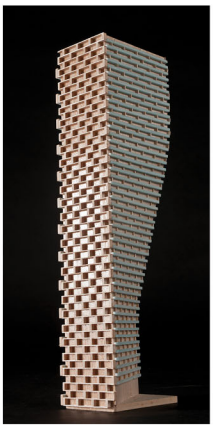
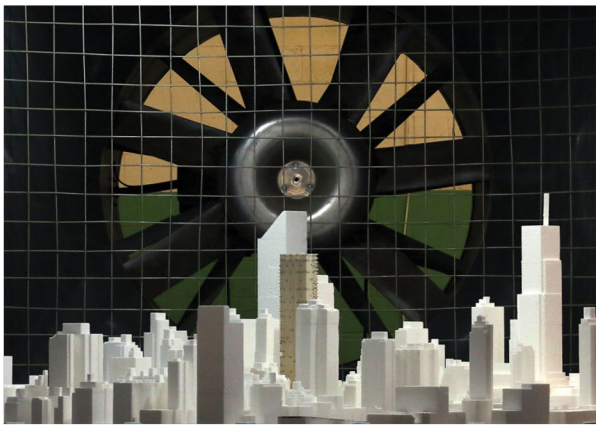
GRADIENTWIND
ENGINEERS & SCIENTISTS

# STATIONARY NOISE ASSESSMENT

1280 Trim Road
Ottawa, Ontario

REPORT: 25-004-Stationary Noise





January 14, 2025

PREPARED FOR

**Harden Realties**
110 Place d'Orleans Drive, Box #69
Orleans, ON K1C 2L9


PREPARED BY

Joshua Foster, P.Eng., Lead Engineer
Sunny Kang, B. A.S, Project Coordinator

# EXECUTIVE SUMMARY

This report describes a stationary noise assessment performed for a proposed commercial development located at 1280 Trim Road in Ottawa, Ontario. The development comprises a restaurant, an office / personal services building, an automotive repair shop, and a drive-thru. Figure 1 illustrates a site plan with the 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) architectural drawings provided by McRobie Architects + Interior Designers in January 2025; and (iv) mechanical engineering drawings and data provided by McKee Engineering in January 2025.

The results of the current study indicate that noise levels at nearby points of reception are expected to fall below the NPC-300 and ENCG noise criteria, provided that the assumptions for noise control as outlined in Section 2.1 are followed and equipment sound power levels due not exceed the values described in Table 2. As such, the proposed development is expected to be compatible with the existing and proposed noise-sensitive land uses. A review of the final equipment selections and locations by a qualified acoustical engineer will be required prior to the installation of the equipment.

# TABLE OF CONTENTS

# 1. INTRODUCTION

Gradient Wind Engineering Inc. (Gradient Wind) was retained by Harden Realties to undertake a stationary noise assessment for the proposed commercial development located at 1280 Trim Road in Ottawa, Ontario. This report summarizes the methodology, results and recommendations related to a stationary noise assessment.

The present scope of work involves assessing exterior noise levels generated by roof top equipment and a drive-thru. The assessment was performed based on theoretical noise calculation methods conforming to the City of Ottawa[1] and Ministry of the Environment, Conservation and Parks (MECP) NPC-300[2] guidelines, architectural drawings provided by McRobie Architects + Interior Designers in January 2025, mechanical engineering drawings and data provided by McKee Engineering in January 2025, surrounding street layouts obtained from the City of Ottawa, and recent site imagery.

# 2. TERMS OF REFERENCE

The focus of this stationary noise assessment is the proposed commercial development located at 1280 Trim Road in Ottawa, Ontario. The subject site is situated on a rectangular parcel of land bounded by Trim Road to the east, commercial properties to the north and south, and industrial property to the west. The development comprises three buildings. A restaurant (Building 1) is located in the northeast corner of the site and will have a drive-thru. An office / personal services (Building 2) will be located on the south of the site and will be attached to a light industrial building (Building 3). Surface parking will occupy the northern portion of the site. The light industrial building will house an automotive repair shop.

The primary sources of noise associated with the development will be from the proposed mechanical equipment located on the roofs of the various buildings, and a drive-thru. The automotive repair shop will operate with doors closed, thus minimizing any observed noise outside the building due to pneumatic tools, hammering, and other such noises associated with car repairs.

[1] City of Ottawa Environmental Noise Control Guidelines, January 2016
[2] Ministry of the Environment, Conservation and Parks (MECP), Environmental Noise Guideline – Publication NPC-300, August 2013

While the surroundings comprise of primarily commercial and industrial land uses, there are two daycares located near the subject site. The first is located immediately northwest of the subject site (La petite echelle – 510 Lacolle Way), and a second daycare is located to the south (Kids Kingdom Daycare and Play Centre – 1290 Trim Road). Daycares are considered noise sensitive land uses and these two daycares are the closest points of reception to the proposed development. The nearest residential property to the site is more then 200 m away and is beyond the zone of influence of the subject site.

As a conservative approach, the building equipment is assumed to operate at all hours of the day, however, certain sources are likely to have reduced operation during the nighttime period between 23:00 and 07:00. Figure 1 illustrates the site plan and surrounding context.

### 2.1 Assumptions

The following assumptions have been made in the analysis:

(i) The locations, quantity and tonnage of rooftop units have been based on architectural and mechanical drawings provided.

(ii) Sound data for all noise sources for the development have been based on Gradient Winds' experience with similar projects.

(iii) All mechanical units were assumed to operate continuously over a 1-hour period during the daytime and evening periods. Due to lower building occupancy, the rooftop equipment and exhaust fans were assumed to operate for only 30 min in any one hour period overnight.

(iv) The ground region was modelled as reflective due to the presence of hard ground (pavement), and absorbative for open spaces and green areas.

## 3. OBJECTIVES

The main goals of this work are to (i) calculate the future on-site and off-site noise levels produced by stationary sources and (ii) ensure that exterior noise levels do not exceed the allowable limits specified by the ENCG, as outlined in Section 4 of this report.

# 4. METHODOLOGY

The impact of the external stationary noise sources on the nearby residential areas was determined by computer modelling. Stationary noise source modelling is based on the software program *Predictor-Lima* developed from the International Standards Organization (ISO) standard 9613 Parts 1 and 2. This computer program simulates three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. This methodology has been used on numerous assignments and has been accepted by the MECP as part of Environmental Compliance Approvals applications.

## 4.1 Perception of Noise

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 source, the sound pressure depends on the location of the receiver and the path that the noise takes to reach the receiver. Its measurement 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 represents the noise perceived by the human ear. With this scale, a doubling of sound power at the source results in a 3 dBA increase in measured noise levels at the receiver and is just perceptible to most people. An increase of 10 dBA is often perceived to be twice as loud.

Stationary sources are defined in NPC-300 as "a source of sound or combination of sources of sound that are included and normally operated within the property lines of a facility and includes the premises of a person as one stationary source, unless the dominant source of sound on those premises is construction"[3].

## 4.2 Stationary Noise Criteria

The equivalent sound energy level, $L_{eq}$, provides a weighted 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 selected period of time. For stationary sources, the $L_{eq}$ is commonly calculated on an hourly interval, while for roadways, the $L_{eq}$ is calculated on the basis of a 16-hour daytime/8-hour nighttime split.

[3] NPC – 300, page 16

Noise criteria taken from the ENCG and NPC-300 apply to outdoor points of reception (POR). A POR is defined under NPC-300 as "any location on a noise-sensitive land use where noise from a stationary source is received"[4]. A POR can be located on an existing or zoned for future use premises of permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, campgrounds, and noise-sensitive buildings such as schools and places of worship. The recommended maximum noise levels for a Class 1 area in an urban environment adjacent to arterial roadways at a POR are the exclusion limits shown in Table 1 below, or the one-hour background sound level due to roadway traffic, whichever is higher. The study site is considered to be Class 1 as it is located within the "Urban Area[5], as it is located next to an arterial roadway.

Background noise calculations were performed for the daycare play area, based on the lowest hourly traffic data for both Trim Road and Taylor Creek Drive. Background noise calculations were performed using the software STAMSON. Details of the calculation are available in Appendix A.

**TABLE 1: EXCLUSIONARY LIMITS FOR CLASS 1 AREA**

| Time of Day | Outdoor Points of Reception (dBA) | Plane of Window (dBA) |
|---|---|---|
| 07:00 – 19:00 | 50 | 50 |
| 19:00 – 23:00 | 50 | 50 |
| 23:00 – 07:00 | N/A | 45 |

## 4.3 Determination of Noise Source Power Levels

Mechanical information for the development was provided by McKee Engineering in January 2025. Table 2 summarizes the sound power of each source used in the analysis. The table summarizes the unmitigated noise levels based on the data provided, as well as the maximum permissible noise levels to ensure on-site and off-site noise levels do not exceed NPC-300 and ENCG criteria. Figure 2 illustrates the source locations.

[4] NPC – 300, page 14
[5] City of Ottawa Official Plan Vol 1: Section 6

**TABLE 2: EQUIPMENT SOUND POWER LEVELS (dBA)**

| Source | Description | Height Above Grade/Roof (m) | Correction Applied | Frequency (Hz) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | Total |
| C1 | Idling Car @ drive-thru (11 Individual sources) | 1.5 | Unmitigated | 60 | 71 | 77 | 76 | 77 | 73 | 69 | 63 | **83** |
| OB | Order Box / Speaker (1 source) | 2 | Unmitigated | | | | | 82 | | | | **85** |
| RTU | Rooftop Unit (8 Individual sources) | 2 | Unmitigated | 67 | 72 | 75 | 80 | 79 | 76 | 73 | 70 | **85** |
| Fan | Exhaust Fans (2 Individual Sources) | 1 | Unmitigated | | | | | 90 | | | | **90** |

## 4.4 Stationary Source Noise Predictions

The impact of stationary noise sources on nearby noise-sensitive areas was determined by computer modelling using the software program Predictor-Lima. This program was developed from the International Standards Organization (ISO) standard 9613 Parts 1 and 2 and is capable of representing three-dimensional surfaces and first reflections of sound waves over a suitable spectrum for human hearing. The methodology has been used on numerous assignments and has been accepted by the Ministry of the Environment, Conservation and Parks (MECP) as part of Environmental Compliance Approval applications.

A total of eight receptor locations were chosen around the site to measure the noise impact at points of reception (POR) during the daytime/evening period (07:00 – 23:00), as well as during the nighttime period (23:00 – 07:00). POR locations include outdoor points of reception (OPOR) and the plane of windows (POW) of the adjacent daycare properties. Sensor locations are described in Table 4 and illustrated in Figure 3. The units were represented as point sources and emitting facade objects in the Predictor model. Table 3 below contains Predictor-Lima calculation settings. These are typical settings that have been based on ISO 9613 standards and guidance from the MECP.

Ground absorption over the study area was determined based on topographical features (such as water, concrete, grassland, etc.). An absorption value of 0 is representative of hard ground, while a value of 1 represents grass and similar soft surface conditions. Existing and proposed buildings were added to the model to account for screening and reflection effects from building façades.

### TABLE 3: CALCULATION SETTINGS

| Parameter | Setting |
|---|---|
| Meteorological correction method | Single value for C0 |
| Value C0 | 2.0 |
| Ground attenuation factor for lawn areas | 1 |
| Ground attenuation factor for roadways and paved areas | 0 |
| Temperature (K) | 283.15 |
| Pressure (kPa) | 101.33 |
| Air humidity (%) | 70 |

### TABLE 4: RECEPTOR LOCATIONS

| Receptor Number | Receptor Location | Height Above Grade(m) |
|---|---|---|
| R1 | POW – 510 Lacolle Way - East Façade | 1.5 |
| R2 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 |
| R3 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 |
| R4 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 |
| R5 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 |
| R6 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 |
| R7 | POW – 1290 Trim Road - North Facade | 1.5 |
| R8 | OPOR - 1290 Trim Road - Daycare play area | 1.5 |

## 5. RESULTS AND DISCUSSION

Noise levels on the surroundings produced by the proposed mechanical equipment and drive-thru associated with the proposed development are presented in Tables 5. The sound levels are based on the assumptions outlined in Section 2.1. It should be noted that the results were generated using the unmitigated noise levels.

### TABLE 5: NOISE LEVELS FROM STATIONARY SOURCES

| Receptor Number | Receptor Location | Height Above Grade (m) | Noise Level (dBA) | | Sound Level Limits | | Meets ENCG Class 1 Criteria | |
|---|---|---|---|---|---|---|---|---|
| | | | Day | Night | Day | Night | Day | Night |
| R1 | POW – 510 Lacolle Way - East Façade | 1.5 | 46 | 45 | 50 | 45 | **Yes** | **Yes** |
| R2 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 | 46 | N/A | 50 | N/A | **Yes** | N/A |
| R3 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 | 47 | N/A | 50 | N/A | **Yes** | N/A |
| R4 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 | 49 | 43 | 50 | N/A | **Yes** | N/A |
| R5 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 | 50 | 43 | 50 | N/A | **Yes** | N/A |
| R6 | OPOR - 510 Lacolle Way – Daycare play area | 1.5 | 53 | 38 | 60* | N/A | **Yes** | N/A |
| R7 | POW – 1290 Trim Road - North Facade | 1.5 | 47 | 44 | 50 | 45 | **Yes** | **Yes** |
| R8 | OPOR - 1290 Trim Road - Daycare play area | 1.5 | 39 | N/A | 50 | N/A | **Yes** | N/A |

N/A - Noise levels at OPORs during the nighttime period are not considered as per ENCG

*Noise criteria taken as background noise level, see Appendix A

As Table 5 summarizes, noise levels fall below ENCG criteria at all receptors. As a general recommendation, rooftop equipment should be located toward the centre of the rooftop area, avoiding direct line of sight with noise-sensitive areas, if possible.

## 6. CONCLUSIONS AND RECOMMENDATIONS

The results of the current study indicate that noise levels at nearby points of reception are expected to fall below the NPC-300 and ENCG noise criteria, provided that the assumptions for noise control as outlined in Section 2.1 are followed and the equipment sound data does not exceed the values noted in Table 2 during the detailed design process.

As such, the proposed development is expected to be compatible with the existing and proposed noise-sensitive land uses. A review of the final equipment selections and locations by a qualified acoustical engineer will be required prior to the installation of the equipment.

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

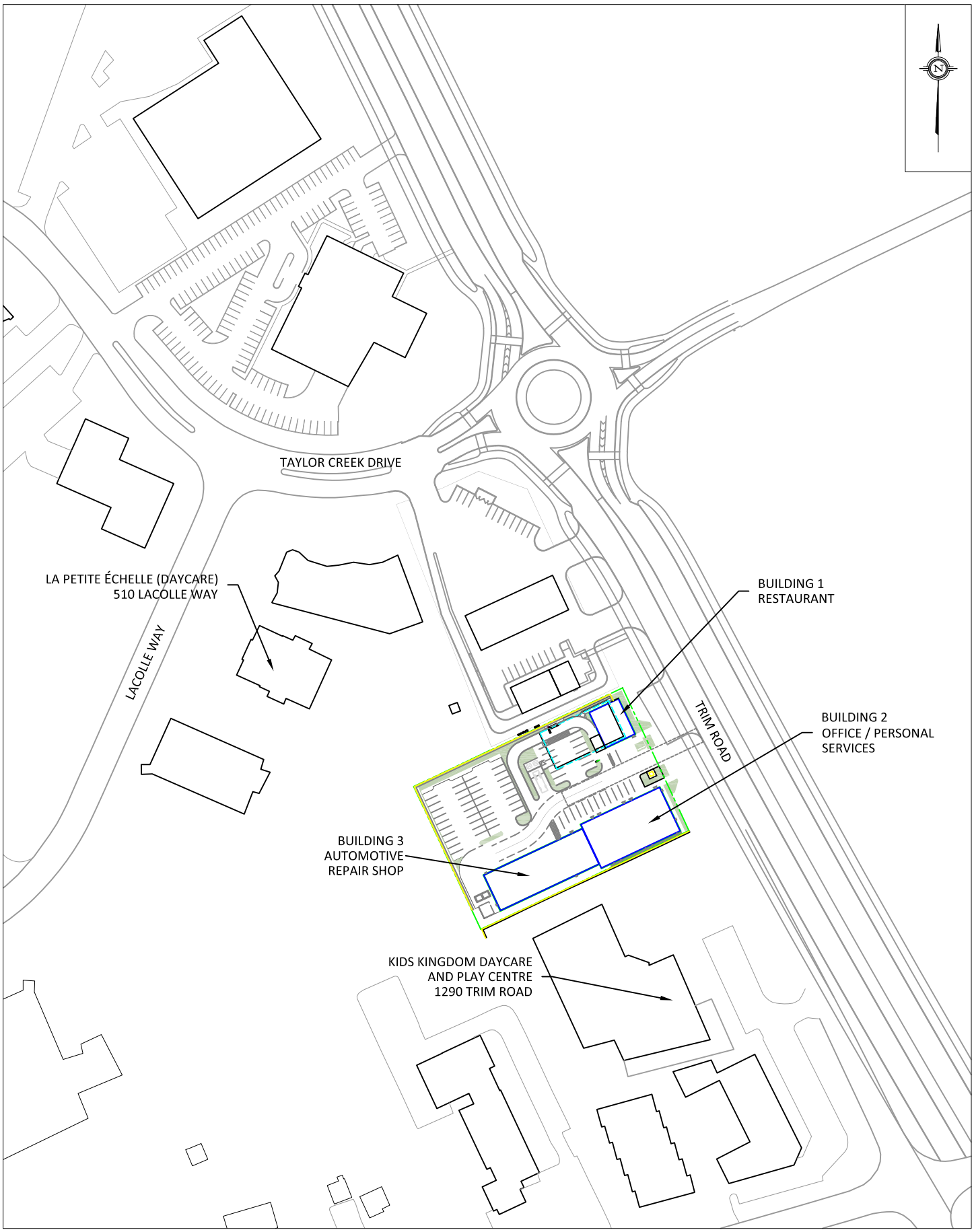
Sincerely,

***Gradient Wind Engineering Inc.***


Joshua Foster, P.Eng.
Lead Engineer

Sunny Kang, B.A.S.
Project Coordinator

*Gradient Wind File #25-004 – Stationary Noise*

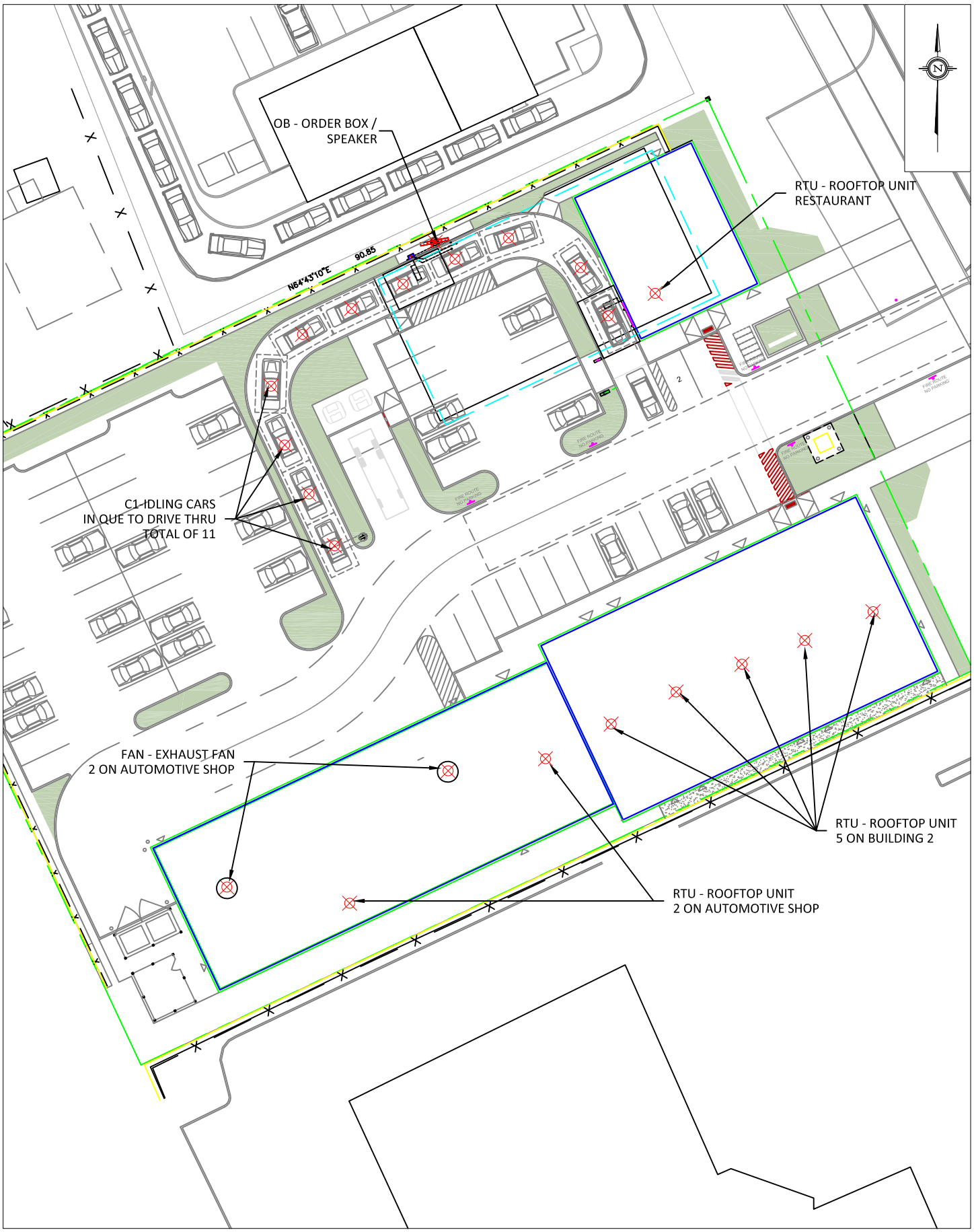



GRADIENTWIND
ENGINEERS & SCIENTISTS
127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

| | |
|---|---|
| PROJECT | 1280 TRIM ROAD, OTTAWA<br>STATIONARY NOISE ASSESSMENT |
| SCALE | 1:2000 (APPROX.) |
| DRAWING NO. | GW25-004-1 |
| DATE | JANUARY 13, 2025 |
| DRAWN BY | J.F. |

DESCRIPTION

FIGURE 1:
SITE PLAN AND SURROUNDING CONTEXT

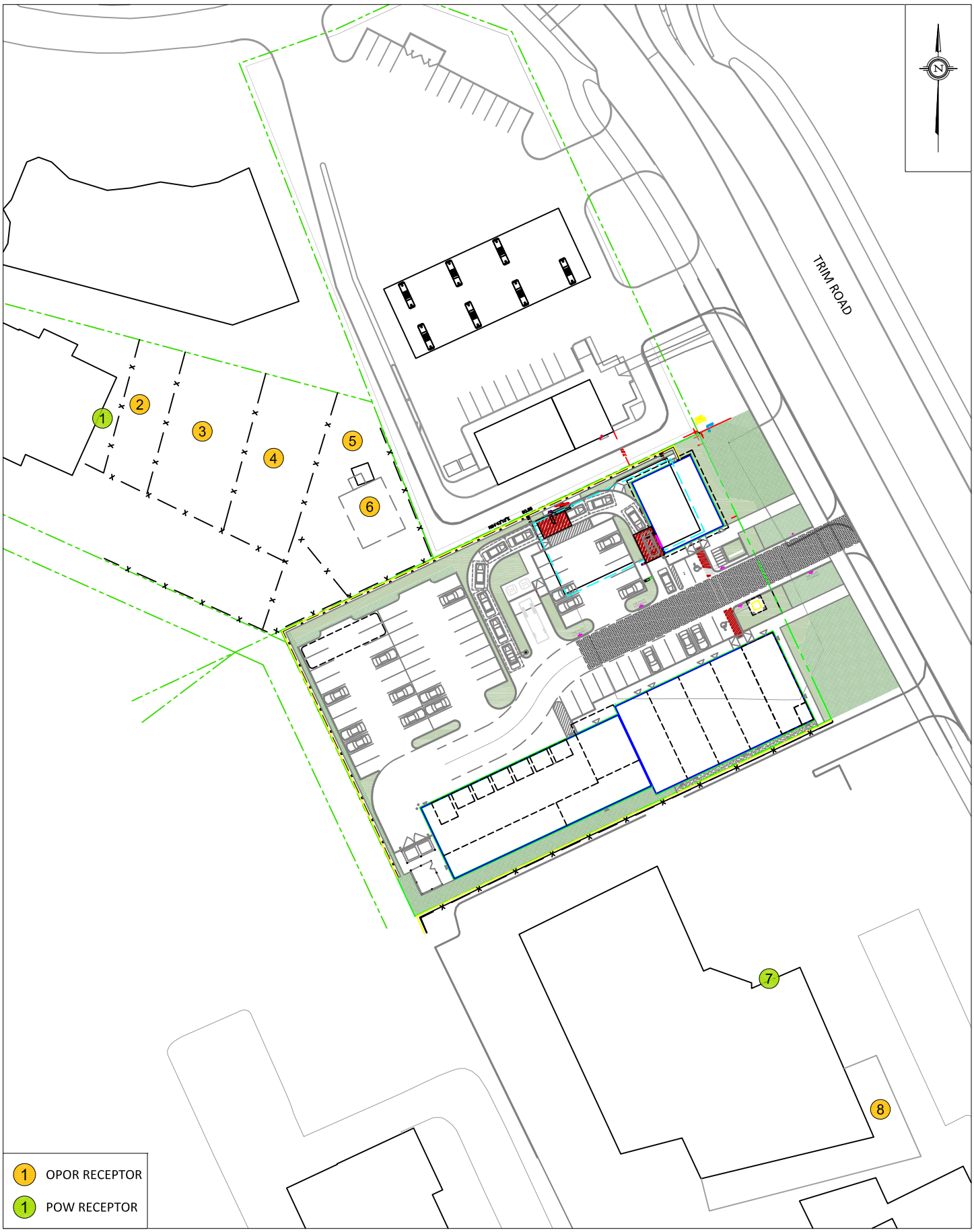



GRADIENTWIND ENGINEERS & SCIENTISTS

127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

| | | | |
|---|---|---|---|
| PROJECT | 1280 TRIM ROAD, OTTAWA<br>STATIONARY NOISE ASSESSMENT | | DESCRIPTION |
| SCALE | 1:2000 (APPROX.) | DRAWING NO. | GW25-004-1 |
| DATE | JANUARY 13, 2025 | DRAWN BY | J.F. |

FIGURE 2:
SOURCE LOCATIONS

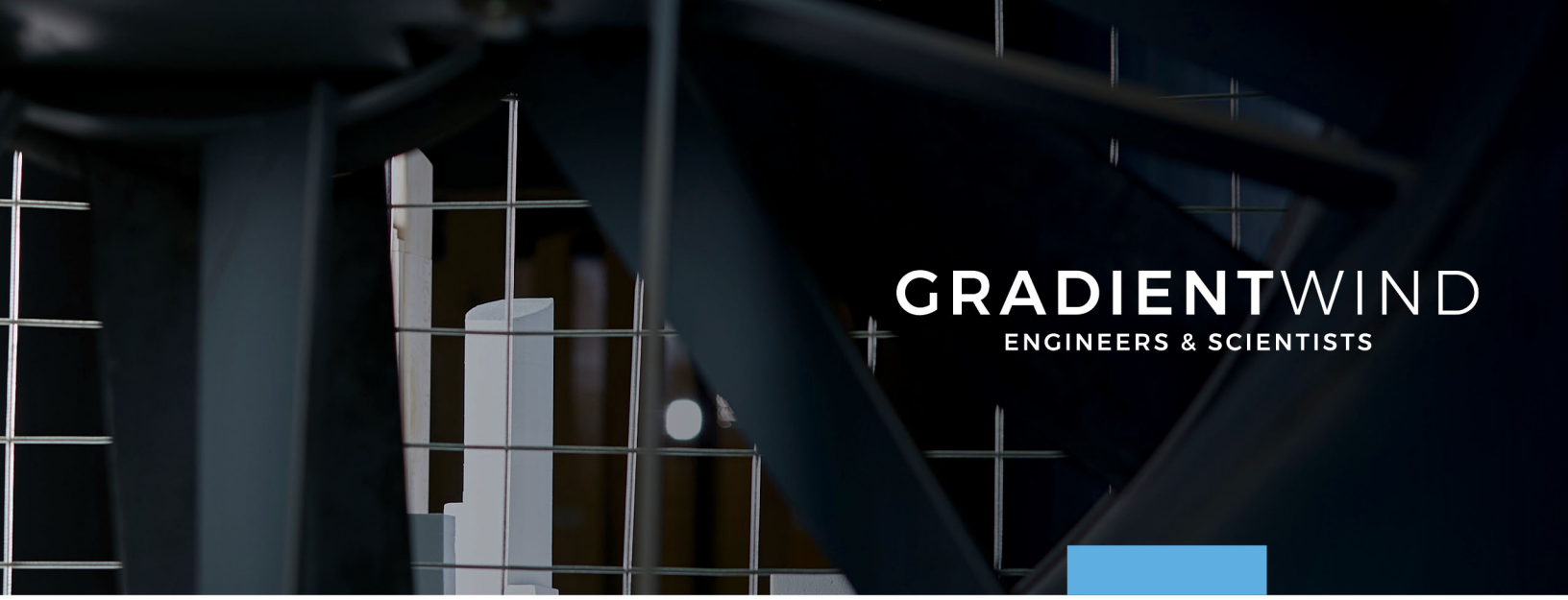



GRADIENTWIND
ENGINEERS & SCIENTISTS
127 WALGREEN ROAD , OTTAWA, ON
613 836 0934 • GRADIENTWIND.COM

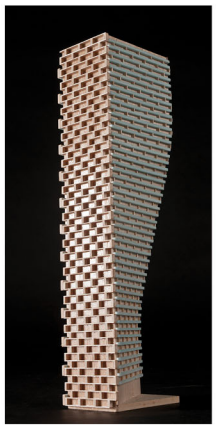
| | |
|---|---|
| PROJECT | 1280 TRIM ROAD, OTTAWA<br>STATIONARY NOISE ASSESSMENT |
| SCALE | 1:1000 (APPROX.) |
| DRAWING NO. | GW25-004-3 |
| DATE | JANUARY 13, 2025 |
| DRAWN BY | J.F. |

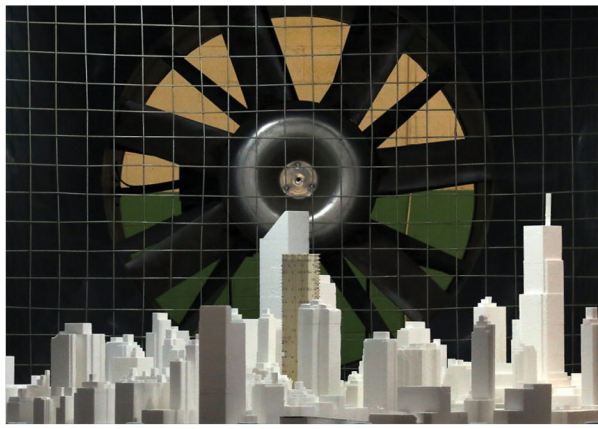
DESCRIPTION

FIGURE 3:
RECEPTOR LOCATIONS



GRADIENTWIND
ENGINEERS & SCIENTISTS





# APPENDIX A

## BACKGROUND NOISE CALCULATIONS

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
GRADIENTWIND.COM

```
STAMSON 5.0        NORMAL REPORT        Date: 06-01-2016 13:14:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R6.te                Time Period: 1 hours
Description:


Road data, segment # 1: Taylor
------------------------------
Car traffic volume  :   184 veh/TimePeriod
Medium truck volume :    15 veh/TimePeriod
Heavy truck volume  :    11 veh/TimePeriod
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Taylor
------------------------------
Angle1   Angle2           :   4.00 deg   34.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 103.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   4.00 deg   Angle2 : 34.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :   5.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 2: TrimSBL
------------------------------
Car traffic volume  :   678 veh/TimePeriod
Medium truck volume :    54 veh/TimePeriod
Heavy truck volume  :    39 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: TrimSBL
------------------------------
Angle1   Angle2           : -54.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -8.00 deg   Angle2 : 18.00 deg
Barrier height            :   5.30 m
Barrier receiver distance :  25.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 3: TrimSBR
------------------------------
Car traffic volume  :   678 veh/TimePeriod
Medium truck volume :    54 veh/TimePeriod
Heavy truck volume  :    39 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: TrimSBR
------------------------------
Angle1   Angle2           :  18.00 deg   54.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  89.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 51.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  26.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 4: TrimNBL
------------------------------
Car traffic volume  :   678 veh/TimePeriod
Medium truck volume :    54 veh/TimePeriod
Heavy truck volume  :    39 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 4: TrimNBL
------------------------------
Angle1   Angle2           : -47.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 103.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -8.00 deg   Angle2 : 18.00 deg
Barrier height            :   5.30 m
Barrier receiver distance :  25.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Road data, segment # 5: TrimNBR
------------------------------
Car traffic volume  :   678 veh/TimePeriod
Medium truck volume :    54 veh/TimePeriod
Heavy truck volume  :    39 veh/TimePeriod
Posted speed limit  :    70 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 5: TrimNBR
------------------------------
Angle1   Angle2           :  18.00 deg   47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 103.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  18.00 deg   Angle2 : 47.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  26.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

```
Results segment # 1: Taylor
--------------------------

Source height = 1.51 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.51 !        1.50 !        1.50 !         1.50

ROAD (0.00 + 33.26 + 0.00) = 33.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     4     34   0.00  60.70   0.00  -8.37  -7.78   0.00   0.00 -11.30  33.26
-------------------------------------------------------------------------------

Segment Leq : 33.26 dBA


Results segment # 2: TrimSBL
----------------------------

Source height = 1.50 m

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

ROAD (57.20 + 41.05 + 0.00) = 57.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -54     -8   0.00  70.85   0.00  -7.73  -5.93   0.00   0.00   0.00  57.20
-------------------------------------------------------------------------------
    -8     18   0.00  70.85   0.00  -7.73  -8.40   0.00   0.00 -13.67  41.05
-------------------------------------------------------------------------------

Segment Leq : 57.30 dBA
```

```
Results segment # 3: TrimSBR
----------------------------

Source height = 1.50 m

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

ROAD (0.00 + 41.64 + 45.34) = 46.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    18     51   0.00  70.85   0.00  -7.73  -7.37   0.00   0.00 -14.11  41.64
-------------------------------------------------------------------------------
    51     54   0.00  70.85   0.00  -7.73 -17.78   0.00   0.00   0.00  45.34
-------------------------------------------------------------------------------

Segment Leq : 46.88 dBA


Results segment # 4: TrimNBL
----------------------------

Source height = 1.50 m

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

ROAD (55.85 + 40.62 + 0.00) = 55.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -47     -8   0.00  70.85   0.00  -8.37  -6.64   0.00   0.00   0.00  55.85
-------------------------------------------------------------------------------
    -8     18   0.00  70.85   0.00  -8.37  -8.40   0.00   0.00 -13.46  40.62
-------------------------------------------------------------------------------

Segment Leq : 55.97 dBA
```

```
Results segment # 5: TrimNBR
----------------------------

Source height = 1.50 m

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

ROAD (0.00 + 40.55 + 0.00) = 40.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    18     47   0.00  70.85   0.00  -8.37  -7.93   0.00   0.00 -14.01  40.55
-------------------------------------------------------------------------------

Segment Leq : 40.55 dBA

Total Leq All Segments: 59.98 dBA


TOTAL Leq FROM ALL SOURCES:       59.98
```