

Geotechnical
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Hydrogeology

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Materials Testing

Building Science

Noise and Vibration
Studies

Environmental Noise Control Study

Proposed Multi-Storey Apartment Building
1 Old Sunset Boulevard, Ottawa

Prepared For

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March 9, 2022

Report: PG6163-1

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1.0 Introduction

Paterson Group (Paterson) was commissioned by My Catering Group to conduct an environmental noise control study for the proposed multi-storey apartment building to be located at 1 Old Sunset Boulevard, in the City of Ottawa.

The objective of the current study is 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 development as they are understood at the time of writing this report.

This study has been conducted according to 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 residential development will consist of a three (3) storey apartment building with one (1) basement level. An approximate elevation of 11 metres above grade is proposed for this development. A total of 8 units are expected at the building. Associated at-grade landscaped terraces, bicycle racks, parking area, and driveway are also anticipated. An amenity area at the rooftop deck of proposed building that will serve as an Outdoor Living Area (OLA) is further anticipated.

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

Surface roadway traffic noise, equivalent to sound level energy L_{eq} , provides a measure of the time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of 16-hour (L_{eq16}) daytime (07:00-23:00) and 8-hour (L_{eq8}) nighttime (23:00-7:00) split to assess its impact on residential, commercial and institutional buildings.

The City of Ottawa's Official Plan dictates that the influence area must contain any of 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 Environmental Noise Guidelines for Stationary and Transportation Sources – NPC-300 outlines the limitations of noise levels in relation to the location of the receptors. These can be found in the following tables:

Table 1 – Noise Level Limit for Outdoor Living Areas	
Time Period	L_{eq} Level (dBA)
Daytime, 7:00-23:00	55
➤ Standard taken from Table 2.2a; Sound Level Limit for Outdoor Living Areas – Road and Rail	

Table 2 – Noise Level Limits for Indoor Living Areas			
Type of Space	Time Period	L_{eq} Level (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	Daytime 7:00-23:00	50	45
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	Daytime 7:00-23:00	45	40
Living/dining/den areas of residences , hospitals, nursing/retirement homes, schools, day-care centres	Daytime 7:00-23:00	45	40
Living/dining/den areas of residences , hospitals, nursing/retirement homes etc. (except schools or day-care centres)	Nighttime 23:00-7:00	45	40
Sleeping quarters of hotels/motels	Nighttime 23:00-7:00	45	40
Sleeping quarters of residences , hospitals, nursing/retirement homes, etc.	Nighttime 23:00-7:00	40	35
➤ Standards taken from Table 2.2b, Sound Level Limit for Indoor Living Areas – Road and Rail and Table 2.2c, Supplementary Sound Level Limits for Indoor Spaces – Road and Rail			

Predicted noise levels at the pane of window dictate the action required to achieve recommended noise levels. It is noted in ENCG that the limits outlined in Table 2 are for the noise levels on the interior of the window glass pane. An open window is considered to provide a 10 dBA noise reduction, while a standard closed window is capable to provide a minimum 20 dBA noise reduction. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, central air conditioning will be required, and the building components will require higher levels of sound attenuation.

If the noise level limits are exceeded, the following Warning Clauses should be included in related deeds of sale:

Table 3 – Warning Clauses for Noise 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 dwelling 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 dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
Warning Clause Type C	"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
Warning Clause Type D	"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
➤ Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines for Stationary and Transportation Sources - 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 subject site is not in proximity to existing or approved stationary sources of noise. Therefore, a stationary noise analysis will not be required.

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 building is bordered to the north by Madawaska Drive and Fifth Avenue followed by residential dwellings and institutional building, to the east by Bronson Avenue followed by residential dwellings, to the south by Old Sunset Boulevard followed by residential dwellings, to the west by residential dwellings followed by Crescent Heights. Madawaska Drive, Fifth Avenue, Bronson Avenue, Old Sunset Boulevard, and Crescent Heights are identified within the 100 m radius of proposed building.

Based on the City of Ottawa’s Official Plan, Schedule E, Fifth Avenue is considered a 2 lane urban collector road (2-UCU), and Bronson Avenue is considered a 4 lane urban arterial road – undivided (4-UAU). 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. The major sources of traffic noise are due to the Fifth Avenue to the north and Bronson Avenue to the east of the proposed building.

All noise sources are presented in Drawing PG6163-3 - Site Geometry located in Appendix 1.

The noise levels from road traffic are provided by the City of Ottawa, taking into consideration the right-of-way width and the implied roadway classification. 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.

Segment	Roadway Classification	AADT Veh/Day	Speed Limit (km/h)	Day/Night Split %	Medium Truck %	Heavy Truck %
Fifth Avenue	2-UCU	8000	40	92/8	7	5
Bronson Avenue	4-UAU	30000	50	92/8	7	5
➤ Data obtained from the City of Ottawa document ENCG						

Three (3) levels of reception points were selected for this analysis. The following elevations were selected from the heights provided on the survey plan for the subject building.

Floor Number	Elevation at Centre of Window (m)	Floor Use	Daytime / Nighttime Analysis
First Floor	3.0	Living Area/Bedroom	Daytime / Nighttime
Third Floor	9.5	Living Area/Bedroom	Daytime / Nighttime
Rooftop	12.5	--	Outdoor Living Area

For this analysis, a reception point was taken at the centre of each floor, at the first floor and top floor. An Outdoor Living Area – an amenity area is anticipated at the rooftop deck of proposed building. A reception point in the centre of rooftop deck, 12.5 m high, was selected for the analysis of this area. Reception points are detailed on Drawing PG6163-2 - 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 roadway was analyzed where it intersected the 100 m buffer zone, which is reflected in the local angles described in Paterson Drawings PG6163-3A to 3E - 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 with respect to the noise sources. The analysis is completed so that no effects of sound reflection off of the building facade are considered, as stipulated by the ENGC.

The subject site is gently sloping downward to the east and at grade with the neighbouring roads within 100 m radius.

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.

5.0 Results

Surface Transportation Noise

The primary descriptors are the 16-hour daytime (7:00-23:00) and the 8-hour nighttime (23:00-7:00) equivalent sound levels, $L_{eq(16)}$ and $L_{eq(8)}$ for City roads.

The exterior noise levels due to roadway traffic sources were analyzed with the STAMSON version 5.04 software at all reception points. The input and output data of the STAMSON modeling can be found in Appendix 2, and the summary of the results can be found in Table 6.

Table 6: Exterior Noise Levels due to Roadway Traffic Sources				
Reception Point	Height Above Grade (m)	Receptor Location	Daytime $L_{eq(16)}$ (dBA)	Nighttime $L_{eq(8)}$ (dBA)
REC 1-1	3.0	Northern Elevation, 1st Floor	67	60
REC 1-3	9.5	Northern Elevation, 3rd Floor	67	60
REC 2-1	3.0	Eastern Elevation – Unit A, 1st Floor	70	63
REC 2-3	9.5	Eastern Elevation – Unit A, 3rd Floor	71	63
REC 3-1	3.0	Eastern Elevation – Unit B, 1st Floor	70	63
REC 3-3	9.5	Eastern Elevation – Unit B, 3rd Floor	71	63
REC 4-1	3.0	Western Elevation, 1st Floor	67	60
REC 4-3	9.5	Western Elevation, 3rd Floor	67	60
REC 5	12.5	Rooftop Amenity Area	60	--

6.0 Discussion and Recommendations

6.1 Outdoor Living Areas

An amenity area is anticipated at the rooftop deck of the proposed building. One (1) receptor point was selected for the analysis at outdoor living area (REC 5). It is assumed that the rooftop deck will only be utilized as an outdoor living area provided that the proposed building is constructed. The proposed Leq(16) at the rooftop deck will be 60 dBA, which exceeds the 55 dBA threshold value specified by the ENCG.

The outdoor living area was designed as rooftop deck, which will increase the total distance between the noise and receptor points. Utilizing this type of outdoor living area, the exterior cladding of the building will act as a noise barrier, providing noise relief to the rooftop deck. Utilizing the exterior of the building as a barrier, including a 1 m solid railing that will extend around the perimeter of outdoor living area, the anticipated noise levels at rooftop deck to 57 dBA during the daytime period (7:00-23:00). Since noise levels cannot be economically reduced to 55 dBA, but having the inclusion of the noise barrier will reduce the noise levels by 3 dBA, this exceedance is considered acceptable provided that a Warning Clause Type A is provided on all deeds of sale.

6.2 Indoor Living Areas and Ventilation

The results of the STAMSON modeling indicate that the noise levels will range between 67 dBA and 71 dBA during the daytime period (07:00-23:00) and between 60 dBA and 63 dBA during the nighttime period (23:00-7:00). The noise levels on the northern, eastern, and southern elevations will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. It is also noted that the noise levels on the northern, eastern, and southern elevations will exceed 65 dBA. Therefore, all units of this building should be supplied with a central air conditioning unit, along with the warning clause Type D, as outlined in Table 3.

This building does exceed the 65 dBA threshold for noise on the northern, eastern, and southern elevations. Therefore, an analysis of the building materials will be required. However, at this time the building materials and exterior wall construction details have not been finalized. Therefore, a review of the proposed building materials on the northern, eastern, and southern elevations will need to be completed.

Proposed Construction Specifications

It is understood that typical window and wall details are proposed for the residential buildings. The effectiveness of the noise insulation can be expressed as the Acoustical Insulation Factor (AIF), calculated as follows:

$$\text{AIF} = L_{\text{eq}(16)}(\text{Exterior}) - L_{\text{eq}(16)}(\text{Interior}) + 10 \log_{10}(N) + 2 \text{ dBA}$$

Where:

$L_{\text{eq}(16)}(\text{Exterior})$ = Calculated value at the window pane

$L_{\text{eq}(16)}(\text{Interior})$ = 45 dBA

N = number of components in the room

No floor plans or detailed design drawings were provided for this portion of the review. A conservative approach is to assume that there are 2 components per room. Therefore, the AIF would need to be at least 31 dBA.

A conversion from AIF to a Standard Transmission Class (STC) rating will require the knowledge of room dimensions in addition to the wall and window dimensions. However, a conservative approach would be to increase the AIF factor by 3. **Therefore, provided the building materials of either the windows and/or exterior walls have an STC rating of 34 or higher, this would be a sufficient noise attenuation device.**

A review of industry standards for construction material indicates that provided the exterior cladding of the northern, eastern, and southern elevations consist of brick or concrete panels and that all windows consist of double pane glass, these materials have an STC rating of greater than 34 and are considered acceptable. If alternative materials are to be utilized on the northern, eastern, and southern elevations, then a review will need to be completed once design details are finalized.

7.0 Summary of Findings

The subject site is located at 1 Old Sunset Boulevard, in the City of Ottawa. It is understood that the proposed development will consist of three (3) storey apartment building and rise approximately 11 metres above grade. There are two major sources of surface transportation noise to the proposed building: Fifth Avenue and Bronson Avenue.

The surface transportation noise analysis was completed at the Outdoor Living Area – rooftop deck. The results of STAMSON modeling indicate that the noise levels at the rooftop deck is expected to be 60 dBA during the daytime period. According to ENCG, noise control measures (i.e. barriers) are required to reduce the L_{eq} to 55 dBA where technically and economically feasible. An investigation including noise barriers, which included both the exterior cladding of the proposed building in addition to the addition of a solid 1 m noise barrier around the perimeter of the outdoor living area found that the noise levels can be reduce to 57 dBA, but cannot be reduced to 55 dBA without the application of an excessively tall barrier. Therefore, since noise levels cannot be economically reduced to 55 dBA, this exceedance in noise level is considered acceptable provided that the warning clause Type A is included on all deeds of sale.

Several reception points were selected for the surface transportation noise analysis, consisting of the centre of first level and top level. The results of STAMSON modeling indicate that the northern, eastern, and southern elevations of the proposed building are expected to exceed the 55 dBA threshold specified by the ENCG. It is also noted that the noise levels on the northern, eastern, and southern elevations will exceed 65 dBA. Therefore, the installation of a central air conditioning unit, along with a warning clause Type D, will be required for all units of proposed building. A review of industry standards for construction material indicates that, provided the exterior cladding of the northern, eastern, and southern elevations consist of brick or concrete panels and that all windows consist of double pane glass, these materials have an STC rating of greater than 34 and are considered acceptable.

The following warning clause is to be included on all Offers of Purchase and Sale and/or lease agreements:

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

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

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 My Catering Group or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.



Yolanda Tang, M.Sc.Eng



Stephanie A. Boisvenue, P.Eng.

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APPENDIX 1

TABLE 7 - SUMMARY OF RECEPTION POINTS AND GEOMETRY

DRAWING PG6163-1 - SITE PLAN

DRAWING PG6163-2 - RECEPTOR LOCATION PLAN

DRAWING PG6163-3 – SITE GEOMETRY

DRAWING PG6163-3A - SITE GEOMETRY (REC 1-1 and REC 1-3)

DRAWING PG6163-3B - SITE GEOMETRY (REC 2-1 and REC 2-3)

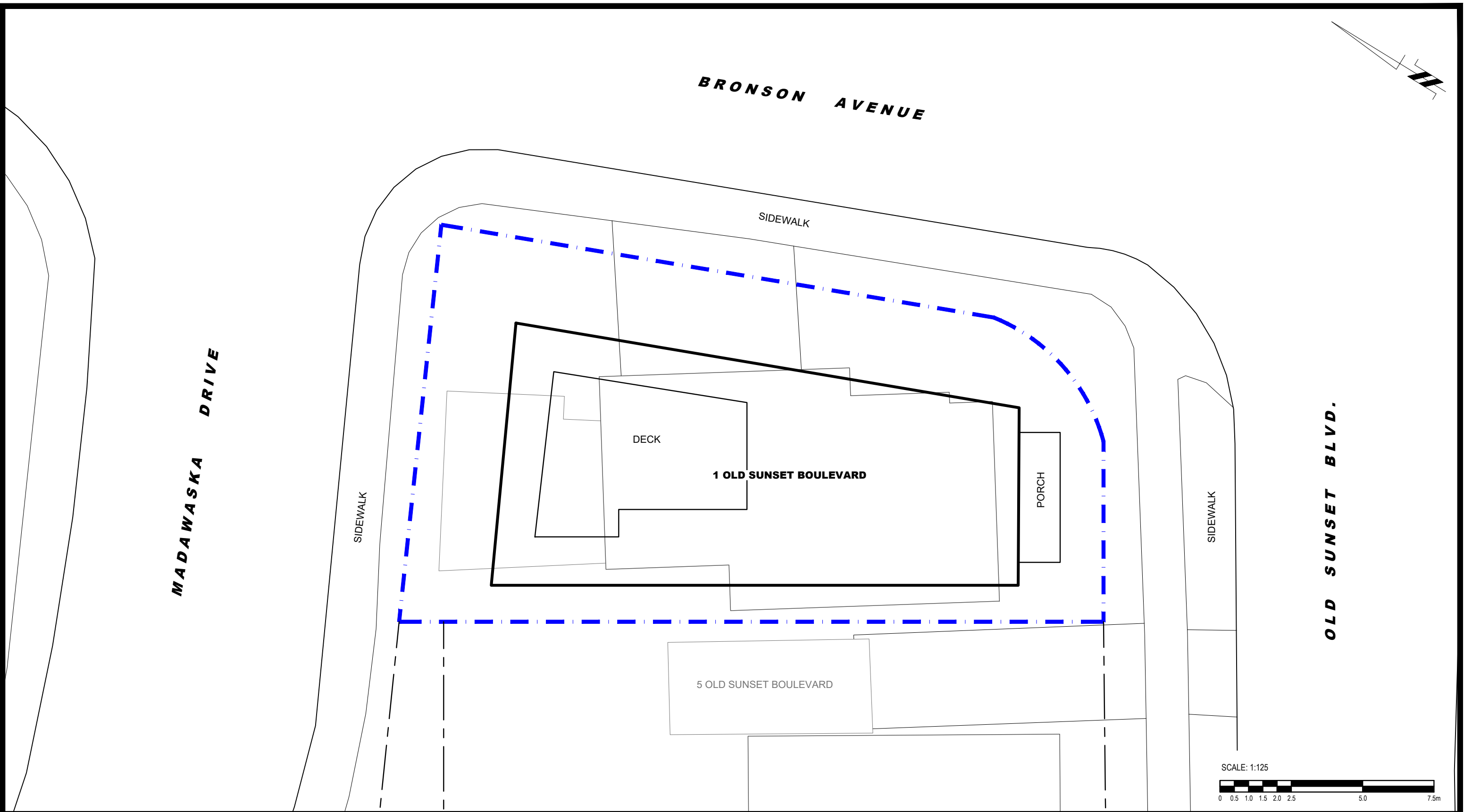
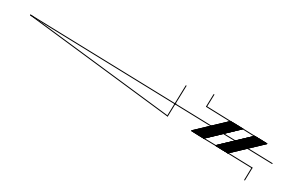
DRAWING PG6163-3C - SITE GEOMETRY (REC 3-1 and REC 3-3)

DRAWING PG6163-3D - SITE GEOMETRY (REC 4-1 and REC 4-3)

DRAWING PG6163-3E - SITE GEOMETRY (REC 5)

**Table 7 - Summary of Reception Points and Geometry
1 Old Sunset Boulevard**

Point of Reception	Location	Leq Day (dBA)	Fifth Avenue						Bronson Avenue					
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)
REC 1-1	Northern Elevation, 1st Floor	67	15	3.0	15.3	59, 86	n/a	n/a	15	3.0	15.3	-80, 0	n/a	n/a
REC 1-3	Northern Elevation, 3rd Floor	67	15	9.5	17.8	59, 86	n/a	n/a	15	9.5	17.8	-80, 0	n/a	n/a
REC 2-1	Eastern Elevation - Unit A, 1st Floor	70	20	3.0	20.2	40, 79	n/a	n/a	15	3.0	15.3	-87, 87	n/a	n/a
REC 2-3	Eastern Elevation - Unit A, 3rd Floor	71	20	9.5	22.1	40, 79	n/a	n/a	15	9.5	17.8	-87, 87	n/a	n/a
REC 3-1	Eastern Elevation - Unit B, 1st Floor	70	25	3.0	25.2	26, 76	n/a	n/a	15	3.0	15.3	-87, 87	n/a	n/a
REC 3-3	Eastern Elevation - Unit B, 3rd Floor	71	25	9.5	26.7	26, 76	n/a	n/a	15	9.5	17.8	-87, 87	n/a	n/a
REC 4-1	Southern Elevation, 1st Floor	67	n/a	n/a	n/a	n/a	n/a	n/a	15	3.0	15.3	0, 90	n/a	n/a
REC 4-3	Southern Elevation, 3rd Floor	67	n/a	n/a	n/a	n/a	n/a	n/a	15	9.5	17.8	0, 90	n/a	n/a
REC 5	Rooftop Amenity Area	60	25	12.5	28.0	49, 84	n/a	n/a	15	12.5	19.5	-79, 89	n/a	n/a



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OTTAWA, ONTARIO

MY CATERING GROUP
NOISE ATTENUATION
PROPOSED MULTI-STOREY BUILDING
1 OLD SUNSET BOULEVARD

SITE PLAN

Scale: 1:125

Drawn by: YA

Checked by: YT

Approved by: SB

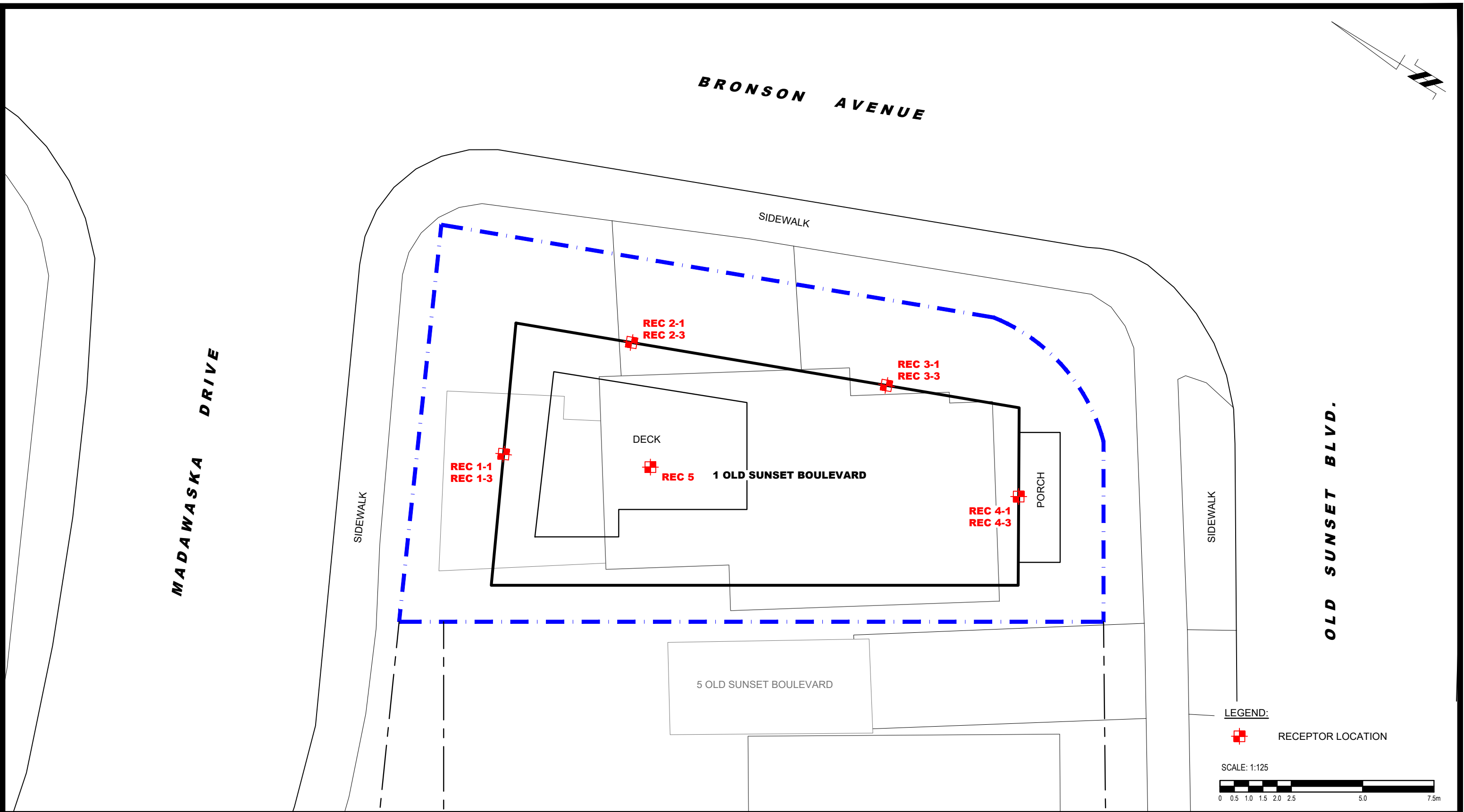
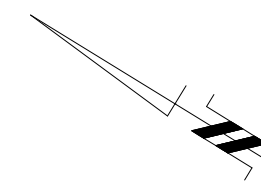
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Report No.: PG6163-1

Dwg. No.: **PG6163-1**

Revision No.:

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LEGEND:
 RECEPTOR LOCATION



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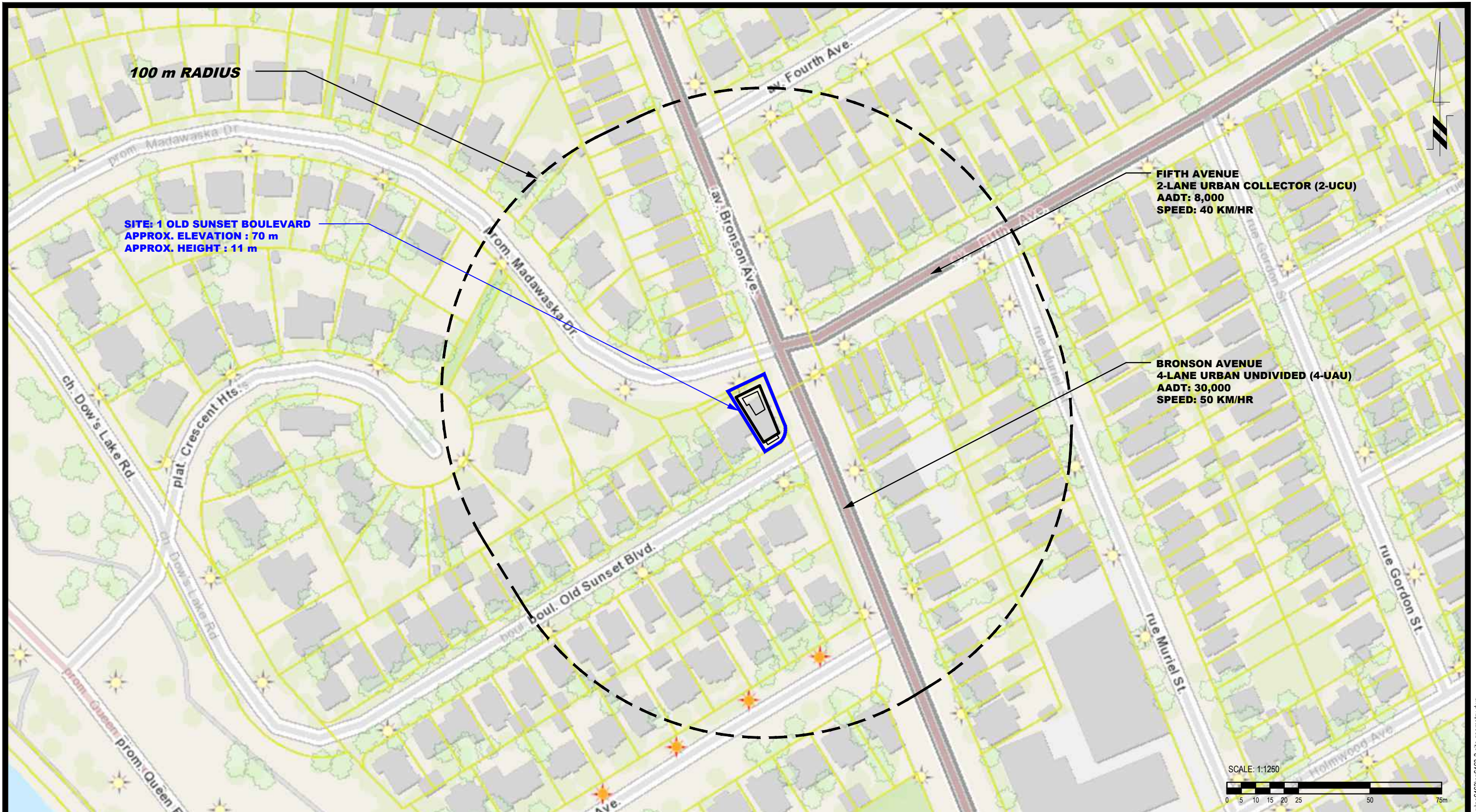
MY CATERING GROUP
 NOISE ATTENUATION
 PROPOSED MULTI-STOREY BUILDING
 1 OLD SUNSET BOULEVARD
 OTTAWA, ONTARIO

Title: **RECEPTOR LOCATION PLAN**

Scale: 1:125
 Drawn by: YA
 Checked by: YT
 Approved by: SB

Date: 02/2022
 Report No.: PG6163-1
 Dwg. No.: **PG6163-2**
 Revision No.:

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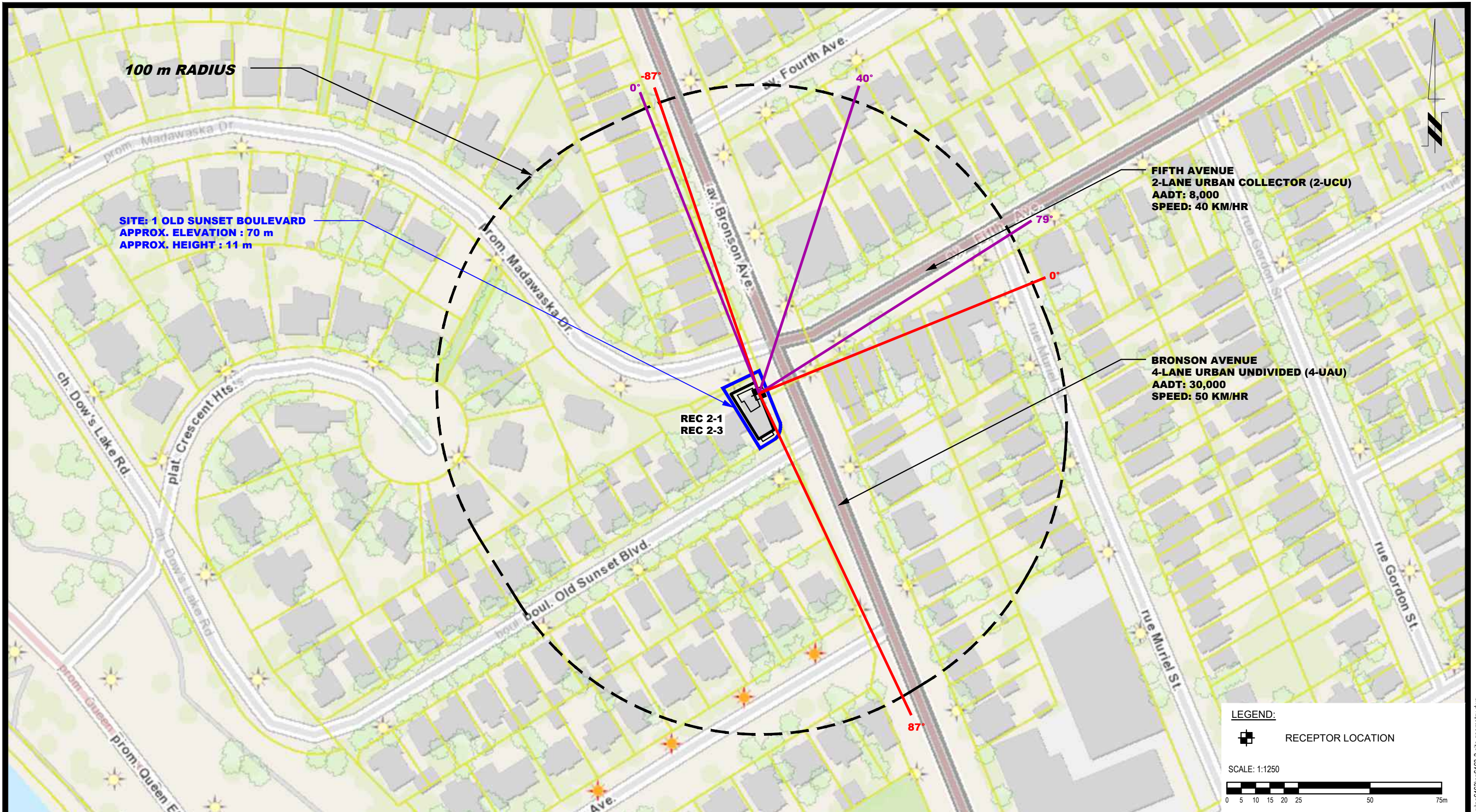
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 1 OLD SUNSET BOULEVARD

ONTARIO

SITE GEOMETRY

Scale: 1:1250
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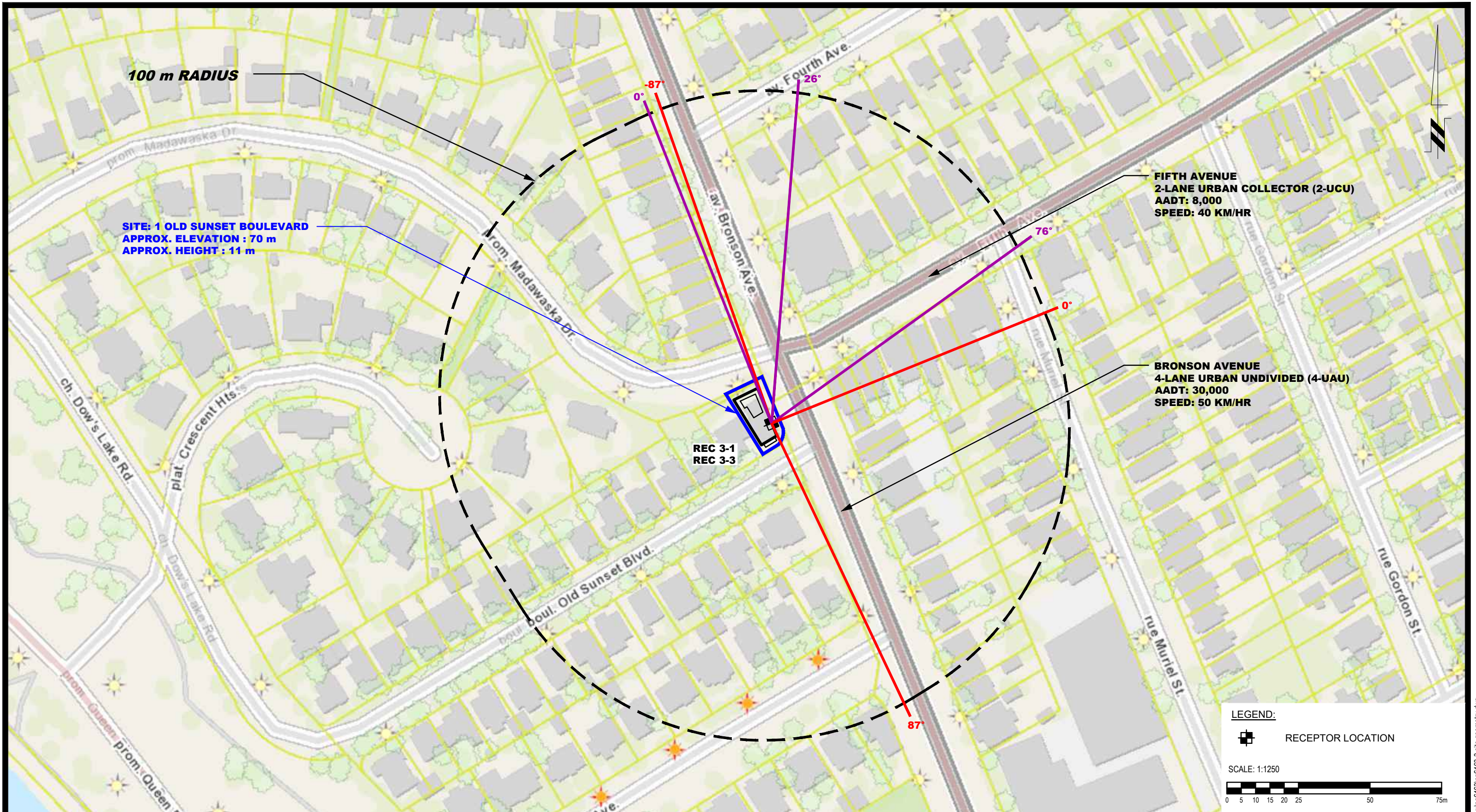
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 PROPOSED MULTI-STORY BUILDING
 1 OLD SUNSET BOULEVARD

SITE GEOMETRY - REC 2-1 AND REC 2-3

Scale:	1:1250	Date:	02/2022
Drawn by:	YA	Report No.:	PG6163-1
Checked by:	YT	Dwg. No.:	PG6163-3B
Approved by:	SB	Revision No.:	

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100 m RADIUS

SITE: 1 OLD SUNSET BOULEVARD
 APPROX. ELEVATION : 70 m
 APPROX. HEIGHT : 11 m

REC 3-1
 REC 3-3

FIFTH AVENUE
 2-LANE URBAN COLLECTOR (2-UCU)
 AADT: 8,000
 SPEED: 40 KM/HR

BRONSON AVENUE
 4-LANE URBAN UNDIVIDED (4-UAU)
 AADT: 30,000
 SPEED: 50 KM/HR

LEGEND:

RECEPTOR LOCATION

SCALE: 1:1250



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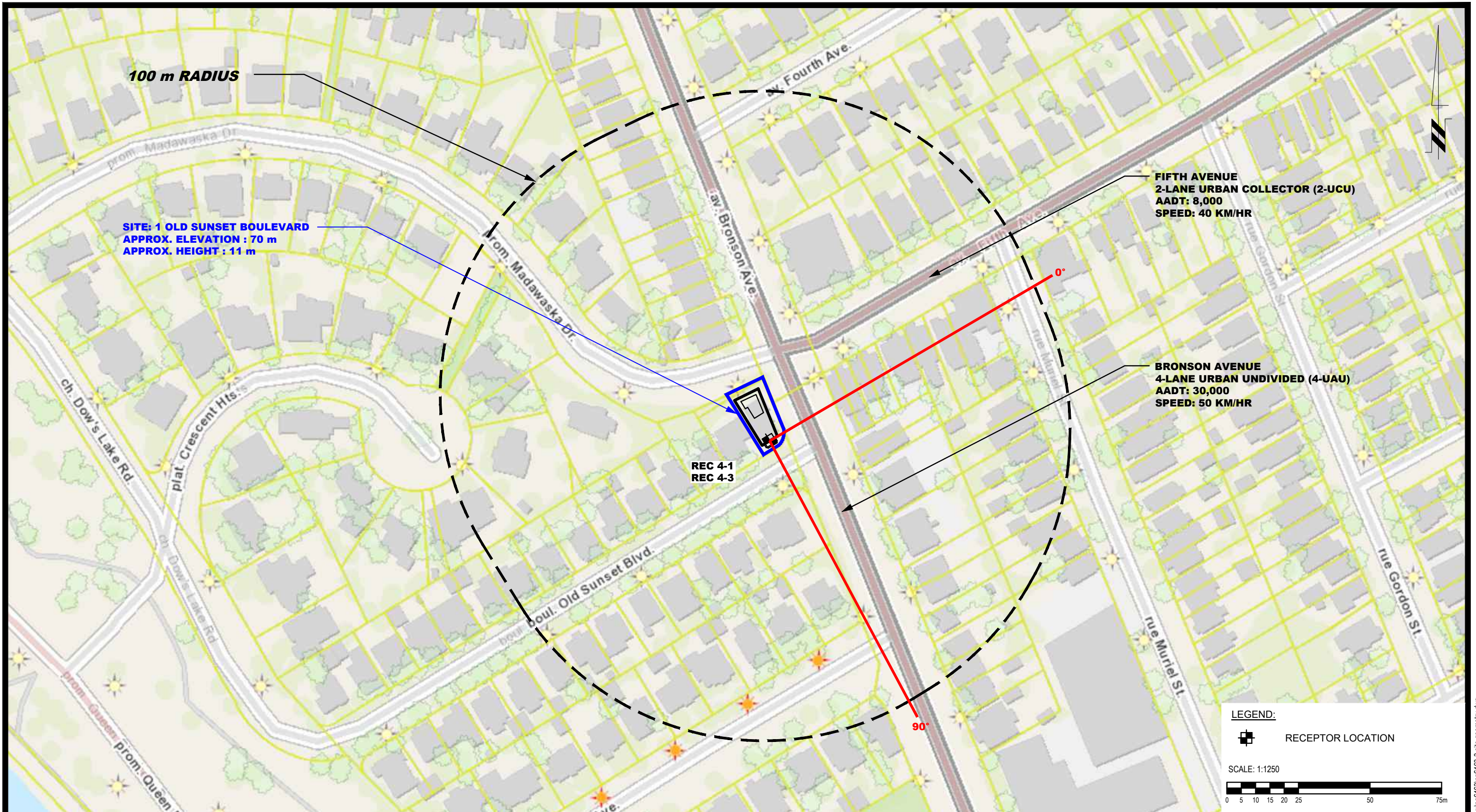
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MY CATERING GROUP
 NOISE ATTENUATION
 PROPOSED MULTI-STORY BUILDING
 1 OLD SUNSET BOULEVARD
 ONTARIO
SITE GEOMETRY - REC 3-1 AND REC 3-3

Scale: 1:1250
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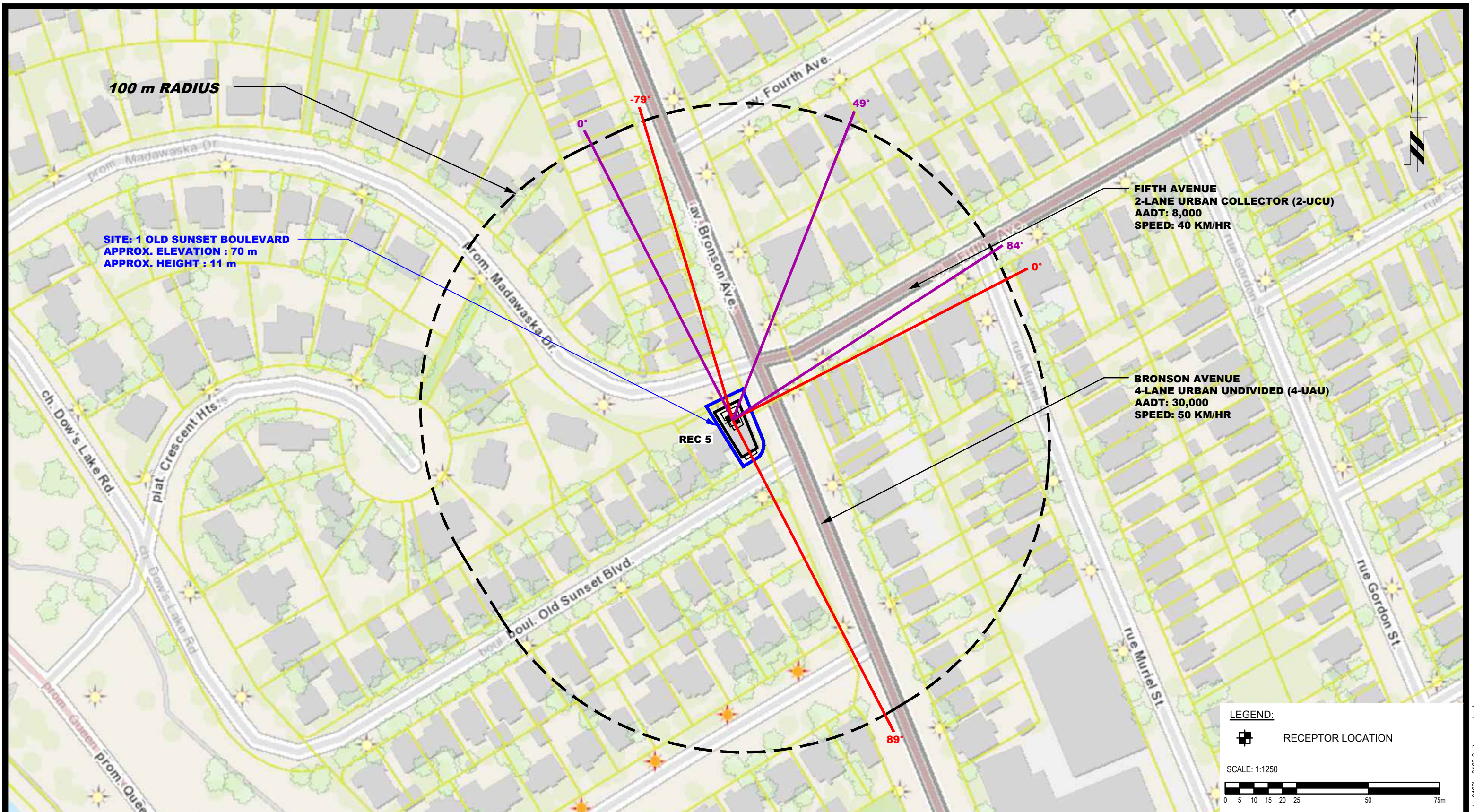
OTTAWA,
Title:

MY CATERING GROUP
NOISE ATTENUATION
PROPOSED MULTI-STOREY BUILDING
1 OLD SUNSET BOULEVARD
SITE GEOMETRY - REC 4-1 AND REC 4-3

ONTARIO

Scale: 1:1250
Drawn by: YA
Checked by: YT
Approved by: SB

Date: 02/2022
Report No.: PG6163-1
Dwg. No.: **PG6163-3D**
Revision No.:



LEGEND:
 RECEPTOR LOCATION

SCALE: 1:1250

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NO.	REVISIONS	DATE	INITIAL

OTTAWA,
 Title:

MY CATERING GROUP
 NOISE ATTENUATION
 PROPOSED MULTI-STORY BUILDING
 1 OLD SUNSET BOULEVARD
SITE GEOMETRY - REC 5

ONTARIO

Scale: 1:1250

Drawn by: YA

Checked by: YT

Approved by: SB

Date: 02/2022

Report No.: PG6163-1

Dwg. No.: **PG6163-3E**

Revision No.:

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APPENDIX 2

STAMSON RESULTS

Filename: rec11.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-1

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 59.00 deg 86.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height : 3.00 / 3.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Bronson Ave (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -80.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 3.00 / 3.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 52.37 + 0.00) = 52.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
59	86	0.62	63.96	0.00	0.00	-11.58	0.00	0.00	0.00	52.37

Segment Leq : 52.37 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 66.96 + 0.00) = 66.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	0	0.62	71.49	0.00	0.00	-4.53	0.00	0.00	0.00	66.96

Segment Leq : 66.96 dBA

Total Leq All Segments: 67.11 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 44.78 + 0.00) = 44.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
59	86	0.62	56.36	0.00	0.00	-11.58	0.00	0.00	0.00	44.78

Segment Leq : 44.78 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 59.36 + 0.00) = 59.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	0	0.62	63.89	0.00	0.00	-4.53	0.00	0.00	0.00	59.36

Segment Leq : 59.36 dBA

Total Leq All Segments: 59.51 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 67.11
(NIGHT): 59.51

↑

↑

Filename: rec13.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-3

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 59.00 deg 86.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height : 9.50 / 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Bronson Ave (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -80.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 9.50 / 9.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 53.39 + 0.00) = 53.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
59	86	0.42	63.96	0.00	0.00	-10.57	0.00	0.00	0.00	53.39

Segment Leq : 53.39 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 67.25 + 0.00) = 67.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	0	0.42	71.49	0.00	0.00	-4.24	0.00	0.00	0.00	67.25

Segment Leq : 67.25 dBA

Total Leq All Segments: 67.42 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 45.80 + 0.00) = 45.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
59	86	0.42	56.36	0.00	0.00	-10.57	0.00	0.00	0.00	45.80

Segment Leq : 45.80 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 59.65 + 0.00) = 59.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-80	0	0.42	63.89	0.00	0.00	-4.24	0.00	0.00	0.00	59.65

Segment Leq : 59.65 dBA

Total Leq All Segments: 59.83 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 67.42
(NIGHT): 59.83

↑

↑

Filename: rec21.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 2-1

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 40.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 3.00 / 3.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -87.00 deg 87.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 3.00 / 3.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 53.37 + 0.00) = 53.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	79	0.62	63.96	0.00	-2.02	-8.57	0.00	0.00	0.00	53.37

Segment Leq : 53.37 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 70.09 + 0.00) = 70.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.62	71.49	0.00	0.00	-1.40	0.00	0.00	0.00	70.09

Segment Leq : 70.09 dBA

Total Leq All Segments: 70.18 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 45.77 + 0.00) = 45.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	79	0.62	56.36	0.00	-2.02	-8.57	0.00	0.00	0.00	45.77

Segment Leq : 45.77 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 62.49 + 0.00) = 62.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.62	63.89	0.00	0.00	-1.40	0.00	0.00	0.00	62.49

Segment Leq : 62.49 dBA

Total Leq All Segments: 62.58 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.18
(NIGHT): 62.58

↑

↑

Filename: rec23.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 2-3

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 40.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 9.50 / 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -87.00 deg 87.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 9.50 / 9.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 54.20 + 0.00) = 54.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	79	0.42	63.96	0.00	-1.77	-7.98	0.00	0.00	0.00	54.20

Segment Leq : 54.20 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 70.43 + 0.00) = 70.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.42	71.49	0.00	0.00	-1.06	0.00	0.00	0.00	70.43

Segment Leq : 70.43 dBA

Total Leq All Segments: 70.53 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 46.61 + 0.00) = 46.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
40	79	0.42	56.36	0.00	-1.77	-7.98	0.00	0.00	0.00	46.61

Segment Leq : 46.61 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 62.83 + 0.00) = 62.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.42	63.89	0.00	0.00	-1.06	0.00	0.00	0.00	62.83

Segment Leq : 62.83 dBA

Total Leq All Segments: 62.93 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.53
(NIGHT): 62.93

↑

↑

Filename: rec31.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-1

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 26.00 deg 76.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 3.00 / 3.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -87.00 deg 87.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 3.00 / 3.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 53.43 + 0.00) = 53.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
26	76	0.62	63.96	0.00	-3.58	-6.94	0.00	0.00	0.00	53.43

Segment Leq : 53.43 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 70.09 + 0.00) = 70.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.62	71.49	0.00	0.00	-1.40	0.00	0.00	0.00	70.09

Segment Leq : 70.09 dBA

Total Leq All Segments: 70.18 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 45.84 + 0.00) = 45.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
26	76	0.62	56.36	0.00	-3.58	-6.94	0.00	0.00	0.00	45.84

Segment Leq : 45.84 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 62.49 + 0.00) = 62.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.62	63.89	0.00	0.00	-1.40	0.00	0.00	0.00	62.49

Segment Leq : 62.49 dBA

Total Leq All Segments: 62.58 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.18
(NIGHT): 62.58

↑

↑

Filename: rec33.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-3

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 26.00 deg 76.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 9.50 / 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

 Angle1 Angle2 : -87.00 deg 87.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 9.50 / 9.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

ROAD (0.00 + 54.28 + 0.00) = 54.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
26	76	0.42	63.96	0.00	-3.15	-6.53	0.00	0.00	0.00	54.28

Segment Leq : 54.28 dBA

↑
 Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 70.43 + 0.00) = 70.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.42	71.49	0.00	0.00	-1.06	0.00	0.00	0.00	70.43

Segment Leq : 70.43 dBA

Total Leq All Segments: 70.53 dBA

↑
 Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

ROAD (0.00 + 46.69 + 0.00) = 46.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
26	76	0.42	56.36	0.00	-3.15	-6.53	0.00	0.00	0.00	46.69

Segment Leq : 46.69 dBA

↑

Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 62.83 + 0.00) = 62.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-87	87	0.42	63.89	0.00	0.00	-1.06	0.00	0.00	0.00	62.83

Segment Leq : 62.83 dBA

Total Leq All Segments: 62.93 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.53
(NIGHT): 62.93

↑

↑

Filename: rec41.te Time Period: Day/Night 16/8 hours
 Description: Receptor Point 4-1

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

 Car traffic volume : 24288/2112 veh/TimePeriod *
 Medium truck volume : 1932/168 veh/TimePeriod *
 Heavy truck volume : 1380/120 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
 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: Bronson Ave (day/night)

 Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 3.00 / 3.00 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Bronson Ave (day)

 Source height = 1.50 m

ROAD (0.00 + 67.10 + 0.00) = 67.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.62	71.49	0.00	0.00	-4.39	0.00	0.00	0.00	67.10

Segment Leq : 67.10 dBA

Total Leq All Segments: 67.10 dBA

↑

Results segment # 1: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 59.50 + 0.00) = 59.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------	--------

0	90	0.62	63.89	0.00	0.00	-4.39	0.00	0.00	0.00	59.50
---	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 59.50 dBA

Total Leq All Segments: 59.50 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 67.10

(NIGHT): 59.50

↑

↑

Filename: rec43.te Time Period: Day/Night 16/8 hours
 Description: Receptor Point 4-3

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

```
-----
Car traffic volume   : 24288/2112  veh/TimePeriod  *
Medium truck volume : 1932/168   veh/TimePeriod  *
Heavy truck volume  : 1380/120   veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :    0 %
Road pavement      :    1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

```
-----
Angle1  Angle2      : 0.00 deg  90.00 deg
Wood depth          : 0          (No woods.)
No of house rows   : 0 / 0
Surface            : 1          (Absorptive ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height     : 9.50 / 9.50 m
Topography         : 1          (Flat/gentle slope; no barrier)
Reference angle    : 0.00
```

↑
 Results segment # 1: Bronson Ave (day)

Source height = 1.50 m

ROAD (0.00 + 67.46 + 0.00) = 67.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.42	71.49	0.00	0.00	-4.03	0.00	0.00	0.00	67.46

Segment Leq : 67.46 dBA

Total Leq All Segments: 67.46 dBA

↑

Results segment # 1: Bronson Ave (night)

Source height = 1.50 m

ROAD (0.00 + 59.86 + 0.00) = 59.86 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

0	90	0.42	63.89	0.00	0.00	-4.03	0.00	0.00	0.00	59.86
---	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 59.86 dBA

Total Leq All Segments: 59.86 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 67.46

(NIGHT): 59.86

↑

↑

Filename: rec5.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 5

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 49.00 deg 84.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 12.50 / 12.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 49.00 deg Angle2 : 84.00 deg
Barrier height : 11.00 m
Barrier receiver distance : 6.00 / 6.00 m
Source elevation : 70.00 m
Receiver elevation : 70.00 m
Barrier elevation : 70.00 m
Reference angle : 0.00

↑

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

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
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: Bronson Ave (day/night)

Angle1 Angle2 : -79.00 deg 89.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height : 12.50 / 12.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -79.00 deg Angle2 : 89.00 deg
Barrier height : 11.00 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 70.00 m
Receiver elevation : 70.00 m
Barrier elevation : 70.00 m
Reference angle : 0.00

↑
Results segment # 1: Fifth Ave (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 ! 12.50 ! 9.86 ! 79.86

ROAD (0.00 + 47.71 + 0.00) = 47.71 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

49 84 0.00 63.96 0.00 -2.22 -7.11 0.00 0.00 -6.91 47.71

Segment Leq : 47.71 dBA

↑

Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	12.50	8.83	78.83

ROAD (0.00 + 59.81 + 0.00) = 59.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-79	89	0.00	71.49	0.00	0.00	-0.30	0.00	0.00	-11.38	59.81

Segment Leq : 59.81 dBA

Total Leq All Segments: 60.07 dBA



Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	12.50	9.86	79.86

ROAD (0.00 + 40.12 + 0.00) = 40.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
49	84	0.00	56.36	0.00	-2.22	-7.11	0.00	0.00	-6.91	40.12

Segment Leq : 40.12 dBA



Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !      12.50 !      8.83 !      78.83

```

ROAD (0.00 + 52.21 + 0.00) = 52.21 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -79    89   0.00  63.89   0.00   0.00  -0.30   0.00   0.00 -11.38  52.21
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----

```

Segment Leq : 52.21 dBA

Total Leq All Segments: 52.47 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.07
(NIGHT): 52.47

↑

↑

Filename: rec5tr.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 5 tr

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Fifth Ave (day/night)

Angle1 Angle2 : 49.00 deg 84.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 12.50 / 12.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 49.00 deg Angle2 : 84.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 6.00 / 6.00 m
Source elevation : 70.00 m
Receiver elevation : 70.00 m
Barrier elevation : 70.00 m
Reference angle : 0.00

↑
Road data, segment # 2: Bronson Ave (day/night)

Car traffic volume : 24288/2112 veh/TimePeriod *
Medium truck volume : 1932/168 veh/TimePeriod *
Heavy truck volume : 1380/120 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 30000
 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: Bronson Ave (day/night)

Angle1 Angle2 : -79.00 deg 89.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 12.50 / 12.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -79.00 deg Angle2 : 89.00 deg
 Barrier height : 12.00 m
 Barrier receiver distance : 5.00 / 5.00 m
 Source elevation : 70.00 m
 Receiver elevation : 70.00 m
 Barrier elevation : 70.00 m
 Reference angle : 0.00

↑
 Results segment # 1: Fifth Ave (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	12.50	9.86	79.86

ROAD (0.00 + 44.78 + 0.00) = 44.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
49	84	0.00	63.96	0.00	-2.22	-7.11	0.00	0.00	-9.85	44.78

Segment Leq : 44.78 dBA

↑

Results segment # 2: Bronson Ave (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	12.50	8.83	78.83

ROAD (0.00 + 56.97 + 0.00) = 56.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-79	89	0.00	71.49	0.00	0.00	-0.30	0.00	0.00	-14.22	56.97

Segment Leq : 56.97 dBA

Total Leq All Segments: 57.22 dBA



Results segment # 1: Fifth Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	12.50	9.86	79.86

ROAD (0.00 + 37.18 + 0.00) = 37.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
49	84	0.00	56.36	0.00	-2.22	-7.11	0.00	0.00	-9.85	37.18

Segment Leq : 37.18 dBA



Results segment # 2: Bronson Ave (night)

Source height = 1.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !      12.50 !      8.83 !      78.83

```

ROAD (0.00 + 49.37 + 0.00) = 49.37 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -79    89   0.00  63.89   0.00   0.00  -0.30   0.00   0.00 -14.22  49.37
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----

```

Segment Leq : 49.37 dBA

Total Leq All Segments: 49.62 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 57.22
(NIGHT): 49.62

↑

↑