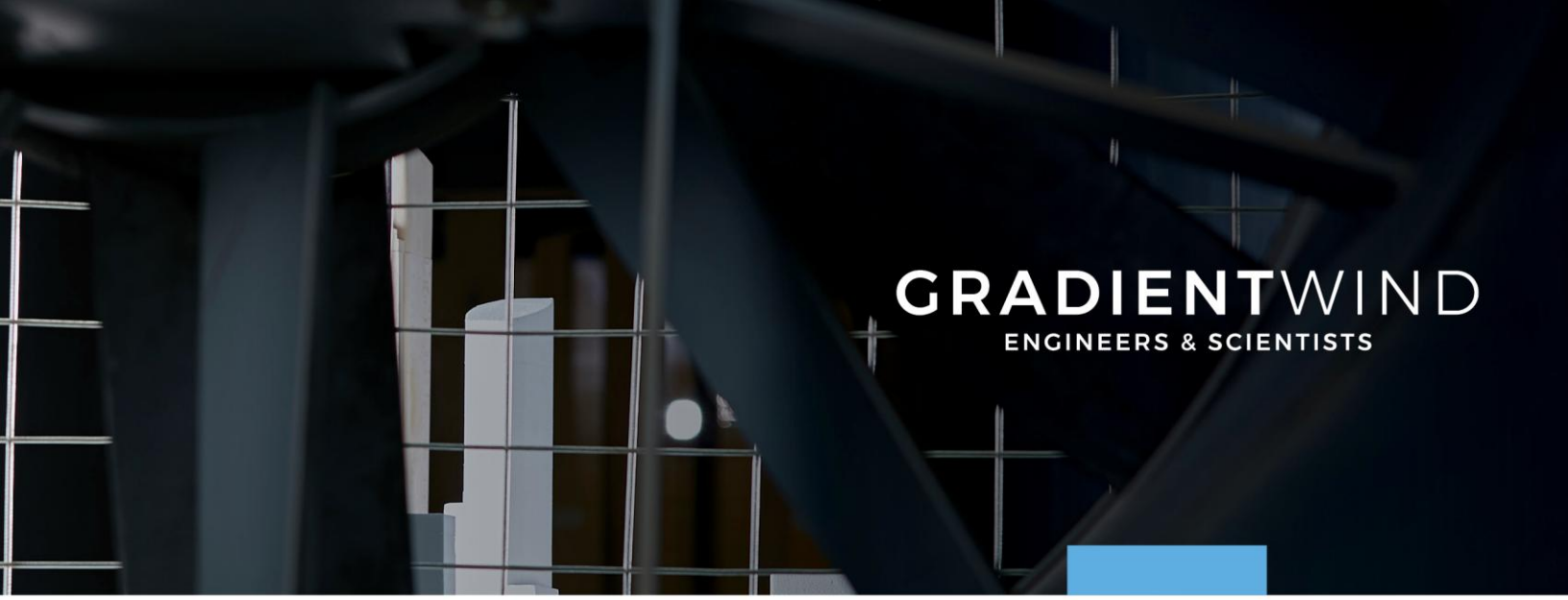

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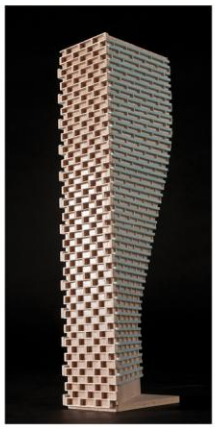
TRANSPORTATION NOISE ASSESSMENT

Magnolia Condo Block
Stittsville, Ontario

Report: 21-420 – Transportation Noise R1



September 23, 2026

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EXECUTIVE SUMMARY

This report describes a transportation noise assessment undertaken in support of a Site Plan Application (SPA) for the proposed residential development of stacked townhouses, referred to as Magnolia Condo Block, located on a portion of 6115 and 6141 Flewellyn Road in Stittsville, Ontario. The proposed development comprises 13 blocks of stacked townhouses. The major sources of roadway traffic noise are Flewellyn Road to the south and Shea Road to the east, as well as proposed internal collectors. Figure 1 illustrates the site location with the surrounding context.

The assessment is based on (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the mature state of development; and (iv) site grading drawings provided by DSEL in September 2026.

The results of the current analysis indicate that noise levels will range between 51 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the southeast façade of Blocks 12 and 13 which are nearest and most exposed to Flewellyn Road.

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components on Blocks 12 and 13. Upgraded building components, including STC rated glazing elements and exterior walls, will be required 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 Blocks 12 and 13 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.

Furthermore, the results indicate that noise levels fall between 55 dBA and 65 dBA during the daytime period at Blocks 1-3, 7, and 11. As such, each affected block of the development will require forced air heating systems with provisions for central air conditioning, as a minimum requirement as shown on Figures 4A and 4B. If air conditioning is installed it will allow occupants to keep windows closed and

maintain a comfortable living environment. In addition to the ventilation requirements, a Type C 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 dominant source of noise impacting the development is from transportation noise sources.

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1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Caivan (Stittsville) Inc. to undertake a transportation noise assessment in support of a Site Plan Application (SPA) for the proposed residential development of stacked townhouses, referred to as Magnolia Condo Block, located on a portion of 6115 and 6141 Flewellyn Road in Stittsville, 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]. Noise calculations were based on grading drawings provided by DSEL in September 2026, with future traffic volumes corresponding to the mature state of development as directed by the project's transportation engineer.

2. TERMS OF REFERENCE

The focus of this transportation noise study is the proposed Condo Block within the Magnolia residential subdivision located in Stittsville, at the northwest corner of the Shea Road and Flewellyn Road intersection. The proposed development comprises 13 blocks of stacked townhouses. Outdoor parking is provided and are accessed by a series of internal roadways.

The primary sources of traffic noise include Flewellyn Road to the south and Shea Road to the east. Two of the main internal roadways were also included in this assessment. The study site is surrounded by existing low-rise residential properties to the northwest, along with scattered low-rise residential and office space to the southeast. Furthermore, the area northwest of the development is developed and suburban, while the southwest is undeveloped forest, farmland and rural. Local and interior roads such as Parade Drive and Beckett Crescent were deemed insignificant due to low traffic volumes. Figure 1 illustrates the site location with the surrounding context.

[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

3. OBJECTIVES

The principal objectives of this study are to (i) calculate the future noise levels produced by local roadway traffic, and (ii) explore potential noise mitigation where required.

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

For surface roadway traffic noise, the equivalent sound energy level, L_{eq}, provides a measure of the time-varying noise levels, which is well correlated with the annoyance of sound. It is defined as the continuous sound level, which has the same energy as a time-varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of a 16-hour (L_{eq16}) daytime (07:00-23:00) / 8-hour (L_{eq8}) nighttime (23:00-07:00) split to assess its impact on residential buildings. The City of Ottawa's Environmental Noise Control Guidelines (ENCG) specifies that the recommended indoor noise limit range (that is relevant to this study) is 45 and 40 dBA for living rooms and sleeping quarters respectively for roadway as listed in Table 1.

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

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

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

The sound level criterion for outdoor living areas is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA, mitigation must be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion.

[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, for exterior roadways, 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. While Table B1 of the ENCG typically prescribes an AADT of 8,000 for 2-lane collector roadways, the specific rural context of this subdivision and input from the transportation engineer suggest a more accurate anticipated traffic volume of 6,000 AADT for the internal collectors. The transportation engineer noted that this estimate has been consistently used for over 10 years and aligns with the TIA forecast of 900 to 4,050 AADT across the three collector road connections. Specifically, the two connections to Flewellyn are projected to reach a combined 6,030 AADT, while the connection to Shea is expected to reach 900 AADT. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY SOURCE DATA

Source	Classification	Speed Limit (km/h)	AADT	Day/Night Split	Medium/Large Truck Pct. (%)
Flewellyn Road	2-Lane Rural Collector	80	**8,000**	92/8	7/5
Shea Road	2-Lane Urban Collector	80	**8,000**		
Internal Road 1	2-Lane Residential Collector	40	**6,000**		
Internal Road 2	2-Lane Residential Collector	40	**6,000**		

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

4.2.3 Theoretical Roadway 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) to represent the roadway line sources. 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)[8]). The Ministry of Environment, Conservation and Parks have also adopted the TMN model as per their "Draft Guideline Noise Pollution Control Publications 306 (NPC-306)[9].

A set of comparative calculations were also performed for comparisons using STAMSON. 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 STAMSON model, however, is an older software and requires each receptor to be calculated separately. STAMSON also does not accurately account for building reflections, multiple screening elements, and curved road geometry. The result of the comparative calculations can be seen in Section 5.1, Table 4.

Transportation noise calculations were performed by treating each roadway 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:

- Vehicle parameters such as truck traffic volume percentages, posted speed limit, and day/night split are summarized in Table 2.
- Default ground surfaces were taken to be absorptive, due to the abundance of fauna and farmland along the traffic sources.
- The study site topography was taken from the grading plan provided by DSEL in January 2026.
- For select sources where appropriate, receptors considered the proposed and existing buildings as a barrier partially or fully obstructing exposure to the sources.

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

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

- Twelve (12) receptors were strategically placed throughout the study area, as seen in Figures 2A and 2B.

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[10] considers:

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

Based on published research[11], exterior walls possess specific sound attenuation characteristics that are used as a basis for calculating the required STC ratings of windows in the same partition. Due to the limited information available at the time of the study, detailed floor layouts and building elevations have not been finalized; therefore, detailed STC calculations could not be performed at this time. As a guideline, the anticipated STC requirements for windows have been estimated based on the overall noise reduction

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

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 51 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the southeast façade of Blocks 12 and 13 which are nearest and most exposed to Flewellyn Road. Figures 5-6 illustrate daytime and nighttime noise contours throughout the site at a height of 7.5 m above grade.

The noise levels predicted due to roadway traffic on Blocks 12 and 13 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, 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 Blocks 12 and 13 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.

Furthermore, the results indicate that noise levels fall between 55 dBA and 65 dBA during the daytime period at Blocks 1-3, 7, and 11. As such, each affected block of the development will require forced air heating systems with provisions for central air conditioning, as a minimum requirement as shown on Figures 4A and 4B. If air conditioning is installed it will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to the ventilation requirements, a Type C Warning Clause will be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROADWAY SOURCES

Receptor Number / Type	Receptor Height Above Grade (m)	Receptor Location	CadnaA Noise Level (dBA)	
			Day	Night
R1 / POW	7.5	Block 3 – Unit 9 – Level 3 – Northeast Façade	60	52
R2 / POW	7.5	Block 1 – Unit 1 – Level 3 – Northeast Façade	61	54
R3 / POW	7.5	Block 1 – Unit 1 – Level 3 – Southeast Façade	59	52
R4 / POW	7.5	Block 11 – Unit 8 – Level 3 – Northeast Façade	63	56
R5 / POW	7.5	Block 11 – Unit 8 – Level 3 – Southeast Façade	64	57
R6 / POW	7.5	Block 13 – Unit 1 – Level 3 – Northeast Façade	64	56
R7 / POW	7.5	Block 13 – Unit 1 – Level 3 – Southeast Façade	67	59
R8 / POW	7.5	Block 12 – Unit 12 – Level 3 – Southeast Façade	67	60
R9 / POW	7.5	Block 12 – Unit 12 – Level 3 – Southwest Façade	64	56
R10 / POW	7.5	Block 7 – Unit 1 – Level 3 – Southwest Façade	58	50
R11 / POW	7.5	Block 10 – Unit 10 – Level 3 – Southeast Façade	52	45
R12 / POW	7.5	Block 10 – Unit 10 – Level 3 – Northeast Façade	51	44

Table 4 shows a comparison of results between CadnaA and STAMSON. Noise levels calculated in STAMSON were found to have a good correlation with CadnaA and variability between the two programs was within an acceptable level of ±0-2 dBA. STAMSON input and output data are provided in Appendix A and Figure A1.

TABLE 4: RESULTS OF STAMSON/CADNAA CORRELATION

Receptor ID	Receptor Height (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)		CadnaA Noise Level (dBA)	
			Day	Night	Day	Night
R7 / POW	7.5	Block 13 – Unit 1 – Level 3 – Southeast Façade	69	61	67	59
R9 / POW	7.5	Block 12 – Unit 12 – Level 3 – Southwest Façade	65	58	64	56

5.2 Noise Control Measures

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components for Blocks 12 and 13. 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 are summarized below for various blocks within the development:

- **Bedroom Windows**

(i) Bedroom windows facing southeast on Blocks 12 and 13 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 southeast on Blocks 12 and 13 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 southeast façade of Blocks 12 and 13 will require a minimum STC of 45, which will be achieved with brick cladding or an acoustical equivalent according to NRC test data[12].

The STC requirements apply to windows, doors, spandrel panels and curtainwall elements. Exterior wall components on these façades are recommended to have a minimum STC of 45, where a 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

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

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 some dwellings will require air conditioning while others require forced air heating with provisions for central air conditioning as a minimum requirement. In addition to ventilation requirements, Warning Clauses will also be required on all Lease, Purchase and Sale Agreements, as summarized in Section 6. Table 5 summarizes the affected dwellings.

TABLE 5: VENTILATION AND WARNING CLAUSE REQUIREMENTS

Ventilation	Warning Clause	Applicable Dwellings
Air Conditioning (AC)	Type D	**Blocks:** 12, 13
Forced Air Heating with Provisions for AC	Type C	**Blocks:** 1-3, 7, 11

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 51 and 67 dBA during the daytime period (07:00-23:00) and between 44 and 60 dBA during the nighttime period (23:00-07:00). The highest noise level (67 dBA) occurs at the southeast façade of Blocks 12 and 13 which are nearest and most exposed to Flewellyn Road.

The noise levels predicted due to roadway traffic exceed the criteria listed in Section 4.2 for building components on Blocks 12 and 13. Upgraded building components, including STC rated glazing elements and exterior walls, will be required 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 Blocks 12 and 13 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."*

Furthermore, the results indicate that noise levels fall between 55 dBA and 65 dBA during the daytime period at Blocks 1-3, 7, and 11. As such, each affected block of the development will require forced air heating systems with provisions for central air conditioning, as a minimum requirement as shown on Figures 4A and 4B. If air conditioning is installed it will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to the ventilation requirements, a Type C Warning Clause will be required on all Lease, Purchase and Sale Agreements, as summarized below.

Type C:

> *"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low*

and medium density developments 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."

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.

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,

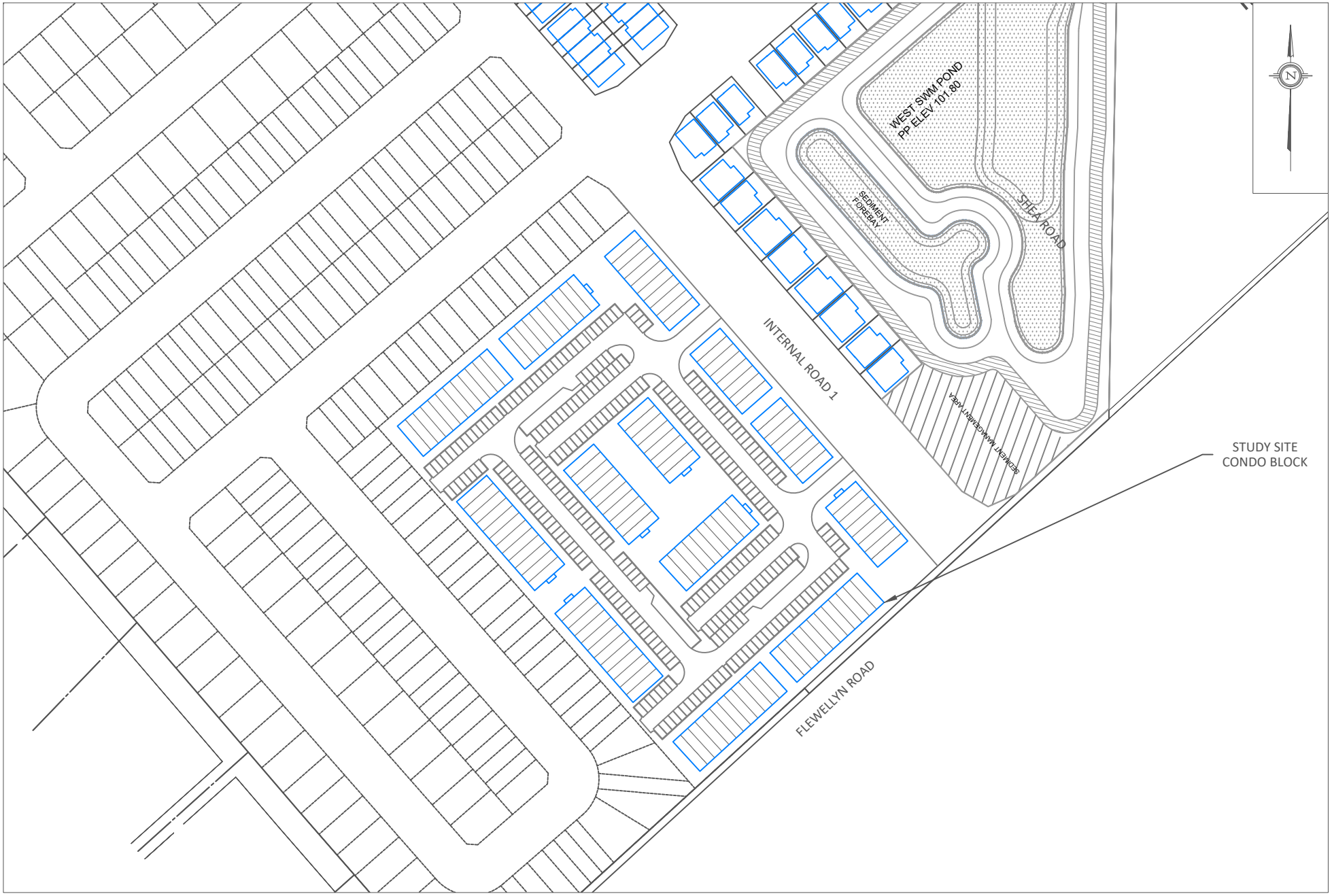
Gradient Wind Engineering Inc.

LICENSED PROFESSIONAL ENGINEER
J. R. FOSTER
100155655
2026-09-23
PROVINCE OF ONTARIO

Doryan Saavedra, B.Eng.
Junior Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #21-420 – Transportation Noise R1



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PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY		DESCRIPTION
SCALE	1:2000 (APPROX.)	DRAWING NO. GW21-420-1	FIGURE 1: SITE PLAN AND SURROUNDING CONTEXT
DATE	SEPTEMBER 23, 2026	DRAWN BY D.S.	

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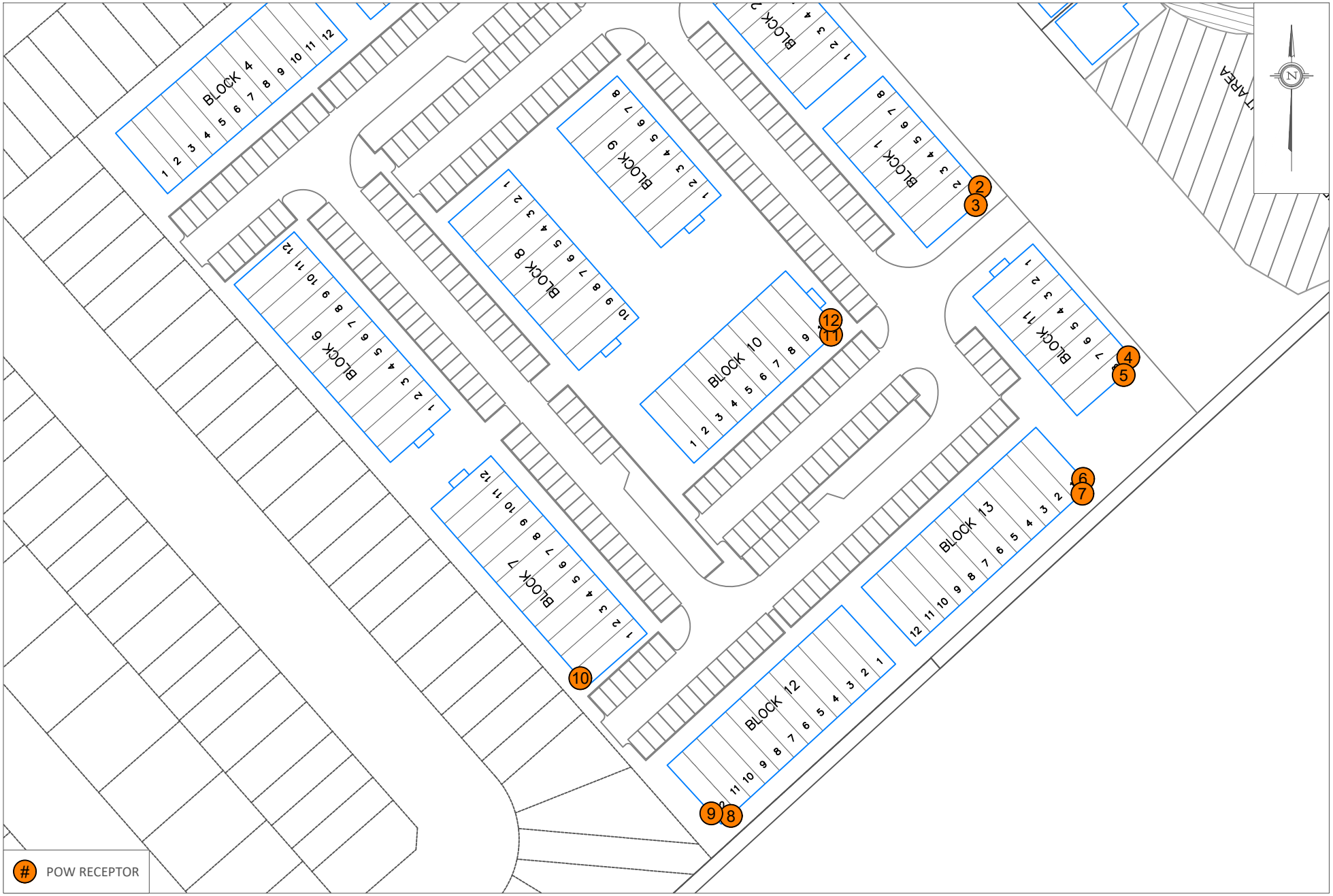
PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW21-420-2A
DATE	SEPTEMBER 23, 2026
DRAWN BY	D.S.
DESCRIPTION	FIGURE 2A: TRANSPORTATION NOISE RECEPTOR LOCATIONS



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PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW21-420-2B
DATE	SEPTEMBER 23, 2026
DRAWN BY	D.S.
DESCRIPTION	FIGURE 2B: TRANSPORTATION NOISE RECEPTOR LOCATIONS

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PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW21-420-3
DATE	SEPTEMBER 23, 2026
DRAWN BY	D.S.
DESCRIPTION	FIGURE 3: WINDOW STC REQUIREMENTS

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PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY	
SCALE	1:1000 (APPROX.)	DRAWING NO. GW21-420-4A
DATE	SEPTEMBER 23, 2026	DRAWN BY D.S.

DESCRIPTION

FIGURE 4A:
VENTILATION REQUIREMENTS

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SCALE	1:1000 (APPROX.)
DRAWING NO.	GW21-420-4B
DATE	SEPTEMBER 23, 2026
DRAWN BY	D.S.
DESCRIPTION	FIGURE 4B: VENTILATION REQUIREMENTS

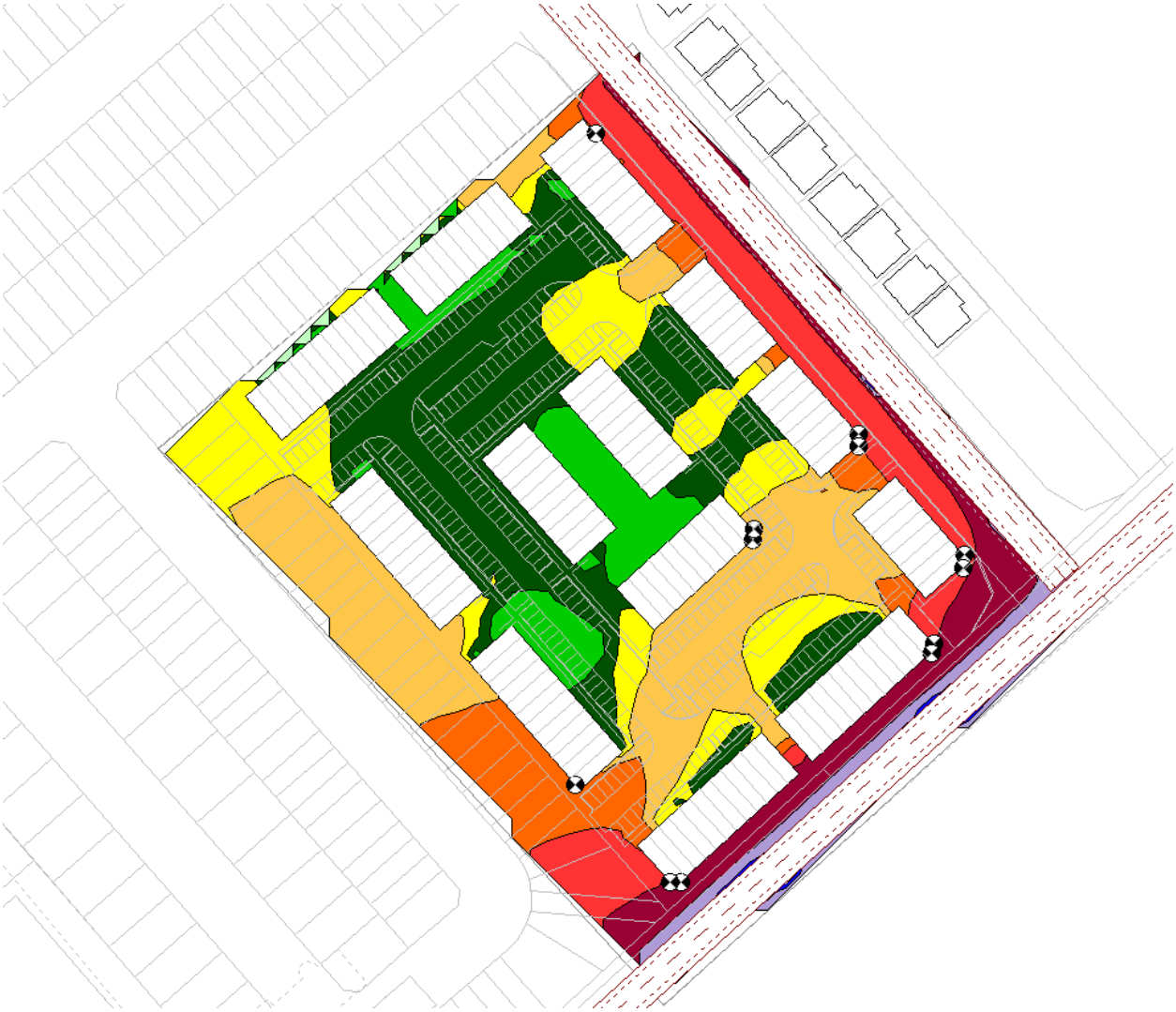


FIGURE 5: DAYTIME ROADWAY TRAFFIC NOISE CONTOURS (7.5 M ABOVE GRADE)

- *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*

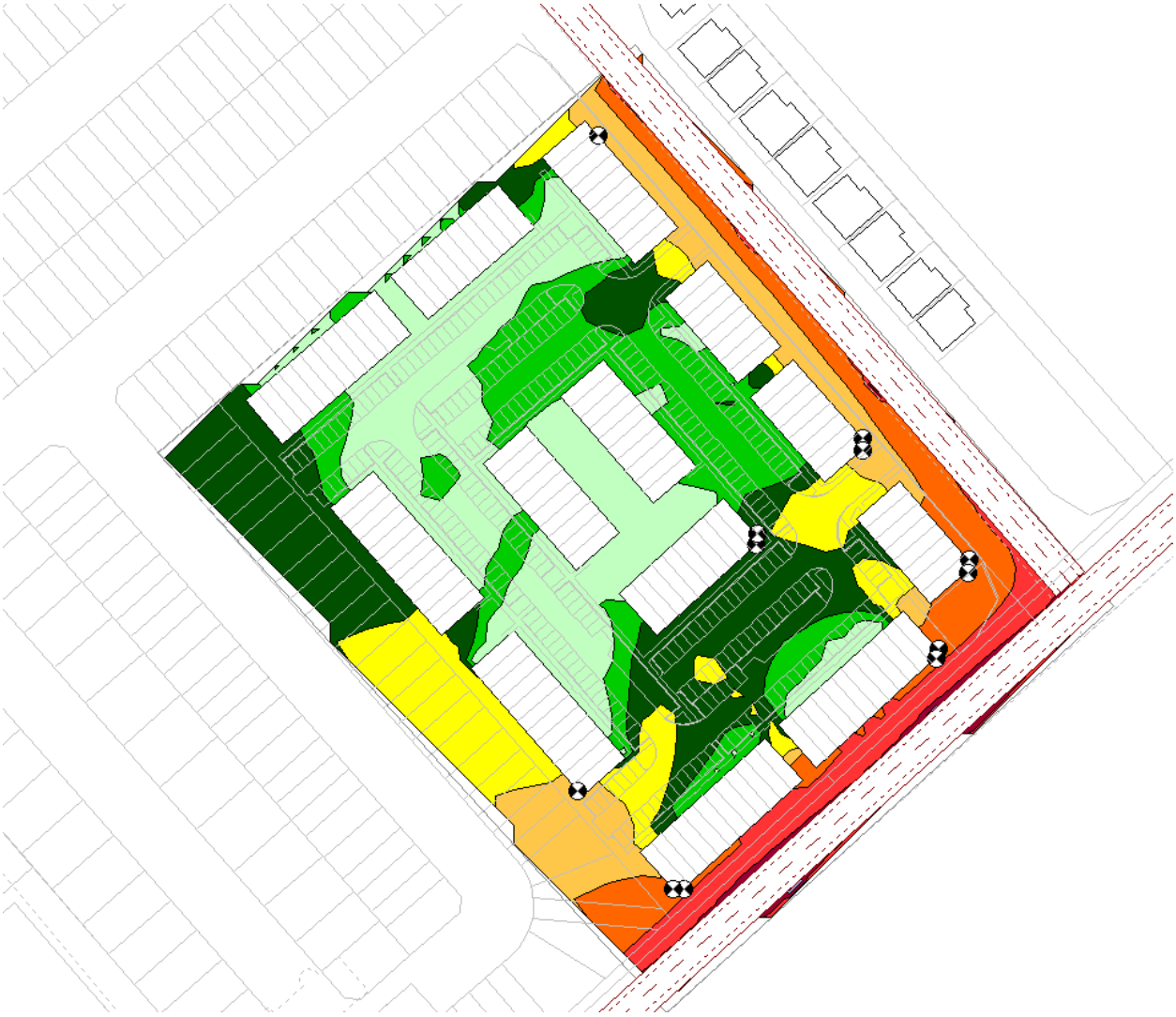


FIGURE 6: NIGHTTIME ROADWAY TRAFFIC NOISE CONTOURS (7.5 M ABOVE GRADE)

- *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 – INPUT AND OUTPUT DATA

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

```
STAMSON 5.0        NORMAL REPORT        Date: 19-01-2026 10:23:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te                 Time Period: Day/Night 16/8 hours
Description: POW - Block 13 - Unit 1 - Level 3 - Southeast Facade


Road data, segment # 1: Flewellyn (day/night)
---------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Flewellyn (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  :  15.00 / 15.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          : 104.00 m
Receiver elevation        : 105.40 m
Barrier elevation         : 105.40 m
Reference angle           :   0.00
```

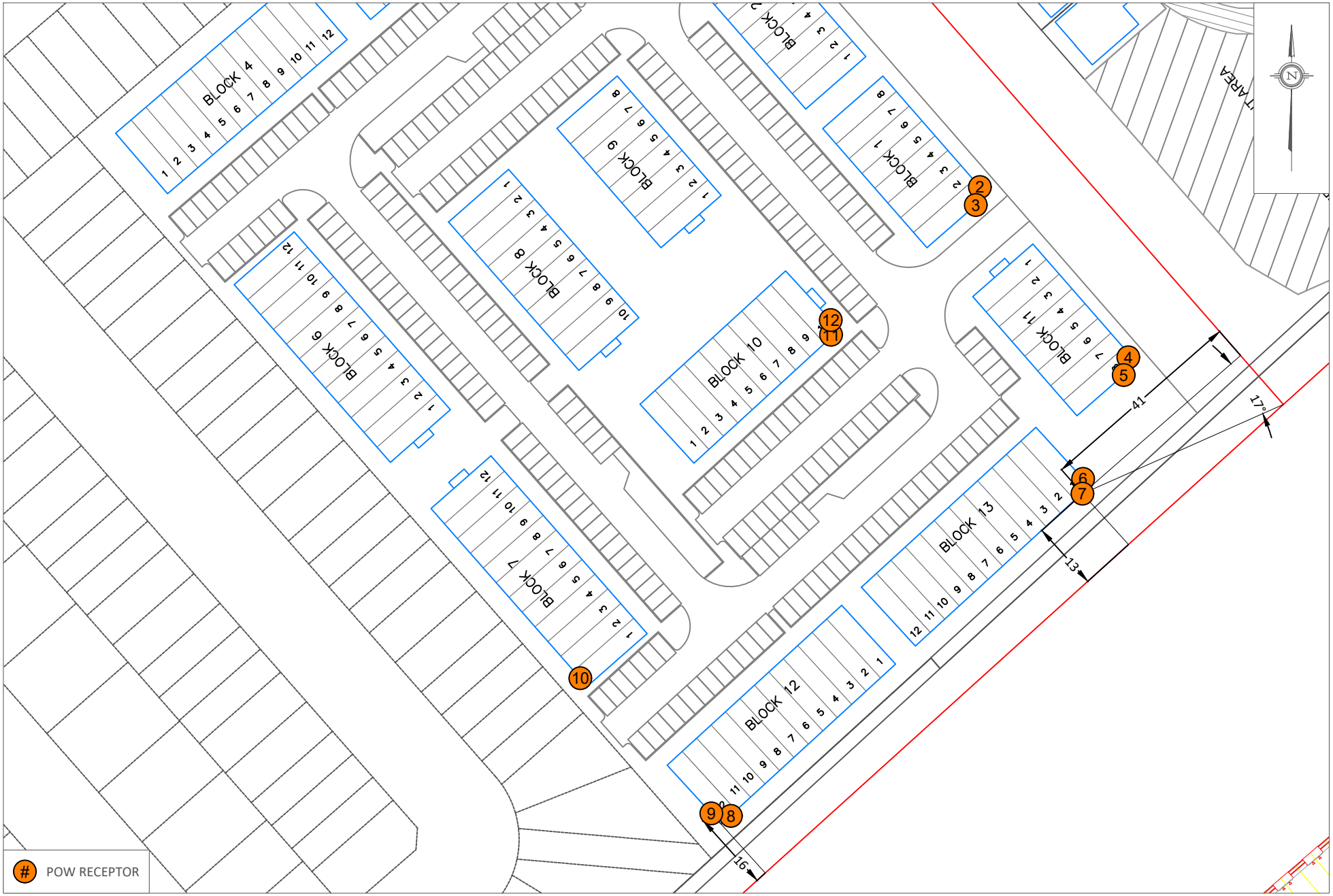
```
Road data, segment # 2: Internal 1 (day/night)
----------------------------------------------
Car traffic volume  :  4858/422   veh/TimePeriod  *
Medium truck volume :   386/34    veh/TimePeriod  *
Heavy truck volume  :   276/24    veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     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):   6000
    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: Internal 1 (day/night)
--------------------------------------------
Angle1   Angle2           :   0.00 deg   17.00 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           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 17.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          : 104.00 m
Receiver elevation        : 105.40 m
Barrier elevation         : 105.40 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !       112.90

ROAD (0.00 + 68.62 + 0.00) = 68.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
   -90     90   0.48  69.76   0.00   0.00  -1.14   0.00   0.00  -0.01  68.60*
   -90     90   0.48  69.76   0.00   0.00  -1.14   0.00   0.00   0.00  68.62
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 68.62 dBA

Results segment # 2: Internal 1 (day)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !       112.90

ROAD (0.00 + 45.96 + 0.00) = 45.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     17   0.48  62.71   0.00  -6.46 -10.28   0.00   0.00   0.00  45.96*
     0     17   0.48  62.71   0.00  -6.46 -10.28   0.00   0.00   0.00  45.96
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 45.96 dBA

Total Leq All Segments: 68.64 dBA
```

```
Results segment # 1: Flewellyn (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 !        7.50 !        7.50 !       112.90

ROAD (0.00 + 61.03 + 0.00) = 61.03 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
   -90     90   0.48  62.16   0.00   0.00  -1.14   0.00   0.00  -0.01  61.01*
   -90     90   0.48  62.16   0.00   0.00  -1.14   0.00   0.00   0.00  61.03
--------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 61.03 dBA

Results segment # 2: Internal 1 (night)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !       112.90

ROAD (0.00 + 38.38 + 0.00) = 38.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------
     0     17   0.48  55.12   0.00  -6.46 -10.28   0.00   0.00   0.00  38.38*
     0     17   0.48  55.12   0.00  -6.46 -10.28   0.00   0.00   0.00  38.38
--------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 38.38 dBA

Total Leq All Segments: 61.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.64
                         (NIGHT): 61.05
```

```
STAMSON 5.0        NORMAL REPORT        Date: 19-01-2026 10:25:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te                 Time Period: Day/Night 16/8 hours
Description: POW - Block 12 - Unit 12 - Level 3 - Southwest Facade


Road data, segment # 1: Flewellyn (day/night)
---------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Flewellyn (day/night)
-------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  16.00 / 16.00  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.00 m
Barrier receiver distance :   0.01 / 0.01   m
Source elevation          : 104.40 m
Receiver elevation        : 105.50 m
Barrier elevation         : 105.50 m
Reference angle           :   0.00
```

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

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        7.50 !        7.50 !       113.00

ROAD (0.00 + 65.19 + 0.00) = 65.19 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.48  69.76   0.00  -0.41  -4.15   0.00   0.00  -0.01  65.18*
     0     90   0.48  69.76   0.00  -0.41  -4.15   0.00   0.00   0.00  65.19
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 65.19 dBA

Total Leq All Segments: 65.19 dBA

Results segment # 1: Flewellyn (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 !        7.50 !        7.50 !       113.00

ROAD (0.00 + 57.60 + 0.00) = 57.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
--------------------------------------------------------------------------------
     0     90   0.48  62.16   0.00  -0.41  -4.15   0.00   0.00  -0.01  57.59*
     0     90   0.48  62.16   0.00  -0.41  -4.15   0.00   0.00   0.00  57.60
--------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 57.60 dBA

Total Leq All Segments: 57.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.19
                         (NIGHT): 57.60
```



GRADIENTWIND
ENGINEERS & SCIENTISTS
127 WALGREEN ROAD , OTTAWA, ON
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PROJECT	MAGNOLIA CONDO BLOCK, STITTSVILLE TRANSPORTATION NOISE STUDY
SCALE	1:1000 (APPROX.)
DRAWING NO.	GW21-420-A1
DATE	SEPTEMBER 23, 2026
DRAWN BY	D.S.
DESCRIPTION	FIGURE A1: STAMSON INPUT PARAMETERS RECEPTORS 7 & 9