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39 Years

# 1104 Halton Terrace

# Noise Impact Assessment

# Noise Impact Assessment

## Maple Leaf Homes
## 1104 Halton Terrace

**Prepared by:**

**NOVATECH**
240 Michael Cowpland Drive, Suite 200
Ottawa, Ontario, K2M 1P6

October 19, 2021

Ref: R-2021-113
Novatech File No. 119024

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October 19, 2021

**BY COURIER**

City of Ottawa
Planning and Growth Management Department
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

**Attention:** **Laurel McCreight, Planner**

**Reference:** **Maple Leaf Homes Development**
**1104 Halton Terrace**
**Noise Impact Assessment**
**Our File No.: 119024**

Please find enclosed the 'Noise Impact Assessment' for Maple Leaf Homes Development located at 1104 Halton Terrace.

Please contact the undersigned with any questions, or if you require additional information.

Sincerely,

**NOVATECH**

Lucas Wilson, P.Eng.
Project Coordinator

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## 1.0 INTRODUCTION

This report is submitted on behalf of the developer, Maple Leaf Homes for the proposed development located at 1104 Halton Terrace, herein called the 'Subject Site'. This report assesses the environmental impact of noise on the proposed development and outlines the mitigation measures that will be required.

The proposed development is located within the Kanata North Community west of the intersection of Halton Terrace and Old Carp Road. The development is approximately 0.72ha and is bounded by Halton Terrace to the south and east, Old Carp Road to the north, and existing residential to the west. A key plan of the area is presented below in **Figure 1-1**.


**Figure 1-1 Key Plan**

The proposed development will consist of one 4-storey apartment building with underground parking consisting of 86 units, as shown on **Figure 1-2**.

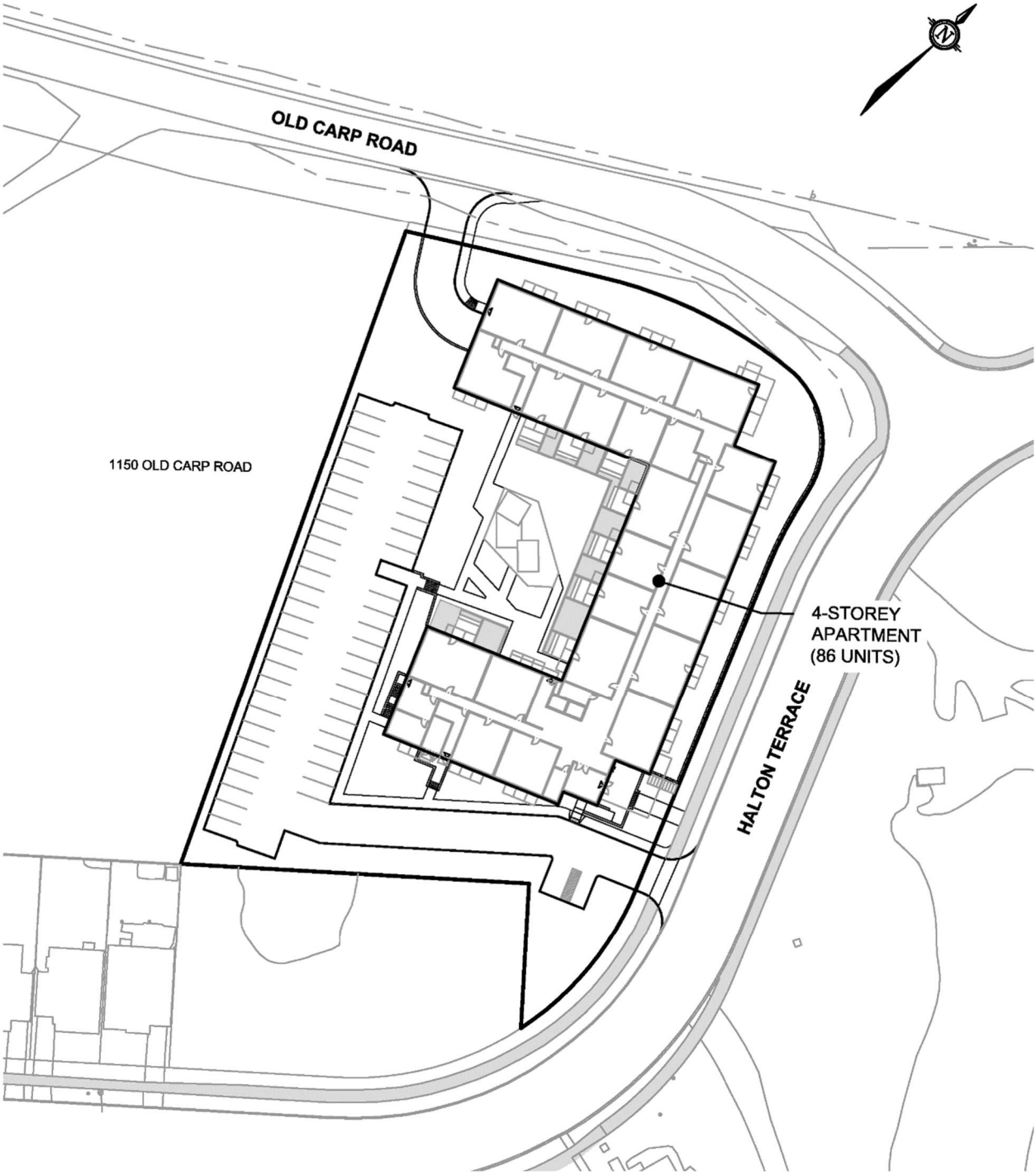



**Figure 1-2 Site Plan**

This report assesses the impacts of sound from vehicular traffic on the proposed development using the Ministry of the Environment (MOE) Stamson 5.0 software and outlines any necessary noise attenuation requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines (ENCG) and the MOE Environmental Noise Guidelines (MOE Publication NPC-300).

# 2.0 CITY OF OTTAWA ENVIRONMENTAL NOISE CONTROL GUIDELINES

## 2.1 Sound Level Criteria

The City of Ottawa is concerned with noise from aircraft, roads, railways and transitways as expressed in the City of Ottawa Official Plan (May 2003). These policies are supported by the Environmental Noise Control Guidelines (ENCG) which is a technical document that outlines the specific sound level criteria. The City of Ottawa's *Environmental Noise Control Guidelines (ENCG)*, January, 2016 and the Ministry of Environment's *Environmental Noise Guidelines, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300* have been used for the purpose of this report. As per Section 2.2 of the City of Ottawa Noise Control Guidelines (2016), unless otherwise noted, developments should be consistent with NPC-300 (MOE publication, 2013).

The areas that must be assessed for acoustic protection include the Outdoor Living Area (OLA) and the Outdoor Plane of Window (POW).

These locations are defined as:

- **Outdoor Living Area (OLA):** The Outdoor Living Area is defined as that part of the outdoor amenity area provided for the quiet enjoyment of the outdoor environment during the daytime period. These amenity areas are typically backyards, gardens, terraces, patios and common outdoor living areas. The OLA noise target for traffic noise sources is 55 dBA. This criterion may be exceeded by an amount not greater than 5 dBA, subject to justification and the use of a Warning Clause. OLA noise levels are analysed at 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW):** The plane of window is defined as the indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during night time hours. The residential Plane of Window noise target for traffic noise sources is 55 dBA during the day and 50 dBA at night. If this criterion is exceeded, the property may be subject to building component analysis and warning clauses. The sound criterion is broadly summarized in **Table 2-1.** POW noise levels are analysed 1.5m above grade for the first storey, 4.69m above grade for the second storey, 7.88m above grade for the third storey and 11.07m above grade for the fourth storey.

**Table 2-1 City of Ottawa Outdoor Plane of Window Sound Level Criteria**

| TIME PERIOD | RECEIVER LOCATION | SOUND LEVEL CRITERIA |
|---|---|---|
| Daytime (07:00 - 23:00 hrs) | Plane of Living Room Window | 55 dBA |
| Night time (23:00 - 07:00 hrs) | Plane of Bedroom Window | 50 dBA |

Compliance with the outdoor sound level criteria generally ensures compliance with the indoor sound level criteria which is summarized below in **Table 2-2**.

**Table 2-2 Indoor Sound Level Criteria**

| TIME PERIOD | RECEIVER LOCATION | SOUND LEVEL CRITERIA |
|---|---|---|
| Daytime (07:00 - 23:00 hrs) | **Living/Dining Rooms of residential dwelling units**, hospitals, schools, nursing homes, day-care centres, theatres, places of worship, individual or semiprivate offices, conference rooms etc. | 45 dBA |
| Night Time (23:00 - 07:00 hrs) | **Sleeping quarters of residential units**, hospitals, nursing homes, senior citizen homes, etc. | 40 dBA |

## 2.2 Noise Attenuation Requirements

When sound levels are predicted to be less than the specified criteria for daytime and night time conditions, no attenuation measures are required on the part of the proponent. As the noise criteria are exceeded, a combination of attenuation measures is recommended by the City of Ottawa and the MOE to modify the development environment.

These attenuation measures may include any or all of the following:

- Distance setback with soft ground;
- Insertion of noise insensitive land uses between the source and sensitive receptor;
- Orientation of building to provide sheltered zone;
- Construction of a noise barrier wall and/or berm;
- Installation of a forced air ventilation system with provision for central air;
- Installation of central air;
- Acoustically selected building façade components

### 2.2.1 *Noise Barrier*

Noise barriers should only be used when other noise control measures have been considered, and there is no other alternative. For the purpose of this study, when noise levels exceed 60 dBA in the Outdoor Living Area, control measures (barriers) are required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

The noise barriers are to be compliant with the City standard for noise barriers and have the following characteristics.

- Minimum height of 2.2m;
- Maximum height of 2.5m (unless approved by the City of Ottawa);
- Situated 0.30m inside the private property;
- A surface mass density not less than 20kg/sq.m; and
- No holes or gaps.

### 2.2.2 *Ventilation Requirements*

A forced air heating system with provision for a central air conditioning system is required if the daytime noise levels are between 55 dBA and 65 dBA and/or night time noise levels are between 50 dBA and 60 dBA.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or night time noise levels exceed 60 dBA.

### 2.2.3 *Building Component Assessment*

When noise levels exceed 65 dBA (daytime) or 60 dBA (night time) the exterior cladding system of the building envelope must be acoustically assessed to ensure the indoor sound criteria is achieved. This includes analysis of the exterior wall, door, and/or glazing system specifications as appropriate.

The NRC research *Acoustic Insulation Factor: A Rating for the Insulation of Buildings against Noise (*June 1980, JD Quirt) is used to assess the building components and the required acoustic insulation factor (AIF). This method is recognized by the City of Ottawa.

The required AIF is based on the Outside $L_{eq}$, Indoor $L_{eq}$ required, and the number of exterior façade components.

Minimum Required AIF = Outside $L_{eq}$ – Indoor $L_{eq}$ + $\log_{10}$ (Number of Components) + 2dB

Where, N = Number of components (walls, windows and roof);
L = Sound Level expressed on a common decibel scale.

### 2.2.4 *Warning Clauses*

When predicted noise levels exceed the specified criteria, the City of Ottawa and the MOE recommend warning clauses be registered as a notice on title and incorporated into the sales agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

The following typical warning clauses are extracted from Section C8.1 of the MOE NPC-300 document.

*Warning Clause Type A*
“Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type B*
“Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type C*
“This dwelling unit has been designed with the provision for adding central air conditioning at the occupant’s discretion. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City’s and the Ministry of the Environment’s noise criteria.”

*Warning Clause Type D*
"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

### 2.2.5 *Summary of Noise Attenuation Measure Requirements*

**Table 2-3** summarizes the noise attenuation measure requirements and warning clauses should sound criteria be exceeded.

**Table 2-3 Outdoor, Ventilation and Warning Clause Requirements (NPC-300)**

| Assessment Location | $L_{eq}$ (dBA) | Outdoor Control Measures | Indoor Control Measures | | Warning Clause |
|---|---|---|---|---|---|
| | | | Ventilation Requirements | Building Components | |
| **Outdoor Living Area (OLA)** | Less than 55 | None required | N/A | N/A | None required |
| | Between 55 and 60 | Control measures (barriers) may not be required but should be considered | N/A | N/A | Required if resultant $L_{eq}$ exceeds 55 dBA Type A |
| | More than 60 | Barriers required | N/A | N/A | Required if resultant $L_{eq}$ exceeds 55 dBA Type B |
| **Plane of Living Room Window (POW)** | Less than 55 | N/A | None Required | None Required | None Required |
| | Between55 and 65 | N/A | Forced air heating with provision for central air conditioning | None Required | Required Type C |
| | More Than 65 | N/A | Central Air Conditioning | Acoustical performance of the windows and walls should be specified | Required Type D |
| **Plane of Bedroom Window (POW)** | Less than 50 | N/A | None Required | None Required | None Required |
| | Between50 and 60 | N/A | Forced air heating with provision for central air conditioning | None Required | Required Type C |
| | More than 60 | N/A | Central Air Conditioning | Acoustical performance of the windows and walls should be specified | Required Type D |

# 3.0 NOISE SOURCES

The City of Ottawa Official Plan and Environmental Noise Control Guidelines (ENCG) stipulate that a noise impact assessment is required when a noise sensitive development is within proximity to a surface transportation (road or rail), stationary and aircraft noise sources.

Due to the site location, only roadway noise will be considered. The following distances to roadway noise sources are applicable to the subject site:

- Within 100m from the right-of-way of an existing/proposed arterial/collector

**Figure 3-1** shows the noise sources that have an impact on this development. Halton Terrace (Collector) and Old Carp Road (Collector) are located within 100m of the development.

## 3.1 Halton Terrace and Old Carp Road (Collector)

Halton Terrace and Old Carp Road are classified as an Urban Collector (2-UCU) Roadway in the 2013 Transportation Master Plan. An Annual Average Daily Traffic (AADT) value of 8,000 is specified for this type of road.

As per Table B1 of Appendix B of the ENCG, **Table 3-1** outlines the traffic parameters used to calculate the sound levels for the development.

**Table 3-1 Halton Terrace & Old Carp Road Noise Parameters**

| | |
|---|---|
| **Roadway Classification** | 2-Lane Urban Collector |
| **Annual Average Daily Traffic (AADT)** | 8,000 veh/day |
| **Day/Night Split (%)** | 92/8 |
| **Heavy Trucks (%)** | 5 |
| **Medium Trucks (%)** | 7 |
| **Posted Speed Limit** | 40 km/hr |
| **Road Gradient** | 1.0% |

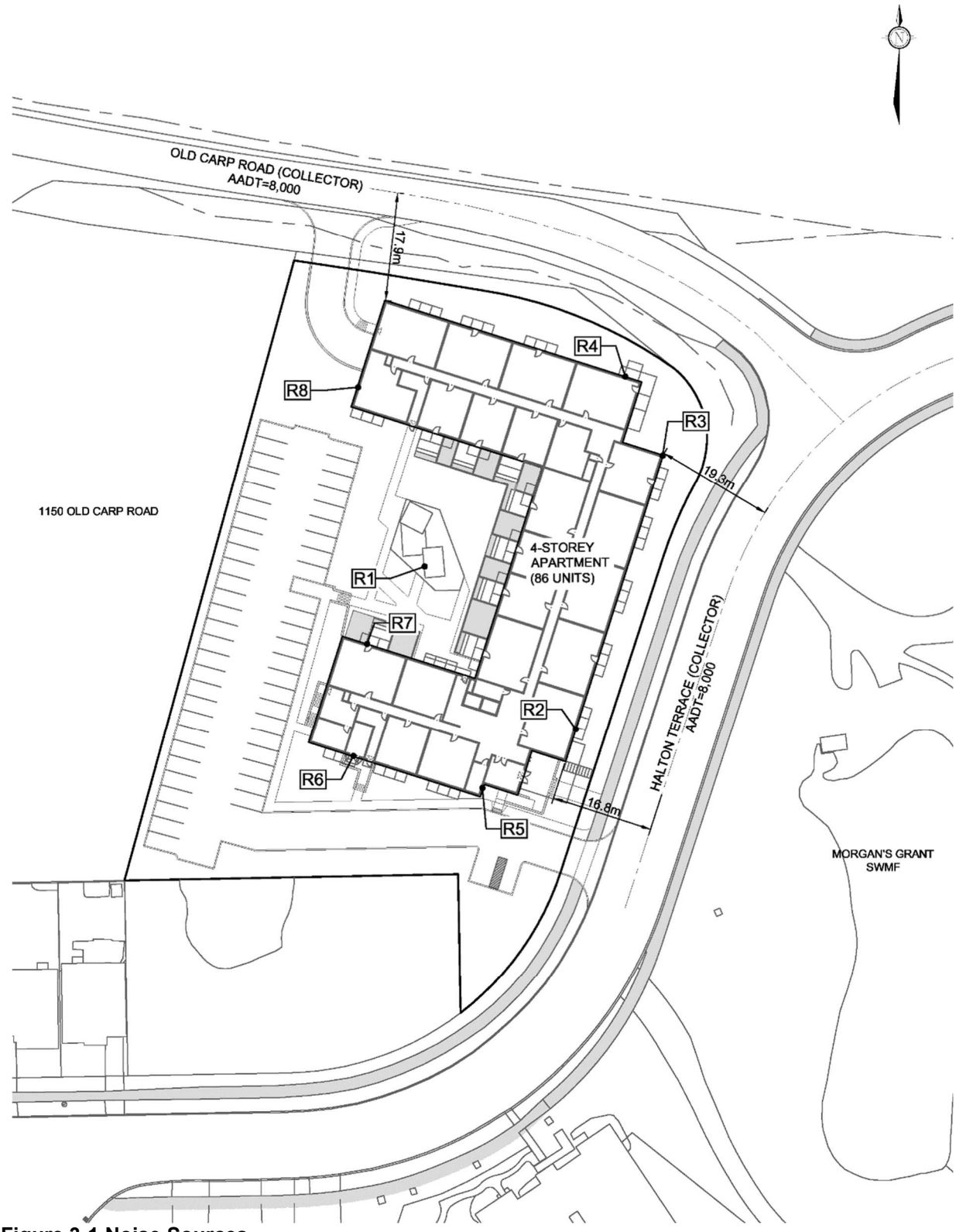



**Figure 3-1 Noise Sources**

# 4.0 NOISE LEVEL PREDICTIONS

## 4.1 Modeling

Noise levels are calculated using the STAMSON computer program, version 5.03. Road data is input into the program as applicable, whereupon the program calculates an A-weighted 16 hour $L_{eq}$ noise level for the daytime and an 8 hour $L_{eq}$ noise level for the night time. The results of these computer calculations are presented in **Appendix B** and summarized in **Table 4-1** and **Table 4-2**.

**Table 4-1 OLA Noise Level Summary**

| LOCATION | OUTDOOR LIVING AREA NOISE LEVEL – Leq - (dBA) |
|---|---|
| | Unattenuated |
| R1 (Amenity Area) | 52.82 |

**Table 4-2 POW Noise Level Summary**

| LOCATION | PLANE OF WINDOW (POW) NOISE LEVEL – $L_{eq}$ - (dBA) | |
|---|---|---|
| | DAYTIME | NIGHT TIME |
| R2 (Ground Floor) | 61.85 | 54.26 |
| R2 (4th Floor) | 62.56 | 54.97 |
| R3 (Ground Floor) | 62.37 | 54.77 |
| R3 (4th Floor) | 63.22 | 55.63 |
| R4 (Ground Floor) | 61.94 | 54.35 |
| R4 (4th Floor) | 62.77 | 55.18 |
| R5 (Ground Floor) | 59.64 | 52.05 |
| R6 (Ground Floor) | 57.30 | 49.71 |
| R7 (Ground Floor) | 53.42 | 45.83 |
| R7 (4th Floor) | 53.63 | 46.04 |
| R8 (Ground Floor) | 54.32 | 46.72 |
| R8 (2nd Floor) | 54.80 | 47.21 |
| R8 (3rd Floor) | 55.30 | 47.71 |

## 4.2 Outdoor Control Measures

The shared amenity space is located in the interior of the site, surrounded by the building and surface parking area. The OLA noise level is below the minimum requirement of 55 dBA (52.82 dBA); therefore, no mitigation measures or warning clauses are required.

## 4.3 Indoor Control Measures

Warning clauses are required on title relating to the requirement of forced air heating with provision for central air conditioning and required central air conditioning.

All units facing Halton Terrace and Old Carp Road and 3rd floor to 4th floor units at Receiver location R8 will require forced air heating with provision for central air conditioning and associated warning clause Type C and are identified below in **Figure 5-1**. Detailed warning clause locations are also shown in the floor plans located in **Appendix C**.

Typical wording for Type C warning clause: "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

### 4.4 Building Component Assessment

All plane-of-window noise levels within the development are below 65 dBA; therefore, building component assessment is not required. As long as building components are built to Ontario Building Code minimums, all indoor noise levels will meet the City of Ottawa and MOE guidelines outlined in **Table 2-2** above.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

To meet the requirements for compliance with the City of Ottawa Environmental Noise Control Guidelines and the MOE Environmental Noise Guideline the following measures are required.

**Outdoor Control Measures**

The noise level in the shared amenity space is below 55 dBA, therefore no warning clause is required.

**Indoor Control Measures**

All units facing Halton Terrace and Old Carp Road and 3rd floor to 4th floor units at Receiver location R8 will require forced air heating with provision for central air conditioning and associated warning clause Type C and are presented in **Figure 5-1**.

**Building Component Assessment**

All building faces will comply with the ENCG indoor noise policy employing Ontario Building Code minimum building components.

**Warning Clauses**

Warning clauses are to be placed on title and in the purchase and sale agreements as indicated above and in **Figure 5-1**. The following typical warning clauses are extracted from Section C8.1 of the MOE NPC-300 document.

Warning Clause Type 'C'
"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

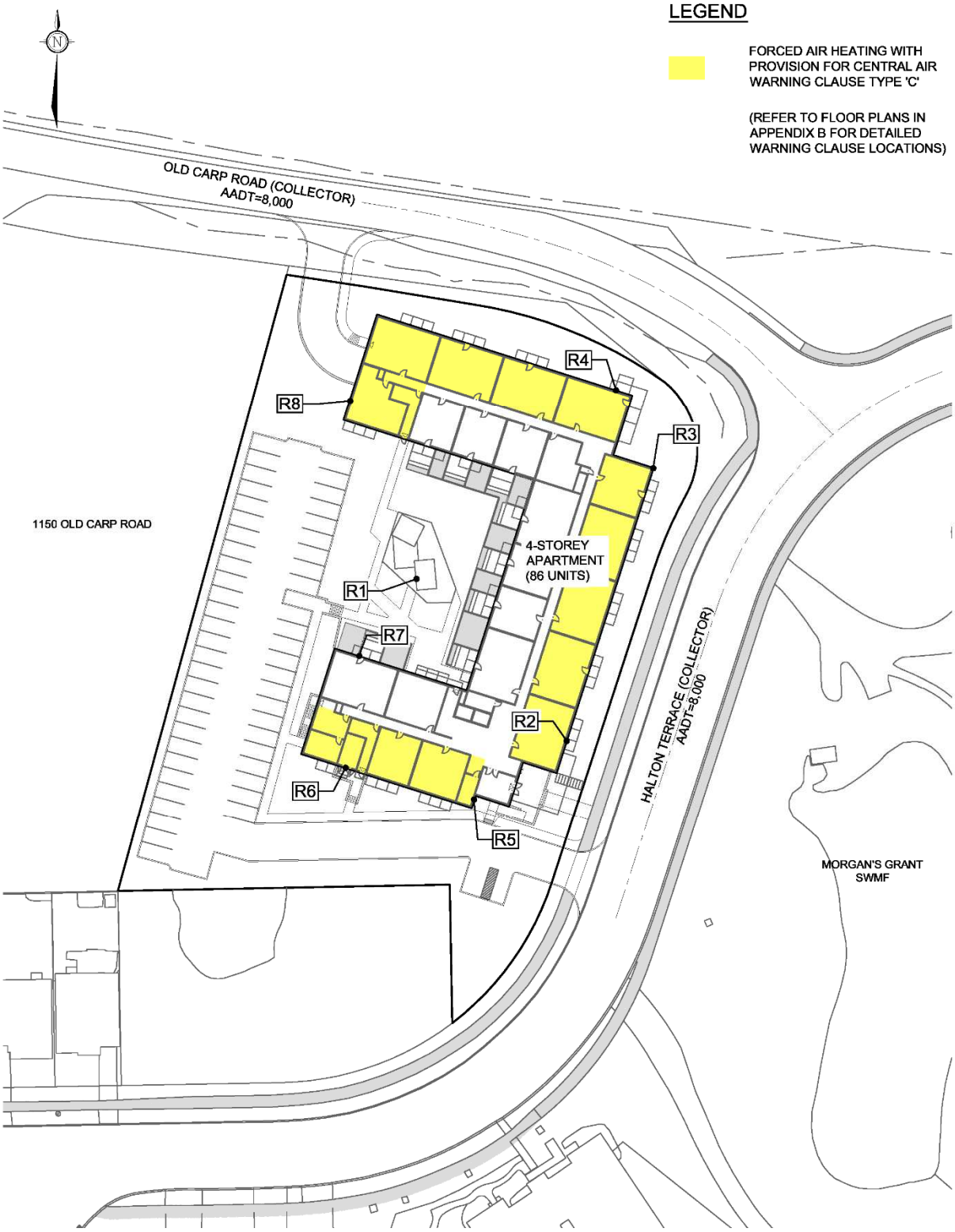



**Figure 5-1 Construction Requirements and Warning Clauses**

If you have any questions or comments with regards to this report, please do not hesitate to contact the undersigned.

Respectfully issued,

**NOVATECH**

Prepared By:

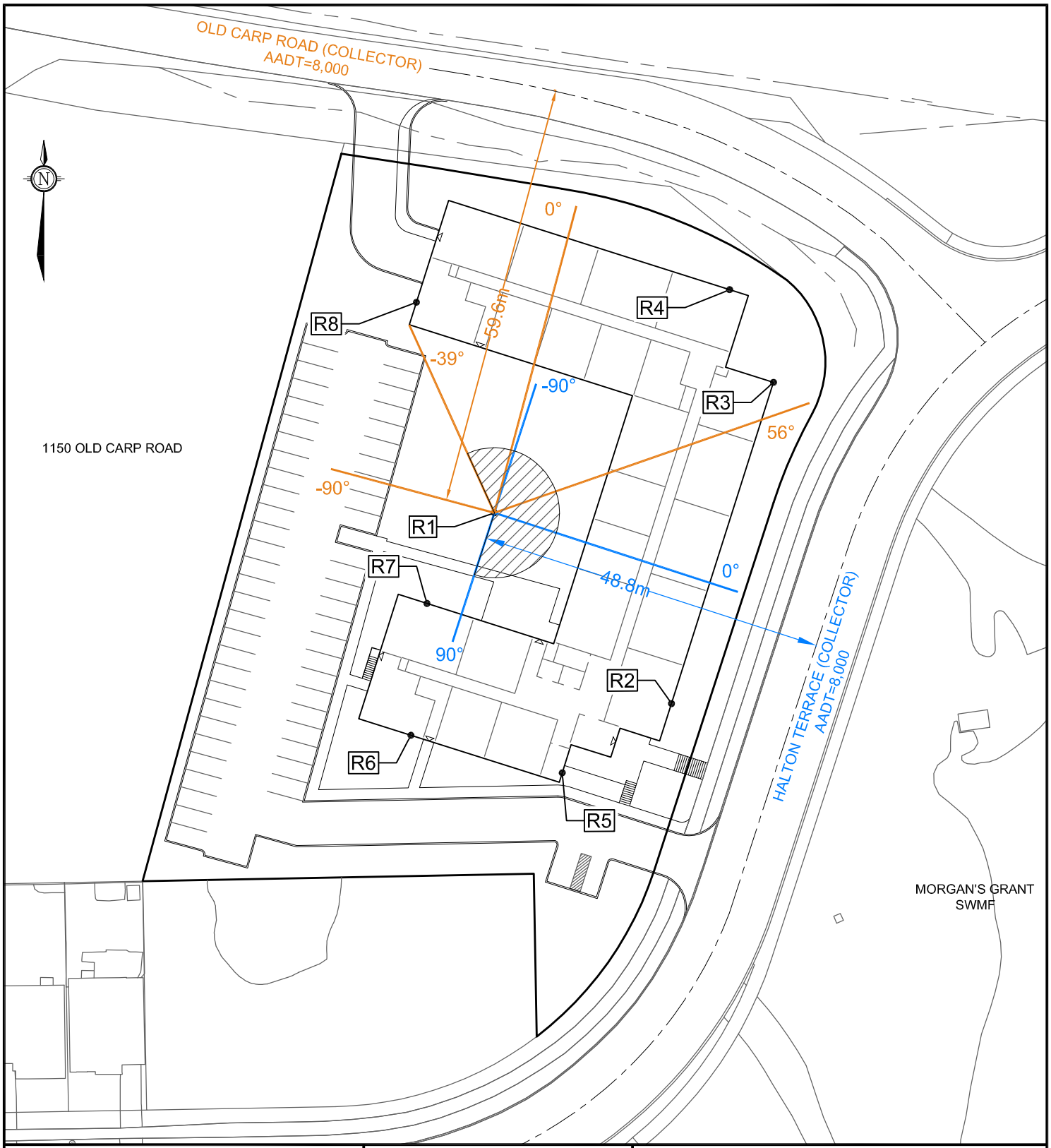

Lucas Wilson, P.Eng.
Project Coordinator

Reviewed By:


Mark Bissett, P.Eng.
Senior Project Manager

# APPENDIX A

## Receiver Location Figures
## Stamson Model Output

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RECEIVER LOCATION

NOISE BARRIER ANGLE

CITY OF OTTAWA
1104 HALTON TERRACE

RECEIVER LOCATIONS
R1

SCALE 1 : 750 (0, 10, 20, 30)

DATE AUG 2021 | JOB 119024 | FIGURE FIG-1

SHT8X11.DWG - 216mmx279mm

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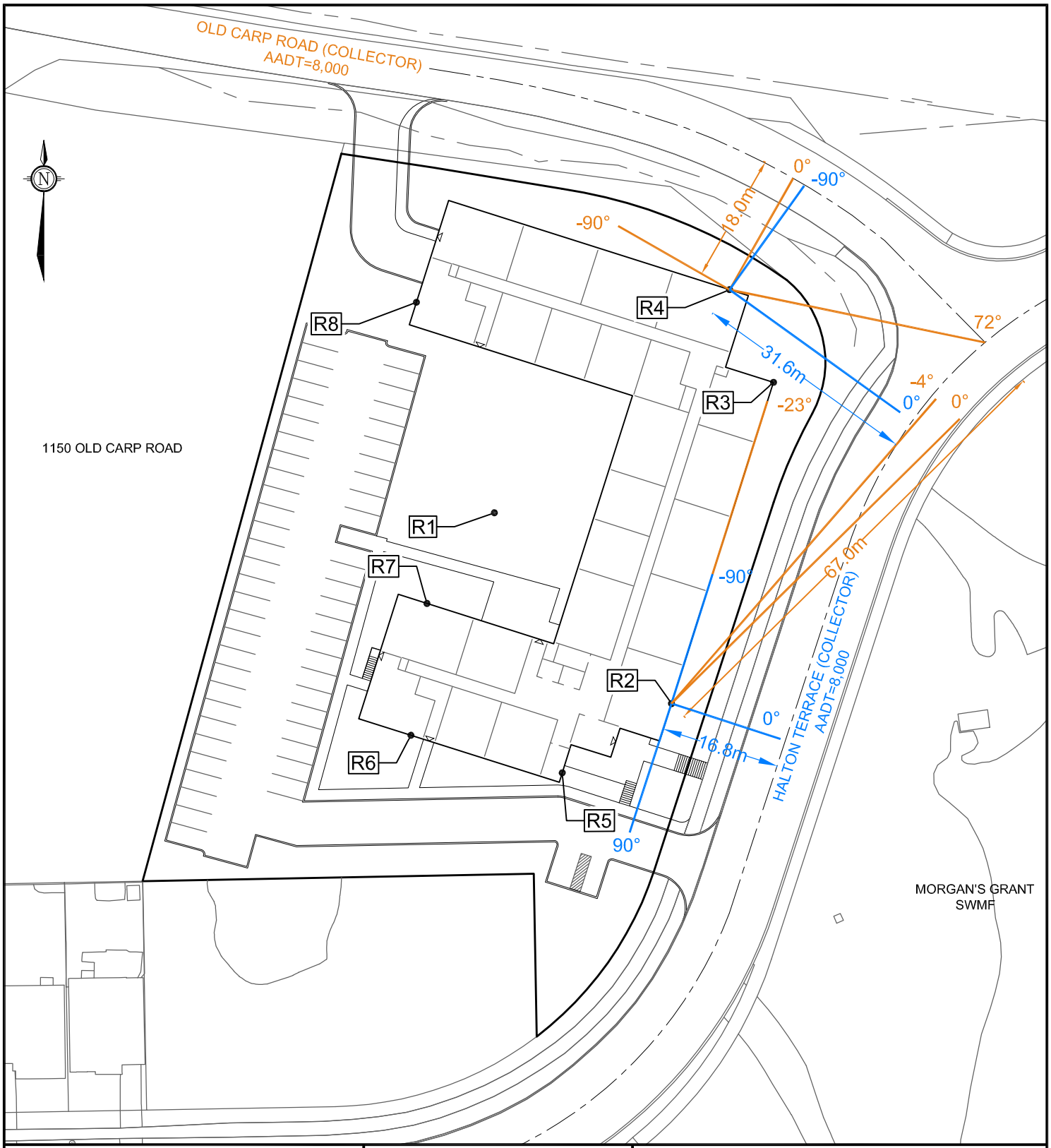


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RECEIVER LOCATION

NOISE BARRIER ANGLE

# CITY OF OTTAWA
# 1104 HALTON TERRACE

## RECEIVER LOCATIONS
## R2 & R4

SCALE 1 : 750 (0, 10, 20, 30)

DATE AUG 2021 | JOB 119024 | FIGURE FIG-2

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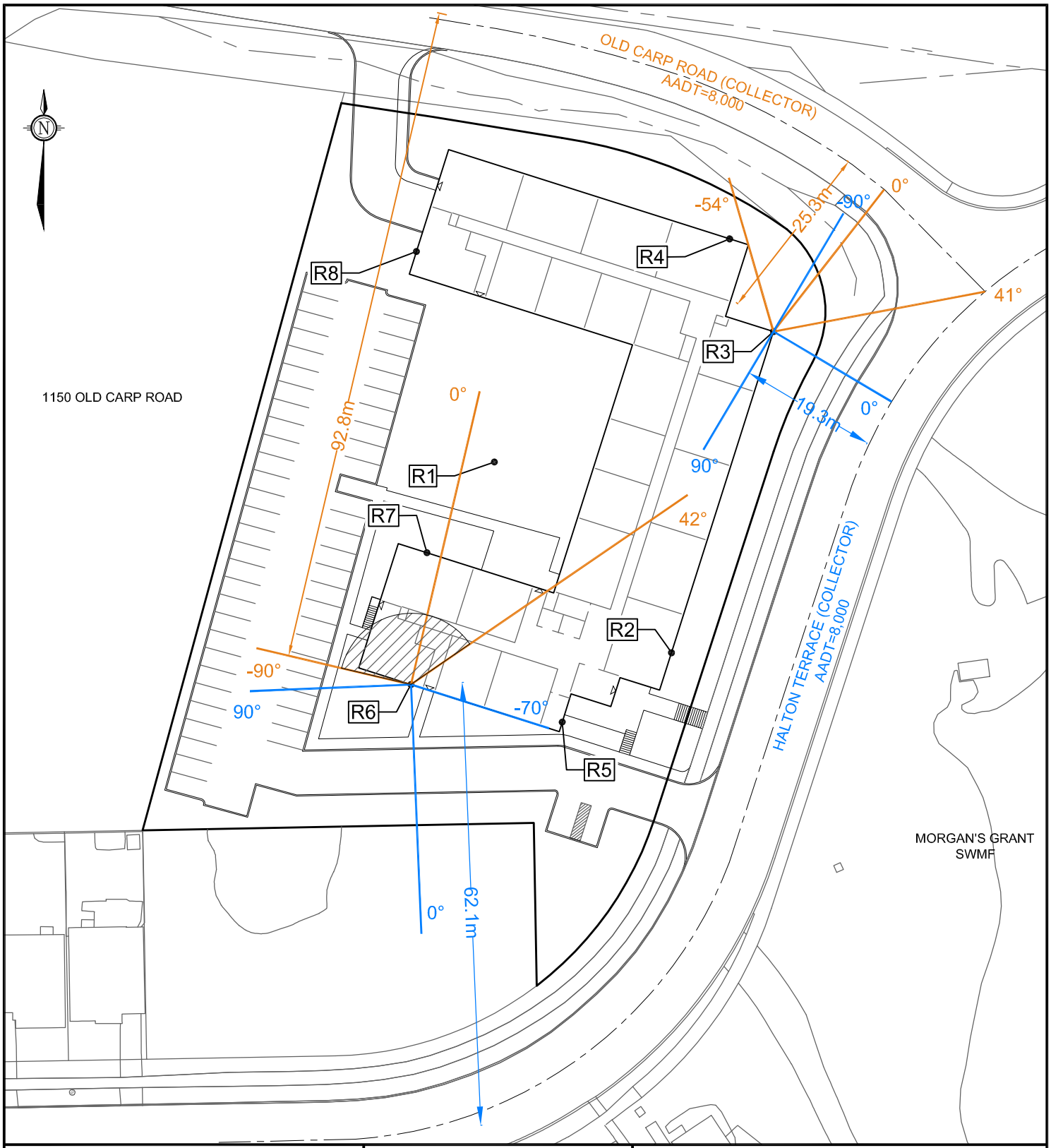


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RECEIVER LOCATION

NOISE BARRIER ANGLE

# CITY OF OTTAWA
# 1104 HALTON TERRACE

## RECEIVER LOCATIONS
## R3 & R6

SCALE 1 : 750 (0, 10, 20, 30)

DATE AUG 2021 | JOB 119024 | FIGURE FIG-3

SHT8X11.DWG - 216mmx279mm

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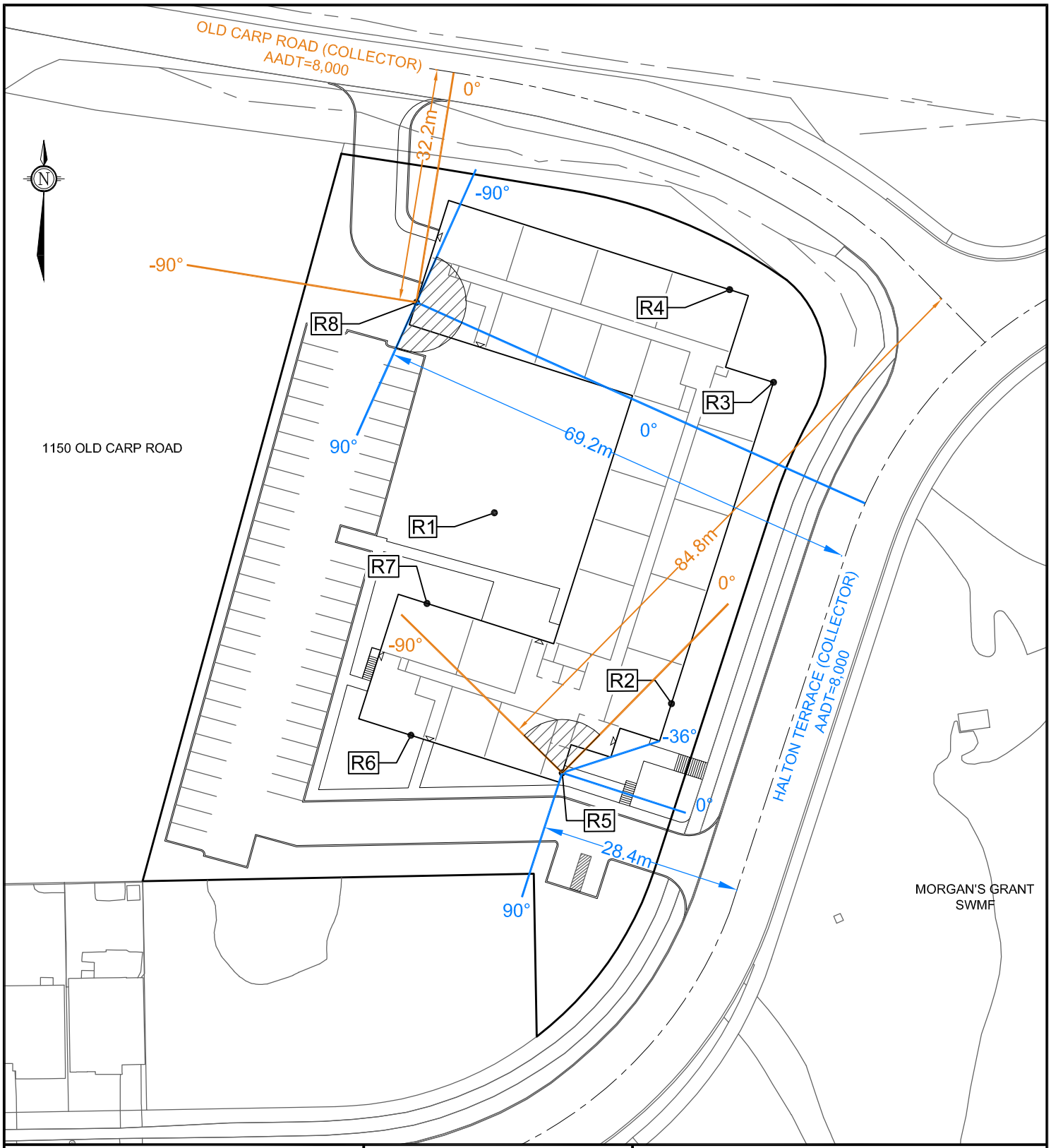


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RECEIVER LOCATION

NOISE BARRIER ANGLE

# CITY OF OTTAWA
# 1104 HALTON TERRACE

## RECEIVER LOCATIONS
## R5 & R8

SCALE 1 : 750 (0, 10, 20, 30)

DATE AUG 2021 | JOB 119024 | FIGURE FIG-4

SHT8X11.DWG - 216mmx279mm

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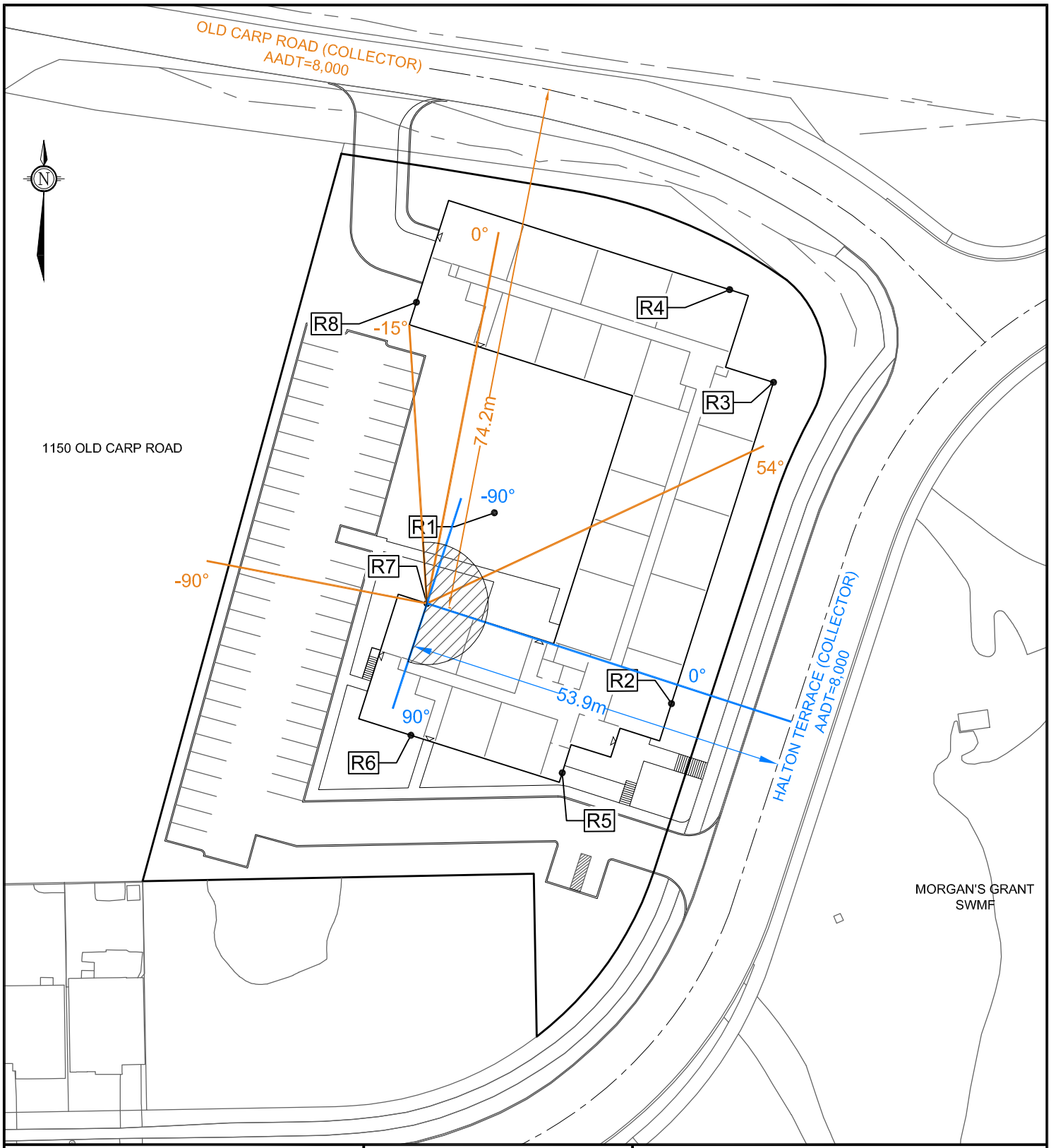


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RECEIVER LOCATION

NOISE BARRIER ANGLE

CITY OF OTTAWA
1104 HALTON TERRACE

RECEIVER LOCATIONS
R7

SCALE 1 : 750 (0, 10, 20, 30)

DATE AUG 2021 | JOB 119024 | FIGURE FIG-5

SHT8X11.DWG - 216mmx279mm

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STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:38:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description: R1 OLA (Shared Amenity Space)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 48.80 / 48.80 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.70 m
Barrier receiver distance : 13.50 / 13.50 m
Source elevation : 82.43 m
Receiver elevation : 85.30 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 56.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 59.60 / 59.60 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -39.00 deg Angle2 : 56.00 deg
Barrier height : 13.08 m
Elevation : 1.70 m
Barrier receiver distance : 21.60 / 21.60 m
Source elevation : 82.13 m
Receiver elevation : 85.30 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---
| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 0.07 | 86.00 |

ROAD (0.00 + 40.32 + 0.00) = 40.32 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -5.12 | 0.00 | 0.00 | 0.00 | -18.51 | 40.32 |

Segment Leq : 40.32 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---
| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | -0.28 | 85.65 |

ROAD (52.49 + 35.19 + 0.00) = 52.57 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -39 | 0.00 | 63.96 | 0.00 | -5.99 | -5.48 | 0.00 | 0.00 | 0.00 | 52.49 |
| -39 | 56 | 0.00 | 63.96 | 0.00 | -5.99 | -2.78 | 0.00 | 0.00 | -20.00 | 35.19 |

Segment Leq : 52.57 dBA

Total Leq All Segments: 52.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.82

STAMSON 5.0 NORMAL REPORT Date: 04-08-2021 10:16:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r211.te Time Period: Day/Night 16/8 hours
Description: R2 POW Ground Level (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 16.80 / 16.80 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -23.00 deg -4.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 / 67.00 m
Receiver height : 1.50 / 1.50 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 61.78 + 0.00) = 61.78 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.62 | 63.96 | 0.00 | -0.79 | -1.38 | 0.00 | 0.00 | 0.00 | 61.78 |

Segment Leq : 61.78 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 43.60 + 0.00) = 43.60 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -23 | -4 | 0.62 | 63.96 | 0.00 | -10.50 | -9.85 | 0.00 | 0.00 | 0.00 | 43.60 |

Segment Leq : 43.60 dBA

Total Leq All Segments: 61.85 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.19 + 0.00) = 54.19 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.62 | 56.36 | 0.00 | -0.79 | -1.38 | 0.00 | 0.00 | 0.00 | 54.19 |

Segment Leq : 54.19 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 36.01 + 0.00) = 36.01 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -23 | -4 | 0.62 | 56.36 | 0.00 | -10.50 | -9.85 | 0.00 | 0.00 | 0.00 | 36.01 |

Segment Leq : 36.01 dBA

Total Leq All Segments: 54.26 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.85
(NIGHT): 54.26

STAMSON 5.0 NORMAL REPORT Date: 04-08-2021 10:17:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r214.te Time Period: Day/Night 16/8 hours
Description: R2 POW 4th Level (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 16.80 / 16.80 m
Receiver height : 11.07 / 11.07 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -23.00 deg -4.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 / 67.00 m
Receiver height : 11.07 / 11.07 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 62.47 + 0.00) = 62.47 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.33 | 63.96 | 0.00 | -0.65 | -0.83 | 0.00 | 0.00 | 0.00 | 62.47 |

Segment Leq : 62.47 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 45.51 + 0.00) = 45.51 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -23 | -4 | 0.33 | 63.96 | 0.00 | -8.63 | -9.81 | 0.00 | 0.00 | 0.00 | 45.51 |

Segment Leq : 45.51 dBA

Total Leq All Segments: 62.56 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.88 + 0.00) = 54.88 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.33 | 56.36 | 0.00 | -0.65 | -0.83 | 0.00 | 0.00 | 0.00 | 54.88 |

Segment Leq : 54.88 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 37.92 + 0.00) = 37.92 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -23 | -4 | 0.33 | 56.36 | 0.00 | -8.63 | -9.81 | 0.00 | 0.00 | 0.00 | 37.92 |

Segment Leq : 37.92 dBA

Total Leq All Segments: 54.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.56
(NIGHT): 54.97

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:43:09
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3l1.te Time Period: Day/Night 16/8 hours
Description: R3 Ground Floor (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 19.30 / 19.30 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -54.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.30 / 25.30 m
Receiver height : 1.50 / 1.50 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 60.81 + 0.00) = 60.81 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.62 | 63.96 | 0.00 | -1.77 | -1.38 | 0.00 | 0.00 | 0.00 | 60.81 |

Segment Leq : 60.81 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 57.17 + 0.00) = 57.17 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -54 | 41 | 0.62 | 63.96 | 0.00 | -3.67 | -3.11 | 0.00 | 0.00 | 0.00 | 57.17 |

Segment Leq : 57.17 dBA

Total Leq All Segments: 62.37 dBA

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

Source height = 1.50 m

ROAD (0.00 + 53.21 + 0.00) = 53.21 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.62 | 56.36 | 0.00 | -1.77 | -1.38 | 0.00 | 0.00 | 0.00 | 53.21 |

Segment Leq : 53.21 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 49.58 + 0.00) = 49.58 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -54 | 41 | 0.62 | 56.36 | 0.00 | -3.67 | -3.11 | 0.00 | 0.00 | 0.00 | 49.58 |

Segment Leq : 49.58 dBA

Total Leq All Segments: 54.77 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.37
(NIGHT): 54.77

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:44:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3l4.te Time Period: Day/Night 16/8 hours
Description: R3 4th Floor (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 19.30 / 19.30 m
Receiver height : 11.07 / 11.07 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -54.00 deg 41.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.30 / 25.30 m
Receiver height : 11.07 / 11.07 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 61.67 + 0.00) = 61.67 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.33 | 63.96 | 0.00 | -1.45 | -0.83 | 0.00 | 0.00 | 0.00 | 61.67 |

Segment Leq : 61.67 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 57.98 + 0.00) = 57.98 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -54 | 41 | 0.33 | 63.96 | 0.00 | -3.02 | -2.96 | 0.00 | 0.00 | 0.00 | 57.98 |

Segment Leq : 57.98 dBA

Total Leq All Segments: 63.22 dBA

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

Source height = 1.50 m

ROAD (0.00 + 54.08 + 0.00) = 54.08 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.33 | 56.36 | 0.00 | -1.45 | -0.83 | 0.00 | 0.00 | 0.00 | 54.08 |

Segment Leq : 54.08 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 50.39 + 0.00) = 50.39 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -54 | 41 | 0.33 | 56.36 | 0.00 | -3.02 | -2.96 | 0.00 | 0.00 | 0.00 | 50.39 |

Segment Leq : 50.39 dBA

Total Leq All Segments: 55.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.22
(NIGHT): 55.63

STAMSON 5.0 NORMAL REPORT Date: 04-08-2021 10:22:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r411.te Time Period: Day/Night 16/8 hours
Description: R4 POW Ground Level (Facing Old Carp Road)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (day/night)
---
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 31.60 / 31.60 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 72.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 18.00 / 18.00 m
Receiver height : 1.50 / 1.50 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 54.34 + 0.00) = 54.34 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.62 | 63.96 | 0.00 | -5.23 | -4.39 | 0.00 | 0.00 | 0.00 | 54.34 |

Segment Leq : 54.34 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 61.11 + 0.00) = 61.11 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 72 | 0.62 | 63.96 | 0.00 | -1.28 | -1.57 | 0.00 | 0.00 | 0.00 | 61.11 |

Segment Leq : 61.11 dBA

Total Leq All Segments: 61.94 dBA

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

Source height = 1.50 m

ROAD (0.00 + 46.74 + 0.00) = 46.74 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.62 | 56.36 | 0.00 | -5.23 | -4.39 | 0.00 | 0.00 | 0.00 | 46.74 |

Segment Leq : 46.74 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 53.52 + 0.00) = 53.52 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 72 | 0.62 | 56.36 | 0.00 | -1.28 | -1.57 | 0.00 | 0.00 | 0.00 | 53.52 |

Segment Leq : 53.52 dBA

Total Leq All Segments: 54.35 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.94
(NIGHT): 54.35

STAMSON 5.0 NORMAL REPORT Date: 04-08-2021 10:24:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r414.te Time Period: Day/Night 16/8 hours
Description: R4 POW 4th Level (Facing Old Carp Road)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (day/night)
---
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 31.60 / 31.60 m
Receiver height : 11.07 / 11.07 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 72.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 18.00 / 18.00 m
Receiver height : 11.07 / 11.07 m

Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

ROAD (0.00 + 55.82 + 0.00) = 55.82 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.33 | 63.96 | 0.00 | -4.30 | -3.84 | 0.00 | 0.00 | 0.00 | 55.82 |

Segment Leq : 55.82 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 61.79 + 0.00) = 61.79 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 72 | 0.33 | 63.96 | 0.00 | -1.05 | -1.11 | 0.00 | 0.00 | 0.00 | 61.79 |

Segment Leq : 61.79 dBA

Total Leq All Segments: 62.77 dBA

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

Source height = 1.50 m

ROAD (0.00 + 48.22 + 0.00) = 48.22 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.33 | 56.36 | 0.00 | -4.30 | -3.84 | 0.00 | 0.00 | 0.00 | 48.22 |

Segment Leq : 48.22 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 54.20 + 0.00) = 54.20 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 72 | 0.33 | 56.36 | 0.00 | -1.05 | -1.11 | 0.00 | 0.00 | 0.00 | 54.20 |

Segment Leq : 54.20 dBA

Total Leq All Segments: 55.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.77
(NIGHT): 55.18

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:46:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5l1.te Time Period: Day/Night 16/8 hours
Description: R5 Ground Floor (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (day/night)
---
Angle1 Angle2 : -36.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 28.40 / 28.40 m
Receiver height : 1.50 / 1.50 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (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 : 84.80 / 84.80 m
Receiver height : 1.50 / 1.50 m

```
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg
Barrier height            :  13.08 m
Elevation                 :   1.50 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  82.44 m
Receiver elevation        :  85.93 m
Barrier elevation         :  85.93 m
Reference angle           :   0.00

Results segment # 1: Halton (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 59.63 + 0.00) = 59.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     90   0.00  63.96   0.00  -2.77  -1.55   0.00   0.00   0.00  59.63
-------------------------------------------------------------------------------

Segment Leq : 59.63 dBA

Results segment # 2: Old Carp (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.46 !        87.39

ROAD (0.00 + 34.44 + 0.00) = 34.44 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  63.96   0.00  -7.52  -3.01   0.00   0.00 -18.98  34.44
-------------------------------------------------------------------------------

Segment Leq : 34.44 dBA

Total Leq All Segments: 59.64 dBA

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

Source height = 1.50 m

ROAD (0.00 + 52.04 + 0.00) = 52.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -36     90   0.00  56.36   0.00  -2.77  -1.55   0.00   0.00   0.00  52.04
-------------------------------------------------------------------------------

Segment Leq : 52.04 dBA
```

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.46 | 87.39 |

ROAD (0.00 + 26.85 + 0.00) = 26.85 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.00 | 56.36 | 0.00 | -7.52 | -3.01 | 0.00 | 0.00 | -18.98 | 26.85 |

Segment Leq : 26.85 dBA

Total Leq All Segments: 52.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.64
(NIGHT): 52.05

STAMSON 5.0 NORMAL REPORT Date: 04-08-2021 13:31:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r611.te Time Period: Day/Night 16/8 hours
Description: R6 POW Ground Level (Facing Halton Terrace)

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (day/night)
---
Angle1 Angle2 : -70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 62.10 / 62.10 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 42.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 92.80 / 92.80 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)

```
Barrier angle1            : -90.00 deg   Angle2 : 42.00 deg
Barrier height            :  13.08 m
Elevation                 :   3.00 m
Barrier receiver distance :   1.00 / 1.00   m
Source elevation          :  82.44 m
Receiver elevation        :  85.93 m
Barrier elevation         :  85.93 m
Reference angle           :   0.00

Results segment # 1: Halton (day)
---------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.27 + 0.00) = 57.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -70     90   0.00  63.96   0.00  -6.17  -0.51   0.00   0.00   0.00  57.27
-------------------------------------------------------------------------------

Segment Leq : 57.27 dBA

Results segment # 2: Old Carp (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+---------------
       1.50 !        1.50 !        1.46 !        87.39

ROAD (0.00 + 35.42 + 0.00) = 35.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     42   0.00  63.96   0.00  -7.91  -1.35   0.00   0.00 -19.27  35.42
-------------------------------------------------------------------------------

Segment Leq : 35.42 dBA

Total Leq All Segments: 57.30 dBA

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

Source height = 1.50 m

ROAD (0.00 + 49.68 + 0.00) = 49.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -70     90   0.00  56.36   0.00  -6.17  -0.51   0.00   0.00   0.00  49.68
-------------------------------------------------------------------------------

Segment Leq : 49.68 dBA
```

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.46 | 87.39 |

ROAD (0.00 + 27.83 + 0.00) = 27.83 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 42 | 0.00 | 56.36 | 0.00 | -7.91 | -1.35 | 0.00 | 0.00 | -19.27 | 27.83 |

Segment Leq : 27.83 dBA

Total Leq All Segments: 49.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.30
(NIGHT): 49.71

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:49:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7l1.te Time Period: Day/Night 16/8 hours
Description: R7 Ground Floor

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 53.90 / 53.90 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 82.67 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 54.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 74.20 / 74.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -15.00 deg Angle2 : 54.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 36.50 / 36.50 m
Source elevation : 82.32 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---
| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.44 | 87.37 |

ROAD (0.00 + 39.37 + 0.00) = 39.37 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -5.55 | 0.00 | 0.00 | 0.00 | -19.03 | 39.37 |

Segment Leq : 39.37 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---
| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | -0.28 | 85.65 |

ROAD (53.21 + 32.85 + 0.00) = 53.25 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -15 | 0.00 | 63.96 | 0.00 | -6.94 | -3.80 | 0.00 | 0.00 | 0.00 | 53.21 |
| -15 | 54 | 0.00 | 63.96 | 0.00 | -6.94 | -4.16 | 0.00 | 0.00 | -20.00 | 32.85 |

Segment Leq : 53.25 dBA

Total Leq All Segments: 53.42 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.44 | 87.37 |

ROAD (0.00 + 31.78 + 0.00) = 31.78 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 56.36 | 0.00 | -5.55 | 0.00 | 0.00 | 0.00 | -19.03 | 31.78 |

Segment Leq : 31.78 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | -0.28 | 85.65 |

ROAD (45.62 + 25.25 + 0.00) = 45.66 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -15 | 0.00 | 56.36 | 0.00 | -6.94 | -3.80 | 0.00 | 0.00 | 0.00 | 45.62 |
| -15 | 54 | 0.00 | 56.36 | 0.00 | -6.94 | -4.16 | 0.00 | 0.00 | -20.00 | 25.25 |

Segment Leq : 45.66 dBA

Total Leq All Segments: 45.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.42
(NIGHT): 45.83

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:50:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7l4.te Time Period: Day/Night 16/8 hours
Description: R7 4th Floor

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 53.90 / 53.90 m
Receiver height : 11.07 / 11.07 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 82.67 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 54.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 74.20 / 74.20 m
Receiver height : 11.07 / 11.07 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -15.00 deg Angle2 : 54.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 36.50 / 36.50 m
Source elevation : 82.32 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Results segment # 1: Halton (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 | 11.07 | 10.83 | 96.76 |

ROAD (0.00 + 42.92 + 0.00) = 42.92 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -5.55 | 0.00 | 0.00 | 0.00 | -15.48 | 42.92 |

Segment Leq : 42.92 dBA

Results segment # 2: Old Carp (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 | 11.07 | 4.58 | 90.51 |

ROAD (53.21 + 33.28 + 0.00) = 53.25 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -15 | 0.00 | 63.96 | 0.00 | -6.94 | -3.80 | 0.00 | 0.00 | 0.00 | 53.21 |
| -15 | 54 | 0.00 | 63.96 | 0.00 | -6.94 | -4.16 | 0.00 | 0.00 | -19.56 | 33.28 |

Segment Leq : 53.25 dBA

Total Leq All Segments: 53.63 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 11.07 | 10.83 | 96.76 |

ROAD (0.00 + 35.33 + 0.00) = 35.33 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 56.36 | 0.00 | -5.55 | 0.00 | 0.00 | 0.00 | -15.48 | 35.33 |

Segment Leq : 35.33 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 11.07 | 4.58 | 90.51 |

ROAD (45.62 + 25.69 + 0.00) = 45.66 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | -15 | 0.00 | 56.36 | 0.00 | -6.94 | -3.80 | 0.00 | 0.00 | 0.00 | 45.62 |
| -15 | 54 | 0.00 | 56.36 | 0.00 | -6.94 | -4.16 | 0.00 | 0.00 | -19.56 | 25.69 |

Segment Leq : 45.66 dBA

Total Leq All Segments: 46.04 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.63
(NIGHT): 46.04

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:51:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8l1.te Time Period: Day/Night 16/8 hours
Description: R8 Ground Floor

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 69.20 / 69.20 m
Receiver height : 1.50 / 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 82.36 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---

| | | | |
|---|---|---|---|
| Angle1 Angle2 | : | -90.00 deg | 0.00 deg |
| Wood depth | : | 0 | (No woods.) |
| No of house rows | : | 0 / 0 | |
| Surface | : | 1 | (Absorptive ground surface) |
| Receiver source distance | : | 32.20 / 32.20 | m |
| Receiver height | : | 1.50 / 1.50 | m |
| Topography | : | 3 | (Elevated; no barrier) |
| Elevation | : | 1.50 m | |
| Reference angle | : | 0.00 | |

Results segment # 1: Halton (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.45 | 87.38 |

ROAD (0.00 + 38.31 + 0.00) = 38.31 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -19.00 | 38.31 |

Segment Leq : 38.31 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 54.21 + 0.00) = 54.21 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.62 | 63.96 | 0.00 | -5.36 | -4.39 | 0.00 | 0.00 | 0.00 | 54.21 |

Segment Leq : 54.21 dBA

Total Leq All Segments: 54.32 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 1.50 | 1.45 | 87.38 |

ROAD (0.00 + 30.72 + 0.00) = 30.72 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 56.36 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -19.00 | 30.72 |

Segment Leq : 30.72 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 46.61 + 0.00) = 46.61 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.62 | 56.36 | 0.00 | -5.36 | -4.39 | 0.00 | 0.00 | 0.00 | 46.61 |

Segment Leq : 46.61 dBA

Total Leq All Segments: 46.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.32
(NIGHT): 46.72

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:55:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8l2.te Time Period: Day/Night 16/8 hours
Description: R8 2nd Floor

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 69.20 / 69.20 m
Receiver height : 4.69 / 4.69 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 82.36 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---

| | | | |
|---|---|---|---|
| Angle1 Angle2 | : | -90.00 deg | 0.00 deg |
| Wood depth | : | 0 | (No woods.) |
| No of house rows | : | 0 / 0 | |
| Surface | : | 1 | (Absorptive ground surface) |
| Receiver source distance | : | 32.20 / 32.20 | m |
| Receiver height | : | 4.69 / 4.69 | m |
| Topography | : | 3 | (Elevated; no barrier) |
| Elevation | : | 1.50 m | |
| Reference angle | : | 0.00 | |

Results segment # 1: Halton (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 4.69 | 4.59 | 90.52 |

ROAD (0.00 + 38.65 + 0.00) = 38.65 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -18.67 | 38.65 |

Segment Leq : 38.65 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 54.69 + 0.00) = 54.69 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.52 | 63.96 | 0.00 | -5.04 | -4.22 | 0.00 | 0.00 | 0.00 | 54.69 |

Segment Leq : 54.69 dBA

Total Leq All Segments: 54.80 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 4.69 | 4.59 | 90.52 |

ROAD (0.00 + 31.06 + 0.00) = 31.06 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 56.36 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -18.67 | 31.06 |

Segment Leq : 31.06 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 47.10 + 0.00) = 47.10 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.52 | 56.36 | 0.00 | -5.04 | -4.22 | 0.00 | 0.00 | 0.00 | 47.10 |

Segment Leq : 47.10 dBA

Total Leq All Segments: 47.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.80
(NIGHT): 47.21

STAMSON 5.0 NORMAL REPORT Date: 14-09-2021 21:55:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8l3.te Time Period: Day/Night 16/8 hours
Description: R8 3rd Floor

Road data, segment # 1: Halton (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: Halton (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 : 69.20 / 69.20 m
Receiver height : 7.88 / 7.88 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 13.08 m
Elevation : 1.50 m
Barrier receiver distance : 1.00 / 1.00 m
Source elevation : 82.36 m
Receiver elevation : 85.93 m
Barrier elevation : 85.93 m
Reference angle : 0.00

Road data, segment # 2: Old Carp (day/night)
---
Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: Old Carp (day/night)
---
Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.20 / 32.20 m
Receiver height : 7.88 / 7.88 m
Topography : 3 (Elevated; no barrier)
Elevation : 1.50 m
Reference angle : 0.00

Results segment # 1: Halton (day)
---

Source height = 1.50 m

Barrier height for grazing incidence
---
| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 7.88 | 7.74 | 93.67 |

ROAD (0.00 + 39.36 + 0.00) = 39.36 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 63.96 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -17.95 | 39.36 |

Segment Leq : 39.36 dBA

Results segment # 2: Old Carp (day)
---

Source height = 1.50 m

ROAD (0.00 + 55.19 + 0.00) = 55.19 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.42 | 63.96 | 0.00 | -4.72 | -4.04 | 0.00 | 0.00 | 0.00 | 55.19 |

Segment Leq : 55.19 dBA

Total Leq All Segments: 55.30 dBA

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

Source height = 1.50 m

Barrier height for grazing incidence
---

| Source Height (m) | Receiver Height (m) | Barrier Height (m) | Elevation of Barrier Top (m) |
|---|---|---|---|
| 1.50 | 7.88 | 7.74 | 93.67 |

ROAD (0.00 + 31.77 + 0.00) = 31.77 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.00 | 56.36 | 0.00 | -6.64 | 0.00 | 0.00 | 0.00 | -17.95 | 31.77 |

Segment Leq : 31.77 dBA

Results segment # 2: Old Carp (night)
---

Source height = 1.50 m

ROAD (0.00 + 47.60 + 0.00) = 47.60 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 0 | 0.42 | 56.36 | 0.00 | -4.72 | -4.04 | 0.00 | 0.00 | 0.00 | 47.60 |

Segment Leq : 47.60 dBA

Total Leq All Segments: 47.71 dBA

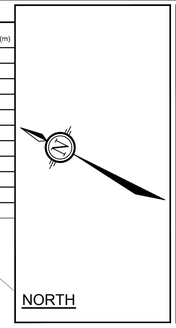
TOTAL Leq FROM ALL SOURCES (DAY): 55.30
(NIGHT): 47.71

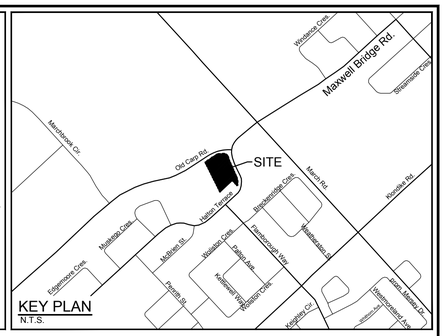
**APPENDIX B**

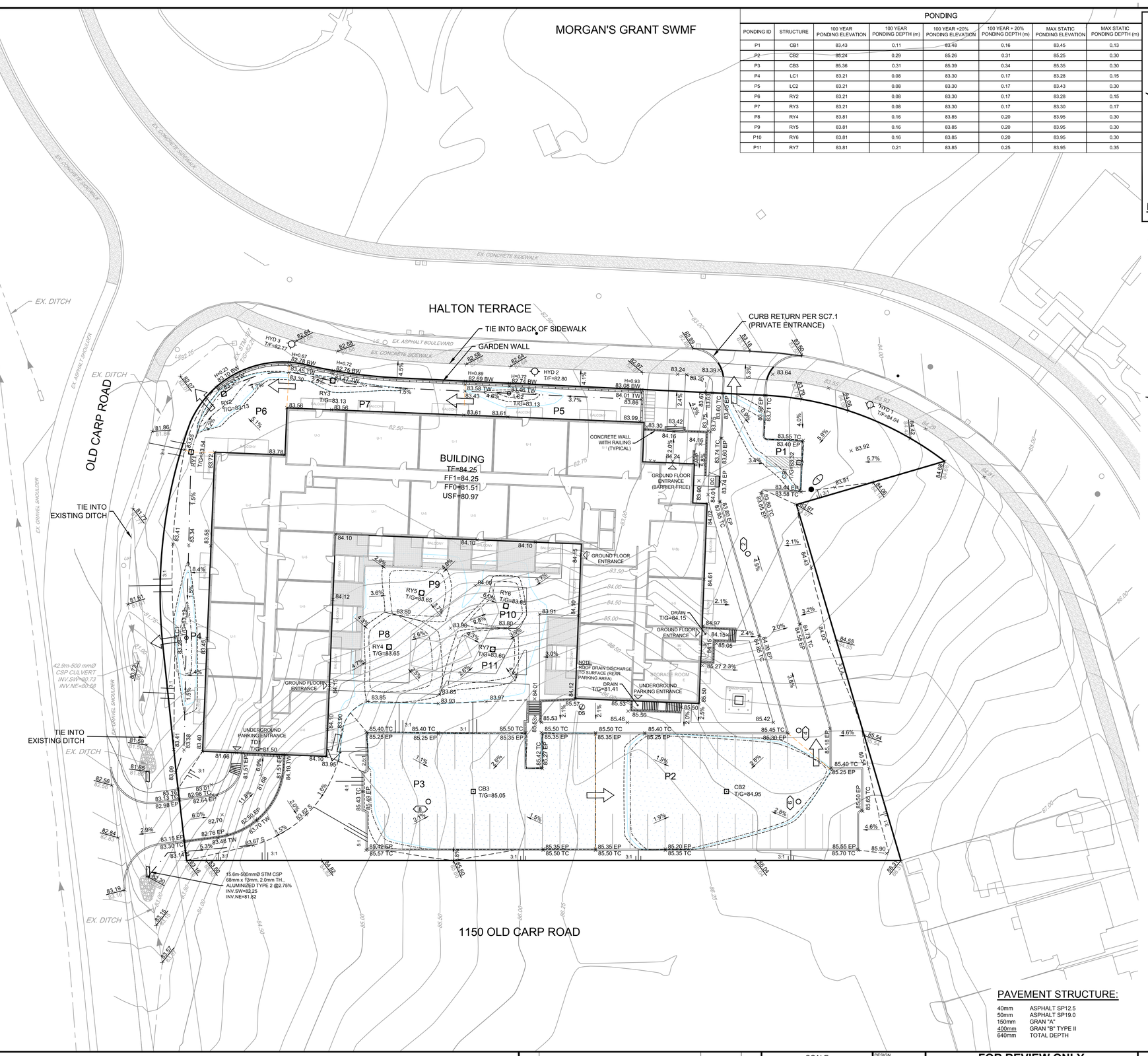
**119024-GR (Grading Plan)**
**Floor & Elevation Plans**

MORGAN'S GRANT SWMF

| PONDING | | | | | | | |
|---|---|---|---|---|---|---|---|
| PONDING ID | STRUCTURE | 100 YEAR PONDING ELEVATION | 100 YEAR PONDING DEPTH (m) | 100 YEAR +20% PONDING ELEVATION | 100 YEAR + 20% PONDING DEPTH (m) | MAX STATIC PONDING ELEVATION | MAX STATIC PONDING DEPTH (m) |
| P1 | CB1 | 83.43 | 0.11 | 83.48 | 0.16 | 83.45 | 0.13 |
| P2 | CB2 | 85.24 | 0.29 | 85.26 | 0.31 | 85.25 | 0.30 |
| P3 | CB3 | 85.36 | 0.31 | 85.39 | 0.34 | 85.35 | 0.30 |
| P4 | LC1 | 83.21 | 0.08 | 83.30 | 0.17 | 83.28 | 0.15 |
| P5 | LC2 | 83.21 | 0.08 | 83.30 | 0.17 | 83.43 | 0.30 |
| P6 | RY2 | 83.21 | 0.08 | 83.30 | 0.17 | 83.28 | 0.15 |
| P7 | RY3 | 83.21 | 0.08 | 83.30 | 0.17 | 83.30 | 0.17 |
| P8 | RY4 | 83.81 | 0.16 | 83.85 | 0.20 | 83.95 | 0.30 |
| P9 | RY5 | 83.81 | 0.16 | 83.85 | 0.20 | 83.95 | 0.30 |
| P10 | RY6 | 83.81 | 0.16 | 83.85 | 0.20 | 83.95 | 0.30 |
| P11 | RY7 | 83.81 | 0.21 | 83.85 | 0.25 | 83.95 | 0.35 |




## LEGEND

- PROPOSED GRADE AND DIRECTION OF FLOW (2.5%)
- PROPOSED ELEVATION (105.59)
- PROPOSED ELEVATION / EXISTING ELEVATION (105.53 / 105.63)
- EXISTING SPOT ELEVATION (55.98)
- EXISTING ELEVATION AT BACK OF SIDEWALK (56.13 BS)
- EXISTING CONTOUR ELEVATION (55.00)
- MAJOR OVERLAND FLOW DIRECTION
- TERRACE GRADE (3:1 MAX)
- SWALE AND TERRACE
- MAX STATIC PONDING LIMITS
- 100-YR PONDING LIMITS
- 100-YR +20% PONDING LIMITS
- HYDRANT WITH TOP OF FLANGE ELEVATION (HYD T/F=56.84)
- SANITARY MANHOLE (105)
- STORM MANHOLE (100)
- CATCHBASIN WITH TOP OF GRATE ELEVATION CB WITH ICD (CB6 T/G=56.48)
- LANDSCAPE TYPE CATCHBASIN WITH TOP OF GRATE ELEVATION (LC1 T/G=56.48)
- VALVE & VALVE BOX LOCATION (VB)
- FINISHED FLOOR (FF=)
- TOP OF FOUNDATION (TF=)
- UNDERSIDE OF FOOTING (USF=)
- EDGE OF PAVEMENT (EP)
- TOP OF CURB (TC)
- ROOFTOP DOWNSPOUT LOCATION (DS)

## GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. BEFORE COMMENCING CONSTRUCTION, PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE INCLUDING BLASTING. INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND THE CITY AS CO-INSURED. AMOUNT OF INSURANCE TO BE SPECIFIED BY OWNER'S AGENT.
5. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
6. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF CITY OF OTTAWA AUTHORITIES.
   - ASPHALT RESTORATION SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA DETAIL R-10.
   - THICKNESS OF GRANULAR MATERIAL AND ASPHALT LAYERS TO MATCH EXISTING.
   - BOULEVARDS SHALL BE REINSTATED WITH 100mm OF TOPSOIL, SEED AND MULCH.
9. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY ENGINEER.
10. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
11. REFER TO GEOTECHNICAL INVESTIGATION PG4872-1 (DATED MAY 3, 2019), PREPARED BY PATERSON GROUP FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS.
12. PERFORATED PIPE SUB-DRAINS TO BE PROVIDED AT SUBGRADE LEVEL EXTENDING FROM THE ROADSIDE CATCHBASIN FOR A DISTANCE OF 3.0m, PARALLEL TO THE CURB IN TWO DIRECTIONS.

## GRADING AND PAVEMENT NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED HARD SURFACE (ie. PAVEMENT, CURB, SIDEWALK, ETC.) AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE HEAVILY PROOF ROLLED WITH A LARGE (10 TON) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. THE GRANULAR BASE SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW IF A WOVEN GEOTEXTILE IS REQUIRED BELOW THE GRANULAR MATERIALS; AND TO CONFIRM THE DEPTH AND COMPACTION OF GRANULAR 'B'
6. PRIOR TO PLACEMENT OF TOPLIFT, THE CONTRACTOR SHALL ADJUST ALL STRUCTURES TO FINAL GRADE PER CITY OF OTTAWA STANDARDS.
7. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
8. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
9. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
10. ALL CURBS SHALL BE BARRIER CURB UNLESS OTHERWISE NOTED AND CONSTRUCTED PER CITY OF OTTAWA STANDARD (SC1.1).
11. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.

## PAVEMENT STRUCTURE:

| | |
|---|---|
| 40mm | ASPHALT SP12.5 |
| 50mm | ASPHALT SP19.0 |
| 150mm | GRAN "A" |
| 400mm | GRAN "B" TYPE II |
| 640mm | TOTAL DEPTH |

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

| No. | REVISION | DATE | BY |
|---|---|---|---|
| 1. | CITY SUBMISSION | OCT 19/21 | MAB |

SCALE 1:300

1:300
0 3 6 9 12

DESIGN DTD
CHECKED LWR
DRAWN DTD
CHECKED MAB
APPROVED JGR

**FOR REVIEW ONLY**

LICENSED PROFESSIONAL ENGINEER
L.R. WILSON
100160065
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
M.A. BISSETT
2021.10.19
PROVINCE OF ONTARIO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Facsimile (613) 254-5867
Website www.novatech-eng.com


CITY OF OTTAWA
1104 HALTON TERRACE

GRADING PLAN

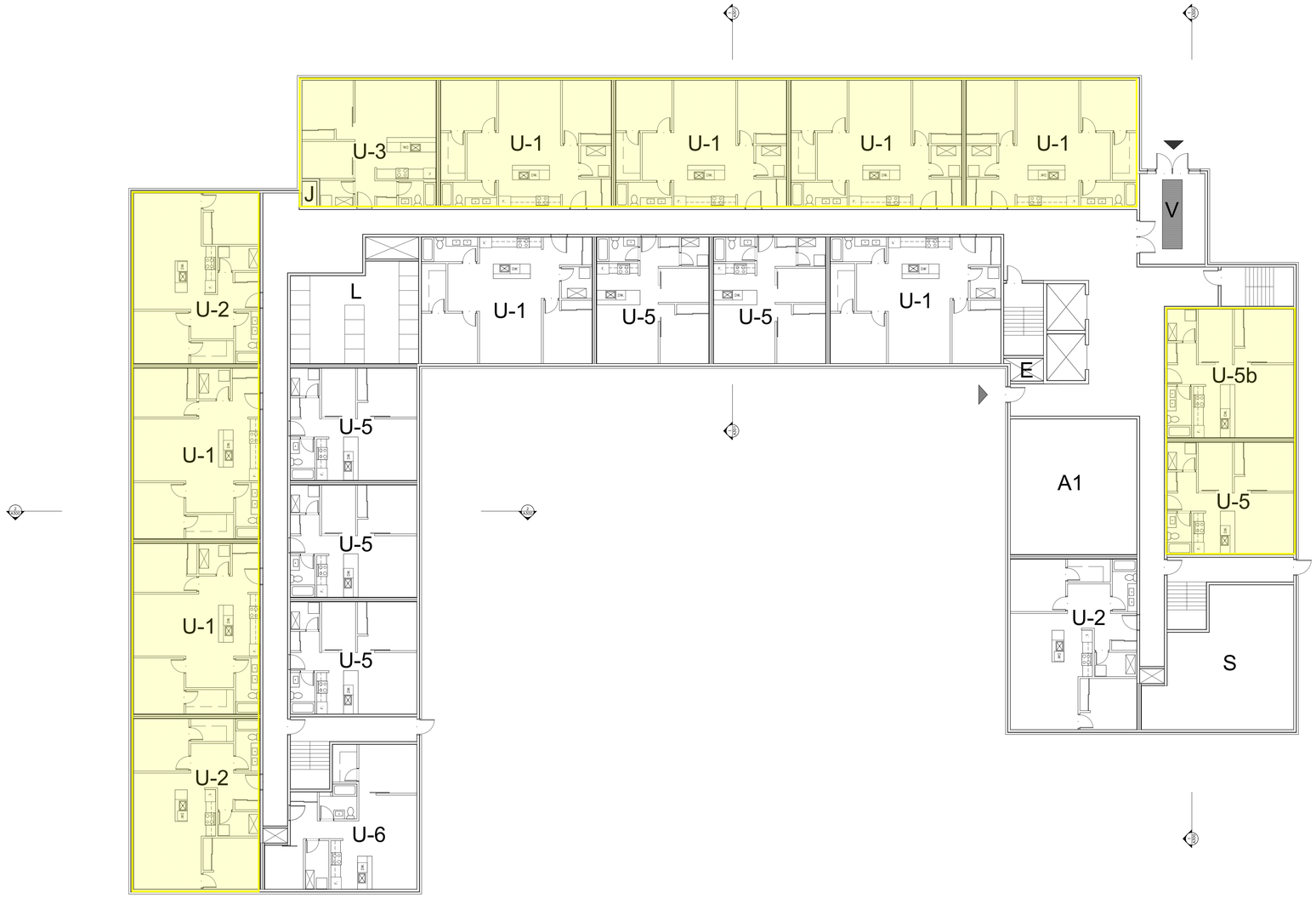
PROJECT No. 119024
REV REV # 1
DRAWING No. 119024-GR

M:\2019\119024\CAD\Design\119024-GR.dwg, PLANS-A1, Oct 18, 2021 - 3.45pm, dduffon

PLANA1.DWG - 841mmx594mm

LEGEND:

FORCED AIR HEATING WITH PROVISION FOR CENTRAL AIR WARNING CLAUSE TYPE 'C'




1 GROUND FLOOR PLAN
1:150

**GENERAL NOTES**

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND OMISSIONS TO THE ARCHITECT. ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS. DO NOT SCALE DRAWINGS. THESE DRAWINGS MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF COLIZZA BRUNI ARCHITECTURE INCORPORATED.COPYRIGHT RESERVED.

| NO | REV DATE | REV DESCRIPTION |
|---|---|---|

PROJECT NAME
1104 HALTON - 86 UNIT APARTMENT BUILDING
OTTAWA, ON

DRAWING TITLE
GROUND FLOOR PLAN

| | |
|---|---|
| SCALE | AS NOTED |
| DRAWN BY | EA |
| DATE | 6/25/21 |
| PROJECT NO. | 03020 |

DRAWING NO.
A101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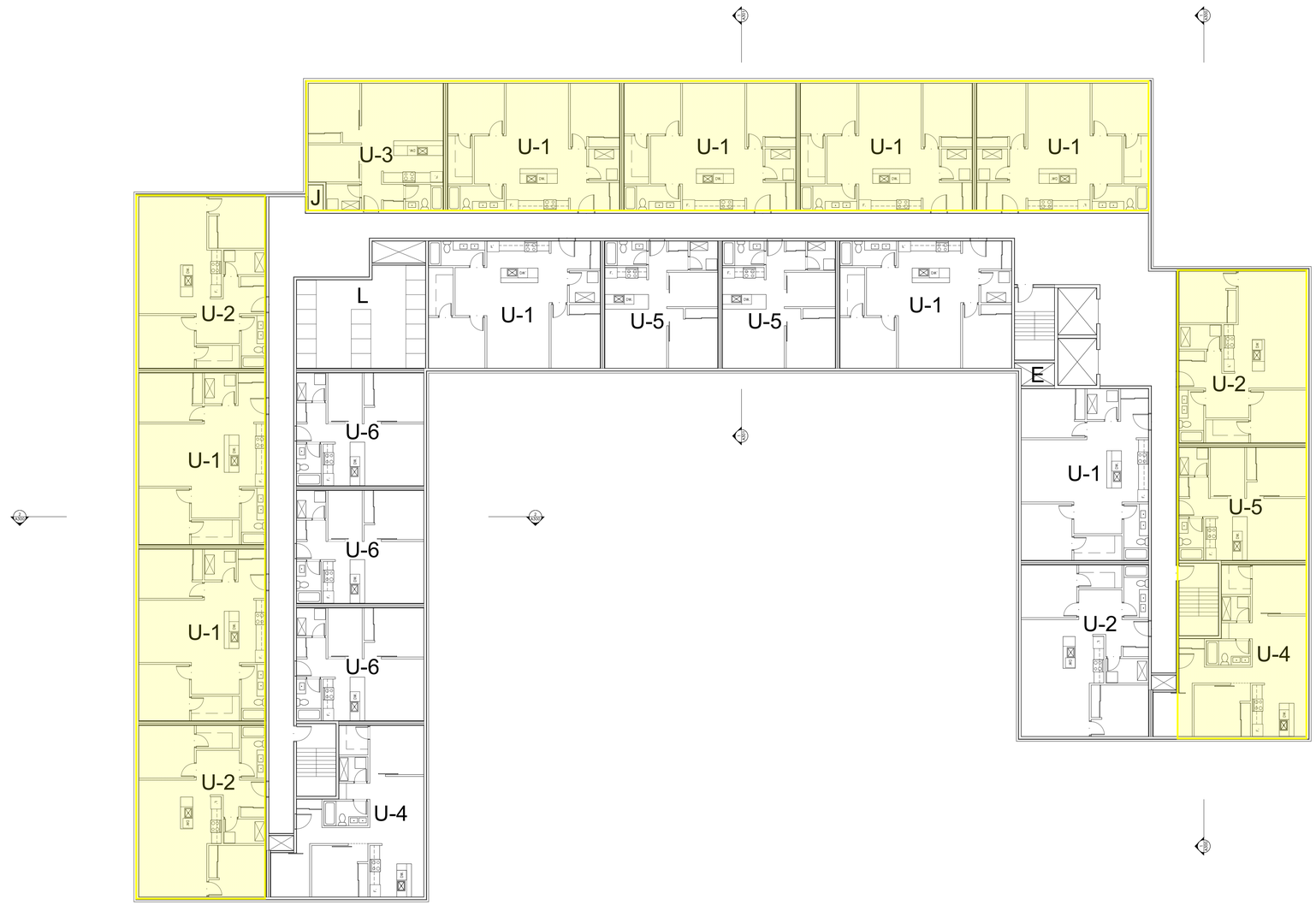
LEGEND:

FORCED AIR HEATING WITH PROVISION FOR CENTRAL AIR WARNING CLAUSE TYPE 'C'




1 SECOND FLOOR PLAN
1:150

**GENERAL NOTES**

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| NO | REV DATE | REV DESCRIPTION |
|---|---|---|

PROJECT NAME
1104 HALTON -
86 UNIT APARTMENT
BUILDING
OTTAWA, ON

DRAWING TITLE
SECOND
FLOOR PLAN

SCALE
AS NOTED

DRAWN BY
EA

DATE
6/25/21

PROJECT NO.
03020

DRAWING NO.
A102


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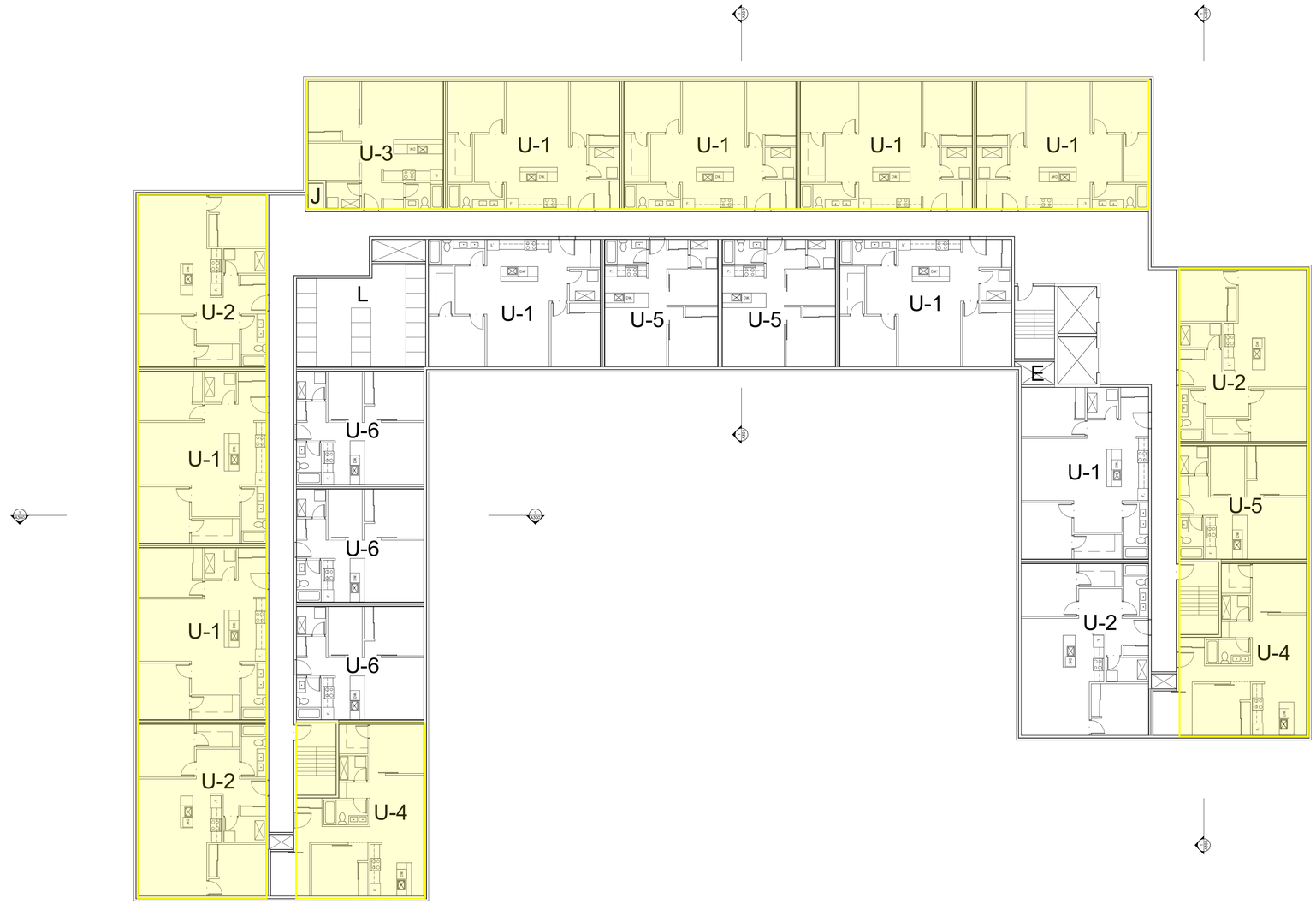
LEGEND:

FORCED AIR HEATING WITH PROVISION FOR CENTRAL AIR WARNING CLAUSE TYPE 'C'




1 THIRD FLOOR PLAN
1:150

**GENERAL NOTES**

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| NO | REV DATE | REV DESCRIPTION |
|---|---|---|

PROJECT NAME
1104 HALTON -
86 UNIT APARTMENT
BUILDING
OTTAWA, ON

DRAWING TITLE
THIRD
FLOOR PLAN

SCALE
AS NOTED

DRAWN BY
EA

DATE
6/25/21

PROJECT NO.
03020

DRAWING NO.
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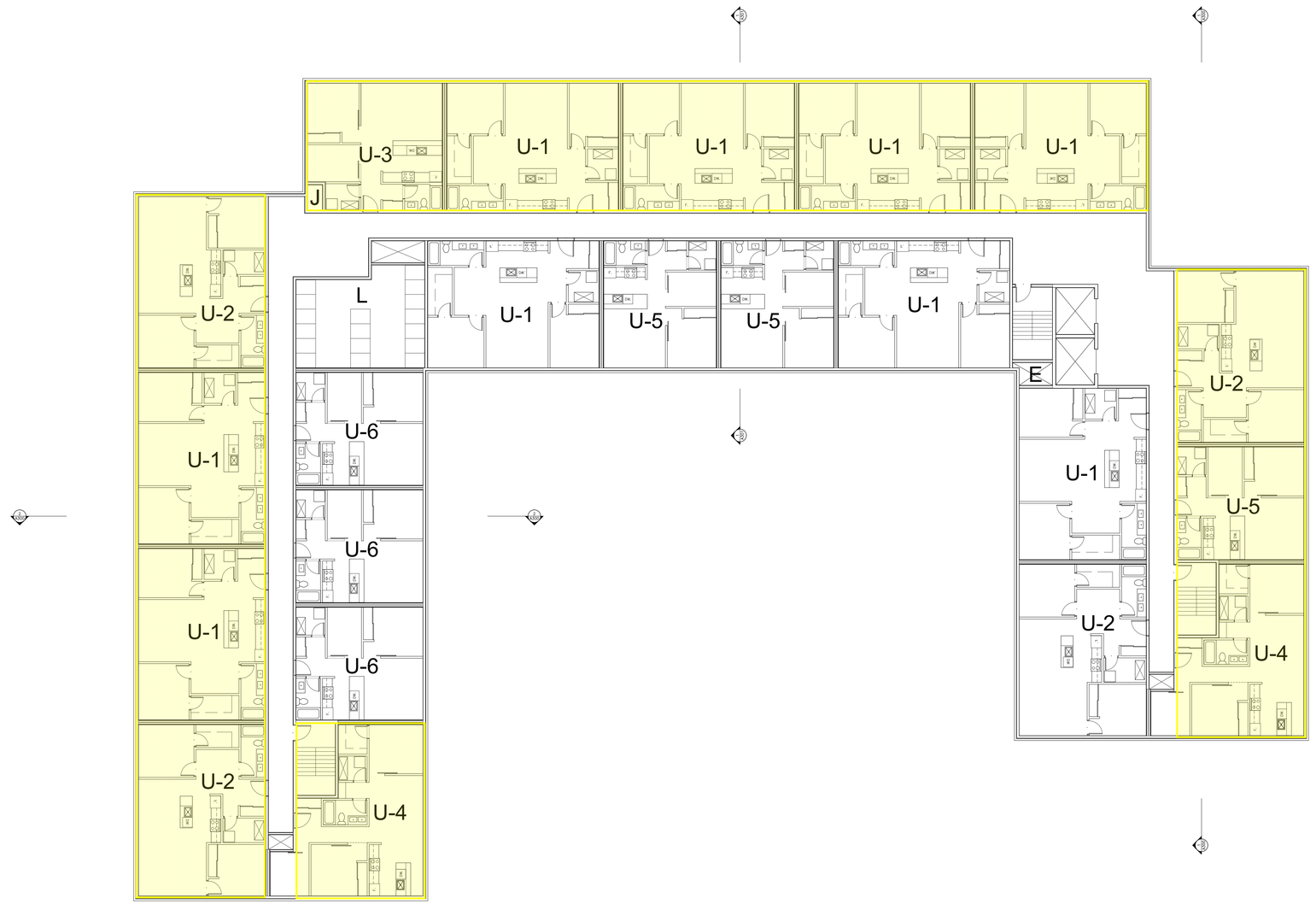
LEGEND:

FORCED AIR HEATING WITH PROVISION FOR CENTRAL AIR WARNING CLAUSE TYPE 'C'




1 FOURTH FLOOR PLAN
1:150

**GENERAL NOTES**

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|---|---|---|

PROJECT NAME
1104 HALTON -
86 UNIT APARTMENT
BUILDING
OTTAWA, ON

DRAWING TITLE
FOURTH
FLOOR PLAN

SCALE
AS NOTED

DRAWN BY
EA

DATE
6/25/21

PROJECT NO.
03020

DRAWING NO.
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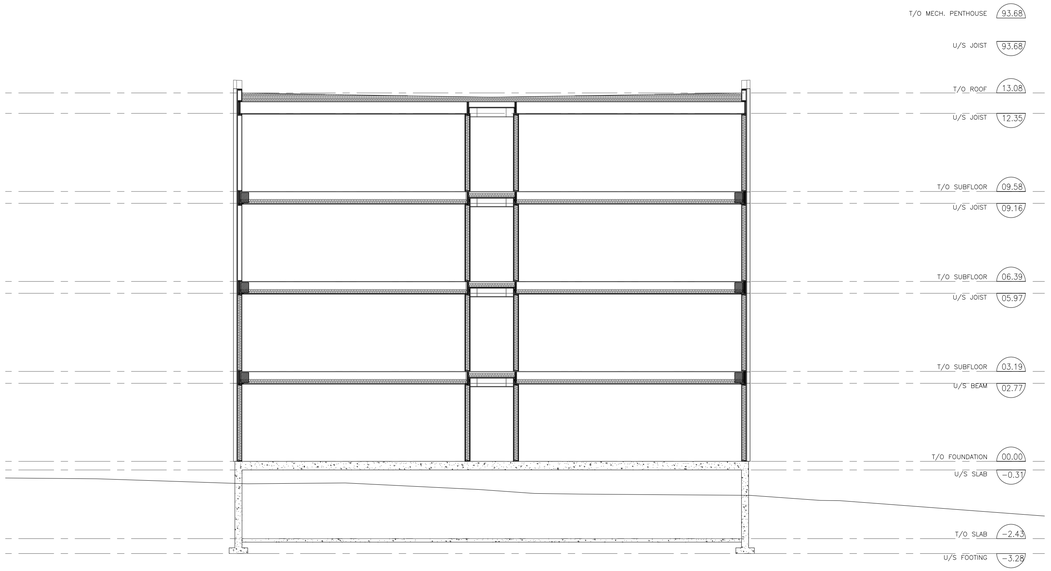
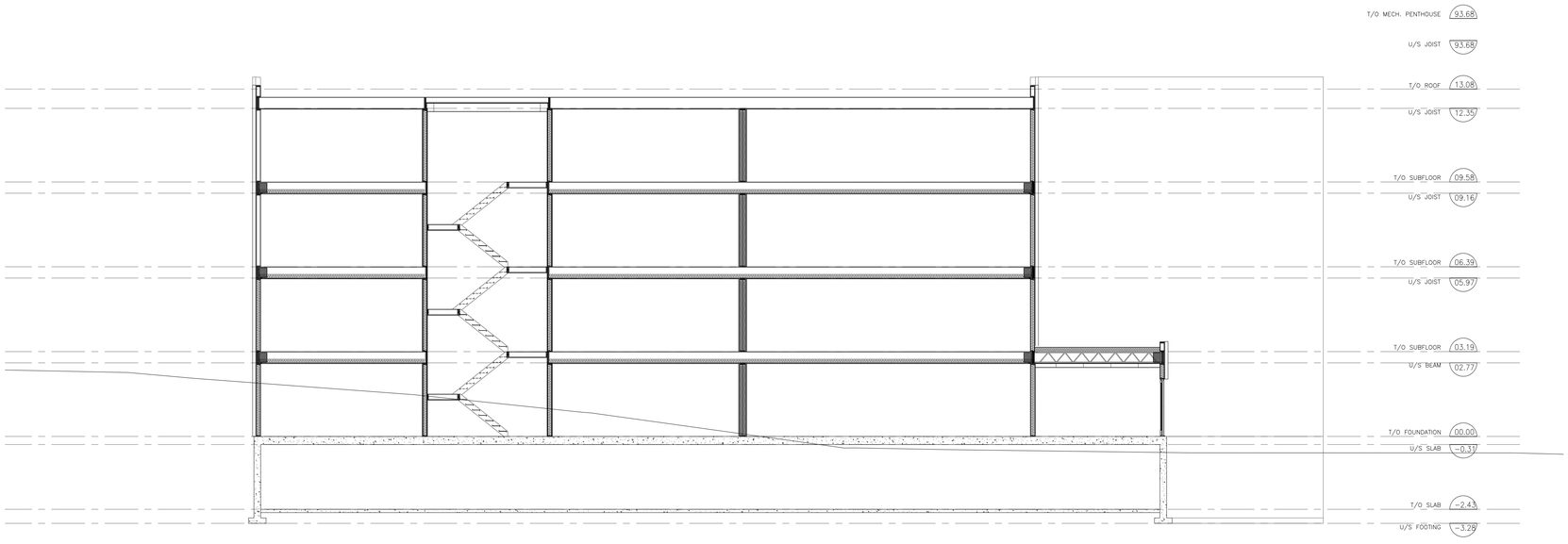



2 BUILDING SECTION 2
1:100




1 BUILDING SECTION 1
1:100

**GENERAL NOTES**

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|---|---|---|

PROJECT NAME
1104 HALTON -
86 UNIT APARTMENT
BUILDING
OTTAWA, ON

DRAWING TITLE
BUILDING
SECTIONS

SCALE
AS NOTED

DRAWN BY
EA

DATE
6/25/21

PROJECT NO.
03020

DRAWING NO.
A300

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