Noise Assessment Report - 19 Robinson Avenue

Project # 160401438

Prepared for:
Figurr Architects Collective

Prepared by:
Stantec Consulting Ltd.

August 21, 2019

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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

Stantec Consulting Ltd. has been retained by Figurr Architects Collective to prepare an environmental noise assessment for the proposed 5 storey building at 19 Robinson Avenue, located in the City of Ottawa. A site plan control application is being prepared and a Noise Assessment Study is required to address City policies regarding residential development adjacent to a 400-series highway.

The purpose of this report is to:

- outline the Ministry's guidelines and criteria for noise levels and residential land use;
- apply the noise level standards of the Ontario Ministry of the Environment, Conservation and Parks NPC-300 to the site in conjunction with the City of Ottawa document "Environmental Noise Control Guidelines" dated January 2016;
- determine the extent to which noise level contours will be of concern to future residents/institutional users of the proposed development, using the computerized version (STAMSON 5.03) of the MECP's noise model;
- outline recommendations for noise attenuation, as necessary, to achieve acceptable noise levels for future residents of the proposed development.

1.2 LOCATION

The proposed development consists of 46 units and the site is located along the northern section of the Robinson Avenue, north of Hurdman Road. The proposed site is illustrated in **Figure 1**. The proposed development consists of 46 units. This report will focus on the rooms with exposure to the 417 Highway.

Surrounding land uses are as follows:

- north – existing park and residential;
- east – existing residential;
- south – existing residential;
- west – existing residential.

The main potential noise source that may impact the subject site is vehicular traffic along the Highway 417. The traffic volumes for these roadways are based on the City of Ottawa document "Environmental Noise Control Guidelines" (2016).

Additional noise sources considered for assessment in this report were the Hurdman Bus Station, the Ottawa Train Station, and the City of Ottawa municipal work yard. It was found that the Hurdman Bus Station falls outside of the required 300m distance from the proposed site set out by the City of Ottawa Environmental Noise Control Guidelines, and was not assessed in this report. The railway alignment for the Lees Train Station is within 300m from the site, however, the alignment at that point has an obstructive grade differential due to its crossing under the 417 highway (as well as obstruction by the Lees interchange crossing over the 417) and was therefore not considered as a potential noise source. Lastly, the Ottawa municipal work yard, despite falling within the required 300m distance, has an anticipated use that was not deemed to be a stationary noise concern due to lack of an existing noise ECA, and work yard development taking place after existing residential buildings in proximity to the site, implying no significant changes to anticipated noise levels beyond background urban hum (as well as being shielded by existing residences to the south).

Figure 1 – 19 Robinson Avenue Development

2.0 NOISE LEVEL CRITERIA

2.1 GUIDELINES

The Ontario Ministry of the Environment, Conservation and Parks (MECP) has produced guidelines for noise levels for use in noise assessment and land use planning. Noise level criteria for residential land use are summarized in **Table 1** below. Noise levels in excess of the guidelines presented are acceptable under certain conditions and with certain provisions.

Table 1 Noise Criteria for Residential Land Use

Location	7 a.m. - 11 p.m.	11 p.m. - 7 a.m.
Outdoor Living Areas	55 dBA	N/A
Indoor Living Areas	55 dBA at plane of living room windows	50 dBA at plane of bedroom windows

Table 2 and **Table 3** set out the required provisions to allow residential activity in locations where noise level criteria exceedances prior to mitigation are expected.

Table 2 Combination of Road and Rail Noise Day-Time Outdoor, Ventilation and Warning Clause Requirements

Location	Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Outdoor Living Area	Leq16hr less than or equal to 55 dBA	N/A	None required	Not required
	Leq16hr greater than 55 dBA to less than or equal to 60 dBA	N/A	Control measures (barriers) may not be required but should be considered	Required if resultant Leq exceeds 55 dBA **Clause GO**
	Leq16hr greater than 60 dBA	N/A	Control measures (barriers) required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant Leq exceeds 60 dBA **Clause MO**
Plane of Living Room Window	Leq16hr less than or equal to 55 dBA	None required	N/A	Not required
	Leq16hr greater than 55 dBA to less than or equal to 65 dBA	Forced air heating with provision for central air conditioning	N/A	Required **Clause GI**
	Leq16hr greater than 65 dBA	Central air conditioning	N/A	Required **Clause MI**

(Source: Ministry of the Environment Conservation and Parks, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

Table 3 Combination of Road and Rail Noise, Night-Time Ventilation and Warning Clause Requirements

Location	Leq (8 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Plane of Bedroom Window	Leq8hr greater than 50 dBA to less or equal to 60 dBA	Forced air heating with provision for central air conditioning	N/A	Required **Clause GI**
	Leq8hr greater than 60 dBA	Central air conditioning	N/A	Required **Clause MI**

(Source: Ministry of the Environment Conservation and Parks, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

The MECP also specifies building component requirements when indoor noise levels exceed the criteria by certain levels. These requirements are summarized in **Table 4**.

Table 4 Road and Rail Noise – Building Component Requirements

Location		Leq (16 hr) (dBA)	Building Component Requirements
Plane of Living Room Window – Daytime	Road	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
		Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
Plane of Bedroom Window - Nighttime	Road	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 55 dBA	Building compliant with the Ontario Building Code
		Greater than 55 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

(Source: Ministry of the Environment Conservation and Parks, Environmental Noise Guideline - Stationary and Transportation Sources- Approval and Planning - Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

3.0 OBSERVATIONS AND CALCULATIONS

3.1 NOISE LEVEL PREDICTIONS

Noise predictions in this report were completed using the computerized version (STAMSON 5.03) of the MECP noise model ORNAMENT to calculate noise levels from various sources. The program accepts variables related to noise sources and receivers, road traffic volumes, and the nature and extent of noise mitigation features, if required.

3.2 ROAD TRAFFIC VOLUMES

Traffic volume data for Highway 417 was provided by the City of Ottawa document "Environmental Noise Control Guidelines" dated January 2016. The document indicates that the average annual daily traffic volume for Highway 417 will be 18,333 vehicles per lane per day for a 4-lane eastbound and 4-lane westbound highway. Additional information regarding applicable assumptions and ratios for day/night traffic and car/ truck traffic is summarized as follows:

- heavy truck traffic for this segment is estimated to be 5% of total traffic volume;
- medium truck traffic for this segment is estimated to be 7% of total traffic volume; the rest is assumed to be car traffic;
- daytime (7 am – 11 pm) traffic is assumed to be 92%, with the remaining 8% at night (11 pm – 7 am); and
- the speed limit for Highway 417 is 100 km/hr

Table 5 and **Table 6** summarizes the traffic volumes used for calculations in this report.

Table 5 Traffic Volumes, 4-Lane Eastbound Highway

	Day	Night	Total
Car	59,370	5,163	64,532
Medium Truck	4,723	411	5,133
Heavy Truck	3,373	293	3,667
TOTAL	67,465	5,867	73,332
Speed Limit	100 km/h		
Gradient	1%		
Surface	Asphalt		

Table 6 Traffic Volumes, 4-Lane Westbound Highway

	Day	Night	Total
Car	59,370	5,163	64,532
Medium Truck	4,723	411	5,133
Heavy Truck	3,373	293	3,667
TOTAL	67,465	5,867	73,332
Speed Limit	100 km/h		
Gradient	1%		
Surface	Asphalt		

3.3 PROJECTED NOISE LEVELS

Using the MECP noise model ORNAMENT, noise levels were calculated for daytime and nighttime conditions at the point representing the anticipated building location based on the site plan prepared by Figurr Architects Collective. The resulting receiver sites are illustrated in **Figure 2** and **Figure 3**.

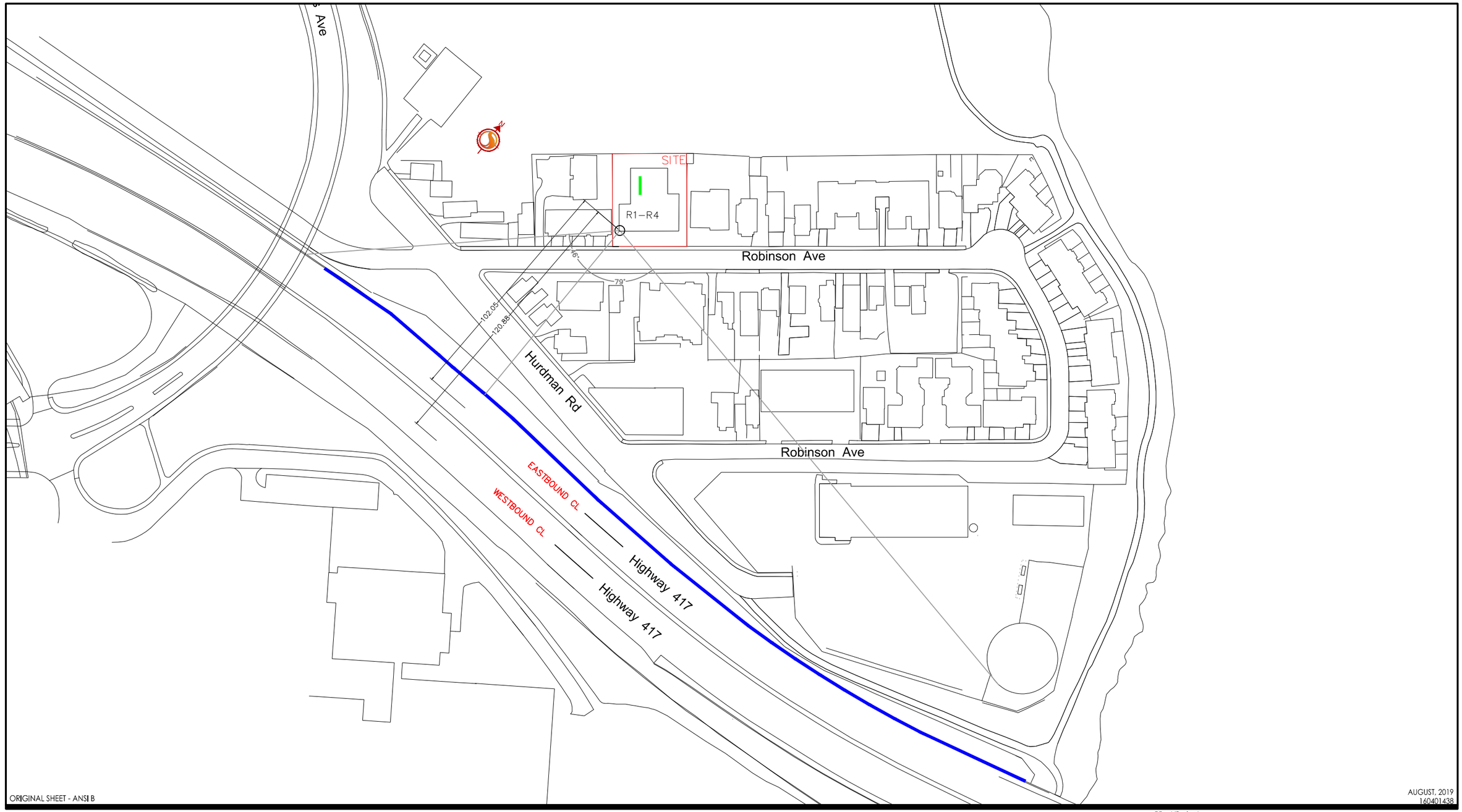
The receiver heights for indoor, daytime, and nighttime noise level calculations for the proposed buildings were assessed at the mid-height of each floor. Building elevation drawings are provided in **Appendix B** as well as the floor plans indicating the receiver locations.

Upon assessing the developments noise exposure to the Highway 417 it was found that the embankment conceals the development from noise west of the Robinson Avenue overpass, and the Hurdman Yard garage and the greenspace along the Rideau River shield the development east of the river. Moreover, adjacent rows of housing were considered to affect the indoor noise levels of the building as well as the outdoor ground floor amenity area. However, such impacts were adjusted for the receiver on the third to fifth floors of the building based on the varying heights of the adjacent row of housing. The difference in the noise levels at each floor height is reflected in **Table 7**.

The unattenuated receiver noise levels have been summarized in **Table 7**, and noise level calculations are provided in **Appendix A** for sound levels at daytime and nighttime building face.

Table 7 Summary of Projected Unattenuated Noise Levels

Receiver Site	Location	Elevation (m)	Daytime-Building Face (dBA)	Nighttime-Building Face (dBA)	Outdoor Amenity Area (dBA)
R1	South Building Face – 1st Floor	1.7	62.5	54.9	-
R2	South Building Face - 2nd Floor	4.7	63.6	56.0	-
R3	South Building Face - 3rd Floor	7.5	65.1	56.2	-
R4	South Building Face – 4th Floor	10.3	66.2	57.7	-
R5	South Building Face – 5th Floor	13.1	67.0	58.0	
ROUT	Outdoor Amenity Area	1.5	-	-	53.9
RROOF	Rooftop Amenity Area	16.0	-	-	61.8



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Stantec
Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613-724-4420
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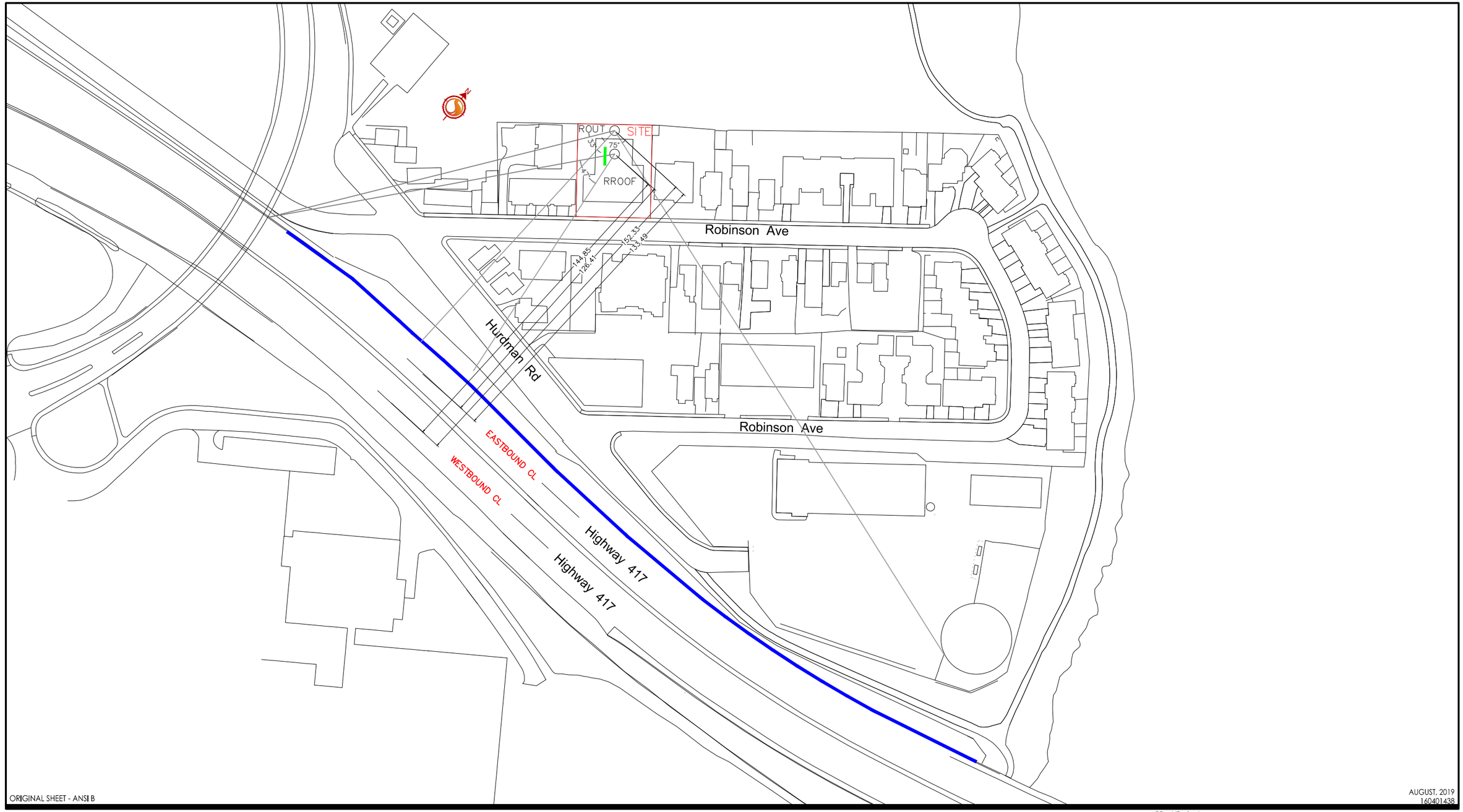
— EXISTING NOISE WALL–5m

Client/Project
ROBINSON VILLAGE I LIMITED PARTNERSHIP
19 ROBINSON AVENUE
NOISE ASSESSMENT REPORT

Figure No.
2.0

Title
INDOOR RECEIVERS
PLAN VIEW



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ORIGINAL SHEET - ANSI B

AUGUST, 2019
160401438

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Tel. 613-724-4420
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EXISTING NOISE WALL–5m

PROPOSED NOISE WALL–2m

Client/Project
ROBINSON VILLAGE I LIMITED PARTNERSHIP
19 ROBINSON AVENUE
NOISE ASSESSMENT REPORT

Figure No.
3.0

Title
OUTDOOR RECEIVER
PLAN VIEW

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 OUTDOOR NOISE IMPACTS

Predicted noise levels lie within City of Ottawa and MECP criteria at the outdoor living area for potential units with exposure to the Highway 417.

The predicted noise level for the outdoor ground floor amenity area located at the rear of the proposed building is 53.9 dBA. This falls within the accepted City of Ottawa and MECP criteria noise level standards and therefore there are no additional measures required for outdoor noise mitigation.

A sensitivity analysis was conducted for the rooftop amenity area with the intent to reduce the resulting noise levels to below the 55 dBA threshold via noise walls with a minimum surface density of 20kg/m². The rooftop terrace would require noise barriers with heights above 2.5m to attenuate noise levels in the OLA to 55dBA, and reduction of noise levels to 60 dBA is achievable at the 2.0m maximum wall height. Due to limitations in the STAMSON software which only allows one barrier to be modeled, the existing 5.0m noise barrier along Highway 417 was not included in this model scenario.

Three noise wall heights surrounding the terrace were modeled to compare the anticipated attenuated noise level. A summary of the attenuated noise generated can be found in Table 8. A noise barrier of 2.0 m is proposed to mitigate the outdoor noise levels on the rooftop and to provide a minimum noise reduction below 60 dBA.

Table 8 Summary of Projected Attenuated Outdoor Living Area Noise Levels

Receiver	Unattenuated Noise Level (dBA)	Noise Wall Height (m)	Attenuated Noise Level (dBA)	Δ Noise Level (dBA)
RROOF 1.5	**61.78**	1.50	**61.64**	0.14
RROOF 1.8	**61.78**	2.00	**59.54**	2.24
RROOF 2.5	**61.78**	2.50	**57.54**	4.24

4.2 INDOOR NOISE IMPACTS

Predicted noise levels are above City of Ottawa and MECP criteria at the daytime building face and the nighttime building face for the proposed units with exposure to Highway 417.

The following summarizes the measures required by the City of Ottawa and MECP criteria for the development to occur within accepted standards:

- Based on the predicted noise levels proposed units within 19 Robinson Avenue the first floor and second floor fall under the noise warning clause Generic Indoor Noise Mitigation (GI) that requires the provision for a central air conditioning system to be installed.

- On all offers of purchase for units with noise warning clause GI, the following information is required to be disclosed:

    - "Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment Conservation and Parks."

- Based on the predicted noise levels proposed units within 19 Robinson Avenue the third to fifth floor fall under the noise warning clause Extensive Indoor Noise Mitigation (MI). These units require the installation of a central air conditioning system to be installed and attenuation features as a part of the building construction that should reduce the noise levels to accepted standards, see Table 9.

- On all offers of purchase for units with noise warning clause MI, the following information is required to be disclosed:

    - "This dwelling unit has been supplied with a forced central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment Conservation and Parks."

Noise warning clauses are provided in **Appendix C**.

4.3 INDOOR NOISE MITIGATION – AIF METHOD

The following building components will apply based on the Acoustical Insulation Factor (AIF) method, as per "Environmental Noise Assessment in Land Use Planning Manual", 1999. The AIF value and minimum building component were based off the preliminary unit floor plans. The calculated noise levels requiring mitigation were based on the fifth floor which is considered to be the worst case condition with noise levels of 67.0 dBA at the west side of the building during the daytime and 58.0 dBA during the nighttime. These noise levels were used to determine the typical building components required for the building façade.

Table 9 summarizes the AIF values and minimum building components and **Appendix B** provides the floor plans and sample calculations.

Table 9 AIF Summary

Floor	Room	Wall	AIF Value	Type of Window Glazing	Type of Exterior Wall	Type of Door
3rd to 5th Floor	Unit 305,405, and 505 Bedroom 1	1	27	2 (18) 2	EW1	-
	Units 302-304, 402-404, and 502-504	1	27	2 (6) 2	EW1	-
	Unit 301,401,and 501	1	30	2 (22) 2	EW1	-
		2	30	2 (6) 2	EW1	-
	Unit 301,401, and 501 Bedroom	2	27	2 (13) 2	EW1	-
	Unit 310,410,and 510	2	27	2 (6) 2	EW1	-
	Unit 310,410, and 510 Bedroom	2	27	2 (6) 2	EW1	-
	Unit 309, 409, and 509	2	24	-	EW1	-
	Unit 309,409, and 509 Bedroom 1	2	27	2 (6) 2	EW1	-

As the noise levels exceed the MECP Criteria, building components including walls and windows are to be designed so the indoor sound levels comply with MECP noise criteria by using EW1 as illustrated above. In this situation, double glazed windows with 2mm and 3mm thickness and various spacing outlined above would be required. The building windows with an equivalent AIF may be substituted for the recommended thickness, glazing and spacing. E.g. a double glazed 3mm pane with 6mm spacing may be substituted for double glazed 2mm panes with 15mm spacing.

EW1 construction consists of:

- 12.7 mm gypsum board, vapour barrier, and 38x89 studs with 50 mm mineral wool or glass fibre batts in inner stud cavities. As well as sheathing and wood siding or metal siding and fibre backer board.

Should the actual floor plans differ from the plans shown in **Appendix B**, updated calculations must be performed prior to the issuance of building permits.

The inclusion of these measures will allow the residential development to proceed in accordance with MECP criteria with respect to environmental noise.

Respectfully submitted by:

Cameron Odam
Engineering Intern

Dustin Thiffault, P.Eng.,
Project Engineer

Appendix A NOISE LEVEL CALCULATIONS

Appendix A Noise Level Calculations
August 21, 2019

A.1 INDOOR RECEIVER STAMSON REPORTS

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 13:36:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description: R1 - INDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 102.05 / 102.05 m
Receiver height : 1.66 / 1.66 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.88 / 120.88 m
Receiver height : 1.66 / 1.66 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	1.66	1.80	61.80

ROAD (0.00 + 57.91 + 0.00) = 57.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	-9.05	0.00	62.44
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	0.00	-13.58	57.91

Segment Leq : 57.91 dBA

Results segment # 2: West 417 (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	1.66	1.94	61.94

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
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	-8.90	0.00	61.85
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	0.00	-10.09	60.66

Segment Leq : 60.66 dBA

Total Leq All Segments: 62.51 dBA

Results segment # 1: East 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.66	1.80	61.80

ROAD (0.00 + 50.31 + 0.00) = 50.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	-9.05	0.00	54.84
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	0.00	-13.58	50.31

Segment Leq : 50.31 dBA

Results segment # 2: West 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	1.66	1.94	61.94

ROAD (0.00 + 53.07 + 0.00) = 53.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	-8.90	0.00	54.26
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	0.00	-10.09	53.07

Segment Leq : 53.07 dBA

Total Leq All Segments: 54.92 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 62.51
(NIGHT): 54.92

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 13:41:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te Time Period: Day/Night 16/8 hours
Description: R2 - INDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 102.05 / 102.05 m
Receiver height : 4.72 / 4.72 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 2 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.88 / 120.88 m
Receiver height : 4.72 / 4.72 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	4.72	2.09	62.09

ROAD (0.00 + 58.69 + 0.00) = 58.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	-9.05	0.00	62.44
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	0.00	-12.80	58.69

Segment Leq : 58.69 dBA

Results segment # 2: West 417 (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	4.72	2.67	62.67

ROAD (0.00 + 61.85 + 0.00) = 61.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	-8.90	0.00	61.85
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	0.00	-8.53	62.22

Segment Leq : 61.85 dBA

Total Leq All Segments: 63.56 dBA

Results segment # 1: East 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.72	2.09	62.09

ROAD (0.00 + 51.09 + 0.00) = 51.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	-9.05	0.00	54.84
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	0.00	-12.80	51.09

Segment Leq : 51.09 dBA

Results segment # 2: West 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	4.72	2.67	62.67

ROAD (0.00 + 54.26 + 0.00) = 54.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	-8.90	0.00	54.26
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	0.00	-8.53	54.62

Segment Leq : 54.26 dBA

Total Leq All Segments: 55.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.56
(NIGHT): 55.97

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 13:52:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te Time Period: Day/Night 16/8 hours
Description: R3 - INDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 102.05 / 102.05 m
Receiver height : 7.51 / 7.51 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 90 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.88 / 120.88 m
Receiver height : 7.51 / 7.51 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	7.51	2.36	62.36

ROAD (0.00 + 59.45 + 0.00) = 59.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	0.00	-12.04	59.45

Segment Leq : 59.45 dBA

Results segment # 2: West 417 (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	7.51	3.33	63.33

ROAD (0.00 + 63.65 + 0.00) = 63.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	0.00	-7.10	63.65

Segment Leq : 63.65 dBA

Total Leq All Segments: 65.05 dBA

Results segment # 1: East 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	7.51	2.36	62.36

ROAD (0.00 + 51.85 + 0.00) = 51.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	-9.05	0.00	54.84
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	0.00	-12.04	51.85

Segment Leq : 51.85 dBA

Results segment # 2: West 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	7.51	3.33	63.33

ROAD (0.00 + 54.26 + 0.00) = 54.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	-8.90	0.00	54.26
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	0.00	-7.10	56.05

Segment Leq : 54.26 dBA
Total Leq All Segments: 56.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.05
(NIGHT): 56.23

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 13:54:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te Time Period: Day/Night 16/8 hours
Description: R4 - INDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 80 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 102.05 / 102.05 m
Receiver height : 10.31 / 10.31 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 80 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.88 / 120.88 m
Receiver height : 10.31 / 10.31 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	10.31	2.64	62.64

ROAD (0.00 + 60.26 + 0.00) = 60.26 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	0.00	-11.22	60.26

Segment Leq : 60.26 dBA

Results segment # 2: West 417 (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	10.31	4.00	64.00

ROAD (0.00 + 64.89 + 0.00) = 64.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	0.00	-5.86	64.89

Segment Leq : 64.89 dBA

Total Leq All Segments: 66.18 dBA

Results segment # 1: East 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	10.31	2.64	62.64

ROAD (0.00 + 52.66 + 0.00) = 52.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	-7.19	0.00	56.70
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	0.00	-11.22	52.66

Segment Leq : 52.66 dBA

Results segment # 2: West 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	10.31	4.00	64.00

ROAD (0.00 + 56.06 + 0.00) = 56.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	-7.10	0.00	56.06
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	0.00	-5.86	57.29

Segment Leq : 56.06 dBA

Total Leq All Segments: 57.69 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 66.18
(NIGHT): 57.69

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 13:56:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te Time Period: Day/Night 16/8 hours
Description: R5 - INDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 80 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 102.05 / 102.05 m
Receiver height : 13.10 / 13.10 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -46.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 80 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 120.88 / 120.88 m
Receiver height : 13.10 / 13.10 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -46.00 deg Angle2 : 79.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 92.15 / 92.15 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	13.10	2.91	62.91

ROAD (0.00 + 61.12 + 0.00) = 61.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-8.33	-1.58	0.00	0.00	-10.37	61.12

Segment Leq : 61.12 dBA

Results segment # 2: West 417 (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	13.10	4.66	64.66

ROAD (0.00 + 65.65 + 0.00) = 65.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	81.40	0.00	-9.06	-1.58	0.00	0.00	-5.10	65.65

Segment Leq : 65.65 dBA

Total Leq All Segments: 66.96 dBA

Results segment # 1: East 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	13.10	2.91	62.91

ROAD (0.00 + 53.52 + 0.00) = 53.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	-7.19	0.00	56.70
-46	79	0.00	73.80	0.00	-8.33	-1.58	0.00	0.00	-10.37	53.52

Segment Leq : 53.52 dBA

Results segment # 2: West 417 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.49	13.10	4.66	64.66

ROAD (0.00 + 56.06 + 0.00) = 56.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	-7.10	0.00	56.06
-46	79	0.00	73.80	0.00	-9.06	-1.58	0.00	0.00	-5.10	58.05

Segment Leq : 56.06 dBA

Total Leq All Segments: 57.98 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 66.96
(NIGHT): 57.98

A.2 OUTDOOR RECEIVER STAMSON REPORT

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 14:48:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ro1.te Time Period: Day/Night 16/8 hours
Description: R1OUT - OUTDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -33.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 3 / 2
House density : 95 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 133.49 / 133.49 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -33.00 deg Angle2 : 75.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 123.90 / 123.90 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -33.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 3 / 2
House density : 95 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 152.33 / 152.33 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -33.00 deg Angle2 : 75.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 123.90 / 123.90 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

```
Results segment # 1: East 417 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.76 !        61.76

ROAD (0.00 + 51.23 + 0.00) = 51.23 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -33     75   0.66  81.40   0.00 -15.76  -2.89   0.00 -11.51   0.00
51.23
   -33     75   0.36  81.40   0.00 -12.91  -2.61   0.00   0.00 -13.90
51.98
-------------------------------------------------------------------------
---

Segment Leq : 51.23 dBA

Results segment # 2: West 417 (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
-----------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.86 !        61.86

ROAD (0.00 + 50.41 + 0.00) = 50.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
---
   -33     75   0.66  81.40   0.00 -16.71  -2.89   0.00 -11.38   0.00
50.41
   -33     75   0.36  81.40   0.00 -13.69  -2.61   0.00   0.00 -10.22
54.88
-------------------------------------------------------------------------
---

Segment Leq : 50.41 dBA

Total Leq All Segments: 53.85 dBA
TOTAL Leq FROM ALL SOURCES (DAY): 53.85
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-08-2019 14:27:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rroof.te             Time Period: Day/Night 16/8 hours
Description: RROOF - OUTDOOR


Road data, segment # 1: East 417 (day/night)
-------------------------------------------
Car traffic volume  : 59370/5163  veh/TimePeriod  *
Medium truck volume :  4723/411   veh/TimePeriod  *
Heavy truck volume  :  3373/293   veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     1 %
Road pavement       :     1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)
-----------------------------------------
Angle1   Angle2           : -37.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 2
House density             :     70 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 126.41 / 126.41 m
Receiver height           :  16.00 / 16.00  m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -37.00 deg   Angle2 : 10.00 deg
Barrier height            :   5.00 m
Barrier receiver distance : 116.02 / 116.02 m
Source elevation          :  60.20 m
Receiver elevation        :  61.08 m
Barrier elevation         :  60.00 m
Reference angle           :   0.00
```

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 144.85 / 144.85 m
Receiver height : 16.00 / 16.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 5.00 m
Barrier receiver distance : 116.02 / 116.02 m
Source elevation : 60.20 m
Receiver elevation : 61.08 m
Barrier elevation : 60.00 m
Reference angle : 0.00

Results segment # 1: East 417 (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	16.00	2.96	62.96

ROAD (0.00 + 55.38 + 0.00) = 55.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.26	-5.83	0.00	0.00	-10.93	55.38

Segment Leq : 55.38 dBA

Results segment # 2: West 417 (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	16.00	4.76	64.76

ROAD (0.00 + 60.65 + 0.00) = 60.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.85	-5.83	0.00	0.00	-5.06	60.65

Segment Leq : 60.65 dBA

Total Leq All Segments: 61.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.78

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 14:31:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rroof15.te Time Period: Day/Night 16/8 hours
Description: RROOF 1.5M - OUTDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 126.41 / 126.41 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 1.50 m
Elevation : 14.50 m
Barrier receiver distance : 8.50 / 8.50 m
Source elevation : 60.20 m
Receiver elevation : 75.58 m
Barrier elevation : 75.58 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 144.85 / 144.85 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 1.50 m
Elevation : 14.50 m
Barrier receiver distance : 8.50 / 8.50 m
Source elevation : 60.20 m
Receiver elevation : 75.58 m
Barrier elevation : 75.58 m
Reference angle : 0.00

Results segment # 1: East 417 (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	0.47	76.05

ROAD (0.00 + 58.65 + 0.00) = 58.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.26	-5.83	0.00	0.00	-7.66	58.65

Segment Leq : 58.65 dBA

Results segment # 2: West 417 (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	0.60	76.18

ROAD (0.00 + 58.60 + 0.00) = 58.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.85	-5.83	0.00	0.00	-7.11	58.60

Segment Leq : 58.60 dBA

Total Leq All Segments: 61.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.64

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 14:30:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rroof20.te Time Period: Day/Night 16/8 hours
Description: RROOF 2.0M - OUTDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume	: 59370/5163	veh/TimePeriod *
Medium truck volume	: 4723/411	veh/TimePeriod *
Heavy truck volume	: 3373/293	veh/TimePeriod *
Posted speed limit	: 100	km/h
Road gradient	: 1	%
Road pavement	: 1	(Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2	: -37.00 deg	10.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 2	
House density	: 70	%
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 126.41 / 126.41	m
Receiver height	: 1.50 / 2.00	m
Topography	: 4	(Elevated; with barrier)
Barrier angle1	: -37.00 deg	Angle2 : 10.00 deg
Barrier height	: 2.00	m
Elevation	: 14.50	m
Barrier receiver distance	: 8.50 / 8.50	m
Source elevation	: 60.20	m
Receiver elevation	: 75.58	m
Barrier elevation	: 75.58	m
Reference angle	: 0.00	

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 144.85 / 144.85 m
Receiver height : 1.50 / 2.00 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 2.00 m
Elevation : 14.50 m
Barrier receiver distance : 8.50 / 8.50 m
Source elevation : 60.20 m
Receiver elevation : 75.58 m
Barrier elevation : 75.58 m
Reference angle : 0.00

Results segment # 1: East 417 (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	0.47	76.05

ROAD (0.00 + 56.54 + 0.00) = 56.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.26	-5.83	0.00	0.00	-9.77	56.54

Segment Leq : 56.54 dBA

Results segment # 2: West 417 (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	0.60	76.18

ROAD (0.00 + 56.52 + 0.00) = 56.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.85	-5.83	0.00	0.00	-9.19	56.52

Segment Leq : 56.52 dBA

Total Leq All Segments: 59.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.54

STAMSON 5.0 NORMAL REPORT Date: 20-08-2019 14:34:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rroof25.te Time Period: Day/Night 16/8 hours
Description: RROOF 2.5M - OUTDOOR

Road data, segment # 1: East 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: East 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 126.41 / 126.41 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 2.50 m
Elevation : 14.50 m
Barrier receiver distance : 8.50 / 8.50 m
Source elevation : 60.20 m
Receiver elevation : 75.58 m
Barrier elevation : 75.58 m
Reference angle : 0.00

Road data, segment # 2: West 417 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: West 417 (day/night)

Angle1 Angle2 : -37.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 2
House density : 70 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 144.85 / 144.85 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 10.00 deg
Barrier height : 2.50 m
Elevation : 14.50 m
Barrier receiver distance : 8.50 / 8.50 m
Source elevation : 60.20 m
Receiver elevation : 75.58 m
Barrier elevation : 75.58 m
Reference angle : 0.00

Results segment # 1: East 417 (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	0.47	76.05

ROAD (0.00 + 54.56 + 0.00) = 54.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.26	-5.83	0.00	0.00	-11.75	54.56

Segment Leq : 54.56 dBA

Results segment # 2: West 417 (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	0.60	76.18

ROAD (0.00 + 54.49 + 0.00) = 54.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-37	10	0.00	81.40	0.00	-9.85	-5.83	0.00	0.00	-11.23	54.49

Segment Leq : 54.49 dBA

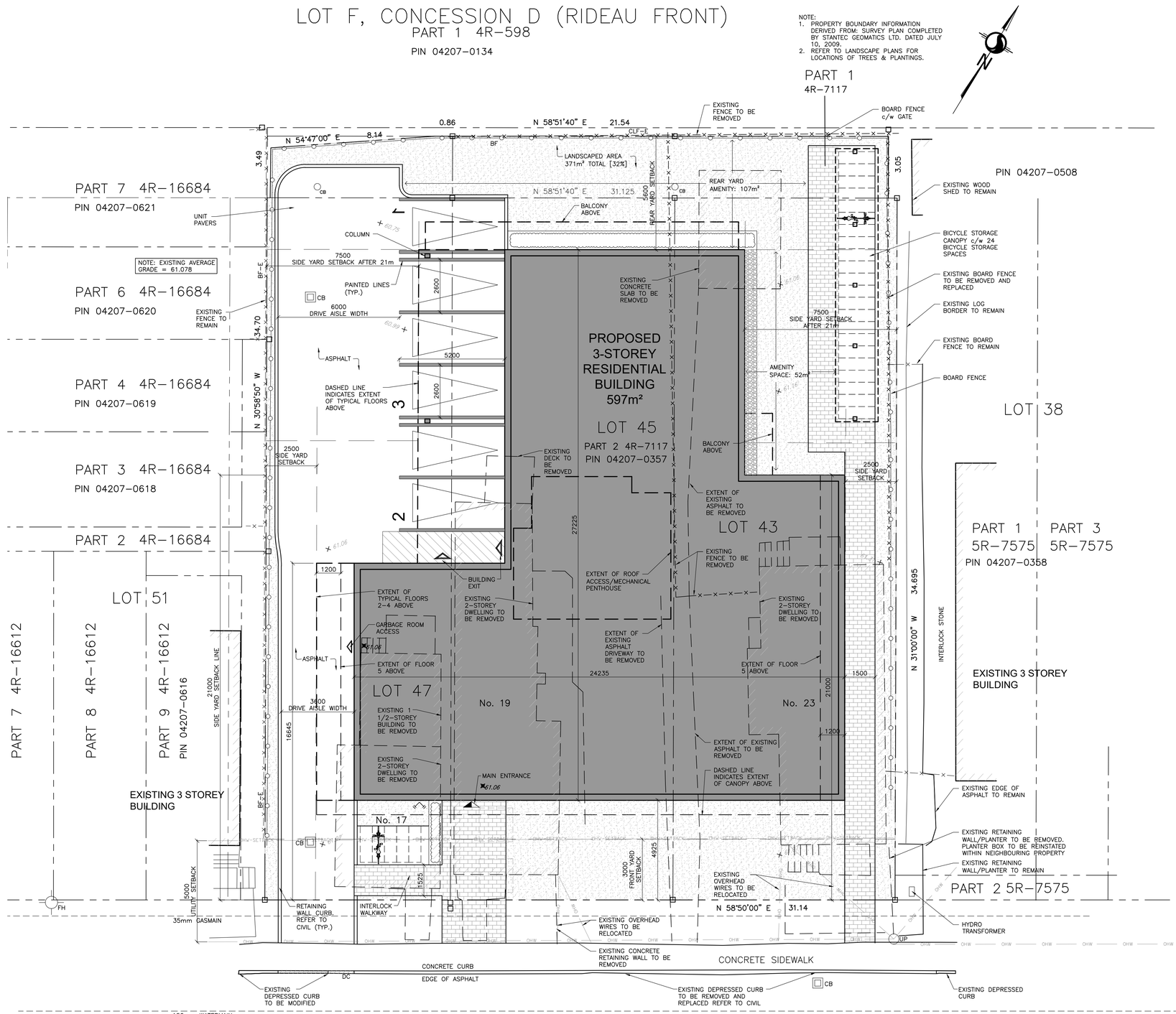
Total Leq All Segments: 57.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.54

Appendix B FLOOR PLANS AND AIF CALCULATIONS

LOT F, CONCESSION D (RIDEAU FRONT)
PART 1 4R-598
PIN 04207-0134

NOTE:
1. PROPERTY BOUNDARY INFORMATION DERIVED FROM: SURVEY PLAN COMPLETED BY STANTEC GEOMATICS LTD. DATED JULY 10, 2009.
2. REFER TO LANDSCAPE PLANS FOR LOCATIONS OF TREES & PLANTINGS.



KEY PLAN

PROPERTY DESCRIPTION

TCU - THREE STOREY RESIDENTIAL BUILDING	
CITY OF OTTAWA PIN NUMBER	04207 0357
MUNICIPAL ADDRESS	19 Robinson Avenue

SITE INFORMATION

LOT AREA:	1,170.9m²
LOT FRONTAGE:	31.14m
LOT DEPTH:	37.745m

BUILDING INFORMATION

BUILDING AREA:	578m²
BUILDING FLOOR AREA:	2,766m²
PROPOSED USE:	APARTMENT DWELLING, MID-RISE

UNIT BREAKDOWN:

FIRST FLOOR:	6 UNITS	4- 1 BD, 2- 2BD
SECOND FLOOR:	10 UNITS	2- STUDIO, 5- 1 BD, 3- 2BD
THIRD FLOOR:	10 UNITS	2- STUDIO, 5- 1 BD, 3- 2BD
FOURTH FLOOR:	10 UNITS	2- STUDIO, 5- 1 BD, 3- 2BD
FIFTH FLOOR:	10 UNITS	2- STUDIO, 7- 1 BD, 1- 2BD
TOTAL:	46 UNITS	12- STUDIO, 22- 1 BD, 12- 2BD

ZONING TABLE	R5N [2053] S312	
CITY OF OTTAWA ZONING BY-LAW No. 2008-250	REQUIRED	PROPOSED
MINIMUM LOT AREA	540m²	1,170.9m²
MINIMUM LOT WIDTH	18m	31.14m
FRONT YARD SETBACK	3m	4.93m
MINIMUM INTERIOR SIDE YARD SETBACK	2.5m within 22.7m(west) and 22.6m (east) of front lot line 7.5m in all other circumstances	2.5m within 20.4m (west)and 21m (east) of front lot line 7.5m for BALANCE
MINIMUM REAR YARD SETBACK	5.6m	5.6m
MAXIMUM BUILDING HEIGHT	12.7m to 18.9m	14.5m
MAXIMUM FLOOR SPACE INDEX	N/A	
LANDSCAPED AREA	30% = 351.27m²	32% = 371m²
VEHICLE PARKING REQUIREMENTS (AREA Y, SCHEDULE 1A)	0 parking spaces for first 12 units Table 101 - Dwelling low-rise apartment 0.5 per dwelling unit = 17 spaces	3 SPACES
VISITOR PARKING REQUIREMENTS (AREA Y, SCHEDULE 1A)	0.1 / DWELLING UNIT AFTER 12 UNITS 3 SPACES REQUIRED	3 SPACES
AMENITY AREA REQUIREMENTS	15m² per unit for the first 8 units = 120m² (Communal Area) 6m² per dwelling unit in excess of 8 = 228m² Total = 348m²	107m² REAR YARD AMENITY 52m² REAR SIDE YARD AMENITY [159m² TOTAL COMMUNAL AMENITY] 31m² AMENITY ROOM 73m² BALCONIES 148m² ROOFTOP AMENITY TOTAL: 411m²
BICYCLE PARKING SPACES	0.5 per dwelling unit = 23	24

LEGEND

- SOFT LANDSCAPING
- UNIT PAVERS REFER TO LANDSCAPE
- ASPHALT PAVING
- CONCRETE
- RIVER STONES. REFER TO LANDSCAPE
- EXISTING BUILDING ELEMENT TO BE REMOVED
- EXISTING FENCE
- NEW BOARD FENCE REFER TO LANDSCAPE
- LOT LINE
- SETBACK LINE
- DESIGNATED BUILDING ENTRANCE / EXIT
- FH FIRE HYDRANT. REFER TO CIVIL
- CB CATCH BASIN
- MH MANHOLE
- FD FLOOR DRAIN
- UP UTILITY POLE
- OHW OVERHEAD UTILITY WIRES
- L.S. LIGHT STANDARD
- DC DEPRESSED CURB
- EXISTING TREE TO REMAIN (REFER TO LANDSCAPE DRAWINGS)
- NEW TREE (REFER TO LANDSCAPE DRAWINGS)
- NEW SHRUBS (REFER TO LANDSCAPE DRAWINGS)
- 77.70 EXISTING GROUND ELEVATION [TO DETERMINE EXISTING AVERAGE GRADE]
- 58.84 NEW GROUND ELEVATION REFER TO CIVIL

NOTE: 'X'-E INDICATES EXISTING TO REMAIN

No.	Date	Émis pour / Object
1	2018-07-09	COORDINATION
2	2018-07-17	COORDINATION
3	2018-11-21	SITE PLAN CONTROL
4	2019-03-15	COORDINATION
5	2019-05-27	COORDINATION

Ingénieur / Engineer (Mécanique & Electricité / Mechanical & Electrical)

Ingénieur / Engineer (Structure / Structure)

Architecte/ Architect (paysagiste / Landscape)

Ingénieur / Engineer (Civil / Civil)

Stantec

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
3550, Saint-Antoine O.
Montreal QC H4C 1A6
T. 514 861-5122

fig. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613 695-6122

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Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa ON

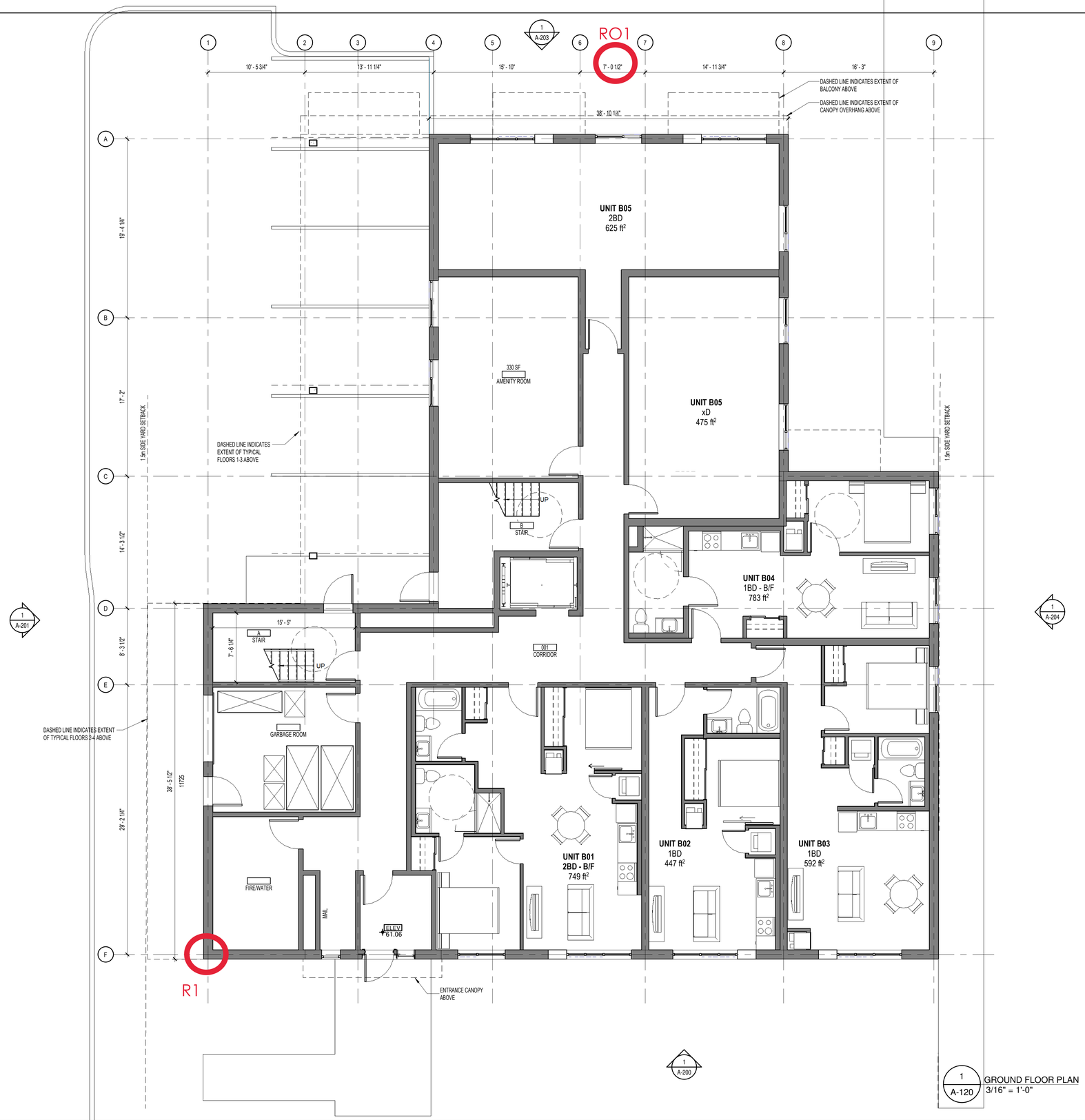
Titre / Title

SITE PLAN

Dessiné par / Drawn by: MD	No. projet / Project number: 1834
Vérifié par / Verified by: RC	No. dessin / Drawing number: A105
Echelle / Scale: *As indicated*	Revision / Revision: 5
Date de création du dessin / Drawing creation date: 2018/05/01	

D07-12-18-0174

#16576



No.	Date	Émis pour / Object
1	2018-05-28	CLIENT REVIEW
2	2018-10-10	COORDINATION
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
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fig. 2
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L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

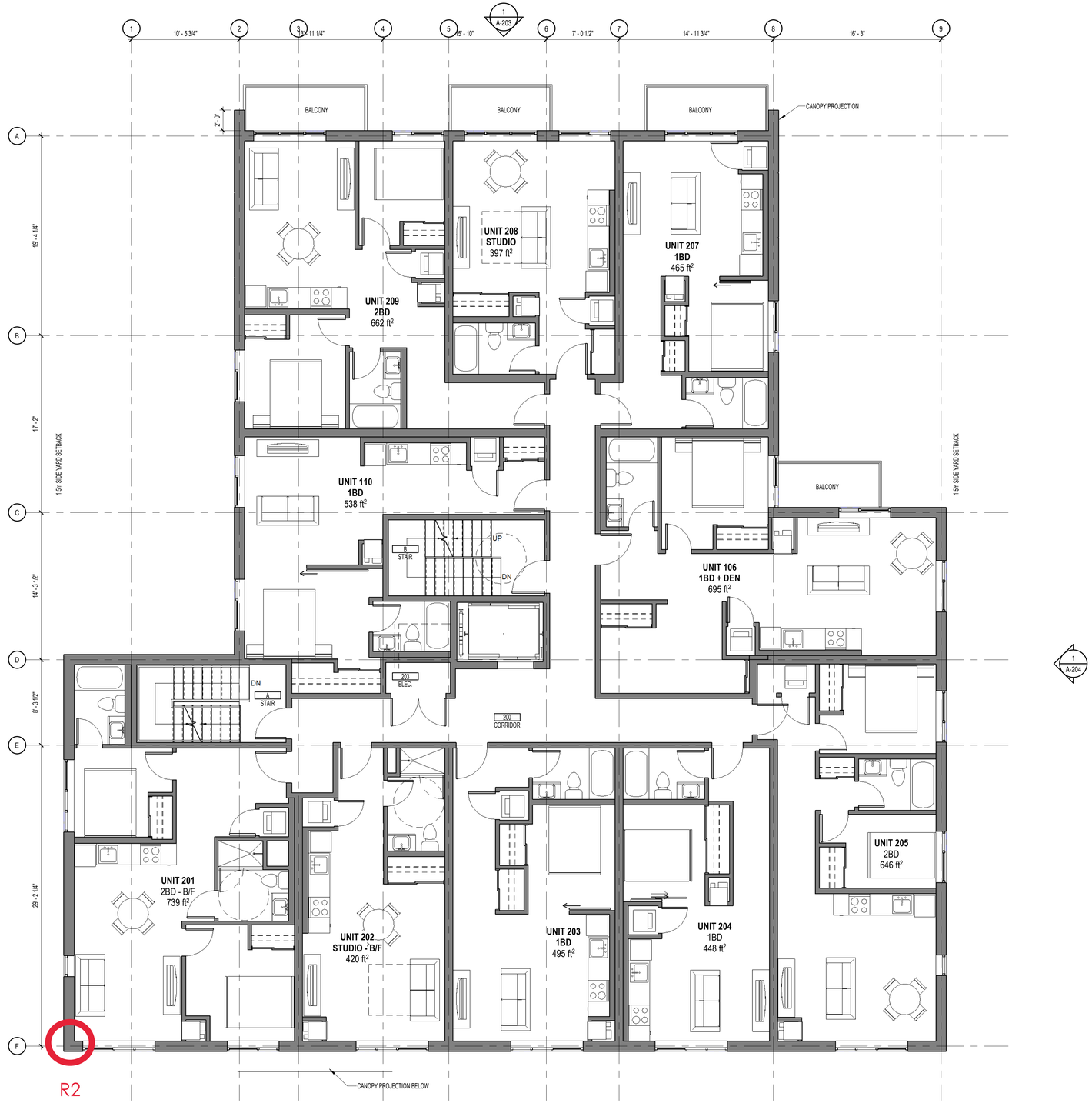
THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

GROUND FLOOR PLAN

Dessiné par / Drawn by MD, SB	*No. projet / Project number* 1834
Vérifié par / Verified by RC	*No. dessin / Drawing number* A-120
Échelle / Scale 3/16" = 1'-0"	*Révision / Revision* 4
Date de création du dessin / Drawing creation date 02/11/10	



1 / A-121 SECOND FLOOR PLAN
3/16" = 1'-0"

No.	Date	Émis pour / Object
1	2018-05-28	CLIENT REVIEW
2	2018-10-10	COORDINATION
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

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fig. 2
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Sceau / Seal

Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

SECOND FLOOR PLAN

Dessiné par / Drawn by: MD, SB	No. projet / Project number: 1834
Vérifié par / Verified by: RC	No. dessin / Drawing number: A-121
Échelle / Scale: 3/16" = 1'-0"	Révision / Revision: 4
Date de création du dessin / Drawing creation date: 01/09/12	

1 A-122 THIRD FLOOR PLAN
3/16" = 1'-0"

No.	Date	Émis pour / Object
2	2018-10-10	COORDINATION
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

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Montréal QC H4C 1A9
T. 514 861-5122

fig. 2
190 Somerset St W #206
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Sceau / Seal

Note:

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Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

THIRD FLOOR PLAN

Dessiné par / Drawn by	*No. projet / Project number*
MD, SB	1834
Vérifié par / Verified by	*No. dessin / Drawing number*
RC	A-122
Échelle / Scale	*Révision / Revision*
3/16" = 1'-0"	4
Date de création du dessin / Drawing creation date	
10/09/18	

1 A-123 PLAN-FOURTH FLOOR
3/16" = 1'-0"

No.	Date	Émis pour / Object
2	2018-10-10	COORDINATION
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig.1
3550, Saint-Antoine O.
Montréal QC H4C 1A8
T. 514 861-5122

fig.2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613-695-6122

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Sceau / Seal

Note:

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Projet / Project

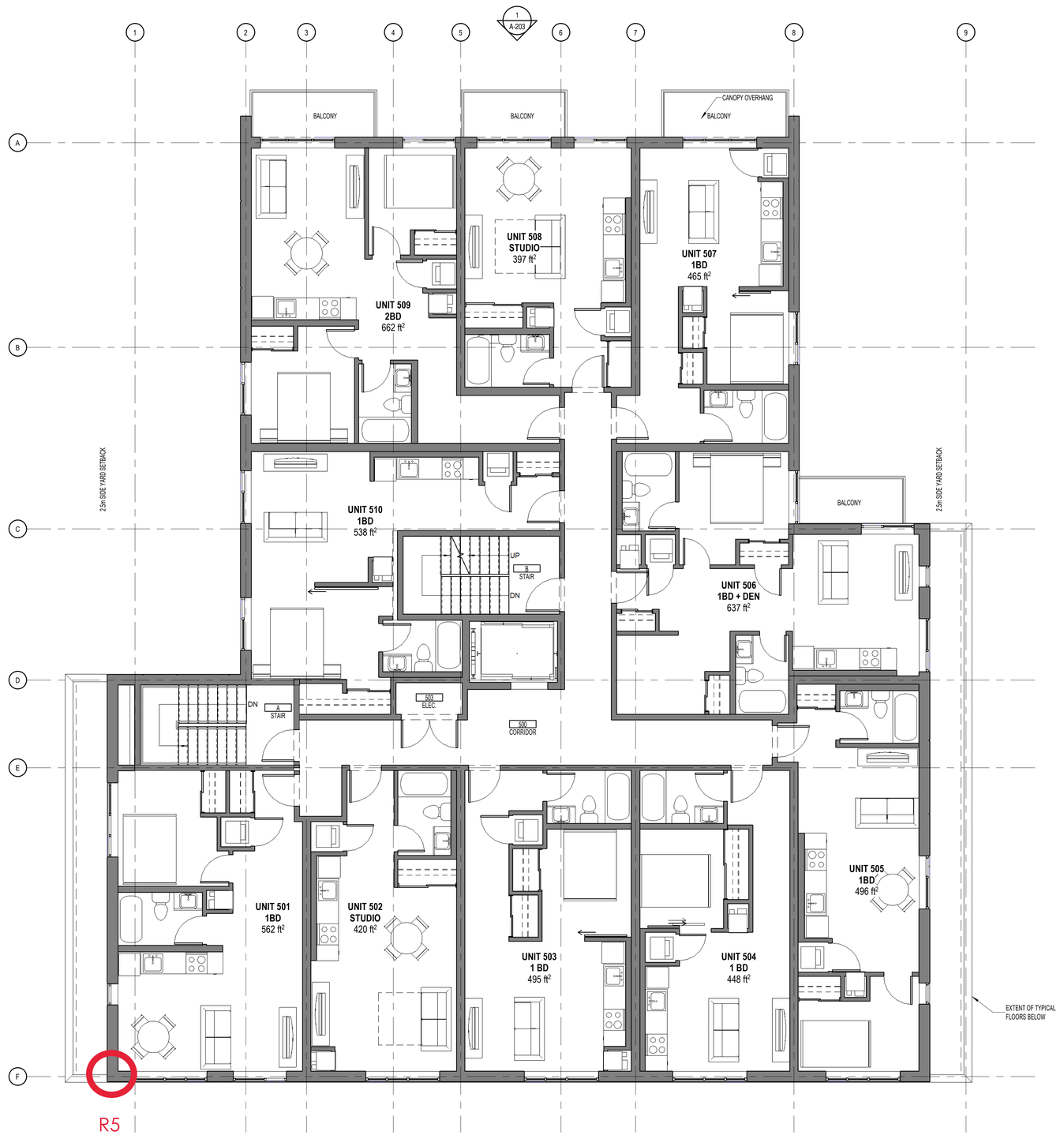
THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

FOURTH FLOOR PLAN

Dessiné par / Drawn by MD, SB	*No. projet / Project number* 1834
Vérifié par / Verified by Checker	*No. dessin / Drawing number* A-123
Échelle / Scale 3/16" = 1'-0"	*Révision / Revision* 4
Date de création du dessin / Drawing creation date 04/04/18	



No.	Date	Émis pour / Object
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
3550, Saint-Antoine O.
Montréal QC H4C 1A9
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fig. 2
190 Somerset St W #206
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Note:

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Projet / Project

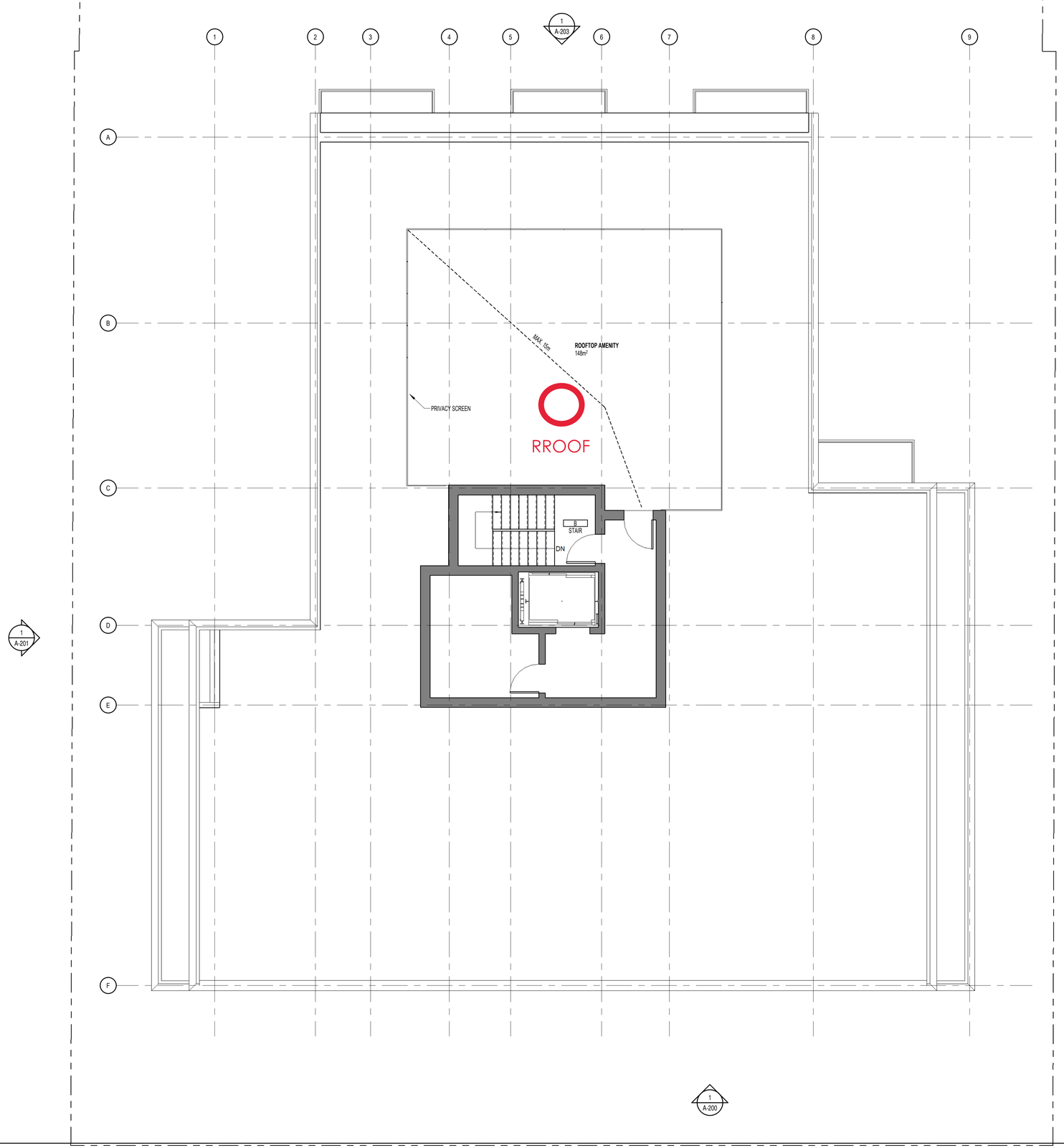
THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

FIFTH FLOOR PLAN

Dessiné par / Drawn by MD, SB	*No. projet / Project number* 1834	
Vérifié par / Verified by RC	*No. dessin / Drawing number* A-124	*Révision / Revision* 4
Échelle / Scale 3/16" = 1'-0"		
Date de création du dessin / Drawing creation date 01/09/12		



No. Date Émis pour / Object

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect — *Collectif d'architectes / Architects Collective*

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fig. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
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Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

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Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

ROOF PLAN

Dessiné par / Drawn by	MD, SB
Vérifié par / Verified by	Checker
Échelle / Scale	3/16" = 1'-0"
Date de création du dessin / Drawing creation date	07/29/19
No. projet / Project number	1834
No. dessin / Drawing number	A-130
Révision / Revision	

1 / A-200 SOUTH ELEVATION
3/16" = 1'-0"

LEGEND - ELEVATIONS

1 **FIBER CEMENT PANELS**
COLOUR: DARK GREY

2 **FIBER CEMENT PANELS**
COLOUR: LIGHT GREY

3 **ALUMINUM SPANDREL PANELS**
COLOUR: DARK GREY

4a **MASONRY UNITS**
COLOUR: LIGHT GREY

4b **MASONRY UNITS**
COLOUR: RED

5 **RESERVED**

6 **GLASS GUARDRAIL**

7 **PRIVACY SCREEN**

8 **PRIVACY SCREEN - ROOFTOP TERRACE**

No.	Date	Émis pour / Object

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
3550, Saint-Antoine O.
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fig. 2
190 Somerset St W #206
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Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

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Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

SOUTH ELEVATION

Dessiné par / Drawn by	MD, AS
Vérifié par / Verified by	RC
Échelle / Scale	As indicated
Date de création du dessin / Drawing creation date	01/09/12
No. projet / Project number	1634
No. dessin / Drawing number	A-200
Révision / Revision	

1 / A-201 WEST ELEVATION
3/16" = 1'-0"

LEGEND - ELEVATIONS

1 **FIBER CEMENT PANELS**
COLOUR: DARK GREY

2 **FIBER CEMENT PANELS**
COLOUR: LIGHT GREY

3 **ALUMINUM SPANDREL PANELS**
COLOUR: DARK GREY

4a **MASONRY UNITS**
COLOUR: LIGHT GREY

4b **MASONRY UNITS**
COLOUR: RED

5 **RESERVED**

6 **GLASS GUARDRAIL**

7 **PRIVACY SCREEN**

8 **PRIVACY SCREEN - ROOFTOP TERRACE**

No.	Date	Émis pour / Object
3	2018-11-14	CLIENT REVIEW
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
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Montréal QC H4C 1A9
T. 514 861-5122

fig. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613 695-6122

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Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

Contractor shall verify all information and dimensions on site and immediately report any errors or omissions to the architect.

Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

WEST ELEVATION

Dessiné par / Drawn by	MD, AS
Vérifié par / Verified by	RC
Échelle / Scale	As indicated
Date de création du dessin / Drawing creation date	01/09/12
No. projet / Project number	1834
No. dessin / Drawing number	A-201
Révision / Revision	4

1 / A-203 NORTH ELEVATION
3/16" = 1'-0"

LEGEND - ELEVATIONS

1 **FIBER CEMENT PANELS**
COLOUR: DARK GREY

2 **FIBER CEMENT PANELS**
COLOUR: LIGHT GREY

3 **ALUMINUM SPANDREL PANELS**
COLOUR: DARK GREY

4a **MASONRY UNITS**
COLOUR: LIGHT GREY

4b **MASONRY UNITS**
COLOUR: RED

5 **RESERVED**

6 **GLASS GUARDRAIL**

7 **PRIVACY SCREEN**

8 **PRIVACY SCREEN - ROOFTOP TERRACE**

No. Date Émis pour / Object

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect
Collectif d'architectes / Architects Collective
fig. 1
3550, Saint-Antoine O.
Montréal QC H4C 1A9
T. 514 861-3122
fig. 2
190 Somerset St W #206
Ottawa ON K2P 0J4
T. 613 695-6122
Formerly Rubin & Rotman
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Sceau / Seal

Note:

L'entrepreneur doit vérifier toutes les dimensions et informations sur le site et aviser immédiatement l'architecte de toutes erreurs ou omissions.

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Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

NORTH ELEVATION

Dessiné par / Drawn by: MD, AS	No. projet / Project number: 1834
Vérifié par / Verified by: RC	No. dessin / Drawing number: A-203
Échelle / Scale: As indicated	Révision / Revision:
Date de création du dessin / Drawing creation date: 01/09/12	

1 / A-204 EAST ELEVATION
3/16" = 1'-0"

LEGEND - ELEVATIONS

1. **FIBER CEMENT PANELS** COLOUR: DARK GREY
2. **FIBER CEMENT PANELS** COLOUR: LIGHT GREY
3. **ALUMINUM SPANDREL PANELS** COLOUR: DARK GREY
4a. **MASONRY UNITS** COLOUR: LIGHT GREY
4b. **MASONRY UNITS** COLOUR: RED
5. **RESERVED**
6. **GLASS GUARDRAIL**
7. **PRIVACY SCREEN**
8. **PRIVACY SCREEN - ROOFTOP TERRACE**

No.	Date	Émis pour / Object
3	2018-11-14	CLIENT REVIEW
4	2018-11-21	SITE PLAN CONTROL

Ingénieur / Engineer
(Mécanique & Électricité / Mechanical & Electrical)

Ingénieur / Engineer
(Structure / Structure)

Client / Client

Robinson Village I Limited Partnership

Architecte / Architect

fig. 1
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T. 514 861-5122

fig. 2
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Ottawa ON K2P 0J4
T. 613 695-6122

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Note:

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Projet / Project

THREE STOREY APARTMENT BUILDING

19 Robinson Avenue, Ottawa, ON

Titre / Title

EAST ELEVATION

Dessiné par / Drawn by MD, AS	*No. projet / Project number* 1834
Vérifié par / Verified by RC	*No. dessin / Drawing number* A-204
Échelle / Scale As indicated	*Révision / Revision* 4
Date de création du dessin / Drawing creation date 11/09/18	

19 Robinson Avenue - 3rd to 5th Floor

Source: Road Traffic

Predicted free-field day time sound level: 67.0 dBA

Predicted free-field night time sound level: 58.0 dBA

Table 1.1 - Sound level at building façade

	Day (Living Area)				Night (Bedroom)			
	Wall 1	Wall 2	Wall 3	Wall 4	Wall 1	Wall 2	Wall 3	Wall 4
Source 1	67.0	67.0	67.0	67.0	58.0	58.0	58.0	58.0
Shielding Correction	0	0	-15	-15	0	0	-15	-15
Resultant Sound Level	67	67	52	52	58.0	58.0	43.0	43.0

Table 1.2 - Number of Components

Room	Wall 1			Wall 2			Wall 3			Wall 4			Total Number of Components
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	
Unit 305,405, and 505 Bedroom 1	1	1											2
Units 302-304, 402-404, and 502-504	1	1											2
Unit 301,401,and 501	1	1		1	1								4
Unit 301,401, and 501 Bedroom				1	1								2
Unit 310,410,and 510				1	1								2
Unit 310,410, and 510 Bedroom				1	1								2
Unit 309, 409, and 509					1								1
Unit 309,409, and 509 Bedroom 1				1	1								2

Note: Ignore if sound level below 55 dBA

* Component AIF exceeds required value by 10 or more and has been ignored as a component

Table 1.3 - AIF

	Wall 1	Wall 2		
Unit 305,405, and 505 Bedroom 1	27			
Units 302-304, 402-404, and 502-504	27			
Unit 301,401,and 501	30	30		
Unit 301,401, and 501 Bedroom		27		
Unit 310,410,and 510		27		
Unit 310,410, and 510 Bedroom		27		
Unit 309, 409, and 509		24		
Unit 309,409, and 509 Bedroom 1		27		

Note: Max AIF selected between Day and Night

Table 1.4 - Adjustment for Geometry

	Wall 1	Wall 2		
Exposure Angle	40-90	40-90		
Adjustment	0	0		

Table 1.5 - Required AIF

	Wall 1	Wall 2		
Unit 305,405, and 505 Bedroom 1	27			
Units 302-304, 402-404, and 502-504	27			
Unit 301,401,and 501	30	30		
Unit 301,401, and 501 Bedroom		27		
Unit 310,410,and 510		27		
Unit 310,410, and 510 Bedroom		27		
Unit 309, 409, and 509		24		
Unit 309,409, and 509 Bedroom 1		27		

Table 2.1 - Component Area (ft^2)

Room	Wall 1			Wall 2			Wall 3			Wall 4			Room Floor Area
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	
Unit 305,405, and 505 Bedroom 1	39	20.6											84
Units 302-304, 402-404, and 502-504	39	34.3											196
Unit 301,401,and 501	67	15.5		11	42.2								209
Unit 301,401, and 501 Bedroom				39	12.3								110
Unit 310,410,and 510				28	31.6								182
Unit 310,410, and 510 Bedroom				28	13.3								108
Unit 309, 409, and 509					77.9								187
Unit 309,409, and 509 Bedroom 1				28	13.3								110

Note: Susan D. Smith Architect Layout

Table 2.2 - Component Percentages per Room Floor Area (%)

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Unit 305,405, and 505 Bedroom 1	46%	25%										
Units 302-304, 402-404, and 502-504	20%	18%										
Unit 301,401,and 501	32%	7%		5%	20%							
Unit 301,401, and 501 Bedroom				35%	11%							
Unit 310,410,and 510				15%	17%							
Unit 310,410, and 510 Bedroom				26%	12%							
Unit 309, 409, and 509					42%							
Unit 309,409, and 509 Bedroom 1				25%	12%							

Table 2.3 - Component Selection

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Unit 305,405, and 505 Bedroom 1	2 (18) 2	EW1										
Units 302-304, 402-404, and 502-504	2 (6) 2	EW1										
Unit 301,401,and 501	2 (22) 2	EW1		2 (6) 2	EW1							
Unit 301,401, and 501 Bedroom				2 (13) 2	EW1							
Unit 310,410,and 510				2 (6) 2	EW1							
Unit 310,410, and 510 Bedroom				2 (6) 2	EW1							
Unit 309, 409, and 509					EW1							
Unit 309,409, and 509 Bedroom 1				2 (6) 2	EW1							

Note 1: Use Tables 7.2 - 7.4, "Topic 7, Enironmental Noise Assesment in Land Use Planning Manual"

Note 2: Windows are based on 2 mm glass thickness (Double Glaze Windows)

19 Robinson Avenue - 3rd to 5th Floor

Source: Road Traffic

Predicted free-field day time sound level: 67.0 dBA

Predicted free-field night time sound level: 58.0 dBA

Table 1.1 - Sound level at building façade

	Day (Living Area)				Night (Bedroom)			
	Wall 1	Wall 2	Wall 3	Wall 4	Wall 1	Wall 2	Wall 3	Wall 4
Source 1	67.0	67.0	67.0	67.0	58.0	58.0	58.0	58.0
Shielding Correction	0	0	-15	-15	0	0	-15	-15
Resultant Sound Level	67	67	52	52	58.0	58.0	43.0	43.0

Table 1.2 - Number of Components

Room	Wall 1			Wall 2			Wall 3			Wall 4			Total Number of Components
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	
Unit 305,405, and 505 Bedroom 1	1	1											2
Units 302-304, 402-404, and 502-504	1	1											2
Unit 301,401,and 501	1	1		1	1								4
Unit 301,401, and 501 Bedroom				1	1								2
Unit 310,410,and 510				1	1								2
Unit 310,410, and 510 Bedroom				1	1								2
Unit 309, 409, and 509					1								1
Unit 309,409, and 509 Bedroom 1				1	1								2

Note: Ignore if sound level below 55 dBA

* Component AIF exceeds required value by 10 or more and has been ignored as a component

Table 1.3 - AIF

	Wall 1	Wall 2		
Unit 305,405, and 505 Bedroom 1	27			
Units 302-304, 402-404, and 502-504	27			
Unit 301,401,and 501	30	30		
Unit 301,401, and 501 Bedroom		27		
Unit 310,410,and 510		27		
Unit 310,410, and 510 Bedroom		27		
Unit 309, 409, and 509		24		
Unit 309,409, and 509 Bedroom 1		27		

Note: Max AIF selected between Day and Night

Table 1.4 - Adjustment for Geometry

	Wall 1	Wall 2		
Exposure Angle	40-90	40-90		
Adjustment	0	0		

Table 1.5 - Required AIF

	Wall 1	Wall 2		
Unit 305,405, and 505 Bedroom 1	27			
Units 302-304, 402-404, and 502-504	27			
Unit 301,401,and 501	30	30		
Unit 301,401, and 501 Bedroom		27		
Unit 310,410,and 510		27		
Unit 310,410, and 510 Bedroom		27		
Unit 309, 409, and 509		24		
Unit 309,409, and 509 Bedroom 1		27		

Table 2.1 - Component Area (ft^2)

Room	Wall 1			Wall 2			Wall 3			Wall 4			Room Floor Area
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	
Unit 305,405, and 505 Bedroom 1	39	20.6											84
Units 302-304, 402-404, and 502-504	39	34.3											196
Unit 301,401,and 501	67	15.5		11	42.2								209
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Unit 310,410,and 510				28	31.6								182
Unit 310,410, and 510 Bedroom				28	13.3								108
Unit 309, 409, and 509					77.9								187
Unit 309,409, and 509 Bedroom 1				28	13.3								110

Note: Susan D. Smith Architect Layout

Table 2.2 - Component Percentages per Room Floor Area (%)

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Unit 305,405, and 505 Bedroom 1	46%	25%										
Units 302-304, 402-404, and 502-504	20%	18%										
Unit 301,401,and 501	32%	7%		5%	20%							
Unit 301,401, and 501 Bedroom				35%	11%							
Unit 310,410,and 510				15%	17%							
Unit 310,410, and 510 Bedroom				26%	12%							
Unit 309, 409, and 509					42%							
Unit 309,409, and 509 Bedroom 1				25%	12%							

Table 2.3 - Component Selection

Room	Wall 1			Wall 2			Wall 3			Wall 4		
	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door	Window	Wall	Door
Unit 305,405, and 505 Bedroom 1	2 (18) 2	EW1										
Units 302-304, 402-404, and 502-504	2 (6) 2	EW1										
Unit 301,401,and 501	2 (22) 2	EW1		2 (6) 2	EW1							
Unit 301,401, and 501 Bedroom				2 (13) 2	EW1							
Unit 310,410,and 510				2 (6) 2	EW1							
Unit 310,410, and 510 Bedroom				2 (6) 2	EW1							
Unit 309, 409, and 509					EW1							
Unit 309,409, and 509 Bedroom 1				2 (6) 2	EW1							

Note 1: Use Tables 7.2 - 7.4, "Topic 7, Enironmental Noise Assesment in Land Use Planning Manual"

Note 2: Windows are based on 2 mm glass thickness (Double Glaze Windows)

Appendix C NOISE WARNING CLAUSE

NOISE ASSESSMENT REPORT - 19 ROBINSON AVENUE

Appendix C Noise Warning Clause
August 21, 2019

WARNING CLAUSES

The following warning clauses may be used individually or in combination:

Generic Mitigation of Indoor Area (GI):

Indoor environment - L_{eq}(16) greater than 55 dBA and less than or equal to 65 dBA or (L_{eq}(8) greater than 50dBA and less than or equal to 60 dBA

To help address the need for sound attenuation this development has been designed so as to provide an indoor environment that is within provincial guidelines. Measures for sound attenuation include:

- a setback of buildings from the noise source;
- the provision for adding central air conditioning at the occupant's discretion.

To be included in all offers of purchase:

"Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment Conservation and Parks."

Extensive Mitigation of Indoor Area (MI):

Indoor environment - L_{eq}(16) greater than 65 dBA or (L_{eq}(8) greater than 60dBA

To help address the need for sound attenuation this development has been designed so as to provide an indoor environment that is within provincial guidelines. Measures for sound attenuation include:

- multi-pane glass;
- exterior wall insulation;
- a forced central air conditioning system.

To ensure that provincial sound level limits are not exceeded, it is important to maintain these sound attenuation features.

To be included in all offers of purchase:

> "This dwelling unit has been supplied with a forced central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring

that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment Conservation and Parks."

To be included in all offers of purchase:

Generic Mitigation of Outdoor Amenity Area (GO):

Outdoor amenity areas- $L_{eq}(16)$ in the OLA greater than 55 dBA and less than or equal to 60 dBA.

To help address the need for outdoor sound attenuation occupants are to be informed this development may potentially require the inclusion of:

- an acoustic barrier.

To be included in all offers of purchase:

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may, on occasion, interfere with some activities of the dwelling occupants in their outdoor amenity area as the sound levels exceed the sound level limits of the City of Ottawa and the Ministry of the Environment and Conservation and Parks."

Extensive Mitigation of Outdoor Amenity Area (MO):

Outdoor amenity areas- $L_{eq}(16)$ in the OLA greater than 60 dBA.

To help address the need for outdoor sound attenuation this development is to includes outdoor noise attenuation with the use of:

- an acoustic barrier.

To be included in all offers of purchase:

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City of Ottawa and the Ministry of the Environment Conservation and Parks."

Appendix C Noise Warning Clause
August 21, 2019

Source: City of Ottawa - Environmental Noise Control Guidelines, January 2016 and Ontario Ministry of the Environment Conservation and Parks, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, Queen's Printer for Ontario, 2013.