

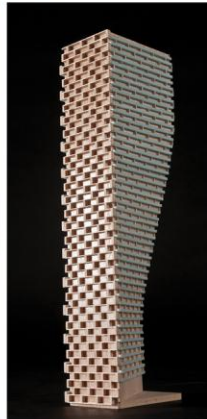
GRADIENTWIND

ENGINEERS & SCIENTISTS

TRANSPORTATION NOISE FEASIBILITY ASSESSMENT

320 Chapel Street
Ottawa, Ontario

Report: 26-115 – Transportation Noise Feasibility



August 20, 2026

PREPARED FOR
Espace320 Inc.
320 Chapel Street
Ottawa, ON
K1N 7Z3

PREPARED BY
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EXECUTIVE SUMMARY

This report describes a transportation noise feasibility assessment undertaken to support Zoning By-Law Amendment (ZBA) application requirements for the proposed addition to the development located at 320 Chapel Street in Ottawa, Ontario. The development consists of an existing 3-storey building and a proposed 3-storey addition to the west. The dominant sources of roadway traffic noise impacting the development are Laurier Avenue East to the north and Chapel Street to the east 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 IDEA in July 2026.

The results of the current analysis indicate that noise levels will range between 54 and 63 dBA during the daytime period (07:00-23:00) and between 46 and 56 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 63 dBA) occurs along the development's east façade which is nearest and most exposed to Chapel Street.

The noise levels at some façades predicted due to roadway traffic falls between 55 dBA and 65 dBA during the daytime and between 50 dBA and 60 dBA during the nighttime. As such, the development will require forced air heating with provisions for the installation of air conditioning (AC) by the occupants. If AC is provided, it will allow occupants to keep windows closed and maintain a comfortable living and working environment. In addition to ventilation requirements, a Type C 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, standard building components that conform to the Ontario Building Code (OBC 2024) will be sufficient to attenuate the indoor noise levels within ENCG criteria.

Noise levels at the green space south of the proposed development was found to be 55 dBA during the daytime. If this area is used as an outdoor amenity, no additional noise control measures are required.



Based on the analysis, residential, library, office, instructional, and medical facility use is feasible at the proposed development provided that the recommended noise mitigation measures and warning clauses described in Section 6 are implemented.

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.

No significant sources of stationary noise are associated with the development, and the expected heating and cooling systems would be similar to those found in small residential units.

TABLE OF CONTENTS

1. INTRODUCTION	1
2. TERMS OF REFERENCE	1
3. OBJECTIVES	2
4. METHODOLOGY.....	2
4.1 Background.....	2
4.2 Roadway Traffic Noise.....	2
4.2.1 Criteria for Roadway Traffic Noise	2
4.2.2 Roadway Traffic Volumes.....	4
4.2.3 Theoretical Roadway Traffic Noise Predictions.....	4
5. RESULTS	5
5.1 Roadway Traffic Noise Levels.....	5
5.2 Noise Control Measures	6
6. CONCLUSIONS AND RECOMMENDATIONS	6

FIGURES

APPENDICES

Appendix A – STAMSON 5.04 Input and Output Data and Supporting Information



1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Espace320 Inc. to undertake a transportation noise feasibility assessment to support Zoning By-Law Amendment (ZBA) application requirements for a proposed addition to the development located at 320 Chapel Street in Ottawa, Ontario. This report summarizes the methodology, results, and recommendations related to the assessment of exterior and interior noise levels generated by local roadway traffic.

This assessment is based on theoretical noise calculation methods conforming to the Ministry of the Environment, Conservation and Parks (MECP) NPC-300¹ and City of Ottawa Environmental Noise Control Guidelines (ENCG)². Noise calculations were based on architectural drawings provided by IDEA, received in July 2026, 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 320 Chapel Street in Ottawa, Ontario. The site is bounded by low-rise residential homes to the north and south, Chapel Street to the east, and low-rise residential and institutional buildings to the west.

The proposed development is located on a rectangular parcel of land and comprises an existing 3-storey building with a 3-storey addition to the west. The basement level features a residential suite, a mechanical room, storage rooms, bicycle parking, and an elevator room. Level 1 features a library, a foyer, a kitchenette, and several flexible spaces. It is noted that instructional use will occur at the flexible spaces on Level 1. At grade parking spaces are also provided on the property. Furthermore, green space is provided to the south of the proposed development which has been assessed in this report as an outdoor amenity. Level 2 features office spaces and a lunchroom. Level 3 comprises solely of office spaces. Certain office spaces on Level 2 and Level 3 will be used for physiotherapy, counselling, and osteopath-type spaces. As such, noise criteria for the development is considered for residential, library, office,

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



instructional, and medical facility use. The relevant sources of roadway traffic noise are Laurier Avenue East to the north and Chapel Street to the east of the subject site. Figure 1 illustrates a site plan with surrounding context.

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 dBA for offices, 45 dBA for living rooms and libraries, and 40 dBA for sleeping quarters, as listed in Table 1. For instructional and medical use, the recommended noise level limit during the day is 45 dBA.

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, therapy or treatment 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 reduction⁴. A closed window due to a ventilation requirement will bring noise levels down to achieve an acceptable indoor environment⁵. 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 attenuation⁶.

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

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



feasible for technical, economic or administrative reasons. Furthermore, noise levels at OLAs must not exceed 60 dBA.

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 Plan⁷ 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
Laurier Avenue East	2-Lane Major Collector (2-UMCU)	50	12,000
Chapel Street	2-Lane Urban Collector	30*	8,000

*Due to STAMSON limitation, a speed of 40 km/h was used for noise calculations

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 streets was taken to be 92%/8%, respectively.
- Ground surfaces for receptors were taken to be absorptive due to the presence of grass and soil and reflective where hard (paved) ground is located.

⁷ City of Ottawa Transportation Master Plan, November 2013



- Topography was assumed to be flat / gently sloped.
- Noise receptors were strategically placed at 5 locations around the study area (see Figure 2).

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 63 dBA during the daytime period (07:00-23:00) and between 46 and 56 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 63 dBA) occurs along the development's east façade which is nearest and most exposed to Chapel Street.

The noise levels at some façades predicted due to roadway traffic falls between 55 dBA and 65 dBA during the daytime and between 50 dBA and 60 dBA during the nighttime. As such, the development will require forced air heating with provisions for the installation of air conditioning (AC) by the occupants. If AC is provided, it will allow occupants to keep windows closed and maintain a comfortable living and working environment. In addition to ventilation requirements, a Type C 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 green space south of the proposed development was found to be 55 dBA during the daytime. If this area is used as an outdoor amenity, no additional noise control measures are 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
R1 / POW	8.5	Level 3 – West Façade	54	46
R2 / POW	8.5	Level 3 – North Façade	60	53
R3 / POW	8.5	Level 3 – East Façade	63	56
R4 / POW	8.5	Level 3 – South Façade	59	51
R5 / OLA	1.5	Level 1 – Outdoor Amenity	55	N/A*

*Noise levels during the nighttime are not considered for OLAs



5.2 Noise Control Measures

The noise levels predicted due to roadway traffic do not exceed the criteria listed in Section 4.2 for upgraded building components. As such, standard building components that conform to the Ontario Building Code (OBC 2024) will be sufficient to mitigate indoor noise in compliance with ENCG criteria.

Results of the calculations also indicate that the development will require forced air heating with provisions for the installation of air conditioning (AC) by the occupants. If AC is provided, it will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, a Type C Warning Clause 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 63 dBA during the daytime period (07:00-23:00) and between 46 and 56 dBA during the nighttime period (23:00-07:00). The highest noise level (i.e. 63 dBA) occurs along the development's east façade which is nearest and most exposed to Chapel Street.

The noise levels at some façades predicted due to roadway traffic falls between 55 dBA and 65 dBA during the daytime and between 50 dBA and 60 dBA during the nighttime. As such, the development will require forced air heating with provisions for the installation of air conditioning (AC) by the occupants. If AC is provided, it will allow occupants to keep windows closed and maintain a comfortable living and working environment. In addition to ventilation requirements, a Type C Warning Clause will also be required to be placed 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."



Furthermore, standard building components that conform to the Ontario Building Code (OBC 2024) will be sufficient to attenuate the indoor noise levels within ENCG criteria.

Noise levels at the green space south of the proposed development was found to be 55 dBA during the daytime. If this area is used as an outdoor amenity, no additional noise control measures are required.

Based on the analysis, residential, library, office, instructional, and medical facility use is feasible at the proposed development provided that the recommended noise mitigation measures and warning clauses described above are implemented.

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.

No significant sources of stationary noise are associated with the development, and the expected heating and cooling systems would be similar to those found in small residential units.

This concludes our transportation noise feasibility 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 S2.

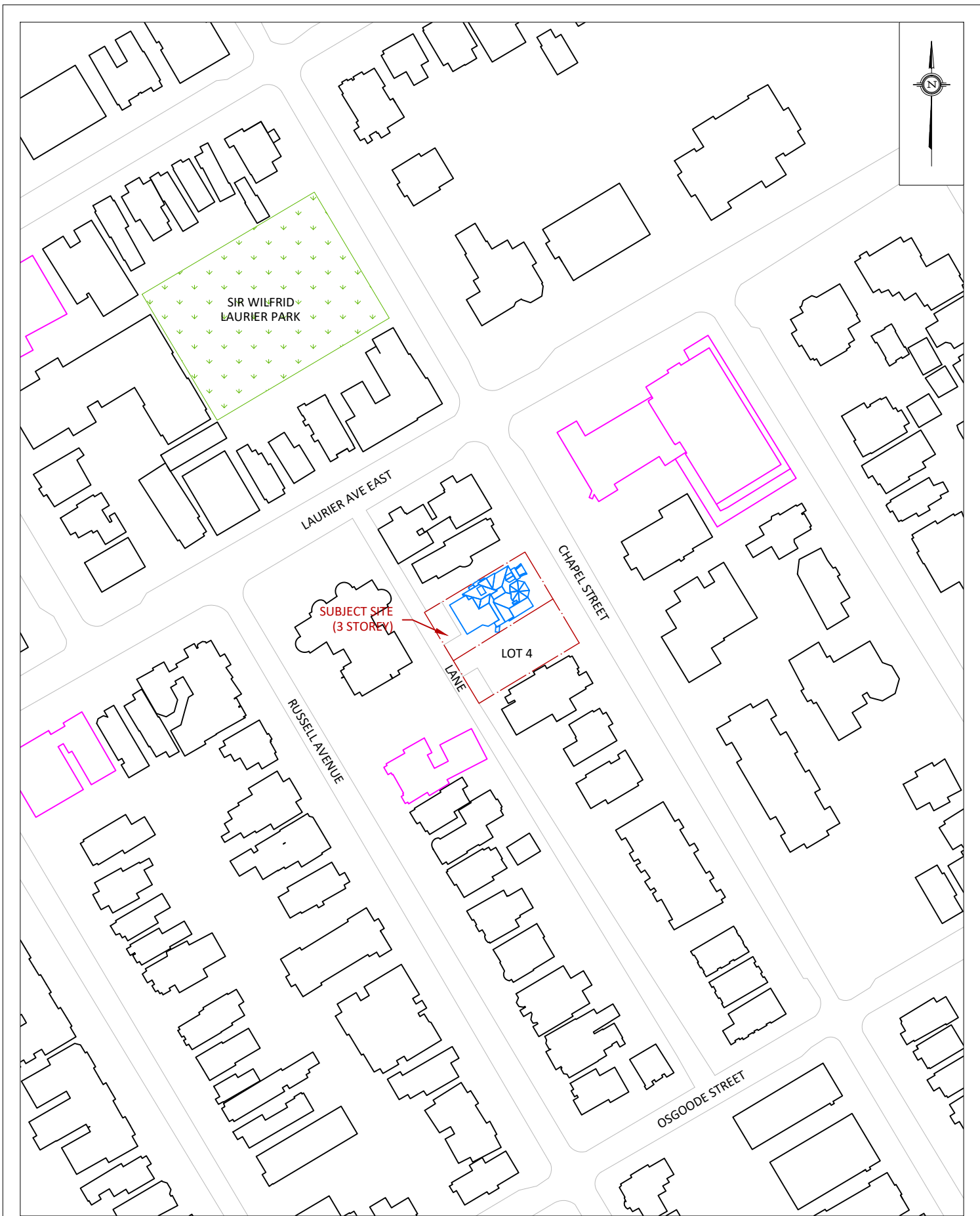
Doryan Saavedra, B.Eng.
Junior Acoustic Scientist

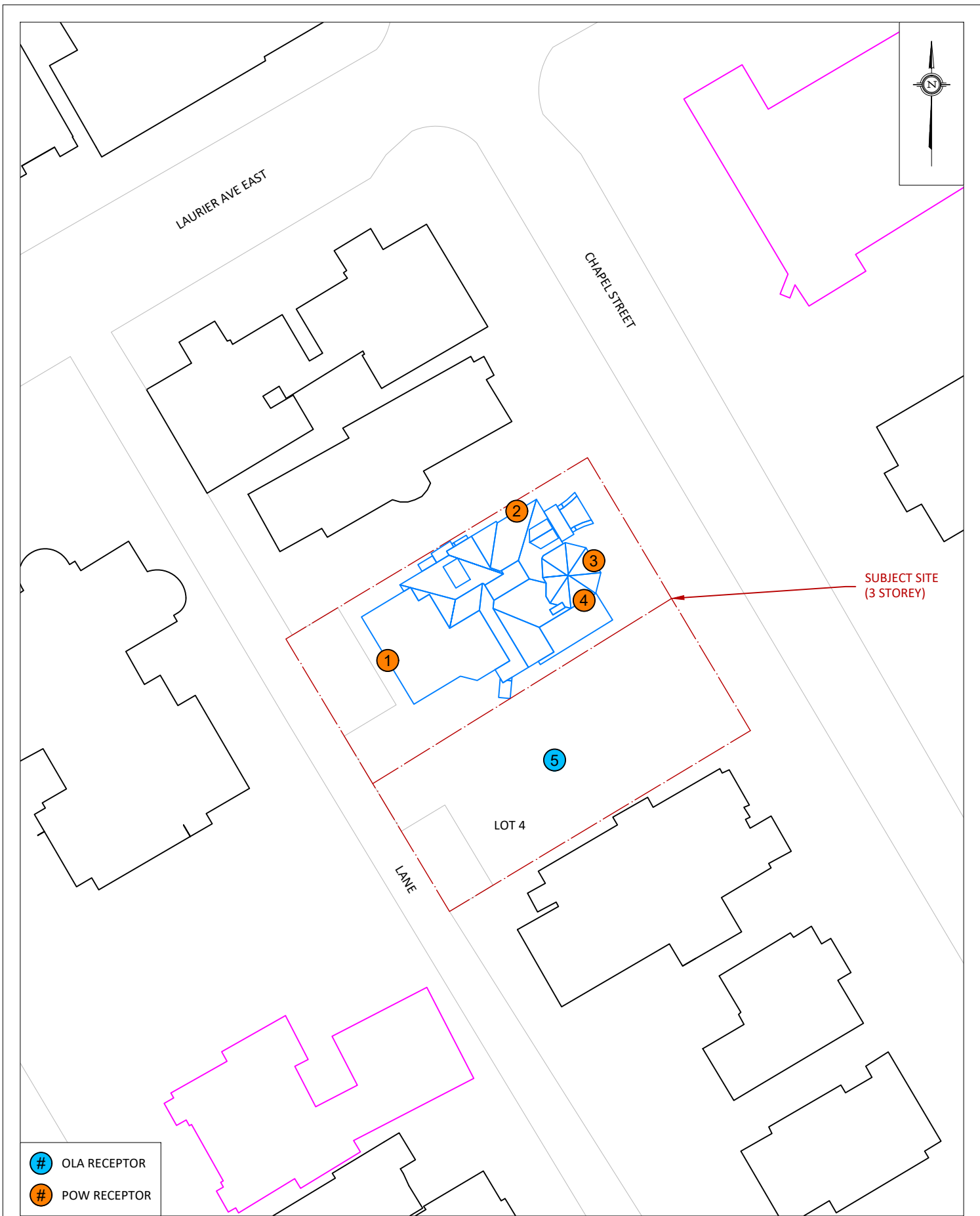


Joshua Foster, P.Eng.
Lead Engineer

Gradient Wind File #26-115 – Transportation Noise Feasibility







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APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

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STAMSON 5.0 NORMAL REPORT Date: 12-08-2026 16:15:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description: Level 3 - West Facade

Road data, segment # 1: Laurier 1 (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier 1 (day/night)

Angle1 Angle2 : -90.00 deg -34.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 48.00 / 48.00 m
Receiver height : 8.50 / 8.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -34.00 deg
Barrier height : 9.00 m
Barrier receiver distance : 24.00 / 24.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Road data, segment # 2: Laurier 2 (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier 2 (day/night)

Angle1 Angle2 : -34.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 48.00 / 48.00 m
Receiver height : 8.50 / 8.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -16.00 deg Angle2 : 0.00 deg
Barrier height : 7.00 m
Barrier receiver distance : 24.00 / 24.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Results segment # 1: Laurier 1 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	5.00	5.00

ROAD (0.00 + 46.46 + 0.00) = 46.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-34	0.00	67.51	0.00	-5.05	-5.07	0.00	0.00	-10.93	46.46

Segment Leq : 46.46 dBA

Results segment # 2: Laurier 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	5.00	5.00

ROAD (52.46 + 41.72 + 0.00) = 52.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	-16	0.00	67.51	0.00	-5.05	-10.00	0.00	0.00	0.00	52.46
-16	0	0.00	67.51	0.00	-5.05	-10.51	0.00	0.00	-10.23	41.72

Segment Leq : 52.81 dBA

Total Leq All Segments: 53.72 dBA



Results segment # 1: Laurier 1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	8.50	!
		5.00	!
			5.00

ROAD (0.00 + 38.86 + 0.00) = 38.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-34	0.00	59.91	0.00	-5.05	-5.07	0.00	0.00	-10.93	38.86

Segment Leq : 38.86 dBA

Results segment # 2: Laurier 2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	8.50	!
		5.00	!
			5.00

ROAD (44.86 + 34.12 + 0.00) = 45.21 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	-16	0.00	59.91	0.00	-5.05	-10.00	0.00	0.00	0.00	44.86
-16	0	0.00	59.91	0.00	-5.05	-10.51	0.00	0.00	-10.23	34.12

Segment Leq : 45.21 dBA

Total Leq All Segments: 46.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.72
(NIGHT): 46.12



STAMSON 5.0 NORMAL REPORT Date: 12-08-2026 15:34:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te Time Period: Day/Night 16/8 hours
Description: Level 3 - North Facade

Road data, segment # 1: Laurier 1 (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier 1 (day/night)

Angle1 Angle2 : -90.00 deg 28.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.00 / 42.00 m
Receiver height : 8.50 / 8.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 28.00 deg
Barrier height : 7.00 m
Barrier receiver distance : 16.00 / 16.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Road data, segment # 2: Laurier 2 (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier 2 (day/night)

Angle1 Angle2 : 28.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.00 / 42.00 m
Receiver height : 8.50 / 8.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 53.00 deg Angle2 : 90.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 30.00 / 30.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Road data, segment # 3: Chapel St (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 : 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 : 92.00

Data for Segment # 3: Chapel St (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 19.00 / 19.00 m
Receiver height : 8.50 / 8.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00



Results segment # 1: Laurier 1 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	5.83	5.83

ROAD (0.00 + 54.03 + 0.00) = 54.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	28	0.03	67.51	0.00	-4.61	-1.90	0.00	0.00	-6.97	54.03

Segment Leq : 54.03 dBA

Results segment # 2: Laurier 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	3.50	3.50

ROAD (51.90 + 42.76 + 0.00) = 52.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
28	53	0.45	67.51	0.00	-6.48	-9.13	0.00	0.00	0.00	51.90
53	90	0.00	67.51	0.00	-4.47	-6.87	0.00	0.00	-13.41	42.76

Segment Leq : 52.40 dBA

Results segment # 3: Chapel St (day)

Source height = 1.50 m

ROAD (0.00 + 58.38 + 0.00) = 58.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.45	63.96	0.00	-1.49	-4.09	0.00	0.00	0.00	58.38

Segment Leq : 58.38 dBA

Total Leq All Segments: 60.47 dBA



Results segment # 1: Laurier 1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	5.83	5.83

ROAD (0.00 + 46.43 + 0.00) = 46.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	28	0.03	59.91	0.00	-4.61	-1.90	0.00	0.00	-6.97	46.43

Segment Leq : 46.43 dBA

Results segment # 2: Laurier 2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	8.50	3.50	3.50

ROAD (44.30 + 35.16 + 0.00) = 44.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
28	53	0.45	59.91	0.00	-6.48	-9.13	0.00	0.00	0.00	44.30
53	90	0.00	59.91	0.00	-4.47	-6.87	0.00	0.00	-13.41	35.16

Segment Leq : 44.80 dBA

Results segment # 3: Chapel St (night)

Source height = 1.50 m

ROAD (0.00 + 50.78 + 0.00) = 50.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.45	56.36	0.00	-1.49	-4.09	0.00	0.00	0.00	50.78

Segment Leq : 50.78 dBA

Total Leq All Segments: 52.87 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.47
(NIGHT): 52.87



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STAMSON 5.0 NORMAL REPORT Date: 12-08-2026 15:41:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te Time Period: Day/Night 16/8 hours
Description: Level 3 - East Facade

Road data, segment # 1: Laurier Ave (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier Ave (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 : 50.00 / 50.00 m
Receiver height : 8.50 / 8.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 42.00 deg Angle2 : 90.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 38.00 / 38.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Road data, segment # 2: Chapel St (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 : 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 : 92.00

Data for Segment # 2: Chapel St (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 : 8.50 / 8.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00



Results segment # 1: Laurier Ave (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	8.50	!
		3.18	!
			3.18

ROAD (53.43 + 42.20 + 0.00) = 53.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.45	67.51	0.00	-7.58	-6.50	0.00	0.00	0.00	53.43
42	90	0.00	67.51	0.00	-5.23	-5.74	0.00	0.00	-14.34	42.20

Segment Leq : 53.74 dBA

Results segment # 2: Chapel St (day)

Source height = 1.50 m

ROAD (0.00 + 62.88 + 0.00) = 62.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	63.96	0.00	0.00	-1.08	0.00	0.00	0.00	62.88

Segment Leq : 62.88 dBA

Total Leq All Segments: 63.38 dBA



Results segment # 1: Laurier Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	8.50	!
		3.18	!
			3.18

ROAD (45.83 + 34.60 + 0.00) = 46.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	42	0.45	59.91	0.00	-7.58	-6.50	0.00	0.00	0.00	45.83
42	90	0.00	59.91	0.00	-5.23	-5.74	0.00	0.00	-14.34	34.60

Segment Leq : 46.14 dBA

Results segment # 2: Chapel St (night)

Source height = 1.50 m

ROAD (0.00 + 55.28 + 0.00) = 55.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	56.36	0.00	0.00	-1.08	0.00	0.00	0.00	55.28

Segment Leq : 55.28 dBA

Total Leq All Segments: 55.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.38
(NIGHT): 55.78



STAMSON 5.0 NORMAL REPORT Date: 12-08-2026 15:26:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te Time Period: Day/Night 16/8 hours
Description: Level 3 - South Facade

Road data, segment # 1: Chapel St (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 : 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 : 92.00

Data for Segment # 1: Chapel St (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 : 18.00 / 18.00 m
Receiver height : 8.50 / 8.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00



Results segment # 1: Chapel St (day)

Source height = 1.50 m

ROAD (0.00 + 58.72 + 0.00) = 58.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.45	63.96	0.00	-1.15	-4.09	0.00	0.00	0.00	58.72

Segment Leq : 58.72 dBA

Total Leq All Segments: 58.72 dBA

Results segment # 1: Chapel St (night)

Source height = 1.50 m

ROAD (0.00 + 51.12 + 0.00) = 51.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.45	56.36	0.00	-1.15	-4.09	0.00	0.00	0.00	51.12

Segment Leq : 51.12 dBA

Total Leq All Segments: 51.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.72
(NIGHT): 51.12



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STAMSON 5.0 NORMAL REPORT Date: 12-08-2026 16:14:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te Time Period: Day/Night 16/8 hours
Description: OLA - At Grade

Road data, segment # 1: Laurier Ave (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Laurier Ave (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 : 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 : 10.00 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: Chapel St 1 (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   : 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       : 92.00
```

Data for Segment # 2: Chapel St 1 (day/night)

```
-----
Angle1  Angle2      : -90.00 deg  -37.00 deg
Wood depth          : 0          (No woods.)
No of house rows    : 0 / 0
Surface             : 1          (Absorptive ground surface)
Receiver source distance : 29.00 / 29.00 m
Receiver height      : 1.50 / 1.50 m
Topography          : 2          (Flat/gentle slope; with barrier)
Barrier angle1       : -90.00 deg  Angle2 : -37.00 deg
Barrier height       : 10.00 m
Barrier receiver distance : 12.00 / 12.00 m
Source elevation     : 0.00 m
Receiver elevation    : 0.00 m
Barrier elevation     : 0.00 m
Reference angle      : 0.00
```



Road data, segment # 3: Chapel St 2 (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 : 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 : 92.00

Data for Segment # 3: Chapel St 2 (day/night)

Angle1 Angle2 : -37.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 29.00 / 29.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 33.00 deg Angle2 : 90.00 deg
Barrier height : 10.00 m
Barrier receiver distance : 14.00 / 14.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00



Results segment # 1: Laurier Ave (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	1.50

ROAD (0.00 + 43.05 + 0.00) = 43.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.06	67.51	0.00	-6.82	-0.17	0.00	0.00	-17.47	43.05

Segment Leq : 43.05 dBA

Results segment # 2: Chapel St 1 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	1.50

ROAD (0.00 + 38.63 + 0.00) = 38.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-37	0.06	63.96	0.00	-3.04	-5.60	0.00	0.00	-16.70	38.63

Segment Leq : 38.63 dBA



Results segment # 3: Chapel St 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	1.50

ROAD (54.92 + 38.84 + 0.00) = 55.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	33	0.66	63.96	0.00	-4.75	-4.29	0.00	0.00	0.00	54.92
33	90	0.06	63.96	0.00	-3.04	-5.26	0.00	0.00	-16.82	38.84

Segment Leq : 55.02 dBA

Total Leq All Segments: 55.38 dBA

Results segment # 1: Laurier Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	1.50

ROAD (0.00 + 35.45 + 0.00) = 35.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.06	59.91	0.00	-6.82	-0.17	0.00	0.00	-17.47	35.45

Segment Leq : 35.45 dBA



Results segment # 2: Chapel St 1 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	1.50	!
1.50	!	1.50	!

ROAD (0.00 + 31.04 + 0.00) = 31.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-37	0.06	56.36	0.00	-3.04	-5.60	0.00	0.00	-16.70	31.04

Segment Leq : 31.04 dBA

Results segment # 3: Chapel St 2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	1.50	!
1.50	!	1.50	!

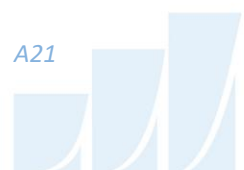
ROAD (47.32 + 31.25 + 0.00) = 47.43 dBA

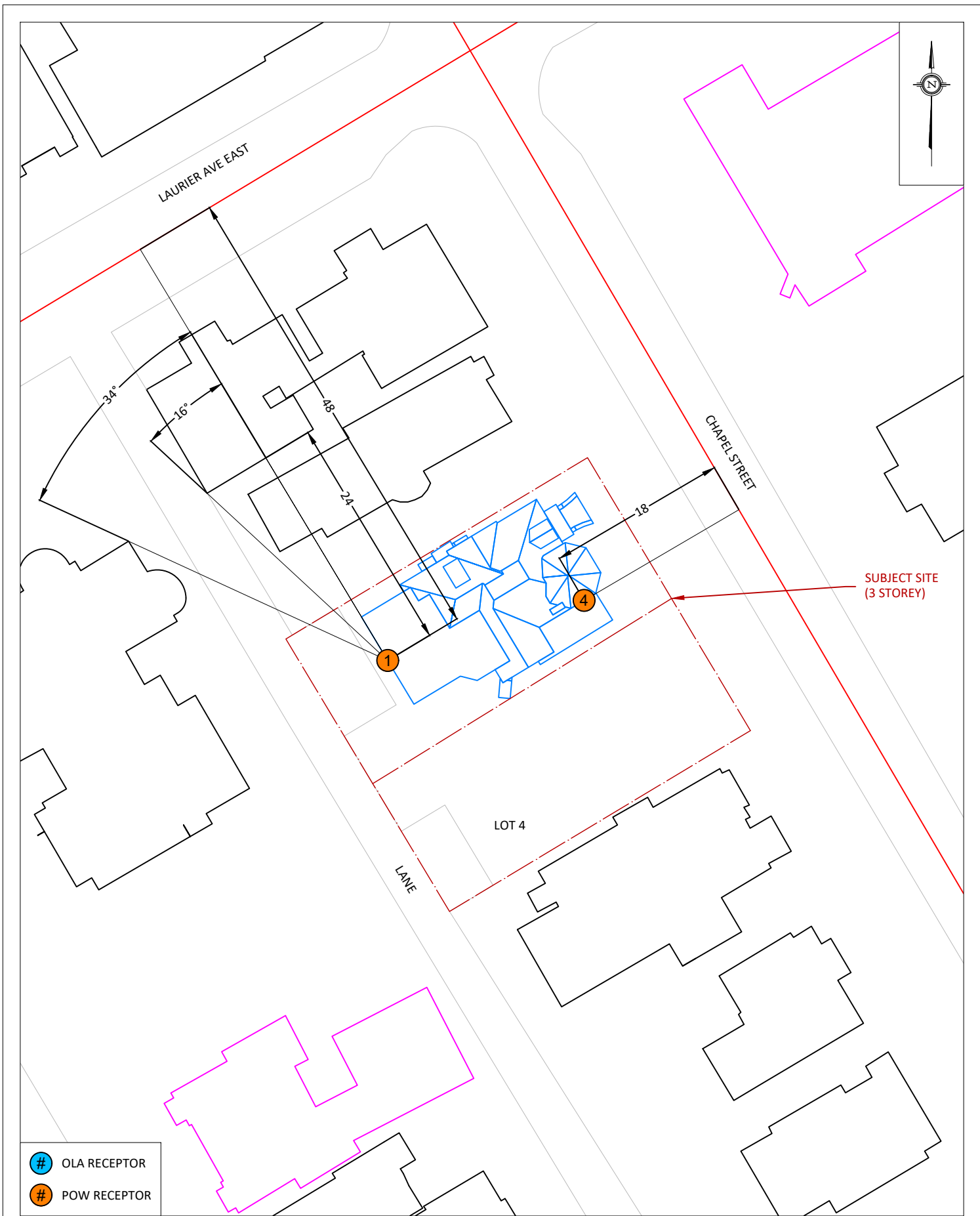
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	33	0.66	56.36	0.00	-4.75	-4.29	0.00	0.00	0.00	47.32
33	90	0.06	56.36	0.00	-3.04	-5.26	0.00	0.00	-16.82	31.25

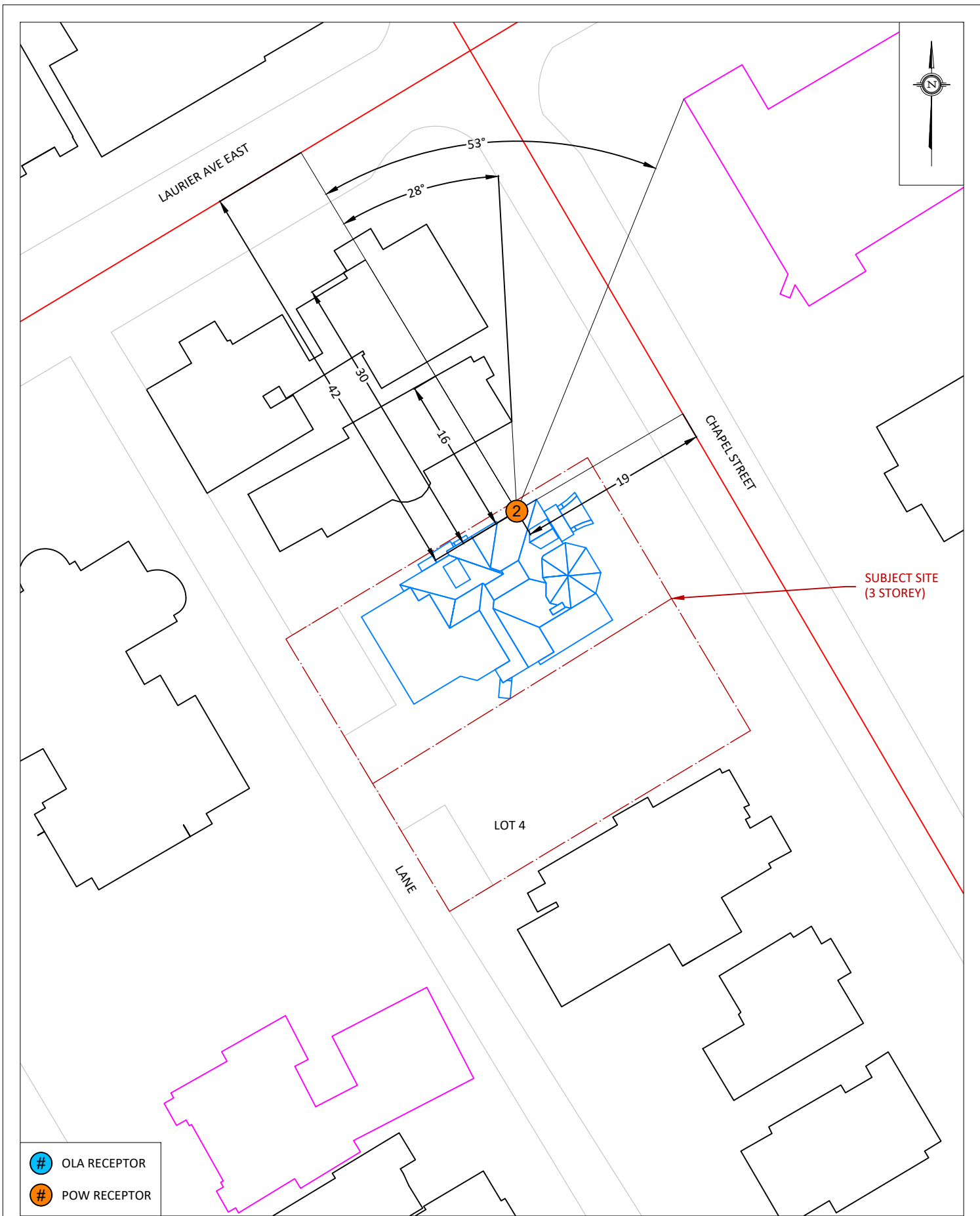
Segment Leq : 47.43 dBA

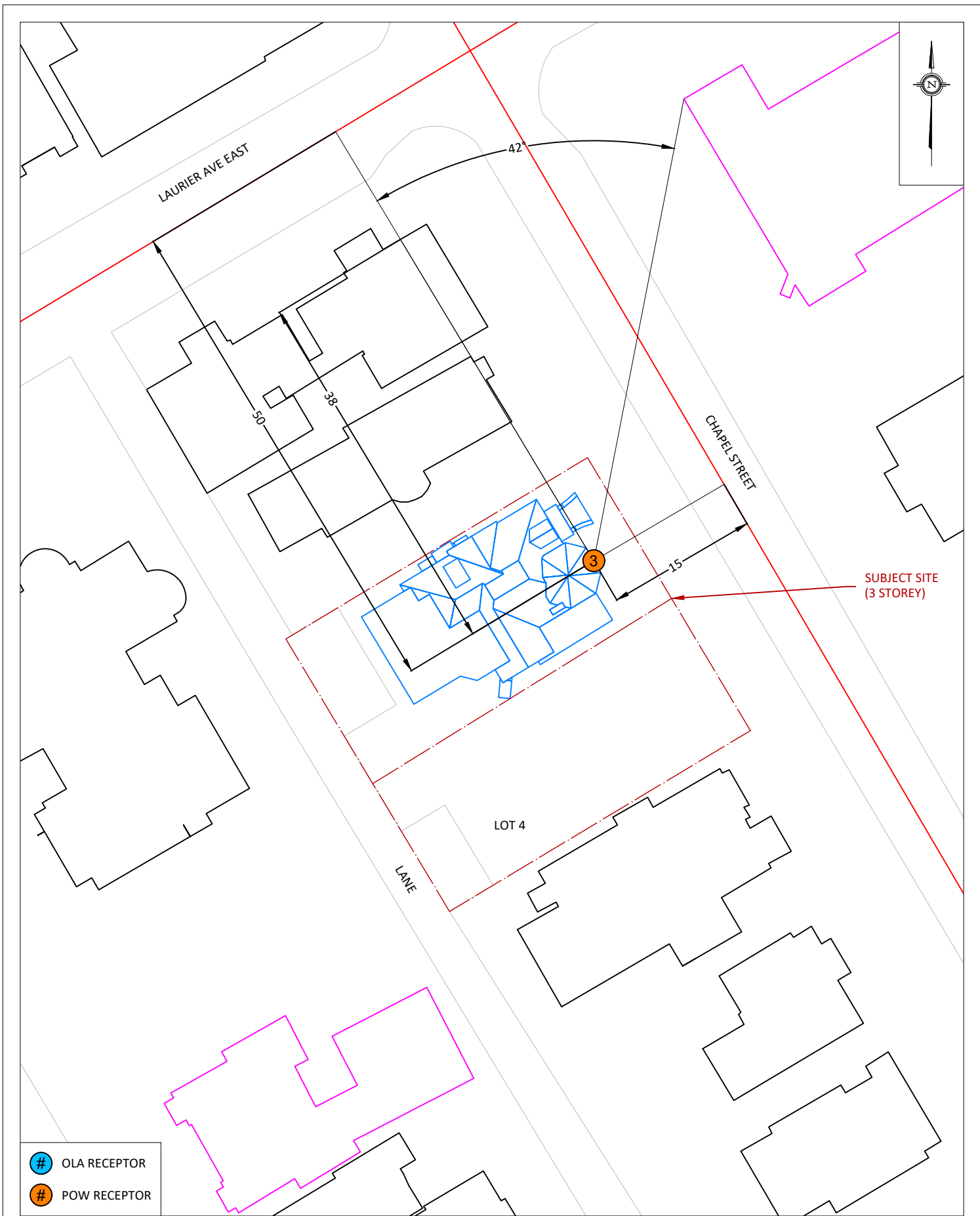
Total Leq All Segments: 47.79 dBA

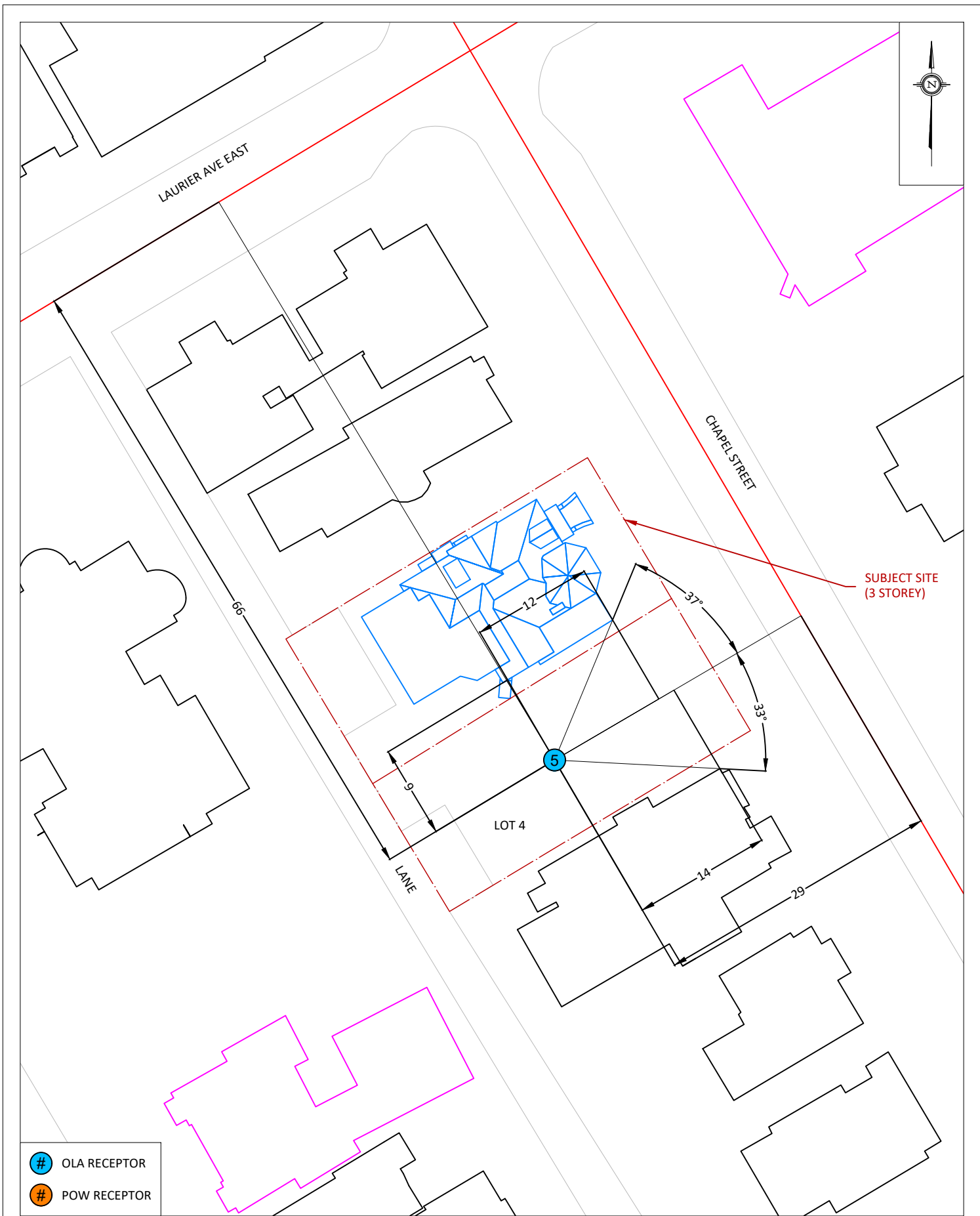
TOTAL Leq FROM ALL SOURCES (DAY): 55.38
(NIGHT): 47.79











GRADIENTWIND ENGINEERS & SCIENTISTS 127 WALGREEN ROAD, OTTAWA, ON 613 836 0934 • GRADIENTWIND.COM	PROJECT		320 CHAPEL STREET, OTTAWA TRANSPORTATION NOISE FEASIBILITY ASSESSMENT		DESCRIPTION
	SCALE	1:500 (APPROX.)	DRAWING NO.	26-115-ANV-A4	
	DATE	AUGUST 6, 2026	DRAWN BY	D.S.	
	FIGURE A4: STAMSON INPUT PARAMETERS RECEPTOR 5				