PATERSON GROUP

Environmental Noise Control Study

Proposed Sivan Temple

2104 Roger Stevens Drive
Ottawa, Ontario

Prepared for the Ottawa Sivan Temple

Report PG7138- 1 Rev. 2 dated March 5, 2025

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1.0 Introduction

Paterson Group (Paterson) was commissioned by the Ottawa Sivan Temple to conduct an environmental noise control study for the proposed development to be located at 2104 Roger Stevens Drive in the City of Ottawa.

The objectives of the current study are to:

- ❑ Determine the primary noise sources impacting the site and compare the projected sound levels to guidelines set out by the Ministry of Environment and Climate Change (MOECC) and the City of Ottawa.

- ❑ Review the projected noise levels and offer recommendations regarding warning classes, construction materials or alternative sound barriers.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations pertaining to the design and construction of the subject residential development as they are understood at the time of writing this report.

This study has been conducted according to the City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Proposed Development

It is understood that the proposed development will consist of a single-story structure with one basement level. Associated parking areas and landscaped areas are also anticipated as a part of the proposed development.

The proposed development will further include a two-story residential structure located behind the proposed Temple structure.

3.0 Methodology and Noise Assessment Criteria

The City of Ottawa outlines three (3) sources of environmental noise that must be analyzed separately:

- ❒ Surface Transportation Noise
- ❒ Stationary Noise
  - ➢ New noise-sensitive development applications (noise receptors) in proximity to existing or approved stationary sources of noise, and
  - ➢ New stationary sources of noise (noise generating) in proximity to existing or approved noise-sensitive developments.
- ❒ Aircraft noise

Surface Transportation Noise

The City of Ottawa's Official Plan, in addition to the ENCG, dictate that the influence area must contain any of the following conditions to classify as a surface transportation noise source for a subject site:

- ❒ Within 100 m of the right-of-way of an existing or proposed arterial, collector or major collector road; a light rail transit corridor; bus rapid transit, or transit priority corridor.
- ❒ Within 250 m of the right-of-way for an existing or proposed highway or secondary rail line.
- ❒ Within 300 m from the right of way of a proposed or existing rail corridor or a secondary main railway line.
- ❒ Within 500 m of an existing 400 series provincial highway, freeway or principle main railway line.

The NPC-300 outlines the limitations of the stationary and environmental noise levels in relation to the location of the receptors. These can be found below in the following tables:

Table 1 - Sound Level Limits for Outdoor Living Areas

Time Period	Required $L_{eq(16)}$ (dBA)
16-hour, 7:00-23:00	55
I. Standards taken from Table 2.2a; Sound Level Limit for Outdoor Living Areas - Road and Rail	

Table 2 - Sound Level Limits for Indoor Living Area			
Type of Space	**Time Period**	**Required L_{eq} (dBA)**	
		Road	**Rail**
Living/Dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc	7:00-23:00	50	40
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms	23:00-7:00	45	40
Sleeping quarters	7:00-23:00	45	40
	23:00-7:00	40	35
I. Standards taken from Table 2.2b; Sound Level Limit for Indoor Living Areas - Road and Rail			

It is noted in ENCG that the limits outlined in Table 2 are for the sound levels on the interior of the glass pane. The ENCG further goes on to state that the limit for the exterior of the pane of glass will be 55 dBA.

If the sound level limits are exceeded at the window panes for the indoor living areas, the following Warning Clauses may be referenced:

Table 3 - Warning Clauses for Sound Level Exceedances	
Warning Clause	**Description**
Warning Clause Type A	"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the noise-sensitive development occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
Warning Clause 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 (rail traffic) (air traffic) may on occasions interfere with some activities of the noise-sensitive development occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
Warning Clause Type C	"This noise-sensitive development 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."
Warning Clause Type D	"This noise-sensitive development 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."
I. Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines - NPC-300	

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities.

The proposed development is not in proximity to any existing or approved stationary sources of noise. Therefore, a stationary noise analysis will not be required with respect to off-site stationary noise sources impacting the proposed development.

However, if exterior noise-generating equipment is required for the proposed development a stationary noise study will be required. If required the stationary noise study with respect to these new noise sources will be completed under a separate cover.

Aircraft/Airport Noise

The subject site is not located within the Airport Vicinity Development Zone. Therefore this project will not require an aircraft/airport noise analysis. No warning clauses regarding aircraft or airport noise will be required.

4.0 Analysis

Surface Transportation Noise

The subject site is currently occupied by an existing single-story structure. The subject site is bordered by Roger Stevens Drive to the north and further by agricultural lands and residential dwellings to the west, and agricultural lands to the east and south. Roger Stevens Drive is identified within the 100 m radius of the proposed development. It is anticipated that a residential dwelling will be constructed at the rear of the proposed development. The residential dwelling is located outside of the 100 m radius and is not included in the current analysis, reference can be made to Drawing PG7138-4-Site Geometry.

Based on the new City of Ottawa Official Plan, Schedule F, Roger Stevens Drive is considered a 2-Lane Rural Arterial (2-RAU). Other roads within the 100 m radius of the proposed development are not classified as either arterial, collector or major collector roads and therefore are not included in this study.

All noise sources are presented in Drawing PG7138-1-Site Geometry located in Appendix 1.

The noise levels from road traffic are provided by the City of Ottawa which takes into consideration the right-of-way width and the implied roadway class. It is understood that these values represent the maximum allowable capacity of the proposed roadways. The parameters to be used for sound-level predictions can be found below.

Table 4 - Traffic and Road Parameters

Road	Implied Roadway	AADT (Veh/day)	Posted Speed (km/h)	Day/Night Split %	Medium Truck %	Heavy Truck %
Roger Stevens Drive	2-RAU	15,000	80	92/8	7	5
Data obtained from the City of Ottawa document ENCG or City of Ottawa Officials						

One (1) level of reception points were selected for this analysis. The following elevations were selected from the heights provided on the survey plan for the subject buildings.

Table 5 - Elevation of Reception Points			
Floor Number	**Elevation at the Centre of Window / Ground Surface (m)**	**Floor Use**	**Daytime/Nighttime Analysis**
Ground Floor	1.5	Place of Worship	Daytime/Nighttime

For this analysis, a reception point was taken at the centre of the ground floor of the structure. Reception points are detailed in Drawing PG7138-2 - Receptor Locations presented in Appendix 1.

All horizontal distances have been measured from the reception point to the edge of the right-of-way. The roadways were analyzed where they intersected the 100 m buffer zone, which is reflected in the local angles described in Paterson Drawings PG7138-3A to 4-Site Geometry in Appendix 1.

Table 7 - Summary of Reception Points and Geometry, located in Appendix 1, provides a summary of the points of reception and their geometry concerning the noise sources. The analysis is completed so that no effects of sound reflection off the building facade are considered, as stipulated by the ENCG. It should be noted that one receptor is assigned to the side of the building affected by noise. The noise source for the proposed development is Roger Stevens Drive: The anticipated noise at each receptor represents the worst-case scenario.

The analysis was completed using STAMSON version 5.04, a computer program which uses the road and rail traffic noise prediction methods using ORNAMENT (Ontario Road Noise Analysis Method for Environment and Transportation) and STEAM (Sound from Trains Environment Analysis Method), publications from the Ontario Ministry of Environment and Energy.

The subject site is relatively level and at grade with the neighbouring roads within a 100 m radius.

5.0 Results

Surface Transportation

The primary descriptors are the 16-hour daytime and the 8-hour nighttime equivalent sound levels, $L_{eq(16)}$ and the $L_{eq(8)}$ for City roads.

The proposed traffic noise levels were analyzed at all reception points. The results of the STAMSON software are located in Appendix 2, and the summary of the results is noted in Table 6 below.

Table 6 – Proposed Noise Levels

Reception Point	Description	OLA (dBA)	Daytime at Facade $L_{eq(16)}$ (dBA)	Nighttime at Facade $L_{eq(8)}$ (dBA)
REC 1	Western Elevation – Ground Floor	-	60.66	53.06
REC 2	Northern Elevation – Ground Floor	-	61.53	52.89
REC 3	Eastern Elevation – Ground Floor	-	52.20	44.61

6.0 Discussion and Recommendations

6.1 Outdoor Living Areas

No outdoor living areas were identified as part of the proposed development.

6.2 Indoor Living Areas and Ventilation

The results of the STAMSON modelling for the receptors located at the centre of the ground floor of the proposed development indicate that the $L_{eq(16)}$ ranges between 61.53 dBA and 52.20 dBA. The noise levels for the proposed development exceed the 55 dBA limit as specified in Table 1; therefore, Warning Clause Type C will be required to be stated on any deeds of sale.

Warning Clause Type C: "This noise-sensitive development 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."

The anticipated residential dwelling identified to the rear of the proposed development was found to be located outside of the 100 m radius of Roger Stevens Drive. Therefore, it is not included in the current analysis. Further reference can be made to Drawing PG7138-4-Site Geometry.

7.0 Summary of Findings

The subject site is located at 2104 Roger Stevens Drive in the City of Ottawa. It is understood that the proposed development will consist of a one-storey building with one basement level. The associated analysis identified one surface transportation noise source: Roger Stevens Drive.

Several reception points were selected for the analysis, consisting of panes of glass reception points on the ground floor level.

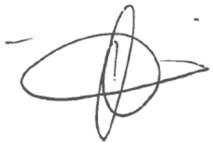
All anticipated noise levels for the proposed development exceeded the 55 dBA threshold as specified by the ENCG, therefore, Warning Clause Type C will be required to be stated on any deeds of sale.

8.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than The Ottawa Sivan Temple, or their agents, is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.



Otillia McLaughlin, B.Eng. Stephanie A. Boisvenue, P.Eng.

Report Distribution:

- ❑ The Ottawa Sivan Temple
- ❑ Paterson Group

APPENDIX 1

TABLE 7 – SUMMARY OF RECEPTION POINTS AND GEOMETRY

DRAWING PG7138-1 – SITE PLAN

DRAWING PG7138-2 – RECEPTOR LOCATION PLAN

DRAWING PG7138-3 – SITE GEOMETRY

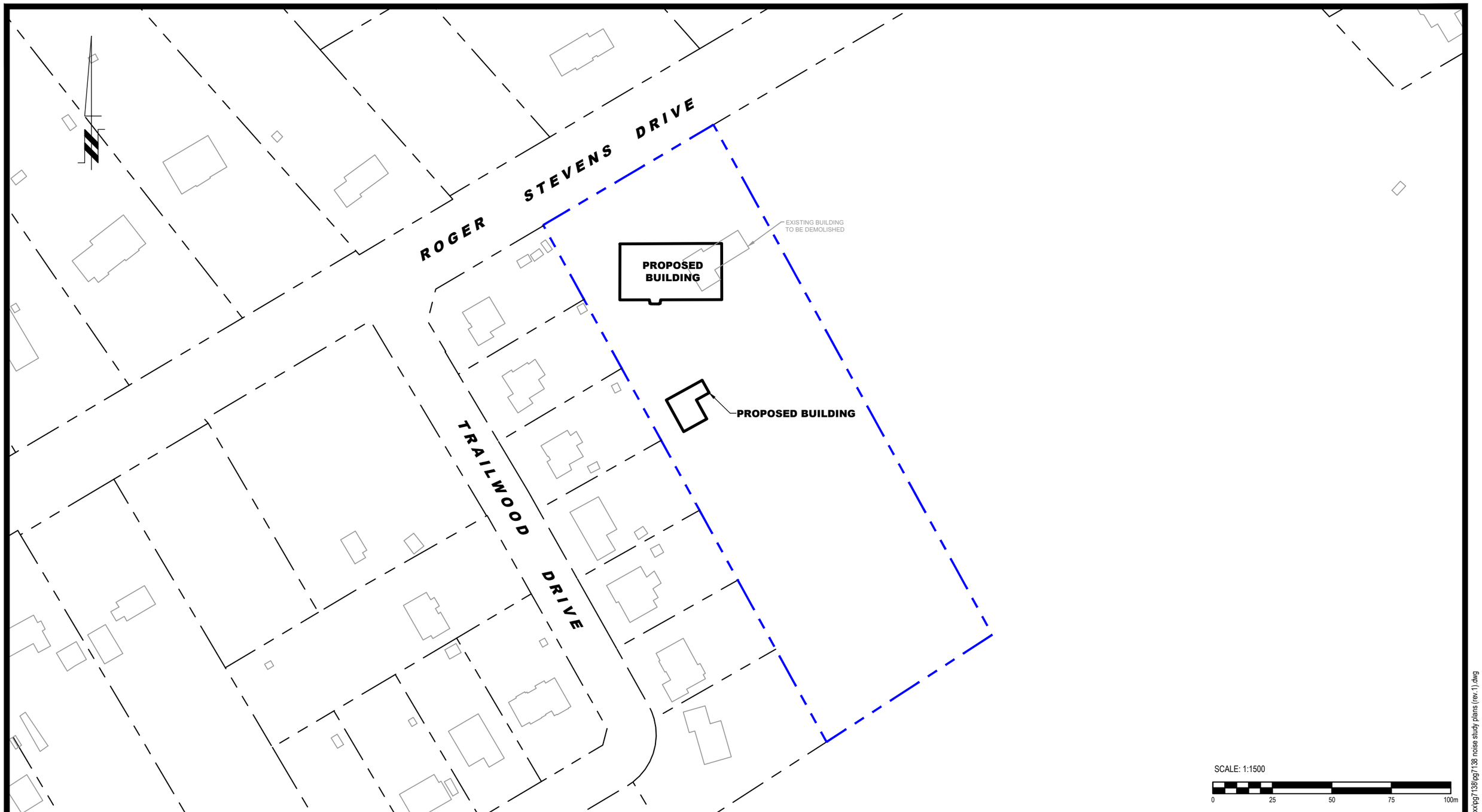
DRAWING PG7138-3A- SITE GEOMETRY (REC 1-1)

DRAWING PG7138-3B- SITE GEOMETRY (REC 2-1)

DRAWING PG7138-3C- SITE GEOMETRY (REC 3-1)

DRAWING PG7138-4-SITE GEOMETRY

Table 7 - Summary of Reception Points and Geometry											
2104 Roger Stevens Drive											
Point of Reception	Location	Total Leq Day (dBA)	Total Leq Night (dBA)	Roger Stevens Drive							
				Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)
REC 1-1	Western Elevation - Ground Floor	60.66	53.06	48	1.5	48.02	-29, 61	n/a	n/a	n/a	n/a
REC 2-1	Northern Elevation - Ground Floor	61.53	52.89	49	1.5	49.02	-63, 59	n/a	n/a	n/a	n/a
REC 3-1	Eastern Elevation - Ground Floor	52.20	44.61	79	1.5	79.01	-20, 0	n/a	n/a	n/a	n/a



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	AS PER CLIENT COMMENTS	18/06/2024	OM

OTTAWA SIVAN TEMPLE

NOISE STUDY
PROPOSED TEMPLE BUILDING
2104 ROGER STEVENS DRIVE

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-1
Approved by: SB	Revision No.: 1

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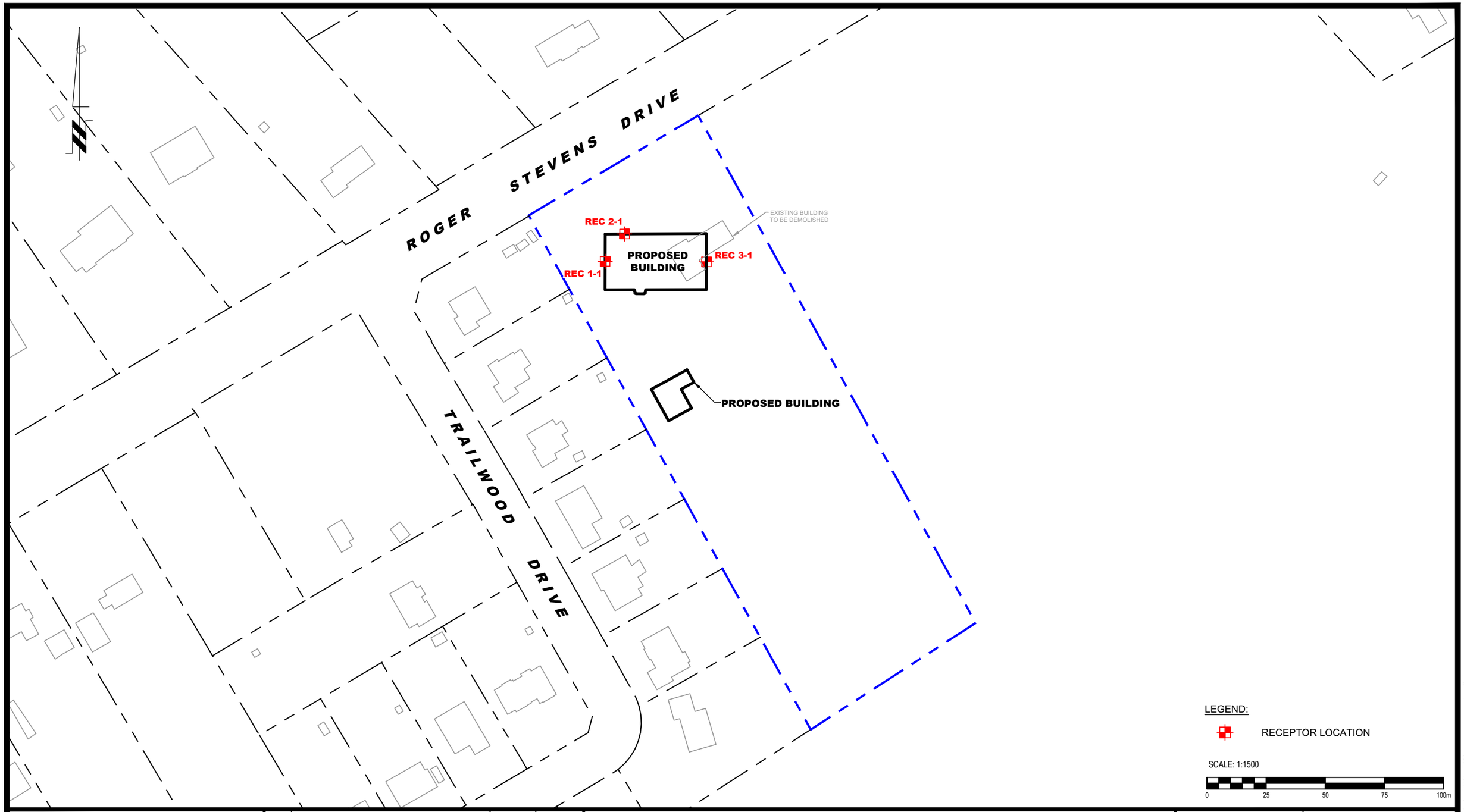

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OTTAWA, ONTARIO

Title:

RECEPTOR LOCATION PLAN

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-2
Approved by: SB	Revision No.: 1

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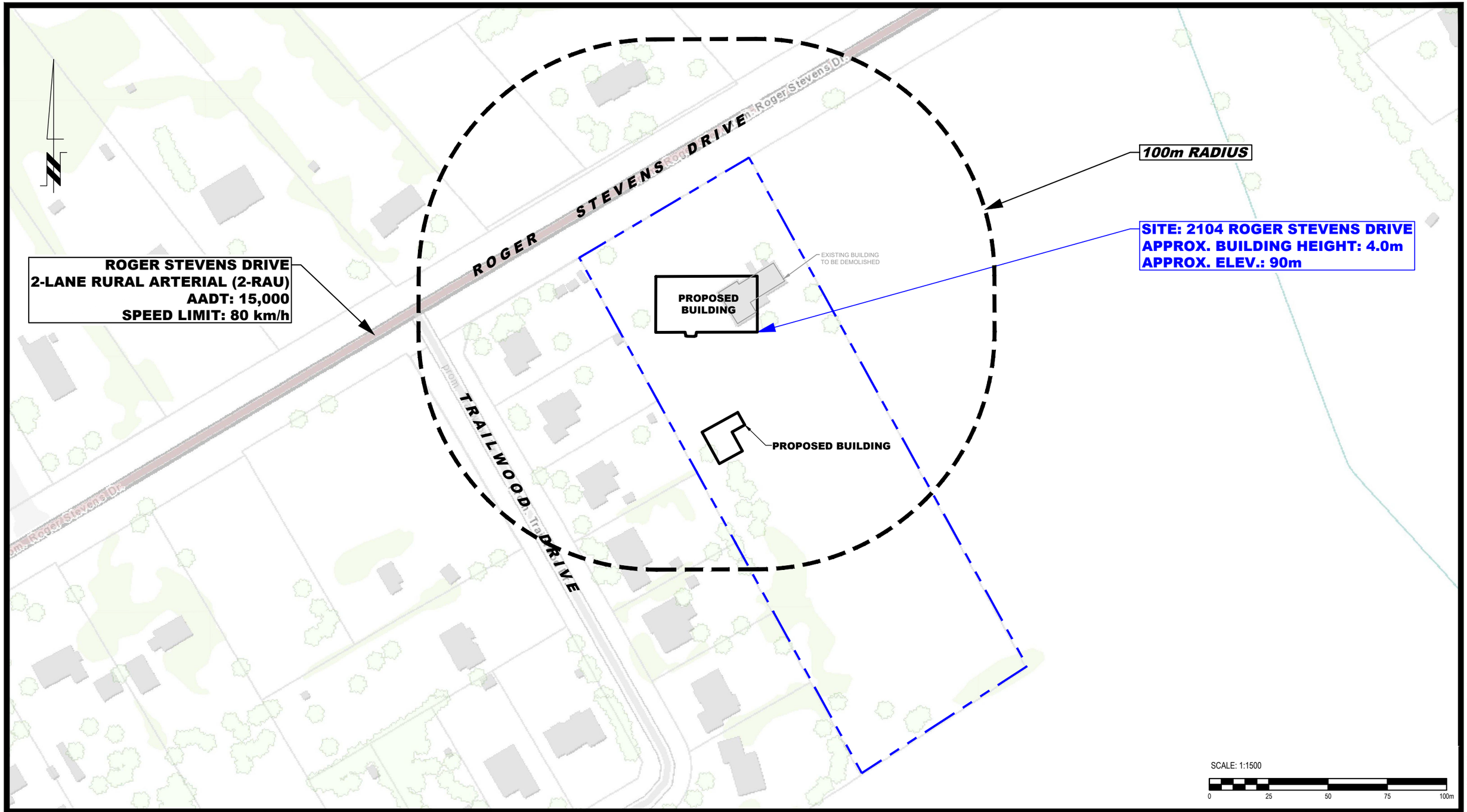

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OTTAWA SIVAN TEMPLE

NOISE STUDY
PROPOSED TEMPLE BUILDING
2104 ROGER STEVENS DRIVE

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - PROPOSED BUILDING

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-3
Approved by: SB	Revision No.: 1

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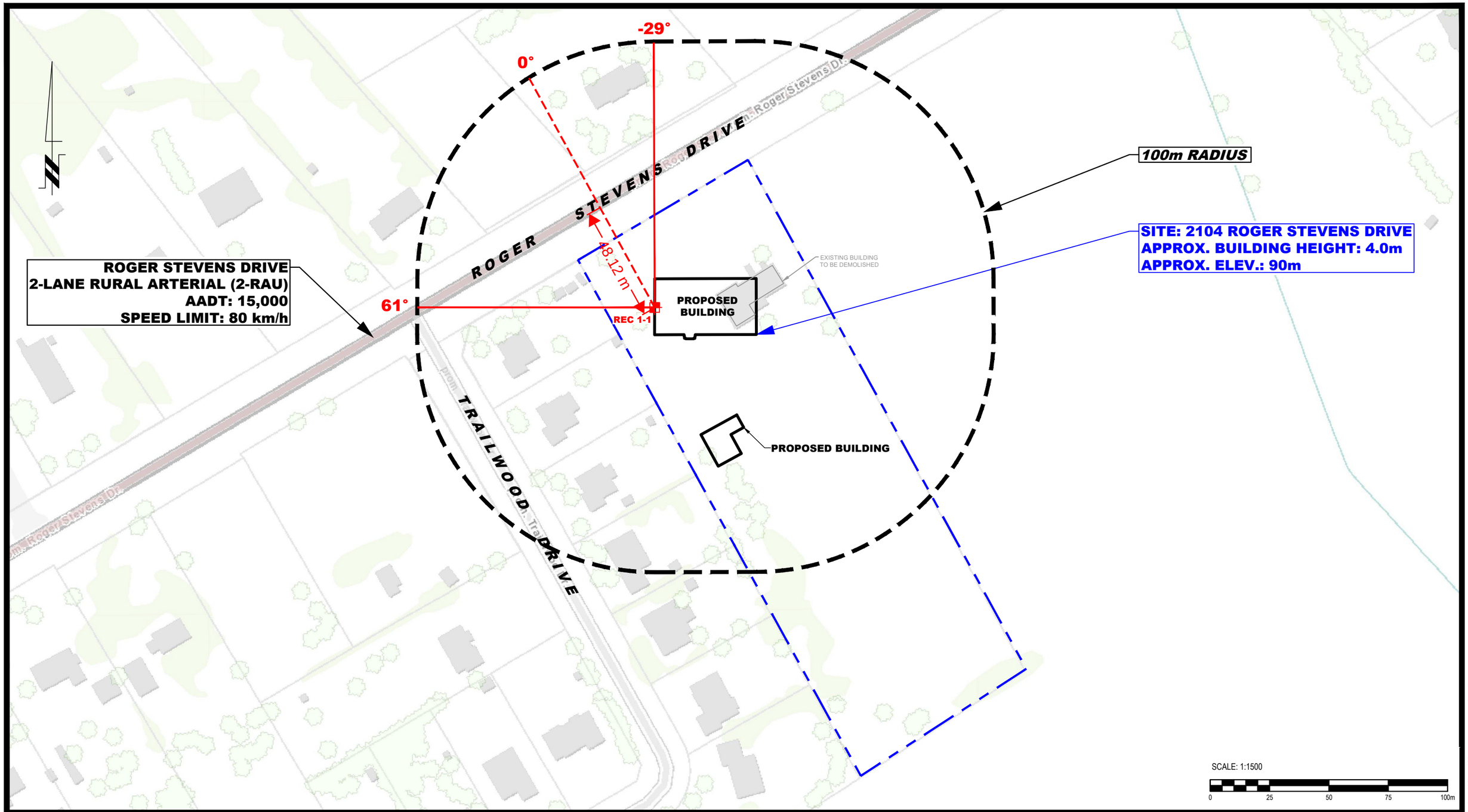

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1	AS PER CLIENT COMMENTS	18/06/2024	OM

OTTAWA SIVAN TEMPLE

NOISE STUDY
PROPOSED TEMPLE BUILDING
2104 ROGER STEVENS DRIVE

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - (REC 1-1)

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-3A
Approved by: SB	Revision No.: 1

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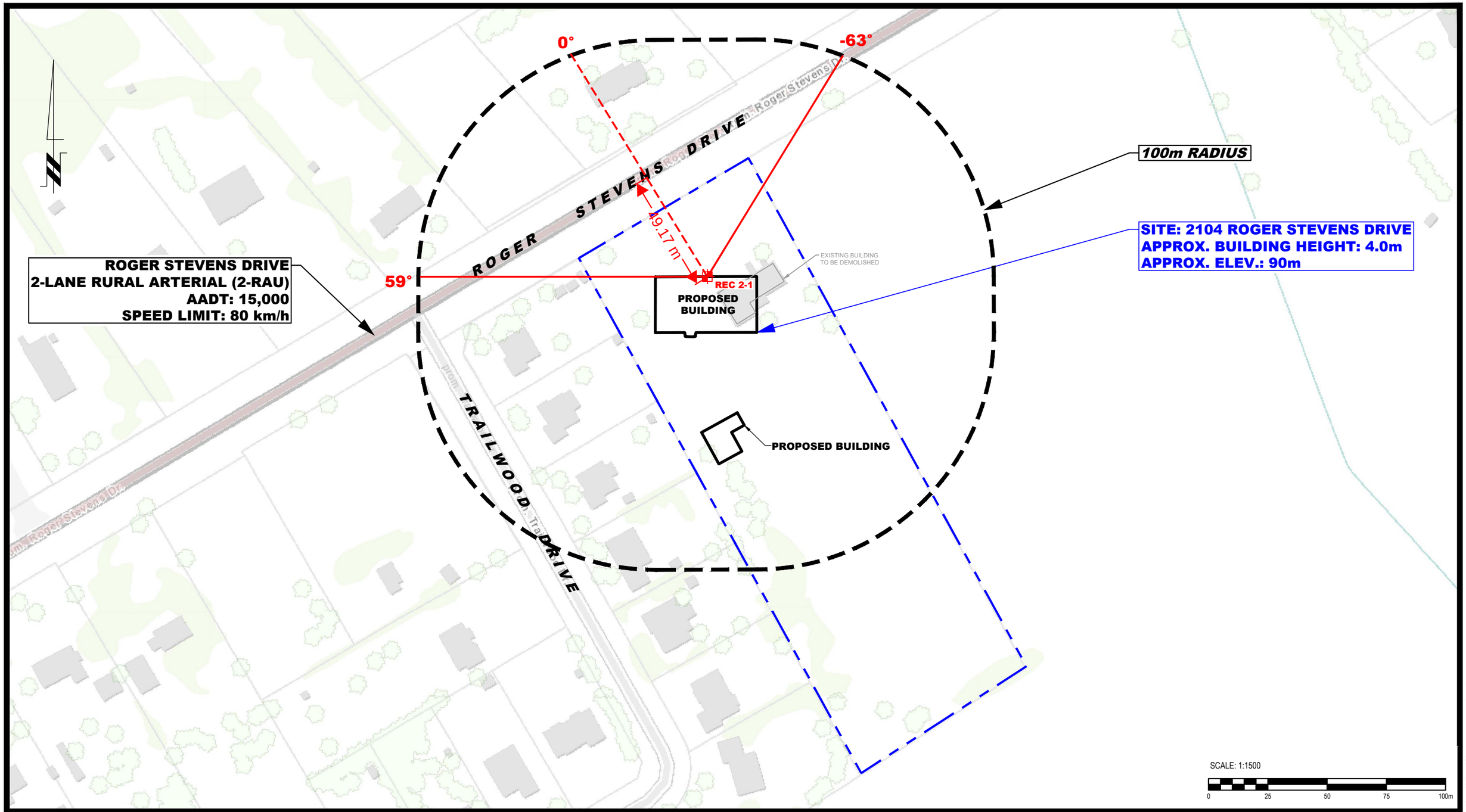

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NO.	REVISIONS	DATE	INITIAL
1	AS PER CLIENT COMMENTS	18/06/2024	OM

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NOISE STUDY
PROPOSED TEMPLE BUILDING
2104 ROGER STEVENS DRIVE

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - (REC 2-1)

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-3B
Approved by: SB	Revision No.: 1

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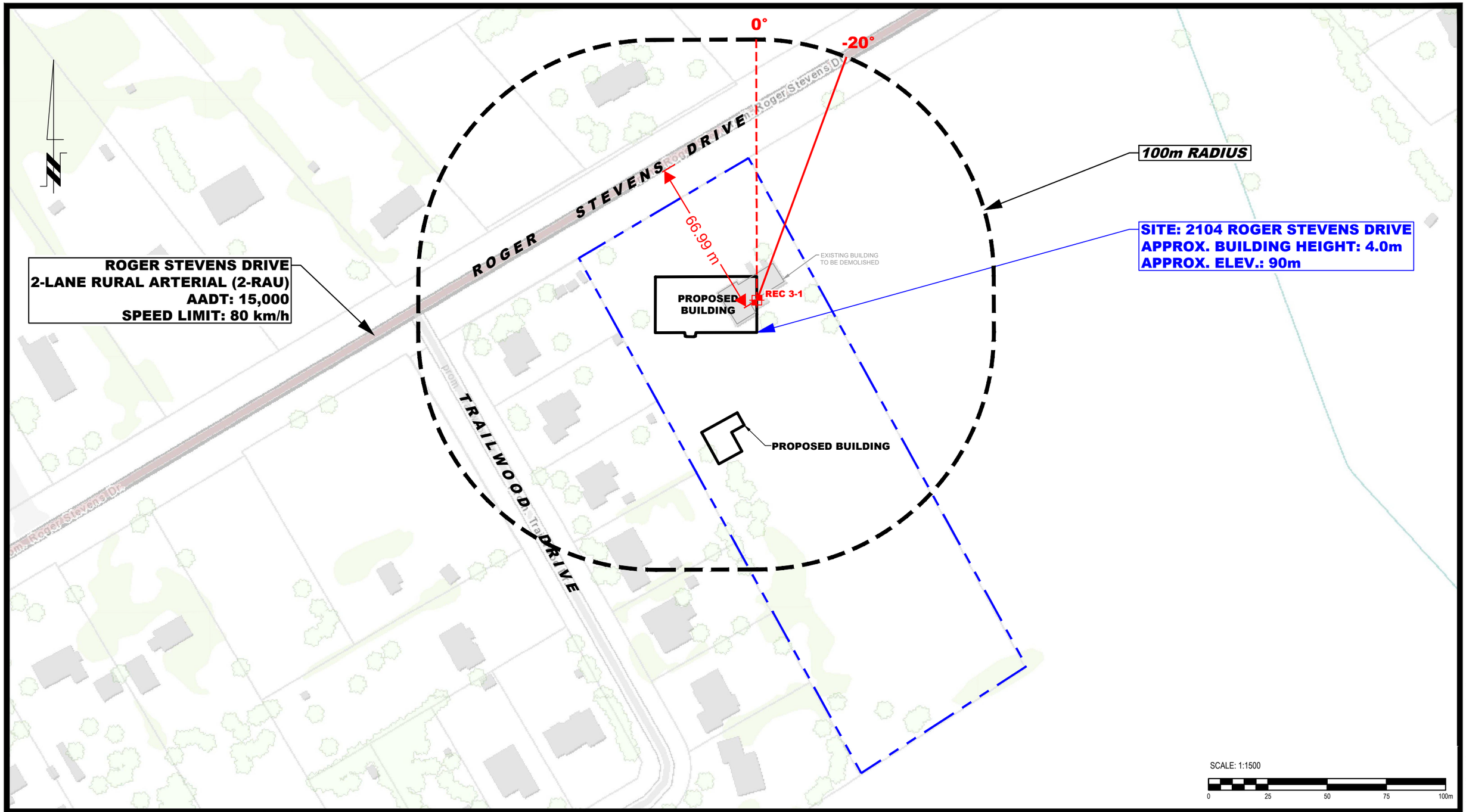

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OTTAWA SIVAN TEMPLE

NOISE STUDY
PROPOSED TEMPLE BUILDING
2104 ROGER STEVENS DRIVE

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - (REC 3-1)

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-3C
Approved by: SB	Revision No.: 1

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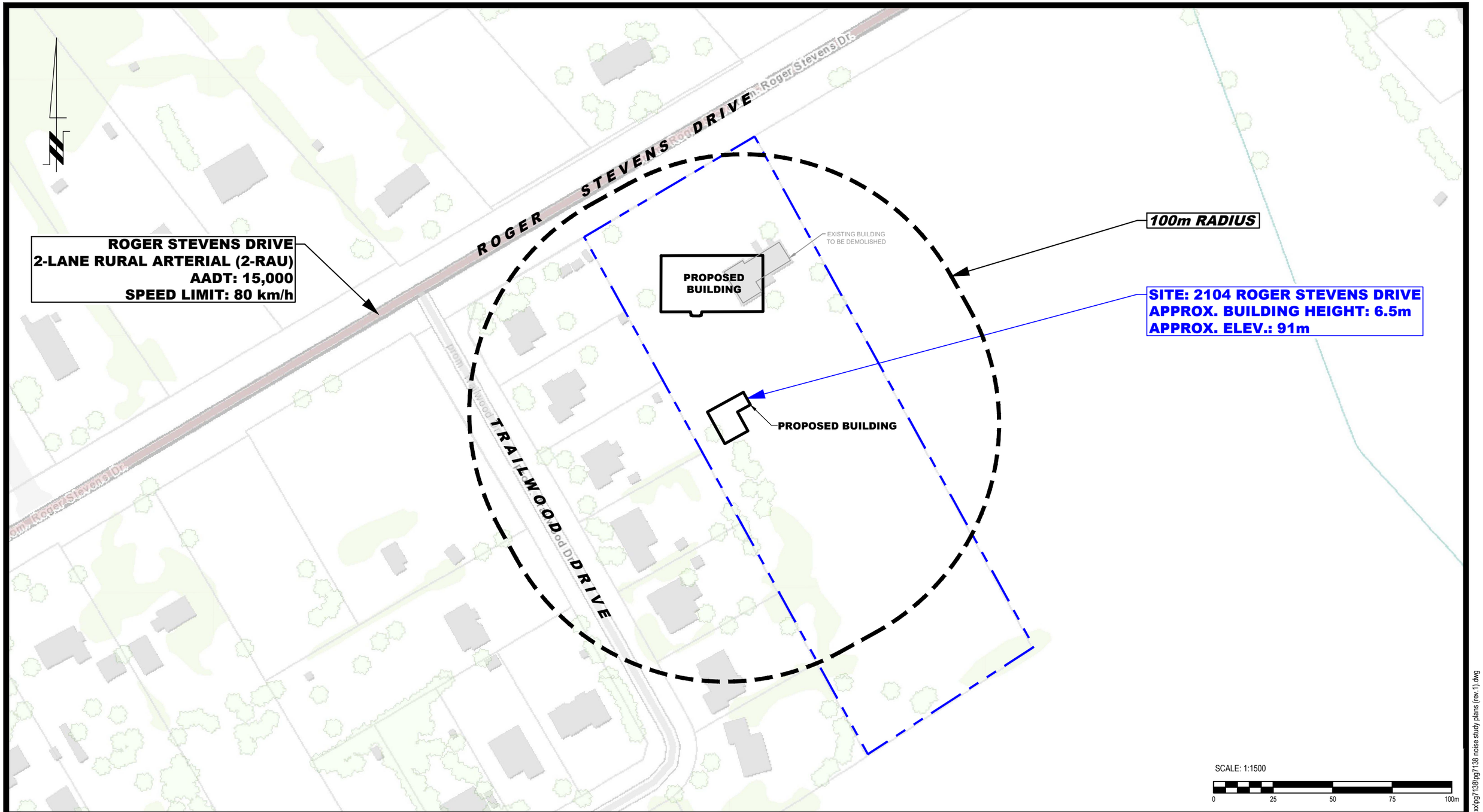

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2104 ROGER STEVENS DRIVE
OTTAWA, ONTARIO

Title:
SITE GEOMETRY - PROPOSED RESIDENTIAL DWELLING

Scale: 1:1500	Date: 06/2024
Drawn by: NFRV	Report No.: PG7138-1
Checked by: OM	Dwg. No.: PG7138-4
Approved by: SB	Revision No.:

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APPENDIX 2

STAMSON RESULTS

STAMSON 5.0 NORMAL REPORT Date: 18-06-2024 15:59:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec1.te Time Period: Day/Night 16/8 hours
Description: REC 1 - Western Elevation

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Roger Steve (day/night)

Angle1 Angle2 : -29.00 deg 61.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 48.00 / 48.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Roger Steve (day)

Source height = 1.50 m

ROAD (0.00 + 60.66 + 0.00) = 60.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-29	61	0.66	72.49	0.00	-8.39	-3.44	0.00	0.00	0.00	60.66

Segment Leq : 60.66 dBA

Total Leq All Segments: 60.66 dBA

↑
Results segment # 1: Roger Steve (night)

Source height = 1.50 m

ROAD (0.00 + 53.06 + 0.00) = 53.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-29	61	0.66	64.89	0.00	-8.39	-3.44	0.00	0.00	0.00	53.06

Segment Leq : 53.06 dBA

Total Leq All Segments: 53.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.66
(NIGHT): 53.06

STAMSON 5.0 NORMAL REPORT Date: 18-06-2024 16:39:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec2.te Time Period: Day/Night 16/8 hours
Description: REC 2 - Northern Elevation

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Roger Steve (day/night)

Angle1 Angle2 : -63.00 deg 59.00 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 : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Roger Steve (day)

Source height = 1.50 m

ROAD (0.00 + 61.53 + 0.00) = 61.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-63	59	0.66	72.49	0.00	-8.68	-2.27	0.00	0.00	0.00	61.53

Segment Leq : 61.53 dBA

Total Leq All Segments: 61.53 dBA

↟
Results segment # 1: Roger Steve (night)

Source height = 1.50 m

ROAD (0.00 + 53.94 + 0.00) = 53.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-63	59	0.66	64.89	0.00	-8.68	-2.27	0.00	0.00	0.00	53.94

Segment Leq : 53.94 dBA

Total Leq All Segments: 53.94 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 61.53
(NIGHT): 53.94
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 05-03-2025 14:23:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec3.te Time Period: Day/Night 16/8 hours
Description: REC 3-1 - Eastern Elevation

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Roger Steve (day/night)

Angle1 Angle2 : -20.00 deg 0.00 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 : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Roger Steve (day)

Source height = 1.50 m

ROAD (0.00 + 52.20 + 0.00) = 52.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	0	0.66	72.49	0.00	-10.68	-9.60	0.00	0.00	0.00	52.20

Segment Leq : 52.20 dBA

Total Leq All Segments: 52.20 dBA

↟
Results segment # 1: Roger Steve (night)

Source height = 1.50 m

ROAD (0.00 + 44.61 + 0.00) = 44.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	0	0.66	64.89	0.00	-10.68	-9.60	0.00	0.00	0.00	44.61

Segment Leq : 44.61 dBA

Total Leq All Segments: 44.61 dBA

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TOTAL Leq FROM ALL SOURCES (DAY): 52.20
(NIGHT): 44.61
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