Traffic Noise Assessment

129 Main Street
Ottawa, Ontario

REPORT: GWE10-018 – Traffic Noise

Prepared For:

Rob Verch
Roderick Lahey Architect Inc.
56 Beech Street
Ottawa, Ontario K1S 3J6
Canada

Prepared By:

Omar Daher, B.Eng., EIT, Junior Environmental Scientist
Joshua Foster, P.Eng., Principal

September 20, 2018

127 Walgreen Road, Ottawa, Ontario K0A 1L0
T (613) 836-0934 ● www.gradientwind.com

EXECUTIVE SUMMARY

This document describes an update to traffic noise assessment in support of site plan application for a proposed residential development at 129 Main Street in Ottawa, Ontario. This report serves as an update to a previous addendum issued by GME on November 15, 2013. For the original traffic noise assessment report, please refer to GME report #10-018 – Noise Final, dated April 22, 2010. This report reflects the most recent changes to the development including alterations to the building profile, floor plans and construction details. The development will contain five (5) floors and rise approximately 20 metres above grade including the mechanical penthouse. There is a rooftop terrace that will serve as an Outdoor Living Areas (OLA). All other private balconies provided as amenity space are not considered as OLA since they are less than 4-metres in depth. The major sources of traffic noise are due to Main Street to the west and Highway 417 East/West to the north. Figure 1 illustrates a complete site plan with surrounding context.

The assessment is based on: (i) theoretical noise prediction methods that conform to the Ministry of the Environment, Conservation and Parks (MECP) and City of Ottawa requirements; (ii) noise level criteria as specified by the City of Ottawa's Environmental Noise Control Guidelines (ENCG); (iii) future vehicular traffic volumes based on the City of Ottawa's Official Plan roadway classifications; and (iv) site plan drawings received from Roderick Lahey Architect Inc. dated June 1, 2018.

The results of the current analysis indicate that noise levels will range between 48 and 70 dBA during the daytime period (07:00-23:00) and between 40 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs on the west façade of the development, most exposed to Main Street and Highway 417. Predicted noise levels due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Therefore, upgraded building components are required where noise levels exceed 65 dBA as shown in Figure 3.

In addition to upgraded building components, the development requires central air conditioning with applicable Warning Clauses. If installed, this would allow occupants to keep windows closed to maintain a quiet indoor environment. Additionally, Warning Clauses will be included in all Agreements of Lease, Purchase and Sale as described in Section 6.

Noise levels at the rooftop terrace are expected to exceed 55 dBA but not 60 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the Leq to 55 dBA where technically and administratively feasible. Investigation into the application of a noise barrier on the rooftop terrace found that noise levels cannot be reduced to 55 dBA without the application of an excessively tall barrier. A 2.0 metre barrier only reduced noise levels by 1 dBA to 59 dBA. Therefore, since noise levels cannot be technically or economically reduced to 55 dBA and since noise levels do not exceed 60 dBA, applicable Warning Clauses will be required, as stated in Section 6.

CONTENTS

1. INTRODUCTION

Gradient Wind Engineering Inc. (GWE), formerly Gradient Microclimate Engineering (GME) was retained by Roderick Lahey Architect Inc. to undertake a traffic noise assessment in support of site plan application for a proposed residential development at 129 Main Street in Ottawa, Ontario. This report serves as an update to a previous addendum issued by GME on November 15, 2013. For the original traffic noise assessment report, please refer to GME report #10-018 – Noise Final, dated April 22, 2010. The development will contain 5 floors and rise approximately 20 metres above grade. This report summarizes the methodology, results, and recommendations related to a traffic noise assessment. GWE's scope of work involved assessing exterior and interior noise levels generated by local roadway traffic. The assessment was performed on the basis of theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP)[2] guidelines. Noise calculations were based on architectural drawings received from Roderick Lahey Architect Inc., with future traffic volumes corresponding to the City of Ottawa's Official Plan (OP) roadway classifications.

2. TERMS OF REFERENCE

The focus of this traffic noise assessment a proposed residential development at 129 Main Street in Ottawa, Ontario. The development will contain 5 floors and rise approximately 20 metres above grade including the mechanical penthouse. Amenity space is provided in the form of a rooftop terrace on the roof of the building, and private balconies on the various floors. As the private balconies are less than 4-metres in depth, they are not considered to be Outdoor Living Areas (OLA). The building planform is rectangular and is oriented along the intersection of Main Street and Springhurst Avenue.

The site is surrounded in the immediate vicinity by residential buildings to the east and north, a university to the south, and a high school to the west. High-density residential areas are located southwest of the development beyond the high school west of the development. The major sources of traffic noise are Main Street to the west, and Highway 417 to the North. The original assessment considered Main Street as a 4-lane Arterial, but due to the Main Street Renewal project being recently completed, Main Street is

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016

[2] Ontario Ministry of the Environment, Conservation and Parks – Environmental Noise Guidelines, Publication NPC-300, Queens Printer for Ontario, Toronto, 2013

now a 2-lane Arterial. Please see Section 4.4 for further details. Figure 1 illustrates a complete site plan with surrounding context.

3. OBJECTIVES

The main goals of this work are to: (i) calculate the future noise levels on the study buildings produced by local roadway traffic, and (ii) ensure that interior and exterior noise levels do not exceed the allowable limits specified by the City of Ottawa's Environmental Noise Control Guidelines as outlined in Section 4.2 of this report.

4. METHODOLOGY

4.1 Background

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

4.2 Roadway Traffic Noise

4.2.1 Criteria for Roadway Traffic Noise

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

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

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

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

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

4.3 Roadway Noise Assessment

4.3.1 Theoretical Roadway Noise Predictions

Noise predictions were performed with the aid of the MECP computerized noise assessment program, STAMSON 5.04, for road analysis. Appendix A includes the STAMSON 5.04 input and output data.

[3] Adapted from ENCG 2016 – Tables 2.2b and 2.2c
[4] Burberry, P.B. (2014). Mitchell's Environment and Services. Routledge, Page 125
[5] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.8
[6] MECP, Environmental Noise Guidelines, NPC 300 – Part C, Section 7.1.3

Roadway traffic noise calculations were performed by treating each roadway segment as separate line sources of noise. In addition to the traffic volumes summarized in Table 2, theoretical noise predictions were based on the following parameters:

- Truck traffic on all roadways was taken to comprise 5% heavy trucks and 7% medium trucks, as per ENCG requirements for noise level predictions.
- The day/night split was taken to be 92% / 8% respectively for all streets.
- Reflective ground surface between source and receiver for Main Street, while absorptive ground considered for the highway due to the large presence of soft ground due to the residential areas between the highway and the proposed development.
- Topography assumed to be a flat/gentle slope.
- Receptor height taken to be 6.1 metres at the 2nd floor, 12.16 m at the 4th floor, and 19.5 m on the roof of the fifth floor based on site plan drawings attached in Appendix A.
- 3 surrounding buildings used as potential noise barriers; an approved future building under construction known as “The Corners on Main” south of the development, taken to be 18-metres in height based on architectural renderings publicly available online, a 9-storey building directly north of the development, and a 27-metre tall building on the intersection of Main Street and Lees Avenue.
- Highway considered with an elevation difference of 10 metres compared to the site using satellite imagery.
- Proposed building used as a barrier for Receptors 9, as it acts as a noise screen against Main Street.
- Receptors 1-2 and 7-8 considered a 3.0-metre barrier along Highway 417 based on satellite imagery to act as a noise screen towards the development.
- Receptor distances and exposure angles found in Appendix A, where Receptors 1-2, 3-4, 5-6, and 7-8 have similar exposure angles and distances
- Distance adjustment used for some receivers where source-receiver distances is less than 15 m.
- Noise receptors were strategically placed at 9 locations around the study area (see Figure 2).

In some cases, source-receiver distances were less than 15 m, which is the minimum distance required for entry in STAMSON. A distance adjustment calculation shown in equation 1 from ORNAMENT was used to

calculate the adjustment value, which was added to the calculated noise level from STAMSON[7]. The equation is as follows:

$$Distance\ Adjustment\ Value = 10\ (1+\propto) \log(\frac{D_{ref}}{D}) \qquad \textbf{(1)}$$

Where the parameters are:

- D_{ref}= Distance used in STAMSON, 15 metres
- D= Actual distance of source-receiver
- α= Ground Absorption Factor (Hard Ground = 0, Soft Ground =1)

4.4 Roadway Traffic Volumes

The ENCG dictates that noise calculations should consider future sound levels based on a roadway's classification at the mature state of development. Recently, a project was completed which reduced Main Street from 4-lanes to 2-lanes, therefore, this report reflects the most recent change to Main Street. Therefore, traffic volumes are based on the roadway classifications outlined in the City of Ottawa's Official Plan (OP) and Transportation Master Plan[8] which provide additional details on future roadway expansions. Average Annual Daily Traffic (AADT) volumes are then based on data in Table B1 of the ENCG for each roadway classification. Table 2 (below) summarizes the AADT values used for each roadway included in this assessment.

TABLE 2: ROADWAY TRAFFIC DATA

Segment	Roadway / Transit Class	Speed Limit (km/h)	Traffic Volumes
Main Street	2-UAU	50	**15,000**
Highway 417 East Bound (3 Lanes)	Highway	100	**54,999**
Highway 417 East Bound (3 Lanes)	Highway	100	**54,999**

[7] ORNAMENT Technical Document, October 1989, Section 4
[8] City of Ottawa Transportation Master Plan, November 2013

4.5 Indoor Noise Calculations

When calculations reveal that outdoor noise levels are sufficiently high as to require investigation of indoor noise levels, calculations are performed to verify the Sound Transmission Class (STC) requirements for building components. The difference between outdoor and indoor noise levels is the noise attenuation provided by the building envelope, measured as sound transmission. According to common industry practice, complete walls and individual wall elements are rated according to Sound Transmission Class (STC). The STC ratings of common residential walls built in conformance with the Ontario Building Code (2012) typically exceed STC 35, depending on exterior cladding, thickness and interior finish details. For example, brick walls can achieve STC 50 or more. Standard good quality double-glazed non-operable windows can have STC ratings ranging from 25 to 40, depending on the window manufacturer, pane thickness and inter-pane spacing. As previously mentioned, the windows are the known weak point in a partition.

As per Section 4.2, when daytime noise levels from road sources at the plane of the window exceed 65 dBA or 60 dBA during the nighttime, building components should be evaluated to ensure acceptable indoor noise levels can be achieved.

The performance of the windows and walls was evaluated using a software program called *INSUL* by Marshal Day Acoustics. The program provides estimates of STC ratings of individual building elements, such as walls and windows. It also predicts indoor sound levels in a room based on the sound transmission data of the components and the outdoor noise levels. The indoor noise calculations are based on the International Standards Organization (ISO) Standard 12354-3[9]. The calculations for indoor noise consider: (i) window type and transmission loss; (ii) exterior wall type and transmission loss; (iii) room volume and the acoustic absorption characteristics of the room; (iv) outdoor noise levels; (v) the indoor sound level criteria, which varies according to the intended use of a space as per Table 1. Outdoor noise level spectra were assumed based on the information in Canada Mortgage and Housing Corporation (CMHC) document "Road and Rail Noise: Effects on Housing" [10]. The CMHC spectra corresponds to an overall sound level of 80 dBA. Octave bands were adjusted uniformly to match the calculated outdoor noise levels predicted by STAMSON.

[9] ISO, Standard 12354-3, Estimations of Acoustic Performance of Buildings from the Performance of Elements – Part 3 Airborne Sound Insulation Against Outdoor Sound

[10] Canada Mortgage and Housing Corporation "Road and Rail Noise: Effects on Housing", 1986, Appendix D: Table D1

5. RESULTS AND DISCUSSION

5.1 Roadway Traffic Noise Levels

The results of the roadway traffic noise calculations are summarized in Table 3 below. A complete set of input and output data from all STAMSON 5.04 calculations are available in Appendix A.

TABLE 3: EXTERIOR NOISE LEVELS DUE TO ROAD TRAFFIC

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
1	6.10	POW – 2nd Floor – West Façade	70*	62*
2	12.16	POW – 4th Floor – West Façade	70*	62*
3	6.10	POW – 2nd Floor – East Façade	63	56
4	12.16	POW – 4th Floor – East Façade	63	56
5	6.10	POW – 2nd Floor – South Façade	48	40
6	12.16	POW – 4th Floor – South Façade	51	43
7	6.10	POW – 2nd Floor – North Façade	64	56
8	12.16	POW – 4th Floor – North Façade	66	58
9	19.5	OLA – Rooftop Terrace	60	-

* - Distance Adjustment Applied to Receptors as per equation 1

The results of the current analysis indicate that noise levels will range between 48 and 70 dBA during the daytime period (07:00-23:00) and between 40 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs on the west façade of the development, most exposed to Main Street and Highway 417. Predicted noise levels due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Therefore, upgraded building components are required where noise levels exceed 65 dBA as shown in Figure 3. A distance adjustment of 0.97 dBA was applied to Receptors 1-2.

5.2 Noise Control Measures

The noise levels predicted due to transportation sources exceed the criteria listed in Section 4.2 for upgraded building components. As discussed in Section 4.5, the anticipated STC requirements for windows, walls, and doors have been estimated using the *INSUL* program. Detailed STC calculations show

that common architecturally specified wall construction[11] and window details will provide the necessary attenuation to control interior noise levels, as discussed in the following paragraphs. Details of *INSUL* calculations and STC estimates can be found in Appendix B.

EXTERIOR WALL STC REVIEW

The exterior wall assemblies for the development have been assumed based on preliminary design information provided by Roderick Lahey Architect Inc., and previous GWE experience for exterior residential wall assemblies. Additionally, available architectural renderings illustrate the use of a masonry finish on the exterior wall assemblies, as shown in Appendix B. Acoustical performance has been evaluated by *INSUL* and comparison of similar assemblies based on NRC test data[12].

Exterior Wall:

- 102 mm Brick Veneer
- 13 mm Glass Faced Gypsum Board (Modeled as DensGlass Sheathing Georgia PA in *INSUL*)
- 152 mm Metal Studs
- 149 mm Wool Batt Insulation
- 13 mm Type C Gypsum Board (minimum)

INSUL Predicted STC rating 52

WINDOW AND DOOR STC REQUIREMENTS

Common and typical exterior window and door assemblies, listed below, have been rated for a particular STC rating based on *INSUL* estimates. Window STC requirements, as shown below and on Figure 3, indicate the façades that require upgraded windows to mitigate noise levels below the criteria specified in Table 1.

Window:

- 4 mm Inner Pane
- 13 mm Air Space
- 4 mm Outer Pane

INSUL Predicted STC rating 33

[11] Based on the Architectural drawings and common residential building practices.

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

It is the responsibility of the manufacturer to ensure that the specified window achieves the required STC. This can only be assured by using window configurations that have been certified by laboratory testing. The requirements for STC ratings assume that the remaining components of the building are constructed and installed according to the minimum standards of the Ontario Building Code. The specified STC requirements also apply to swinging and/or sliding patio doors.

Results of the calculations also indicate that the development will require central air conditioning, which will allow occupants to keep windows closed and maintain a comfortable living environment. In addition to ventilation requirements, Warning Clauses will also be required to be placed on all Lease, Purchase and Sale Agreements, as summarized in Section 6 below.

5.3 Noise Barrier Calculation

Noise levels at the rooftop terrace are expected to exceed 55 dBA but not 60 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the Leq to 55 dBA where technically and administratively feasible. Investigation into the application of a noise barrier on the rooftop terrace found that noise levels cannot be reduced to 55 dBA without the application of an excessively tall barrier. A 2.0 metre barrier only reduced noise levels by 1 dBA to 59 dBA. Therefore, since noise levels cannot be technically or economically reduced to 55 dBA and since noise levels do not exceed 60 dBA, applicable Warning Clauses will be required, as stated in Section 6. Table 4 summarizes the results of the barrier investigations.

TABLE 4: RESULTS OF NOSIE BARRIER INVESTIGATION

Location	Reference Receptor	Barrier Height (m)	Daytime L_{eq} Noise Levels (dBA)	
			With Barrier	Without Barrier
OLA – 5th Floor – Rooftop Terrace	9	2.0	59	60

6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current analysis indicate that noise levels will range between 48 and 70 dBA during the daytime period (07:00-23:00) and between 40 and 62 dBA during the nighttime period (23:00-07:00). The highest noise level (70 dBA) occurs on the west façade of the development, most exposed to Main Street and Highway 417. Predicted noise levels due to roadway traffic exceed the criteria listed in Section 4.2 for building components. Therefore, upgraded building components are required where noise levels exceed 65 dBA as shown in Figure 3.

Noise levels at the rooftop terrace are expected to exceed 55 dBA but not 60 dBA during the daytime period. According to the ENCG, if these areas are to be used as outdoor living areas, noise control measures (barriers) are required to reduce the Leq to 55 dBA where technically and administratively feasible. Investigation into the application of a noise barrier on the rooftop terrace found that noise levels cannot be reduced to 55 dBA without the application of an excessively tall barrier. A 2.0 metre barrier only reduced noise levels by 1 dBA to 59 dBA. Therefore, since noise levels cannot be technically or economically reduced to 55 dBA and since noise levels do not exceed 60 dBA, applicable Warning Clauses will be required, as stated below.

In addition to upgraded building components, ventilation requirements dictate that the development should have central air conditioning. If installed this would allow occupants to keep windows closed to maintain a quiet indoor environment. Additionally, as detailed in Section 5.3, applicable warning clauses are required for the OLA on the rooftop since noise levels could not be mitigated to 55 dBA. The following Warning Clause[13] in all Agreements of Lease, Purchase and Sale will be required for these units:

> *"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 roadway traffic will interfere with some activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment, Conservation and Parks.*
>
> *To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area and indoor environment that is within provincial guidelines. Measures for sound attenuation include:*
>
> - *STC multi-pane glass glazing elements:*
>   - *West and North Façade: STC 33*
> - *STC rated exterior walls*
>   - *North and West façade: STC 52*
>
> *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.*

[13] City of Ottawa, Environmental Noise Control Guidelines, January 2016

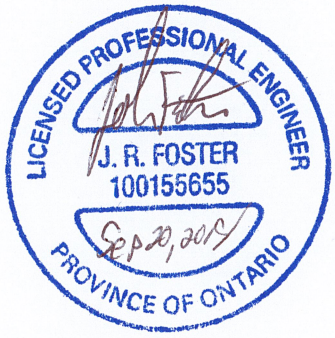
Additionally, with respect to the Outdoor Living Area on the rooftop, Purchasers/ Tenants are advised that sound levels due to road traffic may, on occasion, interfere with some activities of the occupants as the sound levels exceed the level limits of the City of Ottawa and Ministry of the Environment, Conservation and Parks.

To ensure that provincial sound level limits are not exceeded internally, this dwelling unit has been designed with central air conditioning. The 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 and the Ministry of the Environment, Conservation and Parks. "

This concludes our assessment and report. If you have any questions or wish to discuss our findings please advise us. In the interim, we thank you for the opportunity to be of service.

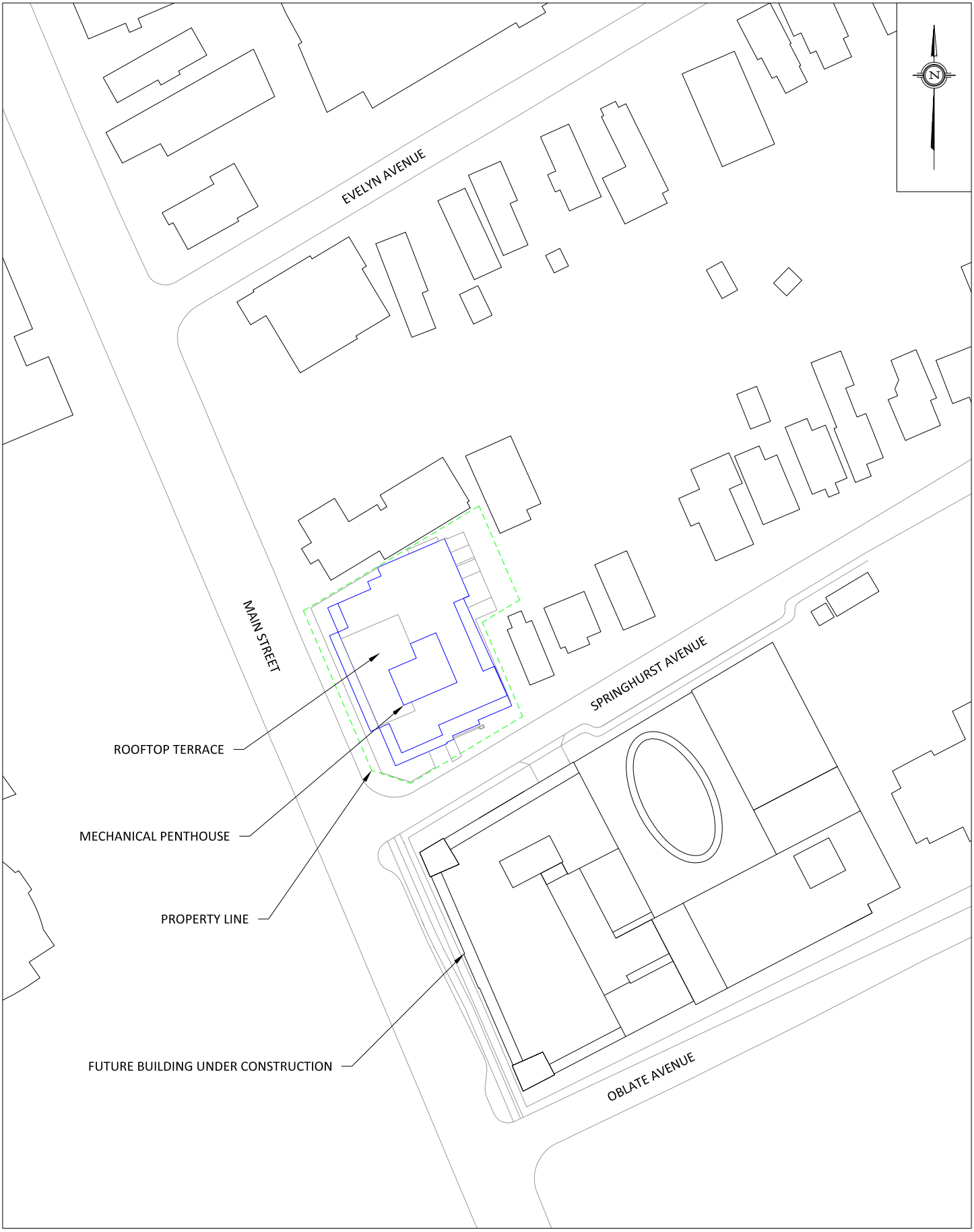
Yours truly,

Gradient Wind Engineering Inc.



Omar Daher, B.Eng., EIT
Junior Environmental Scientist
GWE10-018 – Traffic Noise

Joshua Foster, P.Eng.
Principal



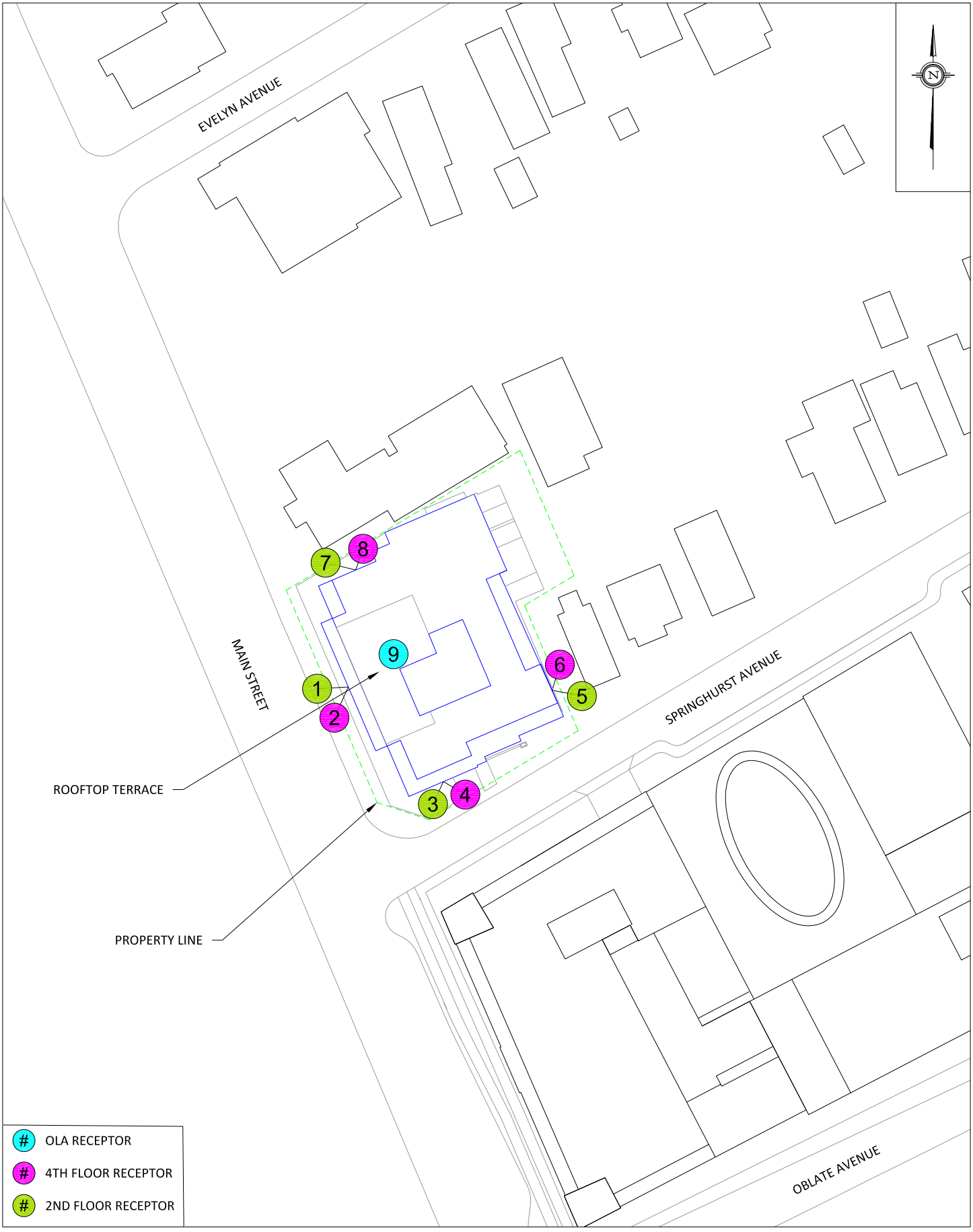
127 Walgreen Road
Ottawa, Ontario
(613) 836 0934

GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE ASSESSMENT		
SCALE	1:1000 (APPROX.)	DRAWING NO.	GWE18-018-1
DATE	AUGUST 2, 2018	DRAWN BY	O.D.

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT



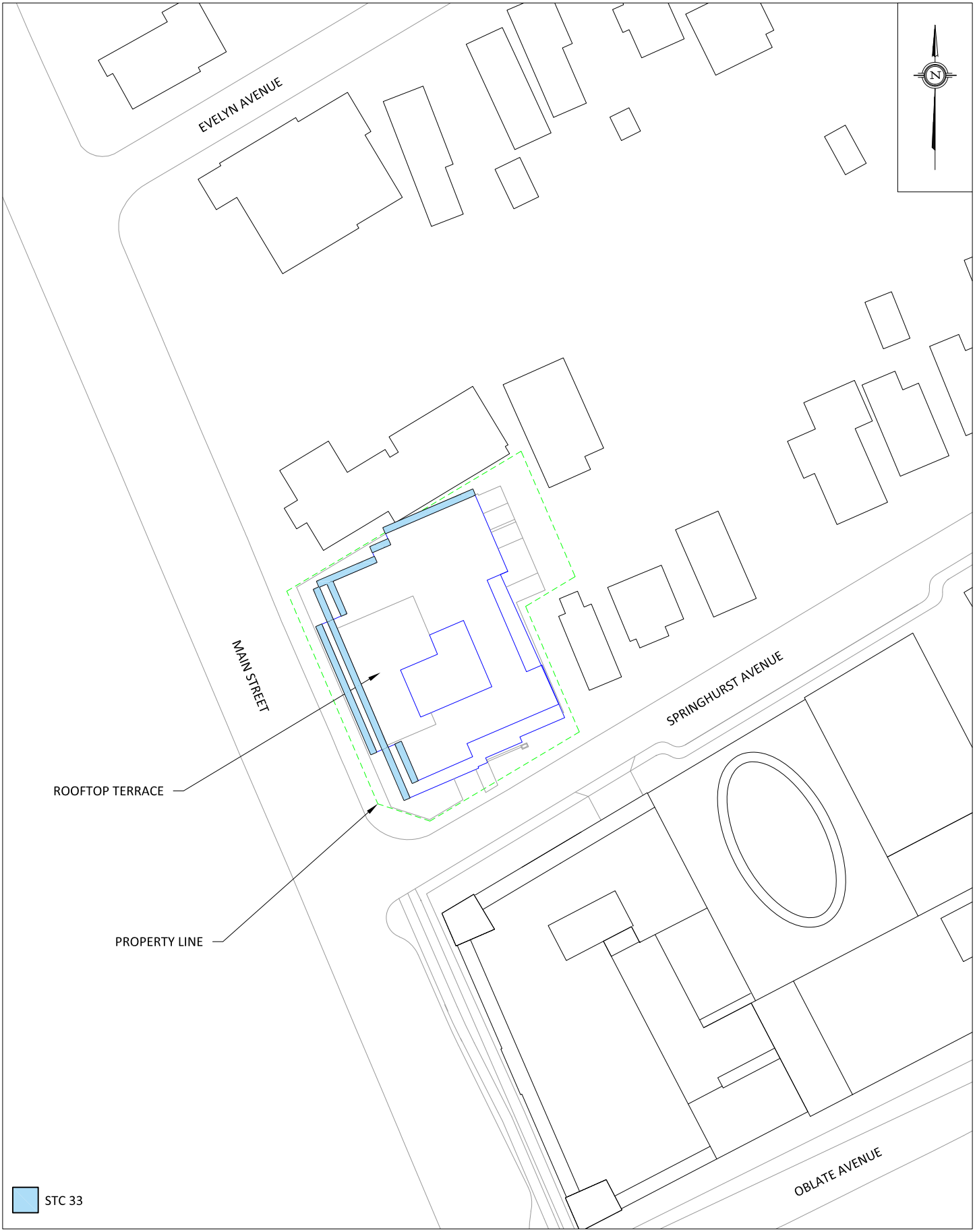
127 Walgreen Road
Ottawa, Ontario
(613) 836 0934

GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE ASSESSMENT		
SCALE	1:750 (APPROX.)	DRAWING NO.	GWE18-018-2
DATE	AUGUST 2, 2018	DRAWN BY	O.D.

DESCRIPTION

FIGURE 2:
RECEPTOR LOCATIONS



127 Walgreen Road
Ottawa, Ontario
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE ASSESSMENT
SCALE	1:750 (APPROX.)
DRAWING NO.	GWE18-018-3
DATE	AUGUST 2, 2018
DRAWN BY	O.D.

DESCRIPTION

FIGURE 3:
BEDROOM AND LIVING ROOM WINDOW STC REQUIREMENTS

APPENDIX A

STAMSON 5.04 - INPUT AND OUTPUT DATA

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_001.te          Time Period: Day/Night 16/8 hours
Description: Receptor 1


Road data, segment # 1: MAIN (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: MAIN (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   6.10 / 6.10   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 E (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 9.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 313.00 / 313.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: 417 W (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417 W (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 345.00 / 345.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 9.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 313.00 / 313.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

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

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00  68.48
-------------------------------------------------------------------------------

Segment Leq : 68.48 dBA


Results segment # 2: 417 E (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 !        6.10 !        1.33 !        75.33

ROAD (0.00 + 50.62 + 0.00) = 50.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.34  80.15   0.00 -17.89  -3.37   0.00   0.00  -8.27  50.62
-------------------------------------------------------------------------------

Segment Leq : 50.62 dBA

#                       #
```

Results segment # 3: 417 W (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	6.10	0.99	74.99

ROAD (0.00 + 51.58 + 0.00) = 51.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	9	0.34	80.15	0.00	-18.28	-3.37	0.00	0.00	-6.91	51.58

Segment Leq : 51.58 dBA

Total Leq All Segments: 68.64 dBA

Results segment # 1: MAIN (night)

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	60.88	0.00	0.00	0.00	0.00	0.00	0.00	60.88

Segment Leq : 60.88 dBA

# #

```
Results segment # 2: 417 E (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 !        6.10 !        1.33 !        75.33

ROAD (0.00 + 43.02 + 0.00) = 43.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.34  72.55   0.00 -17.89  -3.37   0.00   0.00  -8.27  43.02
-------------------------------------------------------------------------------

Segment Leq : 43.02 dBA


Results segment # 3: 417 W (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 !        6.10 !        0.99 !        74.99

ROAD (0.00 + 43.99 + 0.00) = 43.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.34  72.55   0.00 -18.28  -3.37   0.00   0.00  -6.91  43.99
-------------------------------------------------------------------------------

Segment Leq : 43.99 dBA

Total Leq All Segments: 61.04 dBA


TOTAL Leq FROM ALL SOURCES (DAY): 68.64
                           (NIGHT): 61.04

#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_002.te          Time Period: Day/Night 16/8 hours
Description: Receptor 2


Road data, segment # 1: MAIN (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: MAIN (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  12.16 / 12.16  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 E (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 9.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 313.00 / 313.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: 417 W (day/night)
------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: 417 W (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   9.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 345.00 / 345.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 9.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 313.00 / 313.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

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

Source height = 1.50 m

ROAD (0.00 + 68.48 + 0.00) = 68.48 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00   0.00   0.00   0.00   0.00   0.00  68.48
-------------------------------------------------------------------------------

Segment Leq : 68.48 dBA


Results segment # 2: 417 E (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 !       12.16 !        1.52 !        75.52

ROAD (0.00 + 53.92 + 0.00) = 53.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.16  80.15   0.00 -15.47  -2.99   0.00   0.00  -7.77  53.92
-------------------------------------------------------------------------------

Segment Leq : 53.92 dBA

#                       #
```

```
Results segment # 3: 417 W (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 !       12.16 !        1.56 !        75.56

ROAD (0.00 + 55.25 + 0.00) = 55.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.16  80.15   0.00 -15.80  -2.99   0.00   0.00  -6.11  55.25
-------------------------------------------------------------------------------

Segment Leq : 55.25 dBA

Total Leq All Segments: 68.82 dBA


Results segment # 1: MAIN (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.88 + 0.00) = 60.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00   0.00   0.00   0.00   0.00   0.00  60.88
-------------------------------------------------------------------------------

Segment Leq : 60.88 dBA

#                       #
```

```
Results segment # 2: 417 E (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 !       12.16 !        1.52 !        75.52

ROAD (0.00 + 46.32 + 0.00) = 46.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.16  72.55   0.00 -15.47  -2.99   0.00   0.00  -7.77  46.32
-------------------------------------------------------------------------------

Segment Leq : 46.32 dBA


Results segment # 3: 417 W (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 !       12.16 !        1.56 !        75.56

ROAD (0.00 + 47.65 + 0.00) = 47.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      9   0.16  72.55   0.00 -15.80  -2.99   0.00   0.00  -6.11  47.65
-------------------------------------------------------------------------------

Segment Leq : 47.65 dBA

Total Leq All Segments: 61.22 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.82
                           (NIGHT): 61.22
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_003.te          Time Period: Day/Night 16/8 hours
Description: Receptor 3


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -66.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

#                       #
```

```
Results segment # 1: Main (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 !        6.10 !        4.16 !         4.16

ROAD (0.00 + 41.28 + 63.10) = 63.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  68.48   0.00  -1.03  -8.75   0.00   0.00 -17.43  41.28
-------------------------------------------------------------------------------
   -66      0   0.00  68.48   0.00  -1.03  -4.36   0.00   0.00   0.00  63.10
-------------------------------------------------------------------------------

Segment Leq : 63.12 dBA

Total Leq All Segments: 63.12 dBA


Results segment # 1: Main (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 !        6.10 !        4.16 !         4.16

ROAD (0.00 + 33.68 + 55.50) = 55.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  60.88   0.00  -1.03  -8.75   0.00   0.00 -17.43  33.68
-------------------------------------------------------------------------------
   -66      0   0.00  60.88   0.00  -1.03  -4.36   0.00   0.00   0.00  55.50
-------------------------------------------------------------------------------

Segment Leq : 55.53 dBA

Total Leq All Segments: 55.53 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.12
                           (NIGHT): 55.53
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_004.te          Time Period: Day/Night 16/8 hours
Description: Receptor 4


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :  12.16 / 12.16  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -66.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

#                       #
```

```
Results segment # 1: Main (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 !       12.16 !        7.67 !         7.67

ROAD (0.00 + 42.66 + 63.10) = 63.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  68.48   0.00  -1.03  -8.75   0.00   0.00 -16.04  42.66
-------------------------------------------------------------------------------
   -66      0   0.00  68.48   0.00  -1.03  -4.36   0.00   0.00   0.00  63.10
-------------------------------------------------------------------------------

Segment Leq : 63.14 dBA

Total Leq All Segments: 63.14 dBA


Results segment # 1: Main (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 !       12.16 !        7.67 !         7.67

ROAD (0.00 + 35.07 + 55.50) = 55.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -66   0.00  60.88   0.00  -1.03  -8.75   0.00   0.00 -16.04  35.07
-------------------------------------------------------------------------------
   -66      0   0.00  60.88   0.00  -1.03  -4.36   0.00   0.00   0.00  55.50
-------------------------------------------------------------------------------

Segment Leq : 55.54 dBA

Total Leq All Segments: 55.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.14
                           (NIGHT): 55.54
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 38:01:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_005.te          Time Period: Day/Night 16/8 hours
Description: Receptor 5


Road data, segment # 1: 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 E (day/night)
---------------------------------------
Angle1   Angle2           :  12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 5
House density             :     65 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 340.00 / 340.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: 417 W (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 W (day/night)
---------------------------------------
Angle1   Angle2           :  12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 5
House density             :     65 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 362.00 / 362.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

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

Source height = 1.50 m

ROAD (0.00 + 44.87 + 0.00) = 44.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.52  80.15   0.00 -20.63  -5.07   0.00  -9.57   0.00  44.87
-------------------------------------------------------------------------------

Segment Leq : 44.87 dBA


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

Source height = 1.50 m

ROAD (0.00 + 44.49 + 0.00) = 44.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.52  80.15   0.00 -21.05  -5.07   0.00  -9.55   0.00  44.49
-------------------------------------------------------------------------------

Segment Leq : 44.49 dBA

Total Leq All Segments: 47.69 dBA

#                       #
```

```
Results segment # 1: 417 E (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 37.28 + 0.00) = 37.28 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.52  72.55   0.00 -20.63  -5.07   0.00  -9.57   0.00  37.28
-------------------------------------------------------------------------------

Segment Leq : 37.28 dBA


Results segment # 2: 417 W (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 36.89 + 0.00) = 36.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.52  72.55   0.00 -21.05  -5.07   0.00  -9.55   0.00  36.89
-------------------------------------------------------------------------------

Segment Leq : 36.89 dBA

Total Leq All Segments: 40.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.69
                           (NIGHT): 40.10
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_006.te          Time Period: Day/Night 16/8 hours
Description: Receptor 6


Road data, segment # 1: 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 E (day/night)
---------------------------------------
Angle1   Angle2           :  12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 5
House density             :     65 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 340.00 / 340.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: 417 W (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: 417 W (day/night)
---------------------------------------
Angle1   Angle2           :  12.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      5 / 5
House density             :     65 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 362.00 / 362.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

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

Source height = 1.50 m

ROAD (0.00 + 47.77 + 0.00) = 47.77 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.34  80.15   0.00 -18.17  -4.64   0.00  -9.57   0.00  47.77
-------------------------------------------------------------------------------

Segment Leq : 47.77 dBA


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

Source height = 1.50 m

ROAD (0.00 + 47.43 + 0.00) = 47.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.34  80.15   0.00 -18.53  -4.64   0.00  -9.55   0.00  47.43
-------------------------------------------------------------------------------

Segment Leq : 47.43 dBA

Total Leq All Segments: 50.61 dBA

#                       #
```

```
Results segment # 1: 417 E (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 40.17 + 0.00) = 40.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.34  72.55   0.00 -18.17  -4.64   0.00  -9.57   0.00  40.17
-------------------------------------------------------------------------------

Segment Leq : 40.17 dBA


Results segment # 2: 417 W (night)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 39.84 + 0.00) = 39.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    12     90   0.34  72.55   0.00 -18.53  -4.64   0.00  -9.55   0.00  39.84
-------------------------------------------------------------------------------

Segment Leq : 39.84 dBA

Total Leq All Segments: 43.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.61
                           (NIGHT): 43.02
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:57:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_007.te          Time Period: Day/Night 16/8 hours
Description: Receptor 7


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  55.00 deg   Angle2 : 90.00 deg
Barrier height            :   9.00 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: Hwy 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: Hwy 417 E (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 309.00 / 309.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 298.00 / 298.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: Hwy 417 W (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Hwy 417 W (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 331.00 / 331.00 m
Receiver height           :   6.10 / 6.10   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 298.00 / 298.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Results segment # 1: Main (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 !        6.10 !        5.37 !         5.37

ROAD (62.30 + 46.92 + 0.00) = 62.43 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     55   0.00  68.48   0.00  -1.03  -5.15   0.00   0.00   0.00  62.30
-------------------------------------------------------------------------------
    55     90   0.00  68.48   0.00  -1.03  -7.11   0.00   0.00 -13.42  46.92
-------------------------------------------------------------------------------

Segment Leq : 62.43 dBA


Results segment # 2: Hwy 417 E (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 !        6.10 !        1.30 !        75.30

ROAD (0.00 + 53.65 + 0.00) = 53.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.34  80.15   0.00 -17.63  -0.86   0.00   0.00  -8.01  53.65
-------------------------------------------------------------------------------

Segment Leq : 53.65 dBA

#                       #
```

```
Results segment # 3: Hwy 417 W (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 !        6.10 !        0.96 !        74.96

ROAD (0.00 + 54.40 + 0.00) = 54.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.34  80.15   0.00 -18.03  -0.86   0.00   0.00  -6.85  54.40
-------------------------------------------------------------------------------

Segment Leq : 54.40 dBA

Total Leq All Segments: 63.54 dBA


Results segment # 1: Main (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 !        6.10 !        5.37 !         5.37

ROAD (54.71 + 39.32 + 0.00) = 54.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     55   0.00  60.88   0.00  -1.03  -5.15   0.00   0.00   0.00  54.71
-------------------------------------------------------------------------------
    55     90   0.00  60.88   0.00  -1.03  -7.11   0.00   0.00 -13.42  39.32
-------------------------------------------------------------------------------

Segment Leq : 54.83 dBA

#                       #
```

```
Results segment # 2: Hwy 417 E (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 !        6.10 !        1.30 !        75.30

ROAD (0.00 + 46.05 + 0.00) = 46.05 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.34  72.55   0.00 -17.63  -0.86   0.00   0.00  -8.01  46.05
-------------------------------------------------------------------------------

Segment Leq : 46.05 dBA


Results segment # 3: Hwy 417 W (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 !        6.10 !        0.96 !        74.96

ROAD (0.00 + 46.81 + 0.00) = 46.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.34  72.55   0.00 -18.03  -0.86   0.00   0.00  -6.85  46.81
-------------------------------------------------------------------------------

Segment Leq : 46.81 dBA

Total Leq All Segments: 55.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.54
                           (NIGHT): 55.94
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 37:58:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main_008.te          Time Period: Day/Night 16/8 hours
Description: Receptor 8


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.00 / 19.00  m
Receiver height           :  12.16 / 12.16  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: Hwy 417 E (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: Hwy 417 E (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 309.00 / 309.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 298.00 / 298.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: Hwy 417 W (day/night)
-----------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Hwy 417 W (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 331.00 / 331.00 m
Receiver height           :  12.16 / 12.16  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 298.00 / 298.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

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

Source height = 1.50 m

ROAD (0.00 + 64.44 + 0.00) = 64.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  68.48   0.00  -1.03  -3.01   0.00   0.00   0.00  64.44
-------------------------------------------------------------------------------

Segment Leq : 64.44 dBA


Results segment # 2: Hwy 417 E (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 !       12.16 !        1.52 !        75.52

ROAD (0.00 + 56.99 + 0.00) = 56.99 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.16  80.15   0.00 -15.25  -0.44   0.00   0.00  -7.48  56.99
-------------------------------------------------------------------------------

Segment Leq : 56.99 dBA

#                       #
```

```
Results segment # 3: Hwy 417 W (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 !       12.16 !        1.56 !        75.56

ROAD (0.00 + 58.09 + 0.00) = 58.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.16  80.15   0.00 -15.59  -0.44   0.00   0.00  -6.03  58.09
-------------------------------------------------------------------------------

Segment Leq : 58.09 dBA

Total Leq All Segments: 65.94 dBA


Results segment # 1: Main (night)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  60.88   0.00  -1.03  -3.01   0.00   0.00   0.00  56.85
-------------------------------------------------------------------------------

Segment Leq : 56.85 dBA

#                       #
```

```
Results segment # 2: Hwy 417 E (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 !       12.16 !        1.52 !        75.52

ROAD (0.00 + 49.39 + 0.00) = 49.39 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.16  72.55   0.00 -15.25  -0.44   0.00   0.00  -7.48  49.39
-------------------------------------------------------------------------------

Segment Leq : 49.39 dBA


Results segment # 3: Hwy 417 W (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 !       12.16 !        1.56 !        75.56

ROAD (0.00 + 50.49 + 0.00) = 50.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.16  72.55   0.00 -15.59  -0.44   0.00   0.00  -6.03  50.49
-------------------------------------------------------------------------------

Segment Leq : 50.49 dBA

Total Leq All Segments: 58.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.94
                           (NIGHT): 58.34
#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 38:34:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por9.te              Time Period: Day/Night 16/8 hours
Description: Receptor 9


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: HWY 417 eb (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: HWY 417 eb (day/night)
---------------------------------------------
Angle1   Angle2           : -24.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -24.00 deg   Angle2 : 7.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 312.00 / 312.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: HWY 417 wb (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: HWY 417 wb (day/night)
--------------------------------------------
Angle1   Angle2           : -22.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -22.00 deg   Angle2 : 7.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 312.00 / 312.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 4: HWY 417 EB2 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 4: HWY 417 EB2 (day/night)
---------------------------------------------
Angle1   Angle2           :   7.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   7.00 deg   Angle2 : 14.00 deg
Barrier height            :  27.00 m
Barrier receiver distance : 134.00 / 134.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  68.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 5: HWY 417 WB2 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 5: HWY 417 WB2 (day/night)
---------------------------------------------
Angle1   Angle2           :   7.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   7.00 deg   Angle2 : 14.00 deg
Barrier height            :  27.00 m
Barrier receiver distance : 134.00 / 134.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  68.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 6: HWY 417 EB3 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 6: HWY 417 EB3 (day/night)
---------------------------------------------
Angle1   Angle2           :  14.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  14.00 deg   Angle2 : 42.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 312.00 / 312.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 7: HWY 417 WB3 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 7: HWY 417 WB3 (day/night)
---------------------------------------------
Angle1   Angle2           :  14.00 deg   43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  14.00 deg   Angle2 : 43.00 deg
Barrier height            :   3.00 m
Barrier receiver distance : 312.00 / 312.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  74.00 m
Reference angle           :   0.00

#                       #
```

```
Results segment # 1: Main (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 !       19.50 !       14.10 !        14.10

ROAD (0.00 + 53.93 + 0.00) = 53.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -1.25   0.00   0.00   0.00 -13.30  53.93
-------------------------------------------------------------------------------

Segment Leq : 53.93 dBA


Results segment # 2: HWY 417 eb (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 !       19.50 !        1.77 !        75.77

ROAD (0.00 + 51.31 + 0.00) = 51.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -24      7   0.00  80.15   0.00 -13.33  -7.64   0.00   0.00  -7.87  51.31
-------------------------------------------------------------------------------

Segment Leq : 51.31 dBA

#                       #
```

```
Results segment # 3: HWY 417 wb (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 !       19.50 !        2.24 !        76.24

ROAD (0.00 + 53.12 + 0.00) = 53.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      7   0.00  80.15   0.00 -13.60  -7.93   0.00   0.00  -5.50  53.12
-------------------------------------------------------------------------------

Segment Leq : 53.12 dBA


Results segment # 4: HWY 417 EB2 (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 !       19.50 !       12.18 !        80.18

ROAD (0.00 + 33.71 + 0.00) = 33.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  80.15   0.00 -13.33 -14.10   0.00   0.00 -19.01  33.71
-------------------------------------------------------------------------------

Segment Leq : 33.71 dBA

#                       #
```

```
Results segment # 5: HWY 417 WB2 (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 !       19.50 !       12.38 !        80.38

ROAD (0.00 + 33.74 + 0.00) = 33.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  80.15   0.00 -13.60 -14.10   0.00   0.00 -18.70  33.74
-------------------------------------------------------------------------------

Segment Leq : 33.74 dBA


Results segment # 6: HWY 417 EB3 (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 !       19.50 !        1.77 !        75.77

ROAD (0.00 + 51.12 + 0.00) = 51.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     42   0.00  80.15   0.00 -13.33  -8.08   0.00   0.00  -7.62  51.12
-------------------------------------------------------------------------------

Segment Leq : 51.12 dBA

#                       #
```

```
Results segment # 7: HWY 417 WB3 (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 !       19.50 !        2.24 !        76.24

ROAD (0.00 + 53.17 + 0.00) = 53.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     43   0.00  80.15   0.00 -13.60  -7.93   0.00   0.00  -5.44  53.17
-------------------------------------------------------------------------------

Segment Leq : 53.17 dBA

Total Leq All Segments: 59.68 dBA


Results segment # 1: Main (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 !       19.50 !       14.10 !        14.10

ROAD (0.00 + 46.33 + 0.00) = 46.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -1.25   0.00   0.00   0.00 -13.30  46.33
-------------------------------------------------------------------------------

Segment Leq : 46.33 dBA

#                       #
```

```
Results segment # 2: HWY 417 eb (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 !       19.50 !        1.77 !        75.77

ROAD (0.00 + 43.71 + 0.00) = 43.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -24      7   0.00  72.55   0.00 -13.33  -7.64   0.00   0.00  -7.87  43.71
-------------------------------------------------------------------------------

Segment Leq : 43.71 dBA


Results segment # 3: HWY 417 wb (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 !       19.50 !        2.24 !        76.24

ROAD (0.00 + 45.52 + 0.00) = 45.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      7   0.00  72.55   0.00 -13.60  -7.93   0.00   0.00  -5.50  45.52
-------------------------------------------------------------------------------

Segment Leq : 45.52 dBA

#                       #
```

```
Results segment # 4: HWY 417 EB2 (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 !       19.50 !       12.18 !        80.18

ROAD (0.00 + 26.11 + 0.00) = 26.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  72.55   0.00 -13.33 -14.10   0.00   0.00 -19.01  26.11
-------------------------------------------------------------------------------

Segment Leq : 26.11 dBA


Results segment # 5: HWY 417 WB2 (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 !       19.50 !       12.38 !        80.38

ROAD (0.00 + 26.14 + 0.00) = 26.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  72.55   0.00 -13.60 -14.10   0.00   0.00 -18.70  26.14
-------------------------------------------------------------------------------

Segment Leq : 26.14 dBA

#                       #
```

```
Results segment # 6: HWY 417 EB3 (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 !       19.50 !        1.77 !        75.77

ROAD (0.00 + 43.52 + 0.00) = 43.52 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     42   0.00  72.55   0.00 -13.33  -8.08   0.00   0.00  -7.62  43.52
-------------------------------------------------------------------------------

Segment Leq : 43.52 dBA


Results segment # 7: HWY 417 WB3 (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 !       19.50 !        2.24 !        76.24

ROAD (0.00 + 45.58 + 0.00) = 45.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     43   0.00  72.55   0.00 -13.60  -7.93   0.00   0.00  -5.44  45.58
-------------------------------------------------------------------------------

Segment Leq : 45.58 dBA

Total Leq All Segments: 52.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.68
                           (NIGHT): 52.08

#
```

```
STAMSON 5.0        NORMAL REPORT        Date: 20-06-2018 38:36:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: por9b.te             Time Period: Day/Night 16/8 hours
Description: Receptor 9B


Road data, segment # 1: Main (day/night)
----------------------------------------
Car traffic volume  : 12144/1056  veh/TimePeriod  *
Medium truck volume :   966/84    veh/TimePeriod  *
Heavy truck volume  :   690/60    veh/TimePeriod  *
Posted speed limit  :    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):  15000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 1: Main (day/night)
--------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :   6.00 / 6.00   m
Source elevation          :  64.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  82.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 2: HWY 417 eb (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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: HWY 417 eb (day/night)
---------------------------------------------
Angle1   Angle2           : -24.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -24.00 deg   Angle2 : 7.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  82.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 3: HWY 417 wb (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: HWY 417 wb (day/night)
--------------------------------------------
Angle1   Angle2           : -22.00 deg   7.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -22.00 deg   Angle2 : 7.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  82.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 4: HWY 417 EB2 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 4: HWY 417 EB2 (day/night)
---------------------------------------------
Angle1   Angle2           :   7.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   7.00 deg   Angle2 : 14.00 deg
Barrier height            :  27.00 m
Barrier receiver distance : 134.00 / 134.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  68.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 5: HWY 417 WB2 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 5: HWY 417 WB2 (day/night)
---------------------------------------------
Angle1   Angle2           :   7.00 deg   14.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   7.00 deg   Angle2 : 14.00 deg
Barrier height            :  27.00 m
Barrier receiver distance : 134.00 / 134.00 m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  68.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 6: HWY 417 EB3 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 6: HWY 417 EB3 (day/night)
---------------------------------------------
Angle1   Angle2           :  14.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 323.00 / 323.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  14.00 deg   Angle2 : 42.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  82.00 m
Reference angle           :   0.00

#                       #
```

```
Road data, segment # 7: HWY 417 WB3 (day/night)
-----------------------------------------------
Car traffic volume  : 44527/3872  veh/TimePeriod  *
Medium truck volume :  3542/308   veh/TimePeriod  *
Heavy truck volume  :  2530/220   veh/TimePeriod  *
Posted speed limit  :   100 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):  54999
    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 # 7: HWY 417 WB3 (day/night)
---------------------------------------------
Angle1   Angle2           :  14.00 deg   43.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 344.00 / 344.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  14.00 deg   Angle2 : 43.00 deg
Barrier height            :   2.00 m
Barrier receiver distance :  14.00 / 14.00  m
Source elevation          :  74.00 m
Receiver elevation        :  64.00 m
Barrier elevation         :  82.00 m
Reference angle           :   0.00

#                       #
```

```
Results segment # 1: Main (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 !       19.50 !       -3.90 !        78.10

ROAD (0.00 + 51.01 + 0.00) = 51.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  68.48   0.00  -1.25   0.00   0.00   0.00 -16.22  51.01
-------------------------------------------------------------------------------

Segment Leq : 51.01 dBA


Results segment # 2: HWY 417 eb (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 !       19.50 !        1.15 !        83.15

ROAD (0.00 + 52.93 + 0.00) = 52.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -24      7   0.00  80.15   0.00 -13.33  -7.64   0.00   0.00  -6.25  52.93
-------------------------------------------------------------------------------

Segment Leq : 52.93 dBA

#                       #
```

```
Results segment # 3: HWY 417 wb (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 !       19.50 !        1.17 !        83.17

ROAD (0.00 + 52.42 + 0.00) = 52.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      7   0.00  80.15   0.00 -13.61  -7.93   0.00   0.00  -6.20  52.42
-------------------------------------------------------------------------------

Segment Leq : 52.42 dBA


Results segment # 4: HWY 417 EB2 (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 !       19.50 !       12.18 !        80.18

ROAD (0.00 + 33.71 + 0.00) = 33.71 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  80.15   0.00 -13.33 -14.10   0.00   0.00 -19.01  33.71
-------------------------------------------------------------------------------

Segment Leq : 33.71 dBA

#                       #
```

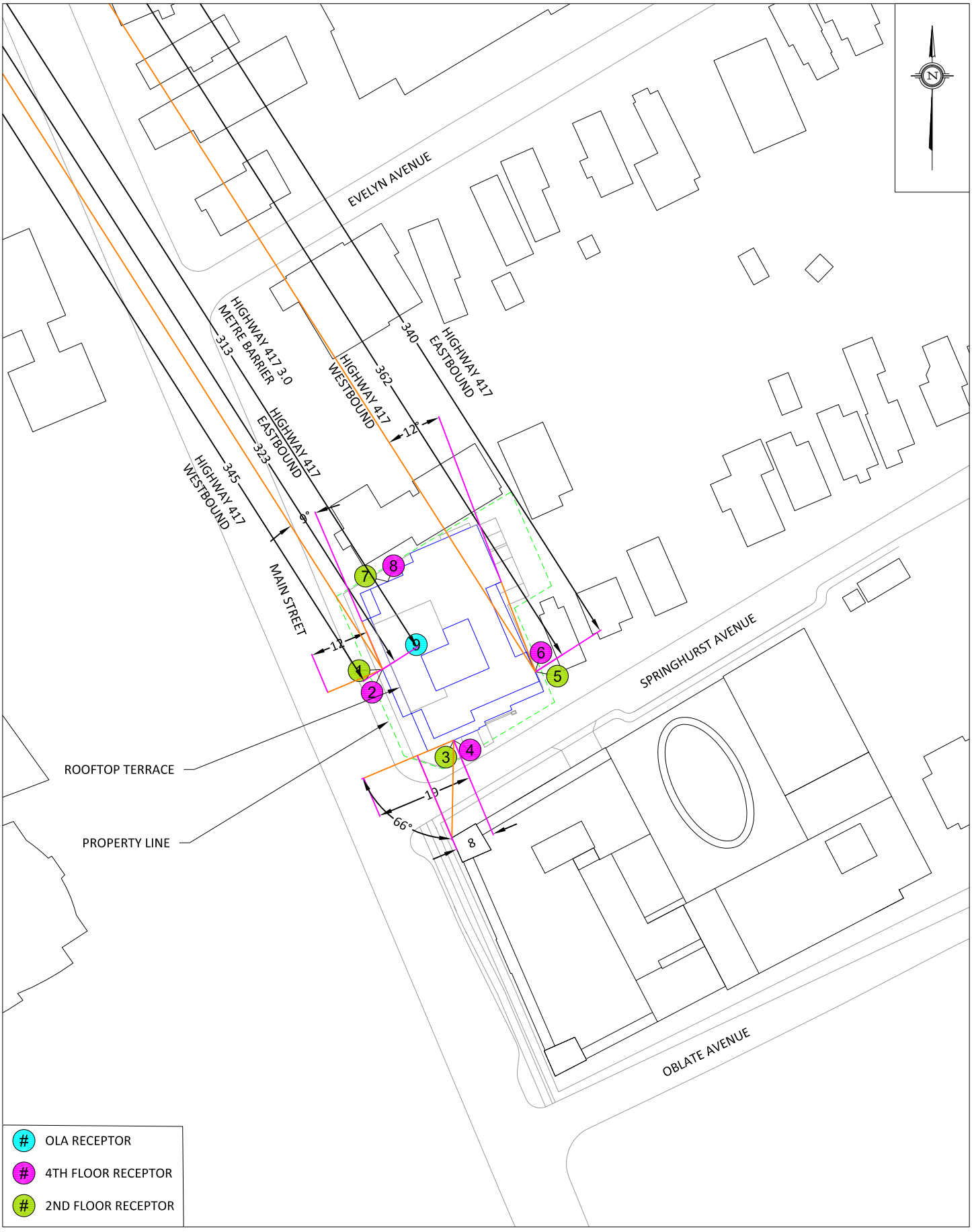
```
Results segment # 5: HWY 417 WB2 (day)
------------------------------------

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 !       19.50 !       12.38 !        80.38

ROAD (0.00 + 33.74 + 0.00) = 33.74 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  80.15   0.00 -13.60 -14.10   0.00   0.00 -18.70  33.74
-------------------------------------------------------------------------------

Segment Leq : 33.74 dBA


Results segment # 6: HWY 417 EB3 (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 !       19.50 !        1.15 !        83.15

ROAD (0.00 + 52.61 + 0.00) = 52.61 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     42   0.00  80.15   0.00 -13.33  -8.08   0.00   0.00  -6.13  52.61
-------------------------------------------------------------------------------

Segment Leq : 52.61 dBA

#                       #
```

```
Results segment # 7: HWY 417 WB3 (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 !       19.50 !        1.17 !        83.17

ROAD (0.00 + 52.54 + 0.00) = 52.54 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     43   0.00  80.15   0.00 -13.61  -7.93   0.00   0.00  -6.07  52.54
-------------------------------------------------------------------------------

Segment Leq : 52.54 dBA

Total Leq All Segments: 59.36 dBA


Results segment # 1: Main (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 !       19.50 !       -3.90 !        78.10

ROAD (0.00 + 43.41 + 0.00) = 43.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.88   0.00  -1.25   0.00   0.00   0.00 -16.22  43.41
-------------------------------------------------------------------------------

Segment Leq : 43.41 dBA

#                       #
```

```
Results segment # 2: HWY 417 eb (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 !       19.50 !        1.15 !        83.15

ROAD (0.00 + 45.33 + 0.00) = 45.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -24      7   0.00  72.55   0.00 -13.33  -7.64   0.00   0.00  -6.25  45.33
-------------------------------------------------------------------------------

Segment Leq : 45.33 dBA


Results segment # 3: HWY 417 wb (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 !       19.50 !        1.17 !        83.17

ROAD (0.00 + 44.82 + 0.00) = 44.82 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -22      7   0.00  72.55   0.00 -13.61  -7.93   0.00   0.00  -6.20  44.82
-------------------------------------------------------------------------------

Segment Leq : 44.82 dBA

#                       #
```

```
Results segment # 4: HWY 417 EB2 (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 !       19.50 !       12.18 !        80.18

ROAD (0.00 + 26.11 + 0.00) = 26.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  72.55   0.00 -13.33 -14.10   0.00   0.00 -19.01  26.11
-------------------------------------------------------------------------------

Segment Leq : 26.11 dBA


Results segment # 5: HWY 417 WB2 (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 !       19.50 !       12.38 !        80.38

ROAD (0.00 + 26.14 + 0.00) = 26.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     7     14   0.00  72.55   0.00 -13.60 -14.10   0.00   0.00 -18.70  26.14
-------------------------------------------------------------------------------

Segment Leq : 26.14 dBA

#                       #
```

```
Results segment # 6: HWY 417 EB3 (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 !       19.50 !        1.15 !        83.15

ROAD (0.00 + 45.01 + 0.00) = 45.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     42   0.00  72.55   0.00 -13.33  -8.08   0.00   0.00  -6.13  45.01
-------------------------------------------------------------------------------

Segment Leq : 45.01 dBA


Results segment # 7: HWY 417 WB3 (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 !       19.50 !        1.17 !        83.17

ROAD (0.00 + 44.95 + 0.00) = 44.95 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    14     43   0.00  72.55   0.00 -13.61  -7.93   0.00   0.00  -6.07  44.95
-------------------------------------------------------------------------------

Segment Leq : 44.95 dBA

Total Leq All Segments: 51.77 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.36
                           (NIGHT): 51.77
```

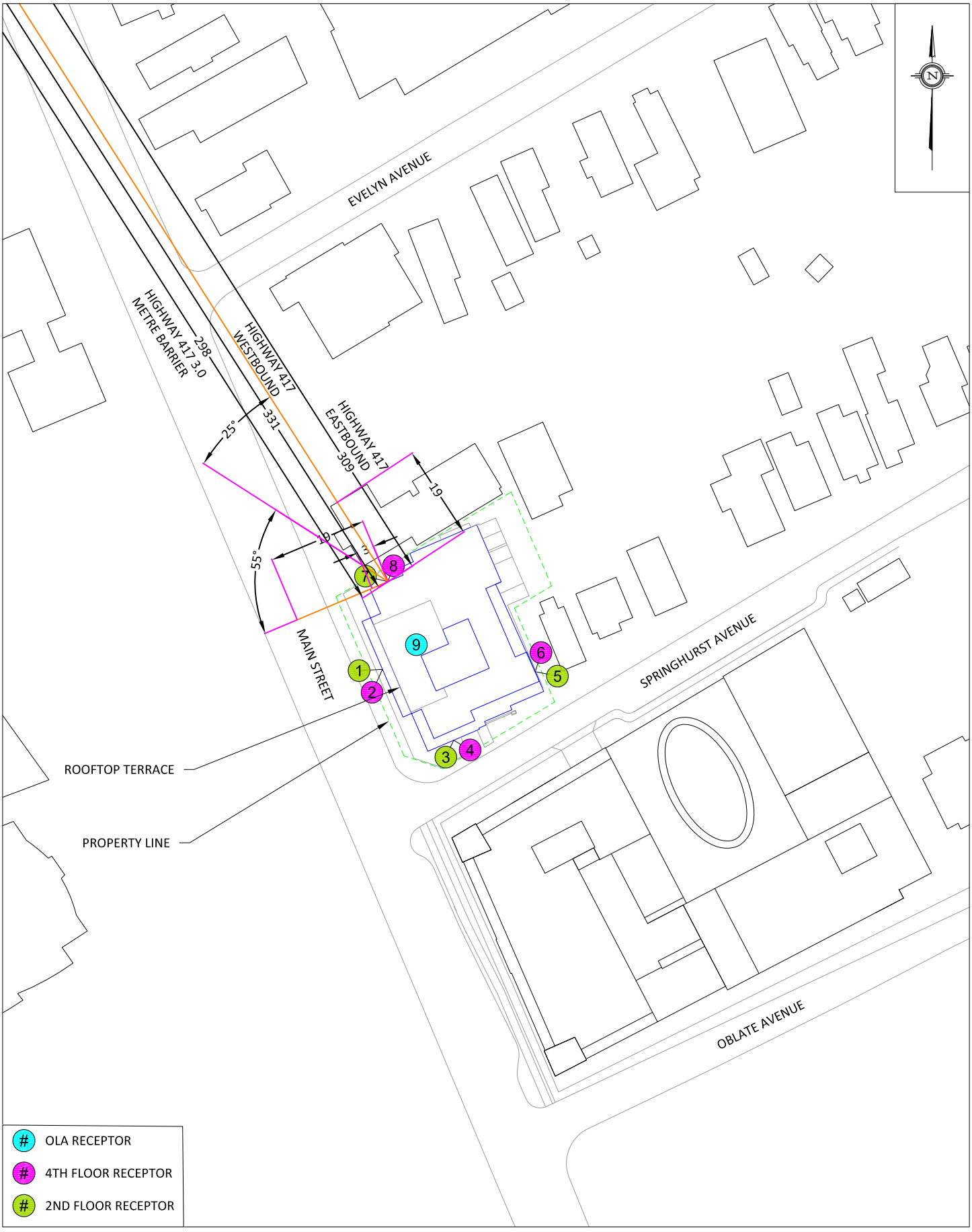


127 Walgreen Road
Ottawa, Ontario
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE STUDY
SCALE	1:1000 (APPROX.)
DRAWING NO.	GWE18-018-A1
DATE	AUGUST 2, 2018
DRAWN BY	O.D.

DESCRIPTION

FIGURE A1:
RECEPTOR DISTANCES AND EXPOSURE ANGLES

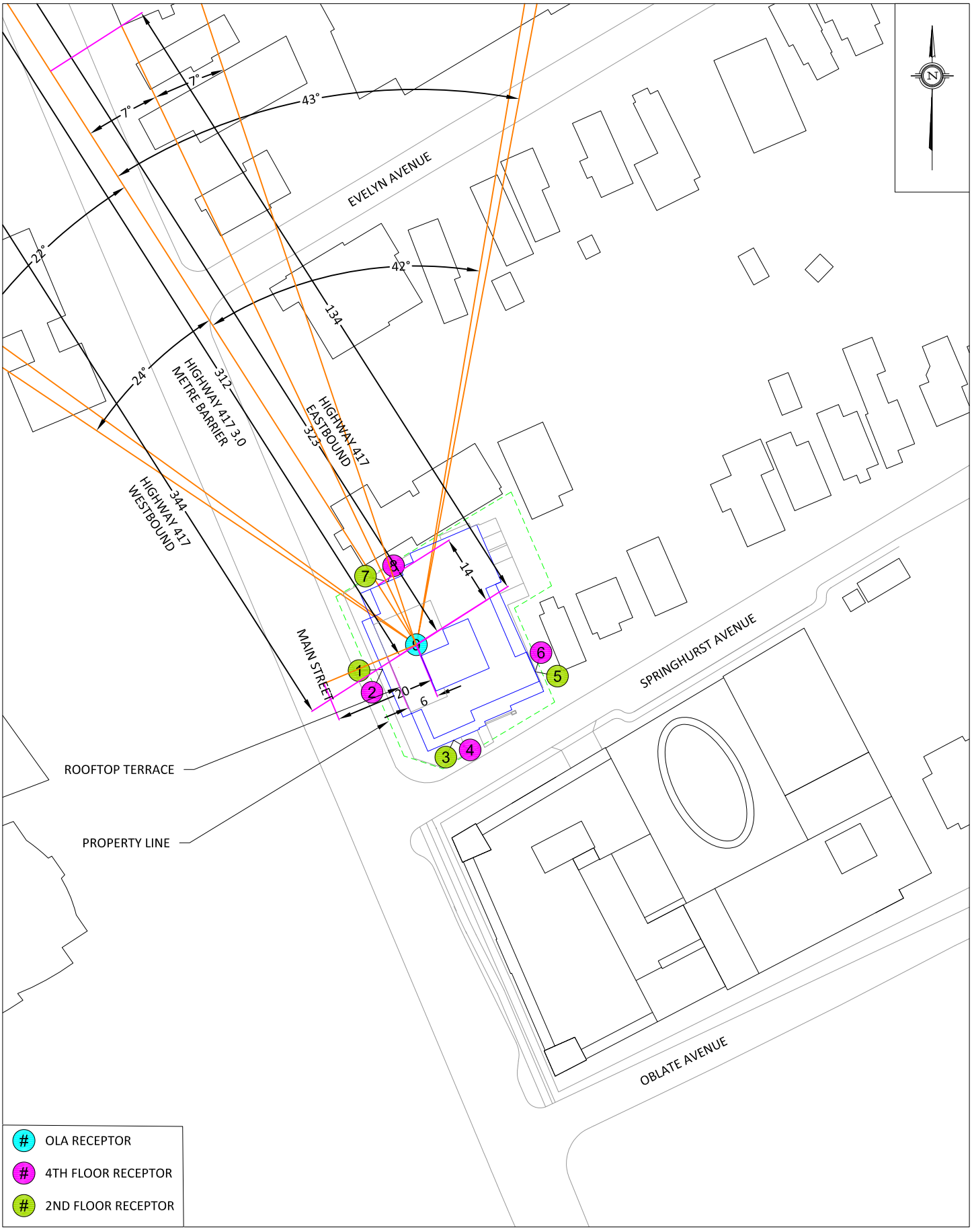


127 Walgreen Road
Ottawa, Ontario
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE STUDY
SCALE	1:750 (APPROX.)
DRAWING NO.	GWE18-018-A2
DATE	AUGUST 2, 2018
DRAWN BY	O.D.

DESCRIPTION

FIGURE A2:
RECEPTOR DISTANCES AND EXPOSURE ANGLES

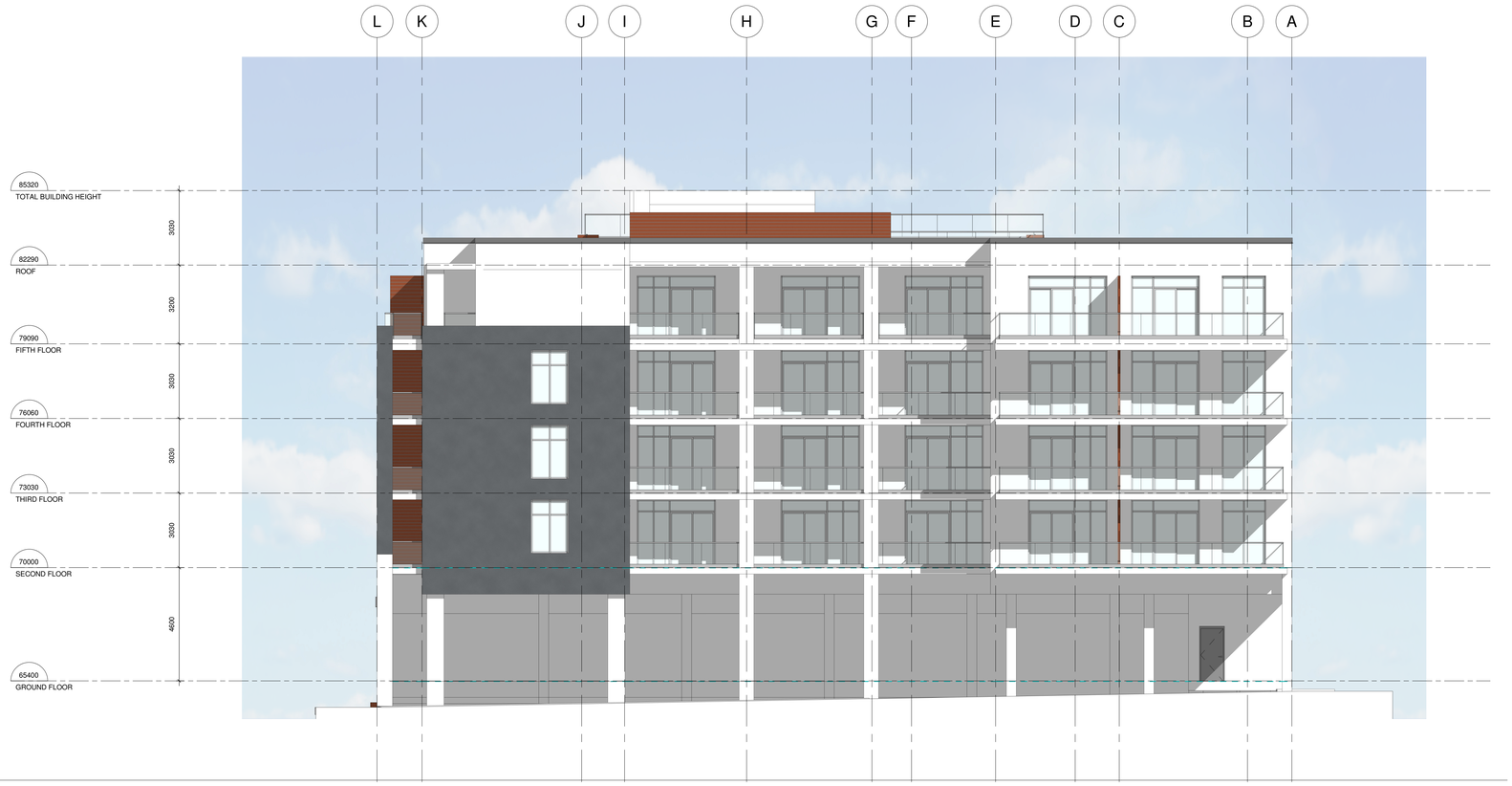


127 Walgreen Road
Ottawa, Ontario
(613) 836 0934
GRADIENT WIND ENGINEERING INC

PROJECT	129 MAIN STREET - TRAFFIC NOISE STUDY
SCALE	1:750 (APPROX.)
DRAWING NO.	GWE18-018-A3
DATE	AUGUST 2, 2018
DRAWN BY	O.D.

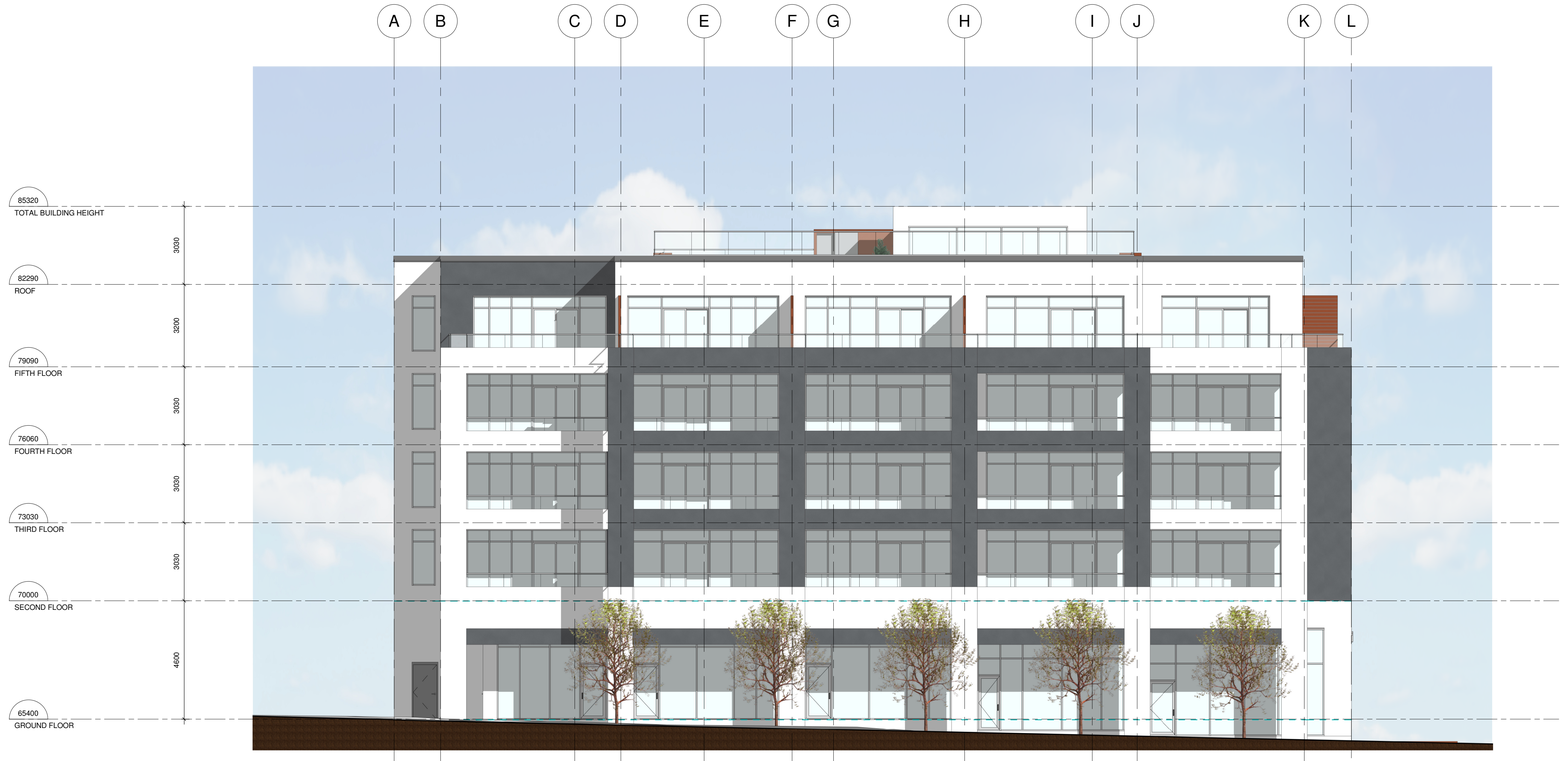
DESCRIPTION

FIGURE A3:
RECEPTOR DISTANCES AND EXPOSURE ANGLES



1 _EAST ELEVATION

1 : 100



2 _WEST ELEVATION

1 : 100

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET
- ◇00◇ INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE
- (00) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATION AND DETAILS ON A900 SERIES
- 00 INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES

GENERAL NOTES:

- (A) REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL , PARTITION, ROOF, CEILING & FLOOR TYPES
- (B) FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A900 SERIES
- (C) ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF STUD
- (D) ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF STUD
- (E) ALL EXTERIOR WALLS ARE TO BE W4 UNLESS OTHERWISE NOTED
- (F) ALL INTERIOR PARTITIONS ARE TO BE P8 UNLESS OTHERWISE NOTED
- (G) ALL REINFORCED CONCRETE SUSPENDED SLABS, COLUMNS & BEAMS HAVE A MIN. FRR OF 1.5 HRS (AS DETERMINED BY OBC-SB2) UNLESS OTHERWISE STATED

#	ISSUED FOR:	DD.MM.YY

REVISIONS:

ARCHITECT SEAL:

NORTH ARROW:

CLIENT:

THE PROPERTIES GROUP

236 Metcalfe Street,
Ottawa Ontario, K2P 1R3
TEL: 613 237 2425
FAX: 613 237 7300
E-MAIL: INFO@PROPERP.COM

ARCHITECT:

RODERICK LAHEY
ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE:

129 MAIN STREET

OTTAWA, ONTARIO

SHEET TILE:

WEST & EAST ELEVATIONS

DRAWN:	CHECKED:
J.K	RLA
SCALE: 1 : 100	SHEET No: A105
PROJECT No: 0622	

PAPER SIZE: ISO Full Bleed B1 (707.00 x 1000.00 MM)

PLOT SCALE: 1:1

F:\2006\0622 Main Street-Prop Grp\01_Design Development\07_Revit Files\samieh revit

PLOT DATE: 5/29/2018 2:44:32 PM