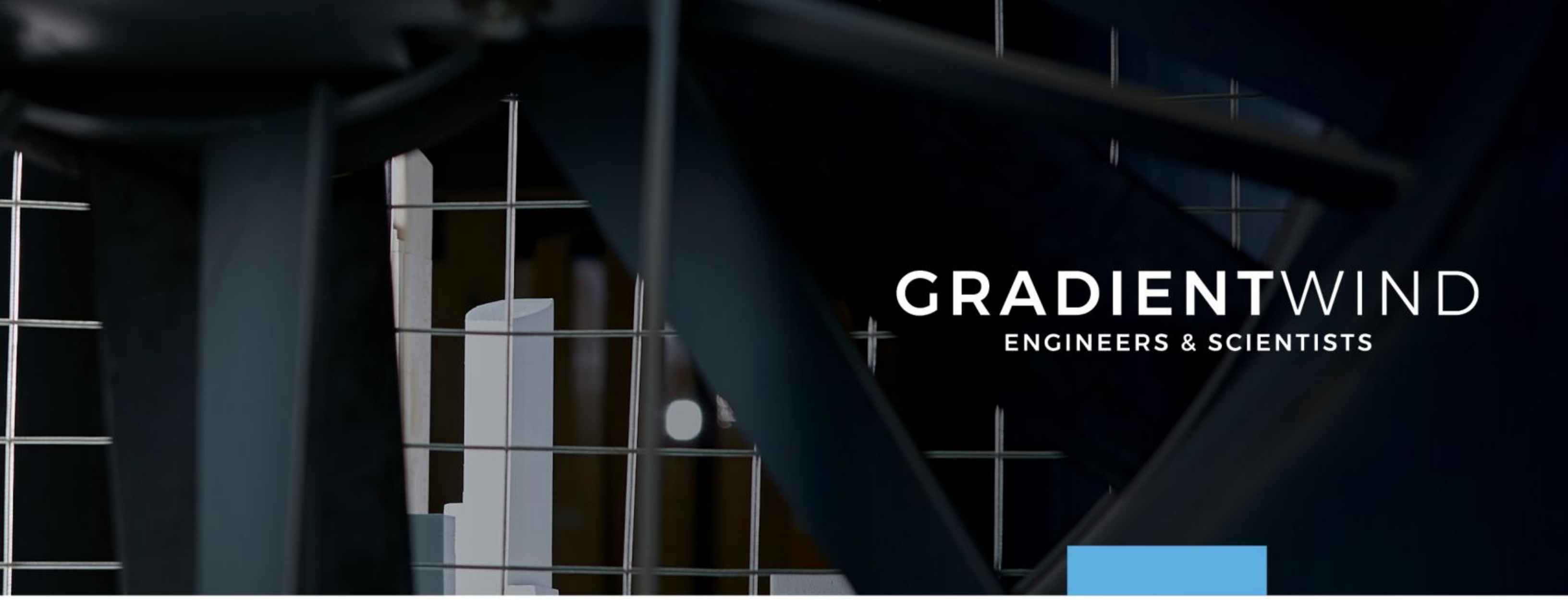
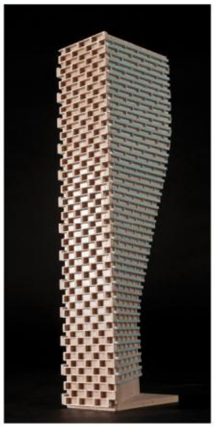
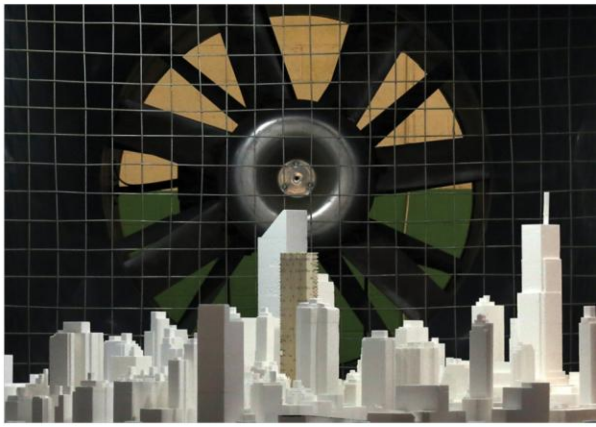


TRANSPORTATION NOISE ASSESSMENT

1970-1980 Fowler Drive
Mississauga, Ontario

REPORT: GWE25-049-Transportation Noise





November 13, 2025

PREPARED FOR
IMH 1970 & 1980 Fowler Drive Ltd
1400-3280 Bloor Street West, Centre Tower
Toronto, Ontario
M8X 2X3

PREPARED BY
Doryan Saavedra, B.Eng., Junior Acoustic Scientist
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GRADIENTWIND.COM

EXECUTIVE SUMMARY

This report describes a transportation noise assessment performed for a proposed residential, high-rise development located at 1970-1980 Fowler Drive in Mississauga, Ontario. The development comprises a 24-storey building with a four-storey podium. The private driveway located east of the proposed development connects to North Sheridan Way and provides access to loading areas and a ramp leading to four levels of below grade parking. At grade is a residential lobby, a refuge area, and building support services. Levels 2-24 comprise residential units. The floorplate sets back at Level 5 to accommodate an indoor and outdoor amenity. The building is topped by a mechanical penthouse and an elevator machine room. An outdoor amenity is provided on the rooftop. The existing playground will be relocated to the southwest of the proposed development. The major sources of traffic noise are Queen Elizabeth Way, Erin Mills Parkway, Fowler Drive, and North Sheridan Way. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) requirements; (ii) future vehicular traffic volumes based on projected roadway traffic counts obtained from the City of Mississauga; and (iii) architectural drawings provided by Core Architects, in October 2025.

The results of the current analysis indicate that noise levels will range between 59 and 66 dBA during the daytime period (07:00-23:00) and between 53 and 65 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 66 dBA) occur along the development’s east facing façades.

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 where noise levels exceed 65 dBA daytime and 60 dBA nighttime, 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 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, Warning Clauses will also be required to be placed in all Lease, Purchase and Sale Agreements, as summarized in Section 6 of this report.

Noise levels at the Level 5 and rooftop outdoor living areas are expected to exceed 60 dBA during the daytime period without a noise barrier. If these areas are to be used as an outdoor living area, noise control measures are required to reduce noise levels as close to 55 dBA where technically and administratively feasible and must not exceed 60 dBA. Further analysis investigated the barrier size required to reduce the noise levels to acceptable conditions of 55 dBA or less and is summarized in Section 5.3. Results of the investigation indicated that a solid guard with a height of 2.0 m (above the walking surface) surrounding the Level 5 and rooftop outdoor living areas as shown on Figure 4 will be sufficient to reduce the noise levels below 60 dBA. As noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized in Section 6.

A review of satellite imagery confirmed there are no significant sources of stationary noise surrounding the site. The site is surrounded by mid- to high-rise apartment buildings, however there is no exposed equipment on these buildings, and the towers are well separated. 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. It is preferable to locate large pieces of equipment, such as cooling towers and make up air units, on the roof of the tower or in mechanical penthouses. These systems will be designed to comply with the NPC-300 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 IMH 1970 & 1980 Fowler Drive Ltd to undertake a transportation noise assessment for the proposed 24-storey residential building development located at 1970-1980 Fowler Drive in Mississauga, Ontario. This report summarizes the methodology, results, and recommendations related to an environmental noise assessment investigating exterior noise levels generated by local roadway traffic.

The assessment was performed based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300 guidelines. Noise calculations were based on architectural drawings received from Core Architects Inc. in October 2025, with future traffic volumes corresponding to projected roadway traffic counts obtained from the City of Mississauga.

2. TERMS OF REFERENCE

The focus of this environmental noise assessment is the proposed residential, high-rise development located at 1970-1980 Fowler Drive in Mississauga, Ontario. The study site is situated on a parcel of land surrounded by residential buildings and bounded by North Sheridan Way located to the north of the development.

The development comprises a 24-storey building with a four-storey podium. The private driveway located east of the proposed development connects to North Sheridan Way and provides access to loading areas and a ramp leading to four levels of below grade parking. At grade is a residential lobby, a refuge area, and building support services. Levels 2-24 comprise residential units. The floorplate sets back at Level 5 to accommodate an indoor and outdoor amenity. The building is topped by a mechanical penthouse and an elevator machine room. An outdoor amenity is provided on the rooftop. The existing playground will be relocated to the southwest of the proposed development. Although the development may feature balconies, these are not considered to be noise sensitive unless they are greater than 4 metres in depth, as per provincial noise guidelines. The site is surrounded by residential buildings to the south, east, and west. The major sources of noise in the area are from roadway traffic along the Queen Elizabeth Way (QEW), Erin Mills Parkway, Fowler Drive, and North Sheridan Way. Figure 1 illustrates a site plan with surrounding context.

3. OBJECTIVES

The main goals of this work are to (i) calculate the future noise levels on the study building produced by local transportation and stationary sources, and (ii) determine whether exterior noise levels exceed the allowable limits specified by the MECP Noise Control Guidelines – NPC-300 as outlined in Section 4 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 Transportation Noise

4.2.1 Criteria for Transportation Noise

For vehicle traffic, 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 NPC-300 guidelines specify that the recommended indoor noise limit range (that is relevant to this study) is 45 and 40 dBA for residence living rooms and sleeping quarters respectively, as listed in Table 1.

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

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[2]. 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 normally triggers the need for central air

[1] Adapted from Table C-2, Part C, Section 3.2.3 of NPC-300
[2] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125

conditioning (or similar systems). Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, building components will require higher levels of sound attenuation[3].

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.

4.2.2 Roadway Traffic Volumes

Noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Therefore, traffic volumes have been considered for the mature state of development based on projected counts obtained from the City of Mississauga. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment. A growth rate of 1% was used to project the existing AADT count into 2037, 10 years after building completion if a two-year construction schedule is assumed. AADT counts are not available for Collector roads, therefore the maximum theoretical capacity of the roadway was used, which is 8,000 vehicles per day.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway Class	Speed Limit (km/h)	Existing AADT Count	Year of Count	Projected 2037 AADT Count
Queen Elizabeth Way	Expressway	100	147,100	2021	**172,486**
Erin Mills Parkway	Major Arterial	70	47,895	2024	**54,509**
North Sheridan Way	Collector	60	N/A	N/A	**8,000**
Fowler Drive	Collector	40	N/A	N/A	**8,000**

[3] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

4.2.3 Theoretical Roadway Traffic Noise Predictions

The impact of transportation noise sources on the development was determined by computer modelling. Transportation noise source modelling is based on the software program *CadnaA* which utilizes the United States Federal Highway Administration's Traffic Noise Model (TNM) version 2.5 to represent the roadways as line sources. The *CadnaA* computer program can represent three-dimensional surfaces and the three orders of reflection of sound waves over a suitable spectrum for human hearing.

The TNM analysis model has been recognized by the Ministry of Transportation Ontario (MTO) as the recommended noise model for transportation projects (ref. Environmental Guide for Noise, 2022 by the Ministry of Transportation (MTO)[4]). The Ministry of Environment, Conservation and Parks have also adopted the TNM model as per their "Draft Guideline Noise Pollution Control Publications 306 (NPC-306)[5].

A set of comparative calculations were also performed for comparisons using STAMSON. The STAMSON model, however, is an older software and requires each receptor to be calculated separately. STAMSON also does not accurately account for building reflections and multiple screening elements, and curved road geometry. The result of the comparative calculations showed that the noise levels have an acceptable difference of 3 dBA of those predicted in *CadnaA*.

Roadway noise calculations were performed by treating each road segment as a separate line source 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.
- The day/night split for Major Arterial and Collector roads was taken to be 90% / 10%, respectively.
- The day/night split for the QEW was taken as 67% / 33%, respectively.
- Absorptive ground surfaces were assumed, except for paved surfaces such as parking lots, where the ground was considered to be a reflective surface.

[4] Ministry of Transportation, Environmental Guide for Noise, 2022. Retrieved from Environmental Guide for Noise 2022

[5] Ministry of Environment, Conservation and Parks, Ontario, "Methods to determine Sound Levels Due to Road and Rail Traffic", Draft February 12, 2020

- Receptor heights were placed at 12.5 m (above grade), 16.1 m (above grade), 75.2 m (above grade), and 79.1 m (above grade) for Level 4 POW, Level 5 OLA, Level 24 POW, and rooftop OLA receptors, respectively.
- A 2.0-metre-tall wind/noise screen surrounds the Level 5 and rooftop outdoor amenity areas.
- Surrounding existing buildings were used as noise barriers.
- The study site was treated as having a flat topography.
- Noise receptors were strategically placed at 9 locations around the study area, as illustrated in 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 4.2.1, 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 are achieved. The calculation procedure[6] 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

[6] Building Practice Note: Controlling Sound Transmission into Buildings by J.D. Quirt, National Research Council of Canada, September 1985

Based on published research[7], 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 have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction required for each intended use of space (STC = Outdoor Noise Level – Targeted Indoor Noise Levels + Safety Factor).

5. RESULTS AND DISCUSSION

5.1 Transportation Noise Levels

The results of the roadway noise calculations are summarized in Table 3 below. The results of the current analysis indicate that noise levels will range between 59 and 66 dBA during the daytime period (07:00-23:00) and between 53 and 65 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 66 dBA) occur along the development's east facing façades. Noise contours are plotted in Figures 5 to 8. CadnaA modelling data is available upon request.

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 where noise levels exceed 65 dBA daytime and 60 dBA nighttime, 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 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, Warning Clauses will also be required to be placed on all Lease, Purchase and Sale Agreements.

If an OLA is placed on level 5 or the rooftop, noise levels predicted due to roadway traffic exceed the criteria listed in the NPC-300 for outdoor living areas, as discussed in Section 4.2.1. Therefore, noise control measures will be required to reduce the L_{eq} to 55 dBA. This is typically achieved with noise barriers surrounding the OLA. Results of the noise barrier investigation is outlined in Section 5.3.

[7] CMHC, Road & Rail Noise: Effects on Housing

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY TRAFFIC SOURCES

Receptor Number / Type	Receptor Height Above Grade (m)	Receptor Location	CadnaA Noise Level (dBA)	
			Day	Night
R1 / POW	12.5	Level 4 – East Façade	61	59
R2 / POW	12.5	Level 4 – North Façade	61	59
R3 / POW	12.5	Level 4 – West Façade	59	53
R4 / POW	75.2	Level 24 – East Façade	66	65
R5 / POW	75.2	Level 24 – South Façade	65	63
R6 / POW	75.2	Level 24 – West Façade	60	54
R7 / POW	75.2	Level 24 – North Façade	63	61
R8 / OLA	16.1	Level 5 – Outdoor Amenity	62	N/A*
R9 / OLA	79.1	Rooftop – Outdoor Amenity	65	N/A*

*Noise levels during the nighttime are not considered for OLAs

Table 4 below provides a comparison between CadnaA and STAMSON. Noise levels calculated in STAMSON were found to have good correlation with CadnaA and variability between the two programs was within an acceptable level of ±0-3 dBA.

TABLE 4: RESULT CORRELATION WITH STAMSON

Receptor Number	Receptor Location	Receptor Height (m)	STAMSON 5.04 Noise Level (dBA)		CadnaA Noise Level (dBA)	
			Day	Night	Day	Night
4	Level 24 – East Façade	75.2	69	68	66	65
9	Rooftop – Outdoor Amenity	79.1	68	68	65	65

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 bedroom and living room window STC's for all facades of the development. The STC requirements for the windows are summarized below for various units within the development:

- **Bedroom Windows**

(i) Bedroom windows facing north, east, and south will require a minimum STC of 30.

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

- **Living Room Windows**

(i) Living room windows facing north, east, and south will require a minimum STC of 30.

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

- **Exterior Walls**

(i) Exterior wall components on the north, east, and south façades will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[8].

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

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

installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

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

5.3 Noise Barrier Calculation

Noise levels at the Level 5 and rooftop outdoor living areas are expected to exceed 60 dBA during the daytime period without a noise barrier. If these areas are to be used as an outdoor living area, noise control measures are required to reduce noise levels as close to 55 dBA where technically and administratively feasible and must not exceed 60 dBA. Further analysis investigated the barrier size required to reduce the noise levels to acceptable conditions of 55 dBA or less and is summarized in Table 5 (below). Results of the investigation indicated that a solid guard with a height of 2.0 m (above the walking surface) surrounding the Level 5 and rooftop outdoor living areas as shown on Figure 4 will be sufficient to reduce the noise levels below 60 dBA. As noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized in Section 6.

TABLE 5: RESULTS OF NOISE BARRIER INVESTIGATION

Receptor Number	Receptor Location	Daytime L_{eq} Noise Levels (dBA)				
		No Barrier	With 1.1 m Barrier	With 1.5 m Barrier	With 2.0 m Barrier	With 2.5 m Barrier
8	Level 5 – Outdoor Amenity	62	62	58	**56**	54
9	Rooftop – Outdoor Amenity	65	59	58	**57**	55

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 59 and 66 dBA during the daytime period (07:00-23:00) and between 53 and 65 dBA during the nighttime period (23:00-07:00). The highest noise levels (i.e. 66 dBA) occur along the development's east facing façades.

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 where noise levels exceed 65 dBA daytime and 60 dBA nighttime, as discussed in Section 4.2.1. Noise control requirements are specified in Section 5.2 and Figure 3. The results also indicate that 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, Type D Warning Clauses 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 City of Mississauga and the Ministry of the Environment."*

Noise levels at the Level 5 and rooftop outdoor living areas are expected to exceed 60 dBA during the daytime period without a noise barrier. If these areas are to be used as an outdoor living area, noise control measures are required to reduce noise levels as close to 55 dBA where technically and administratively feasible and must not exceed 60 dBA. Further analysis investigated the barrier size required to reduce the noise levels to acceptable conditions of 55 dBA or less and is summarized in Section 5.3. Results of the investigation indicated that a solid guard with a height of 2.0 m (above the walking surface) surrounding the Level 5 and rooftop outdoor living areas as shown on Figure 4 will be sufficient to reduce the noise levels below 60 dBA. As noise levels continue to exceed 55 dBA, a Type B Warning Clause will be required on all Lease, Purchase, and Sale Agreements, as summarized below.

***Type* B**

"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 City of Mississauga and the Ministry of the Environment."

A review of satellite imagery confirmed there are no significant sources of stationary noise surrounding the site. The site is surrounded by mid- to high-rise apartment buildings, however there is no exposed equipment on these buildings, and the towers are well separated. 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. It is preferable to locate large pieces of equipment, such as cooling towers and make up air units, on the roof of the tower or in mechanical penthouses. These systems will be designed to comply with the NPC-300 sound level limits. A review by a qualified acoustic consultant is recommended once the mechanical design of the building has developed.

This concludes our 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,

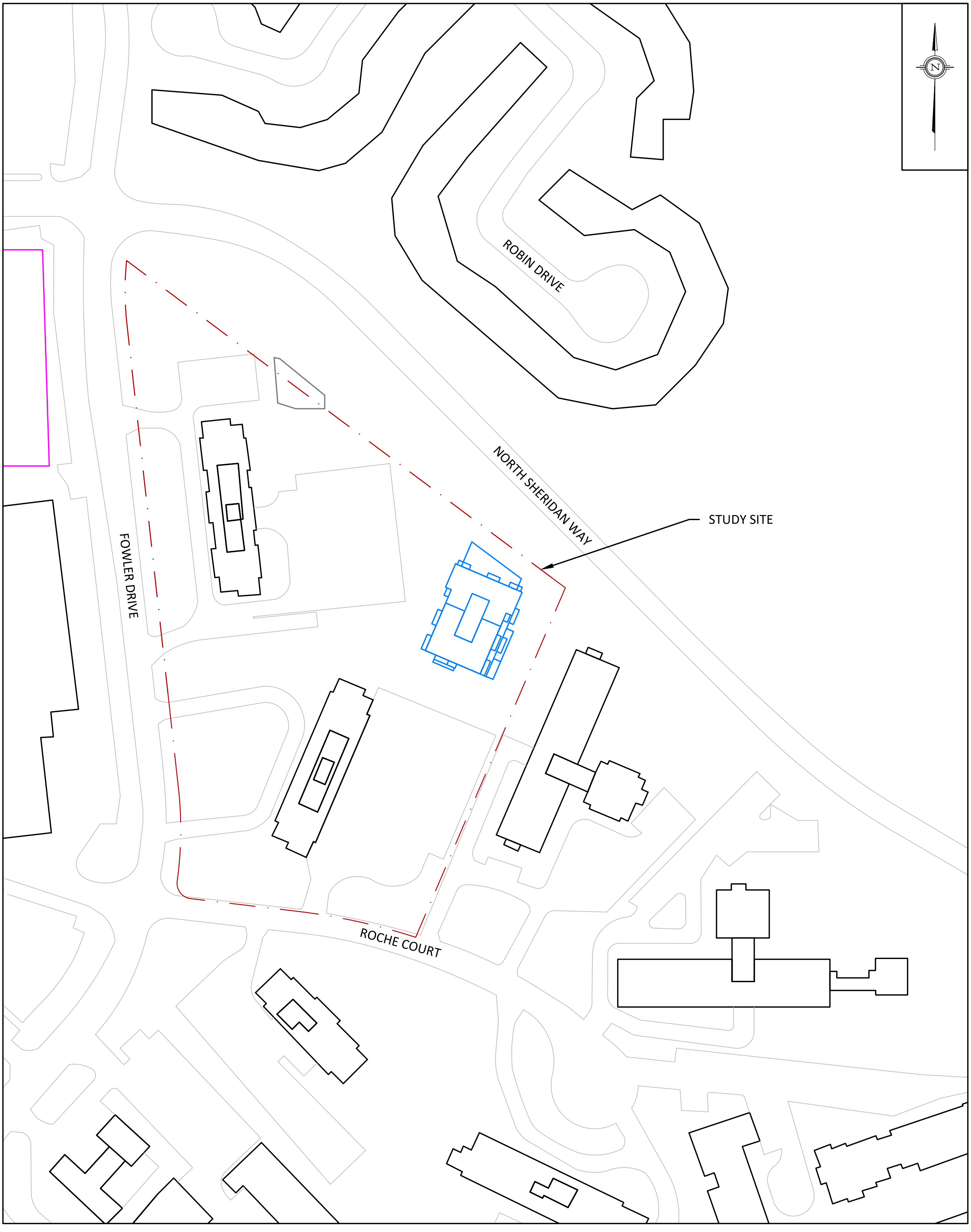
Gradient Wind Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100155655
2025-11-13
PROVINCE OF ONTARIO

Doryan Saavedra, B.Eng.
Junior Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer

GWE25-049 – Transportation Noise



GRADIENTWIND
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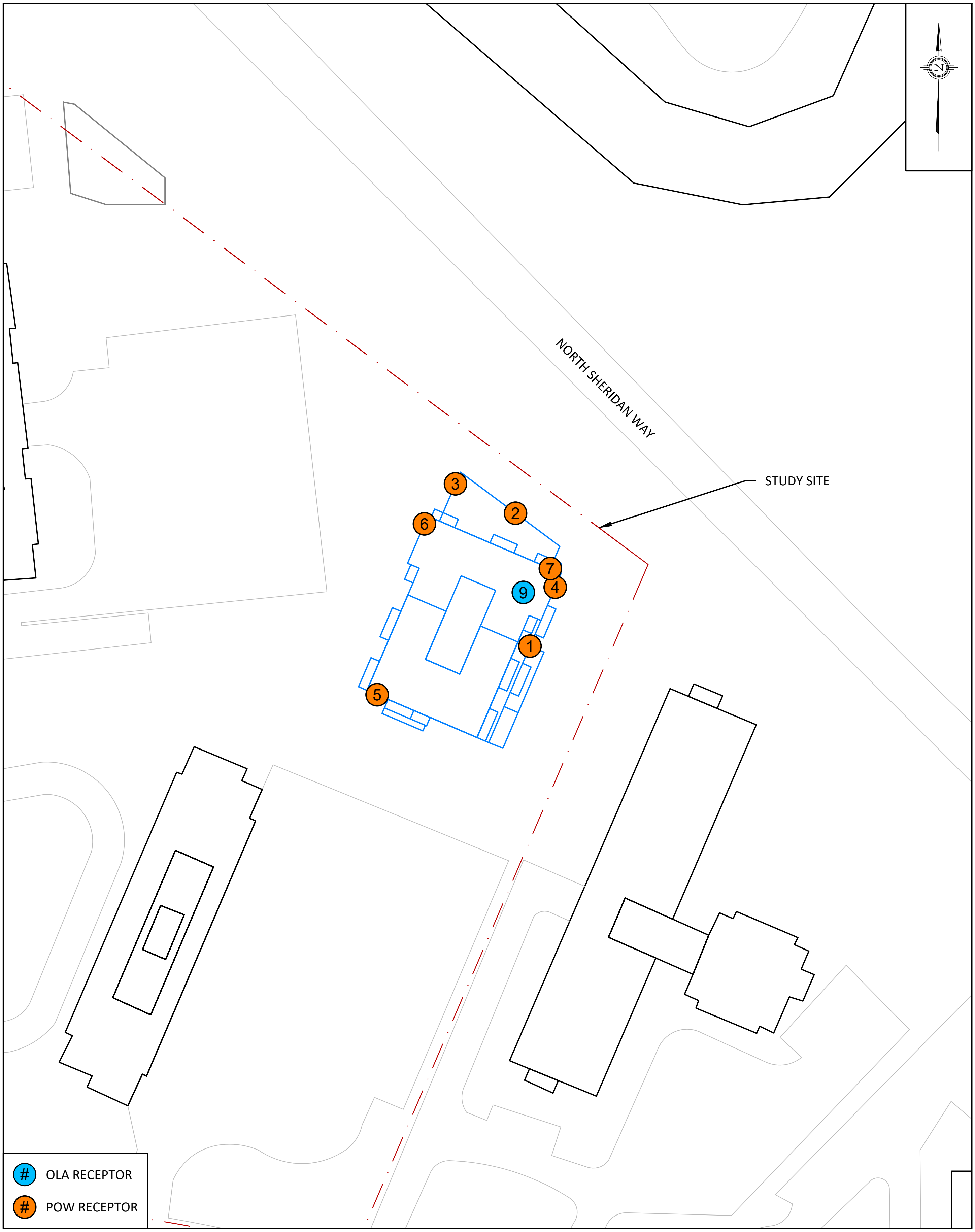
PROJECT	1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT
SCALE	1:2000
DRAWING NO.	25-049-1
DATE	NOVEMBER 12, 2025
DRAWN BY	T.K.
DESCRIPTION	FIGURE 1: PROPERTY LINE AND SURROUNDING CONTEXT



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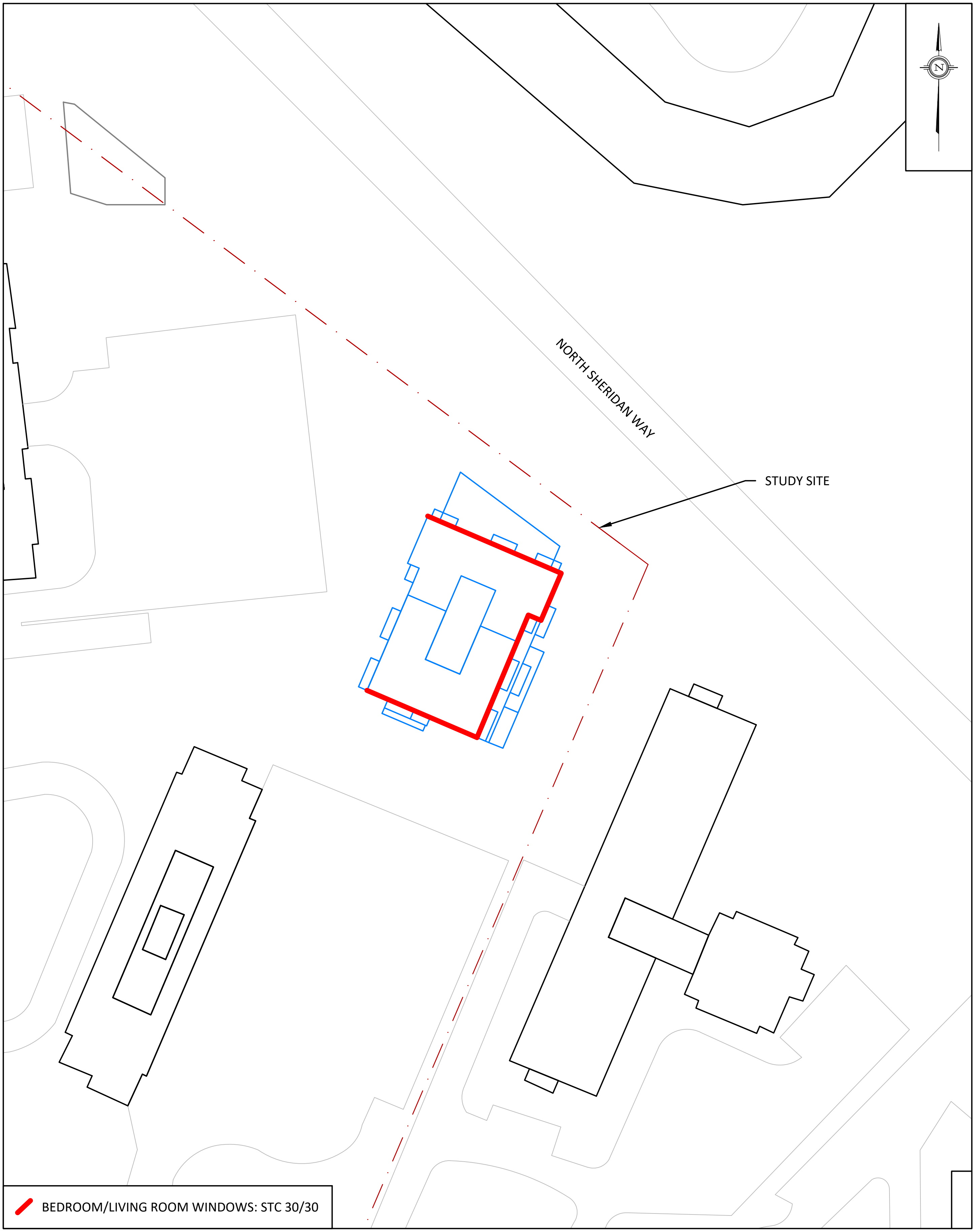
PROJECT	1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT		
SCALE	1:1000	DRAWING NO.	25-049-2
DATE	NOVEMBER 12, 2025	DRAWN BY	T.K.

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



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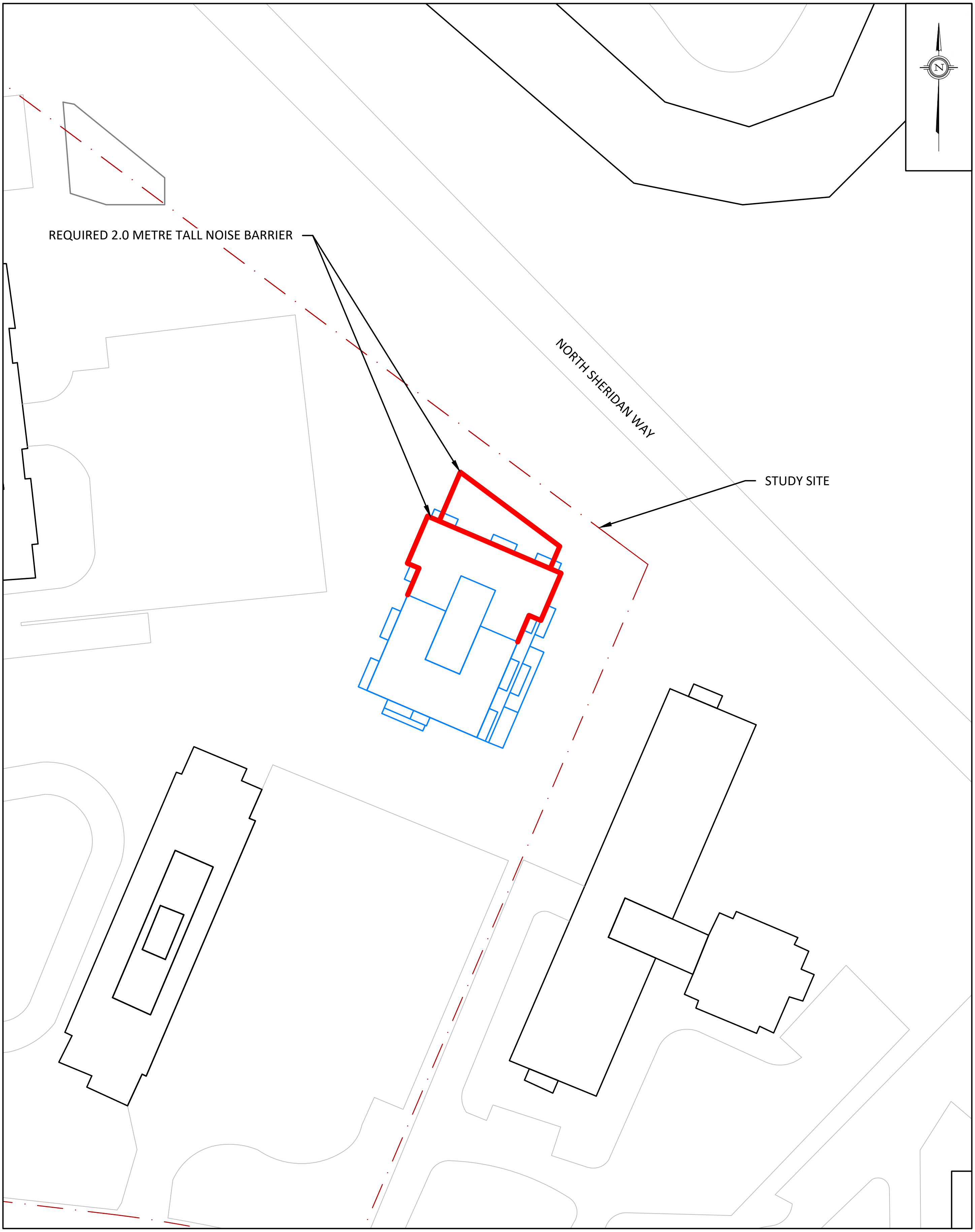
PROJECT	1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT		
SCALE	1:1000	DRAWING NO.	25-049-3
DATE	NOVEMBER 12, 2025	DRAWN BY	T.K.

DESCRIPTION

FIGURE 3:
WINDOW STC REQUIREMENTS



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PROJECT: 1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT		DESCRIPTION: FIGURE 4: NOISE BARRIER REQUIREMENTS
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DATE: NOVEMBER 12, 2025	DRAWN BY: T.K.	

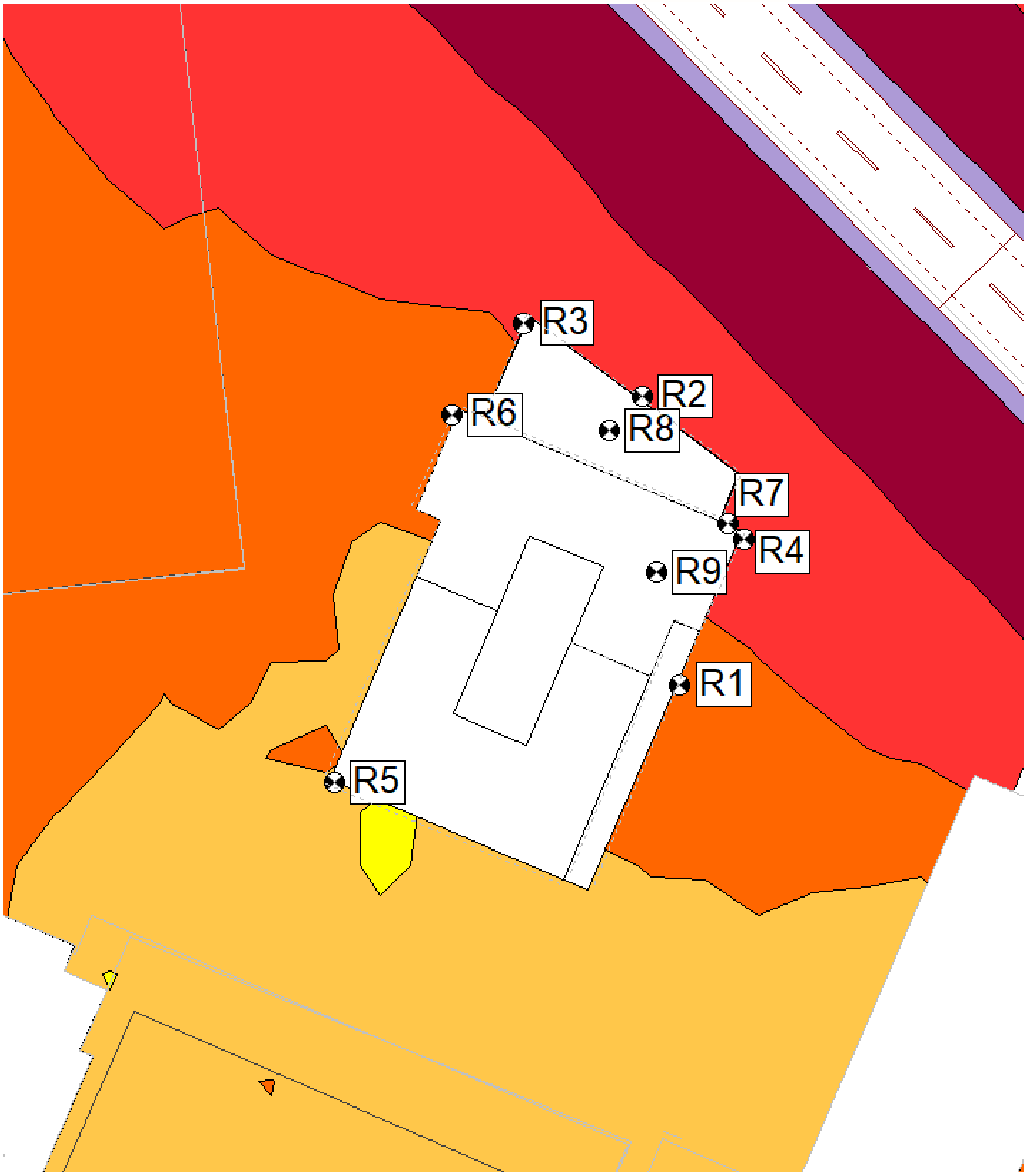


FIGURE 5: DAYTIME TRANSPORTATION NOISE CONTOUR (1.5 METERS ABOVE GRADE)

80 – 85 dB
75 – 80 dB
70 – 75 dB
65 – 70 dB
60 – 65 dB
55 – 60 dB
50 – 55 dB
45 – 50 dB
40 – 45 dB
35 – 40 dB
0 – 35 dB

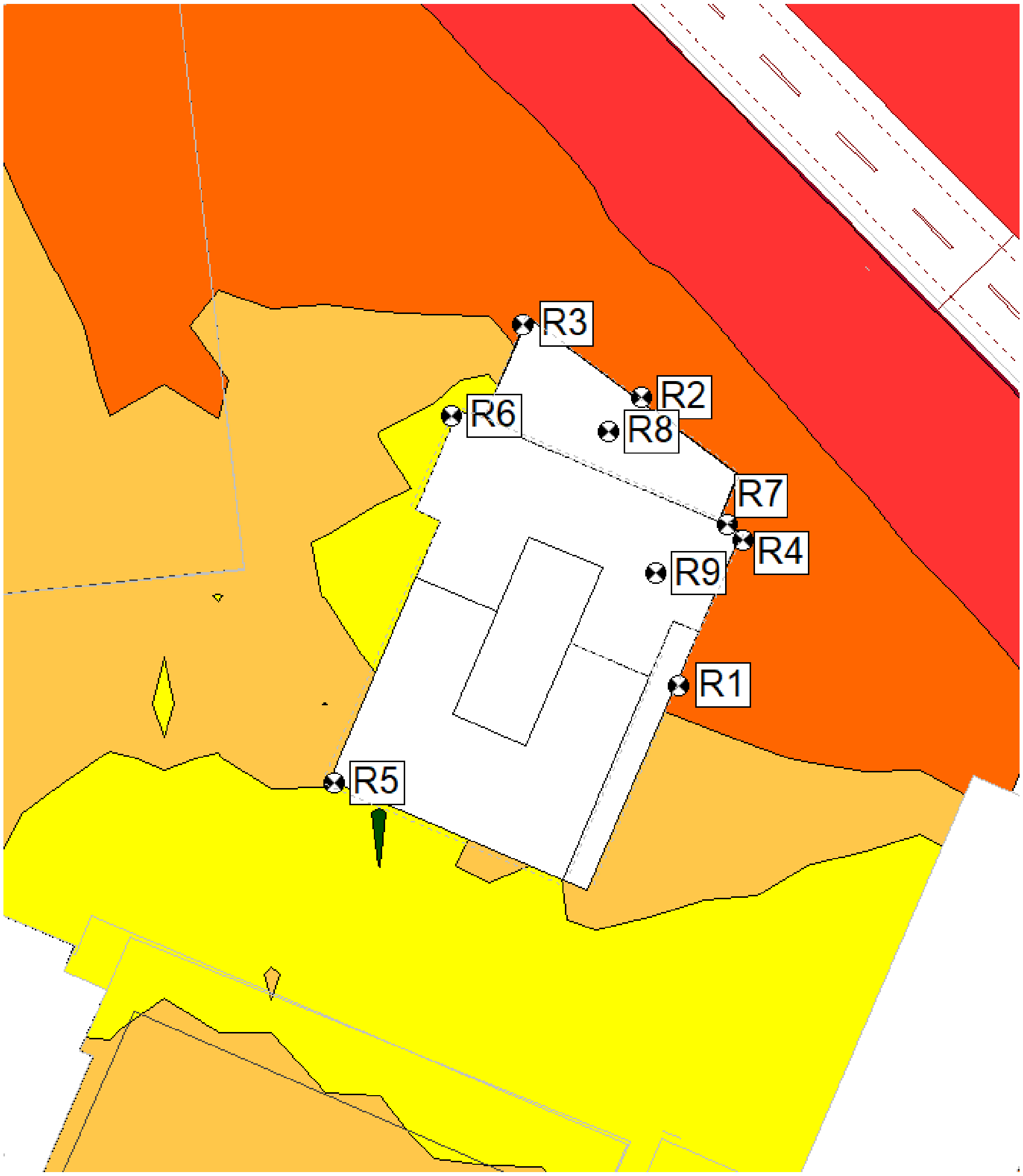
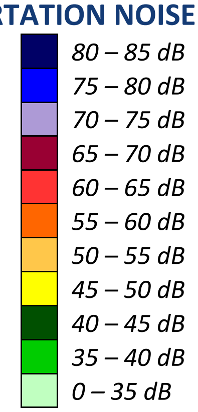


FIGURE 6: NIGHTTIME TRANSPORTATION NOISE CONTOUR (1.5 METERS ABOVE GRADE)



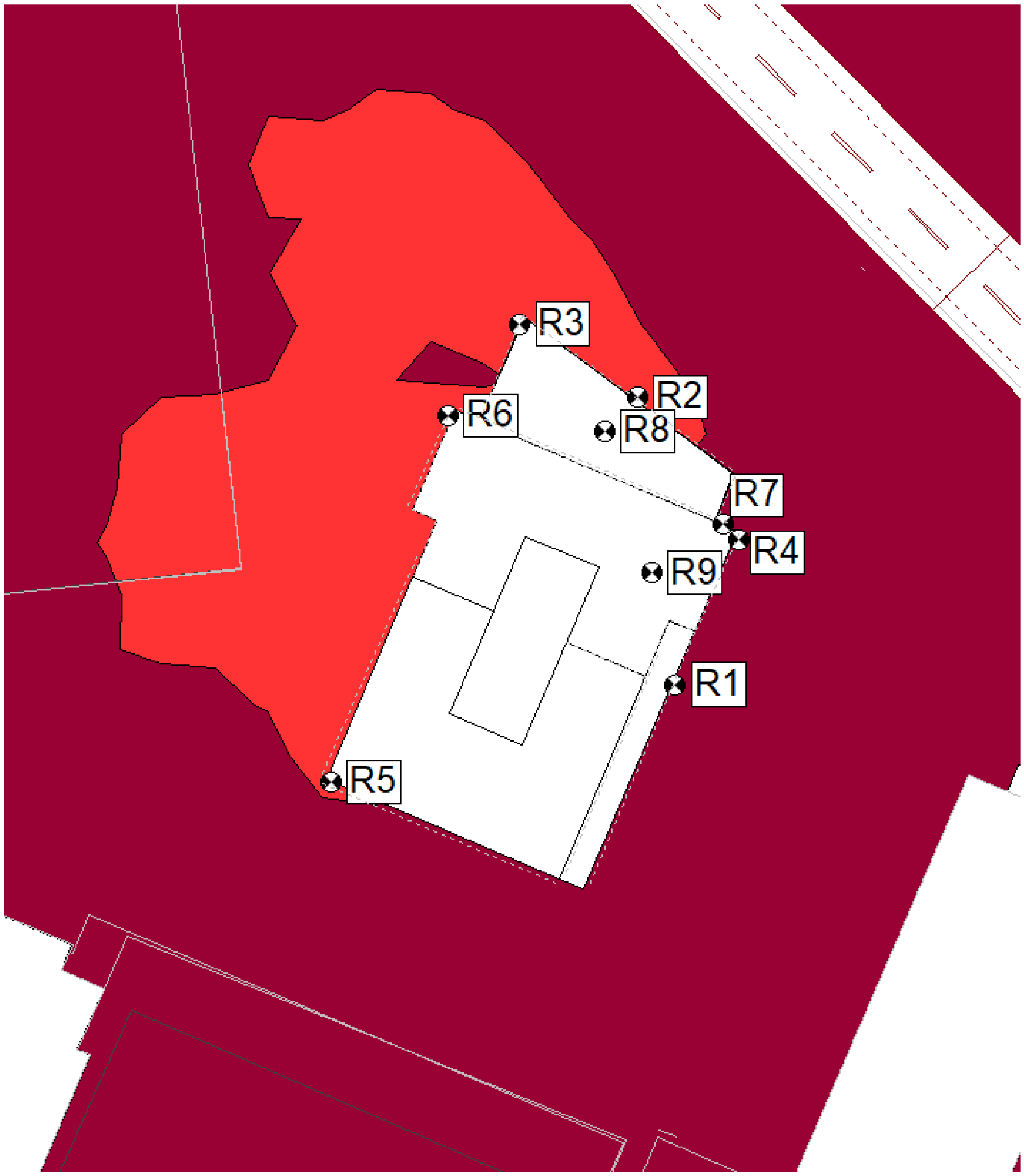


FIGURE 7: DAYTIME TRANSPORTATION NOISE CONTOUR (75.2 METERS ABOVE GRADE)

	80 – 85 dB
	75 – 80 dB
	70 – 75 dB
	65 – 70 dB
	60 – 65 dB
	55 – 60 dB
	50 – 55 dB
	45 – 50 dB
	40 – 45 dB
	35 – 40 dB
	0 – 35 dB

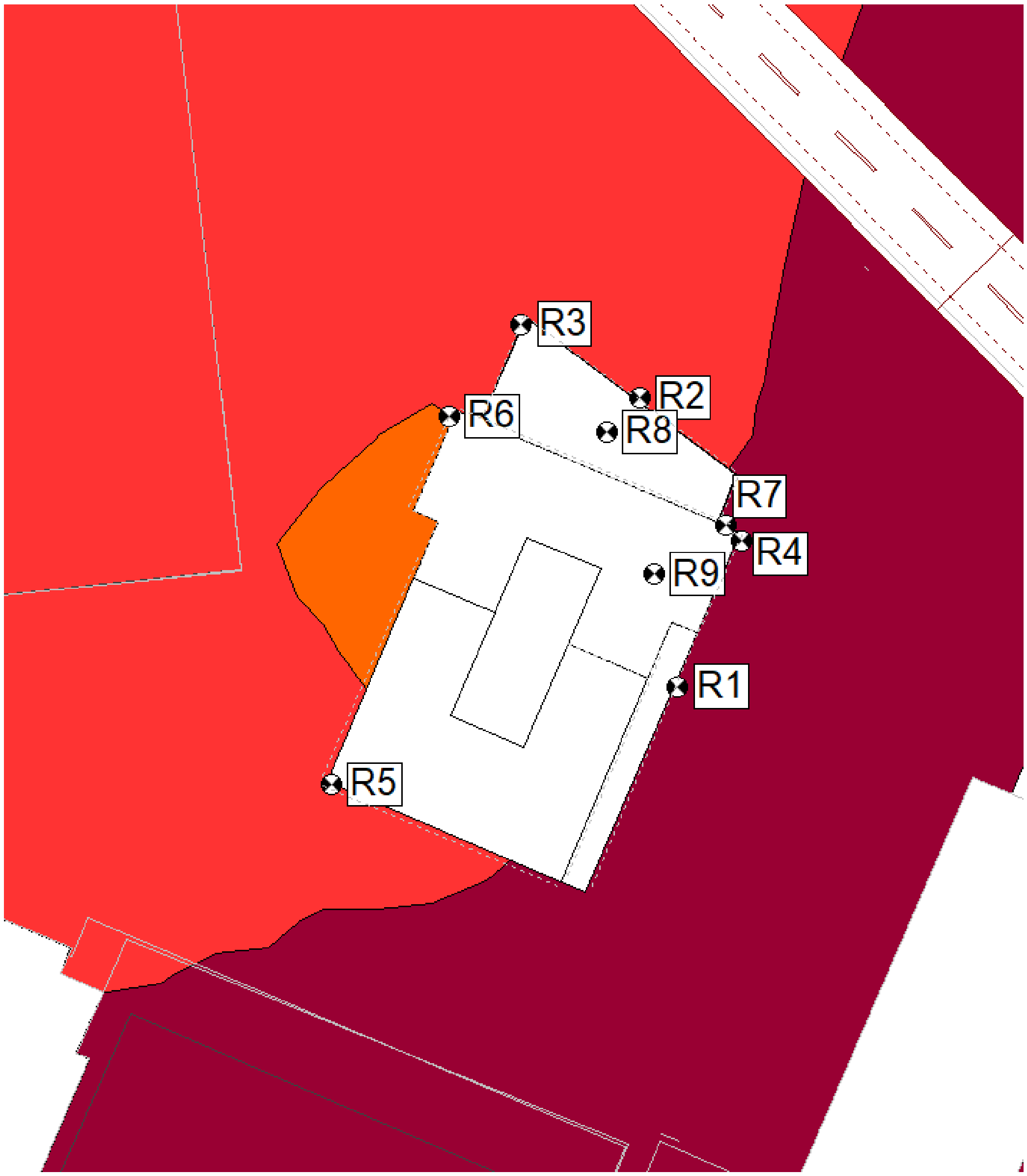


FIGURE 8: NIGHTTIME TRANSPORTATION NOISE CONTOUR (75.2 METERS ABOVE GRADE)

80 – 85 dB
75 – 80 dB
70 – 75 dB
65 – 70 dB
60 – 65 dB
55 – 60 dB
50 – 55 dB
45 – 50 dB
40 – 45 dB
35 – 40 dB
0 – 35 dB

APPENDIX A

STAMSON 5.04 – SAMPLE NOISE CALCULATIONS

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
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```
STAMSON 5.0        NORMAL REPORT        Date: 12-11-2025 16:36:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te                 Time Period: Day/Night 16/8 hours
Description: POW - Level 24 East Facade


Road data, segment # 1: Sheridan (day/night)
--------------------------------------------
Car traffic volume  :  6336/704   veh/TimePeriod  *
Medium truck volume :   504/56    veh/TimePeriod  *
Heavy truck volume  :   360/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth         :   0.00
    Number of Years of Growth           :   0.00
    Medium Truck % of Total Volume      :   7.00
    Heavy Truck  % of Total Volume      :   5.00
    Day (16 hrs) % of Total Volume      :  90.00

Data for Segment # 1: Sheridan (day/night)
------------------------------------------
Angle1   Angle2           : -22.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :  75.20 / 75.20  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 2: QEW (day/night)
---------------------------------------
Car traffic volume  : 101698/50090 veh/TimePeriod  *
Medium truck volume :  8090/3984  veh/TimePeriod  *
Heavy truck volume  :  5778/2846  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): 147100
    Percentage of Annual Growth        :   1.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  67.00

Data for Segment # 2: QEW (day/night)
-------------------------------------
Angle1   Angle2           : -90.00 deg   74.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 472.00 / 472.00 m
Receiver height           :  75.20 / 75.20  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

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

Source height = 1.50 m

ROAD (0.00 + 61.43 + 0.00) = 61.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -22     90   0.00  67.17   0.00  -3.68  -2.06   0.00   0.00   0.00  61.43
----------------------------------------------------------------------------

Segment Leq : 61.43 dBA

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

Source height = 1.50 m

ROAD (0.00 + 68.35 + 0.00) = 68.35 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -90     74   0.00  83.73   0.00 -14.98  -0.40   0.00   0.00   0.00  68.35
----------------------------------------------------------------------------

Segment Leq : 68.35 dBA

Total Leq All Segments: 69.15 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.90 + 0.00) = 54.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -22     90   0.00  60.64   0.00  -3.68  -2.06   0.00   0.00   0.00  54.90
----------------------------------------------------------------------------

Segment Leq : 54.90 dBA

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

Source height = 1.50 m

ROAD (0.00 + 68.29 + 0.00) = 68.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -90     74   0.00  83.67   0.00 -14.98  -0.40   0.00   0.00   0.00  68.29
----------------------------------------------------------------------------

Segment Leq : 68.29 dBA

Total Leq All Segments: 68.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.15
                         (NIGHT): 68.48
```

```
STAMSON 5.0        NORMAL REPORT        Date: 13-11-2025 10:27:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te                  Time Period: Day/Night 16/8 hours
Description: OLA - Rooftop Outdoor Amenity


Road data, segment # 1: Erin Mills (day/night)
----------------------------------------------
Car traffic volume  : 43171/4797  veh/TimePeriod  *
Medium truck volume :  3434/382   veh/TimePeriod  *
Heavy truck volume  :  2453/273   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):  47895
    Percentage of Annual Growth        :   1.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Erin Mills (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  : 328.00 / 328.00 m
Receiver height           :  79.10 / 79.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  77.60 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: QEW (day/night)
---------------------------------------
Car traffic volume   : 101698/50090 veh/TimePeriod  *
Medium truck volume  :  8090/3984  veh/TimePeriod  *
Heavy truck volume   :  5778/2846  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): 147100
    Percentage of Annual Growth        :   1.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  67.00

Data for Segment # 2: QEW (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   : 476.00 / 476.00 m
Receiver height            :  79.10 / 79.10  m
Topography                 :      2       (Flat/gentle slope; with barrier)
Barrier angle1             :  58.00 deg   Angle2 : 90.00 deg
Barrier height             :  83.60 m
Barrier receiver distance  :   9.00 / 9.00   m
Source elevation           :   0.00 m
Receiver elevation         :   0.00 m
Barrier elevation          :   0.00 m
Reference angle            :   0.00
```

```
Road data, segment # 3: Sheridan (day/night)
--------------------------------------------
Car traffic volume  :  6336/704   veh/TimePeriod  *
Medium truck volume :   504/56    veh/TimePeriod  *
Heavy truck volume  :   360/40    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Sheridan (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  :  41.00 / 41.00  m
Receiver height           :  79.10 / 79.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  77.60 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

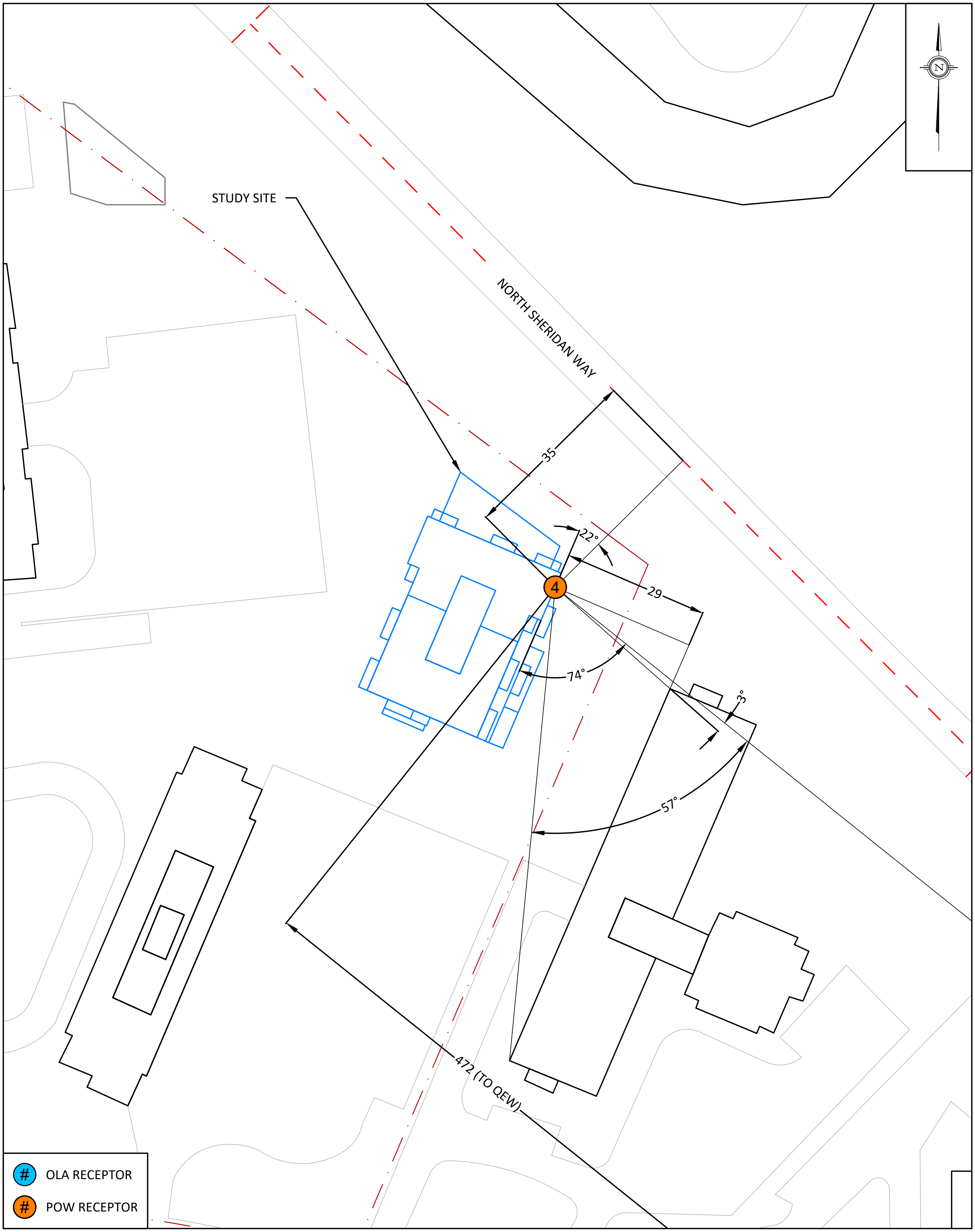
```
Road data, segment # 4: Fowler (day/night)
------------------------------------------
Car traffic volume  :  6336/704   veh/TimePeriod  *
Medium truck volume :   504/56    veh/TimePeriod  *
Heavy truck volume  :   360/40    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 4: Fowler (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  : 146.00 / 146.00 m
Receiver height           :  79.10 / 79.10  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 22.00 deg
Barrier height            :  83.60 m
Barrier receiver distance :   9.00 / 9.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Erin Mills (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 !        79.10 !        76.97 !         76.97

ROAD (0.00 + 57.77 + 0.00) = 57.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -90     90   0.00  76.82   0.00 -13.40   0.00   0.00   0.00  -5.66  57.77
-----------------------------------------------------------------------------

Segment Leq : 57.77 dBA

Results segment # 2: QEW (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 !        79.10 !        77.63 !         77.63

ROAD (67.87 + 48.60 + 0.00) = 67.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -90     58   0.00  83.73   0.00 -15.02  -0.85   0.00   0.00   0.00  67.87
-----------------------------------------------------------------------------
    58     90   0.00  83.73   0.00 -15.02  -7.50   0.00   0.00 -12.62  48.60
-----------------------------------------------------------------------------

Segment Leq : 67.92 dBA
```

```
Results segment # 3: Sheridan (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 !       79.10 !       67.74 !        67.74

ROAD (0.00 + 46.74 + 0.00) = 46.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -90     90   0.00  67.17   0.00  -4.37   0.00   0.00   0.00 -16.07  46.74
-----------------------------------------------------------------------------

Segment Leq : 46.74 dBA

Results segment # 4: Fowler (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 !       79.10 !       74.32 !        74.32

ROAD (0.00 + 33.89 + 49.75) = 49.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----------------------------------------------------------------------------
   -90     22   0.00  63.86   0.00  -9.88  -2.06   0.00   0.00 -18.03  33.89
-----------------------------------------------------------------------------
    22     90   0.00  63.86   0.00  -9.88  -4.23   0.00   0.00   0.00  49.75
-----------------------------------------------------------------------------

Segment Leq : 49.86 dBA

Total Leq All Segments: 68.41 dBA
```

```
Results segment # 1: Erin Mills (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 !        79.10 !        76.97 !        76.97

ROAD (0.00 + 51.24 + 0.00) = 51.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -90     90   0.00  70.30   0.00 -13.40   0.00   0.00   0.00  -5.66  51.24
----------------------------------------------------------------------------

Segment Leq : 51.24 dBA

Results segment # 2: QEW (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 !        79.10 !        77.63 !        77.63

ROAD (67.80 + 48.53 + 0.00) = 67.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
----------------------------------------------------------------------------
   -90     58   0.00  83.67   0.00 -15.02  -0.85   0.00   0.00   0.00  67.80
----------------------------------------------------------------------------
    58     90   0.00  83.67   0.00 -15.02  -7.50   0.00   0.00 -12.62  48.53
----------------------------------------------------------------------------

Segment Leq : 67.85 dBA
```

```
Results segment # 3: Sheridan (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 !        79.10 !        67.74 !         67.74

ROAD (0.00 + 40.21 + 0.00) = 40.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.00  60.64   0.00  -4.37   0.00   0.00   0.00 -16.07  40.21
--------------------------------------------------------------------------------

Segment Leq : 40.21 dBA

Results segment # 4: Fowler (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 !        79.10 !        74.32 !         74.32

ROAD (0.00 + 27.35 + 43.22) = 43.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     22   0.00  57.33   0.00  -9.88  -2.06   0.00   0.00 -18.03  27.35
--------------------------------------------------------------------------------
    22     90   0.00  57.33   0.00  -9.88  -4.23   0.00   0.00   0.00  43.22
--------------------------------------------------------------------------------

Segment Leq : 43.33 dBA

Total Leq All Segments: 67.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.41
                         (NIGHT): 67.97
```



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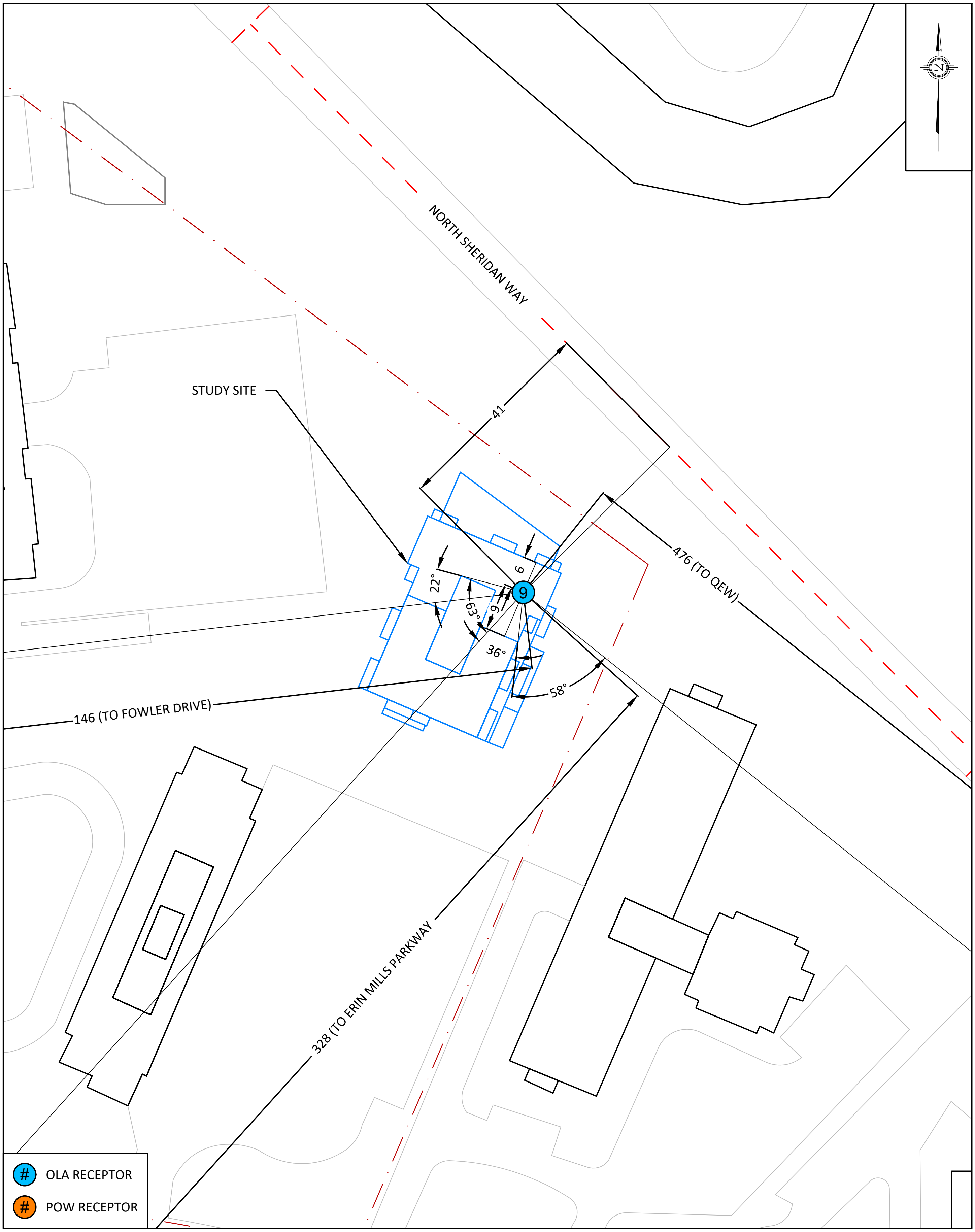
PROJECT	1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT
SCALE	1:1000
DRAWING NO.	25-049-A1
DATE	NOVEMBER 12, 2025
DRAWN BY	T.K.
DESCRIPTION	FIGURE A1: STAMSON INPUT PARAMETERS RECEPTOR 4



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PROJECT	1970 & 1980 FOWLER DRIVE, MISSISSAUGA TRANSPORTATION NOISE ASSESSMENT		
SCALE	1:1000	DRAWING NO.	25-049-A2
DATE	NOVEMBER 12, 2025	DRAWN BY	T.K.

DESCRIPTION

FIGURE A2:
STAMSON INPUT PARAMETERS
RECEPTOR 9