



Acoustical Consultants Inc.

P.O. Box 32059
1447 Upper Ottawa St.
Hamilton ON
L8W 3K0

November 12, 2024,

2559165 Ontario Inc.
1571 King Street
St Catharines, ON
L2R 6P7

Attn: Jennifer Vida

Our File NO: 23-4075

RE: Niagara Region Comments regarding 1570 Niagara Stone Road, NOTL

In response to Niagara Region email sent on July 25th, 2024, dBA Acoustical Consultants Inc. offer the following responses to their comments on the Noise Study dated September 2023.

Comment: Regarding noise impacts from nearby stationary sources, the report states: “To the east and south are small commercial buildings. These commercial properties are considered stationary noise sources and they will not have an acoustical impact on the proposed development”. The report does not include any further assessment or discussion to indicate how this conclusion was derived.

Response: Commercial properties have been addressed in the revised noise study dated November 2024.

Comment: Regional staff note that an existing agricultural warehousing/distribution facility (Niagara Orchard & Vineyard Corp.) is located at 1550 Niagara Stone Road. This facility includes several loading docks which border Field Road and are only separated from the subject lands by the parking lot of the adjacent church. Given the proximity to the subject lands, and lack of intervening development, it is reasonable to conclude that noise impacts to the subject lands from this facility may occur. NPC-300 guidelines specifically identify routine loading and unloading facilities as stationary noise sources which require assessment. Staff note that there are other existing commercial facilities located along Niagara Stone Road which may have HVAC or other external equipment and/or activities that may impact the subject lands as well.

Response: This has been addressed in the revised noise study dated November 2024.

Comment: Town staff have identified that the property located at 10 Field Road, which borders the subject lands, is zoned Village Commercial (VC), which would allow for a variety of commercial uses, including, but not limited to, automobile sales and service establishment, automobile service station, building supply outlet, farm implement dealer, gas bar, car wash, restaurant/take-out restaurant. The updated noise study should also address any potential mitigation and/or other requirements that may need to be implemented through the proposed development to ensure compatibility is achieved if/when these uses are established in the future.


Response: As of the time of this report that property is being used as a residential property and is not set up to be able to operate as any of the above mentioned potential commercial uses. We can only base our noise study on what is actually operating on that property at the time of the report.

Comment: Regional staff note that the Regional Road Traffic Noise Control Policy requires that sound level predictions for future road traffic be based on a 20-year AADT forecast. The submitted noise study includes only a 13-year forecast (projected to 2034). The study should therefore also be updated to include a 20-year forecast from projected construction completion.

Response: This has been addressed in the revised noise study dated November 2024.

Should you require any further explanation, please contact the writer.

Respectfully submitted,
dBA Acoustical Consultants Inc.

A handwritten signature in black ink that reads "Frank Westaway". The signature is written in a cursive, flowing style.

Frank Westaway, Owner
Qualified Acoustical Consultant

NOISE IMPACT STUDY
“VIRGIL APARTMENT”
1570 NIAGARA STONE ROAD
NIAGARA-ON-THE-LAKE, ON
REGION OF NIAGARA

Prepared for:

2559165 Ontario Inc.
1571 King Street
St. Catharines, ON
L2R 6P7

Prepared By:



Nicole Cleaver
Noise Consultant

Reviewed By:



Frank Westaway
Qualified Acoustical Consultant

Revised November 2024
September 2023

Our File No: 23-4075
dBA ACOUSTICAL CONSULTANTS INC.
P.O Box 32059
1447 Upper Ottawa
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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has been retained by 2559165 Ontario Inc., to provide a noise impact study for the proposed “Virgil Apartment” located at 1570 Niagara Stone Road, Niagara-on-the-Lake, Region of Niagara.

The purpose of this study is to determine the noise impact from Niagara Stone Road, Line 1 Road and Four Mile Creek Road traffic that may impact the proposed townhouse development, as required for application approval for the Town of Niagara-on-the-Lake, Region of Niagara.

This study will detail noise impact relative to the site plan and recommend noise control measures necessary (if applicable) to meet Ministry of Environment Conservation and Parks (MECP) Publication NPC-300 entitled “Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the Town of Niagara-on-the-Lake, Region of Niagara.

Vibration is not considered as there are no heavy industrial operations in the proposed development site area. Aircraft is not a concern as the development is located outside the NEF 25 contour of the area. See attached Figure 1 Site Location.

2.0 SITE DESCRIPTION

Proposed is a 4-storey Mid-Rise building with first floor parking, standard balconies are proposed and are less than 4m in depth and not considered as Outdoor Living Areas (OLA’s). Also proposed are 2 blocks of 2-storey townhouses with 4 units per block, totaling 8 units. These units also have terraces that are less than 4m in depth and not considered as Outdoor Living Areas (OLA’s).

The proposed development is located approximately 90m northwest of Niagara Stone Road, which is a two-lane roadway with a center turn lane and a speed limit of 50km/hr. Line 1 Road is approximately 100m north of the proposed development and is a 2-lane roadway and has a speed limit of 50 km/hr. Four Mile Creek Road is approximately 250m west of the proposed development and is a 2-lane roadway which has a speed limit of 50 km/hr. Other area local streets do not have an acoustical impact on the townhouse development due to low traffic volumes and speed limits.

To the north and west are single family homes. To the east and south are small commercial buildings. These commercial properties are considered stationary noise sources and will be discussed in Section 6.0. See attached Figure 2 Site Plan.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

The MECP specifies limits for road noise relative to new residential developments. The MECP Publication NPC-300 entitled “Stationary & Transportation Sources-Approval & Planning, specifies the criteria, summarized as follows:

TABLE 1 - Road Traffic Sound Level Limits	
Time Period	Leq (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living area
07:00 – 23:00 (16 hr.)	55 Plane of Window
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom window

The OLA refers to an outdoor patio, a backyard, a terrace or other area where outdoor passive recreation is expected. Noise levels are calculated at the upper storey bedroom window to represent nighttime (23:00-0700) periods.

TABLE 2 – Noise Control Requirements		
Time Period	Noise Level Leq (dBA)	Action Required
07:00 - 23:00 Daytime (OLA)	55 to 60	Warning Clause Type “A”
	> 60	Barrier & Warning Clause Type “B”
07:00 – 23:00 Daytime (POW)	> 55	Provision for A/C, Warning Clause “C”
	> 65	Central A/C, Warning Clause “D”
	> 65	Building Component Specification
23:00 to 07:00 Nighttime (POW)	> 50	Provision for A/C and Warning Clause Type “C”
	> 60	Building Component Specification
	> 60	Central Air and Warning Clause Type “D”

Where nighttime noise levels exceed 60 dBA, building components must be designed to meet Table 3 indoor sound level limits.

TABLE 3 - Indoor Road Sound Level Limits		
Indoor Location	Leq (dBA)	
	Road	Rail
Living/Dining 7:00 – 23:00	45	NA
Bedroom 23:00 - 07:00	40	NA

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for Niagara Stone Road which is considered the major road noise source in the proposed development area. The most current road traffic volumes for Niagara Stone Road are 2021 AADT (Annual Average Daily Traffic) and provided via email from the Region of Niagara, Transportation Department. It was confirmed that the traffic data has not been updated and remains the same as of November 2024. See Appendix “A”.

Line 1 Road and Four Mile Creek Road AADT traffic volumes were provided via email by Marci Weston from the Town of Niagara-on-the-Lake. Due to low traffic volumes Stamson computer program 5.04 was unable to calculate the noise levels. Therefore, these two roads will not have an acoustical impact on the proposed development. See Appendix “A”.

The MECP computer program STAMSON version 5.04 was used to carry out prediction calculations and the traffic data is summarized in Table 5. The daytime/nighttime volume ratio relative to Niagara Stone Road is calculated using a 90/10 split. See Appendix “A”.

The percentage of annual growth for Niagara Stone Road was figured at 2% over 24 years and is reflective as the worst-case scenario. Niagara Stone Road truck volumes were factored at 2% medium and 2% heavy of the total vehicle volumes. The AADT (Annual Average Daily Traffic) volumes were used and are reflective as the worst-case scenario. See Figure 3 Receptor Locations.

TABLE 5 – Future Road Traffic Volumes (2045)			
Niagara Stone Road	AADT 21714 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	18761	391	391
Night	2085	43	43

The following Table 6 summarizes the Niagara Stone Road “free field” traffic noise prediction results, modeled at 5 receptor locations representative of the east and south façades within the proposed development. See Figure 3 Receptor Locations.

TABLE 6A – Predicted Niagara Stone Road Future Traffic Noise (dBA)		
Niagara Stone Road	07:00 – 23:00	23:00 – 07:00
R1 – East Façade – 1 st Floor Residential (4.5m)	52 dBA	45 dBA
R2 – East Façade – 4 th Floor Residential (10.5m)	54 dBA	47 dBA
R3 – South Façade – 1 st Floor Residential (4.5m)	54 dBA	47 dBA
R4 – South Façade – 4 th Floor Residential (10.5m)	51 dBA	44 dBA
R5 – East Façade – Townhouse Unit B4 (1.5m)	52 dBA	46 dBA

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR NOISE LEVELS

Calculated daytime road noise levels at the Plane of Window (POW) does not exceed the 55 dBA criteria as outlined in Table 2. The proposed development includes terraces, that are less than 4m in depth and are not considered as Outdoor Living Areas (OLA’s) as defined by MECP noise guidelines. The 4-storey building balconies are less than 4m in depth and are not considered as Outdoor Living Areas (OLA’s) as defined by MECP noise guidelines. There is no other outdoor amenity areas included on the Site Plan.

4.2 INDOOR NOISE LEVELS

Calculated nighttime road noise levels at the Plane of Window (POW) does not exceed the 50 dBA criteria outlined in Table 2 for indoor spaces. Noise mitigation measures are not required. Ontario Building Code (OBC) will suffice throughout the proposed development.

TABLE 7 – Recommended Door, Wall, and Window Construction			
LOCATION	Window STC To Be Used	Exterior Wall STC	Patio Door Construction STC
4-Storey Mid-Rise Building	Example	Example	Example
Bedroom	OBC	OBC	OBC
Living room	OBC	OBC	OBC
2-Storey Townhouses	Example	Example	Example
Bedroom	OBC	OBC	OBC
Living room	OBC	OBC	OBC

5.0 VENTILATION / WARNING CLAUSES

Ventilation and warning clause requirements are not required for this project.

6.0 REGULATORY CONTEXT

The MECP Publication NPC-300 - Stationary and Transportation Source Guidelines defines a point of reception/receptor as *“any point on the premises of a person where the sound or vibration originating from other than those premises is received.”*

The point of reception may be located on any of the following, or zoned for future use, premises including but not limited to the following: residential homes, hospitals, nursing/retirement homes, etc.

6.1 CLASS 2 NOISE LEVEL CRITERIA

The areas surrounding 1570 Niagara Stone Road is indicative of a “Class 2 Area” (Urban) as defined in MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning.

“Class 2 area” means an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as “urban hum.”

The applicable sound limits are the higher of:

- The existing ambient sound level; or
- The minimum values of Table 8.1. & and Table 8.1B

No restrictions apply to stationary sources if the one-hour equivalent sound exposure (Leq) is lower than the levels in the following Table 8.1A and Table 8.1B.

Table 8.1A
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	55
19:00-23:00	50	45	40	55

Table 8.1B
Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00-19:00	50	50	45	60
19:00-23:00	50	50	40	60
23:00-07:00	45	45	40	55

6.2 D6 CLASS 2 NOISE SEPARATION

D6 - Class I Industrial Facility

A place of business for a small-scale, self-contained plant or building which produces/stores a product which is contained in a package and has low probability of fugitive emissions. Outputs are infrequent and could be point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration. There are daytime operations only, with infrequent movement of products and/or heavy trucks and no outside storage.

D6 - Class II Industrial Facility

A place of business for medium scale processing and manufacturing with outdoor storage of wastes or materials (i.e., it has an open process) and/or there are periodic outputs of minor annoyance. There are occasional outputs of either point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration, and low probability of fugitive emissions. Shift operations are permitted and there is frequent movement of products and/or heavy trucks during daytime hours.

D6 - Class III Industrial Facility

A place of business for large scale manufacturing or processing, characterized by: large physical size, outside storage of raw and finished products, large production volumes and continuous movement of products and employees during daily shift operations. It has frequent outputs of major annoyance and there is high probability of fugitive emissions.

Influence Area Concept (4.1)

Potential influence areas for industrial land uses (4.1.1) The Ministry have identified, through case studies and past experience, the following potential influence areas (i.e., areas within which adverse effects may be experienced) for industrial land uses.

Class I – 70m

Class II – 300m

Class III – 1000m

7.0 STATIONARY SOURCES

7.1 NIAGARA ORCHARD & VINELAND CORP.

Niagara Orchard & Vineland Corp. (NOVC) is located at 1550 Niagara Stone Road. There are three transport truck bays and one smaller truck bay located on the northwest side of the building, and 2 transport truck bays and 3 smaller truck bays on the northeast side of the building. There are two smaller truck bays on the southeast side of the building, however these bays will not have an acoustical impact on the proposed building due to the shielding of the building.

There are approximately 8-10 refrigerated trucks per hour and 10-12 regular trucks per hour that arrive at this property. The trucks can enter and exit off Field Road or Niagara Stone Road. The refrigeration system on the trailer stays on during loading and unloading to maintain the temperature in the trailer. dBA staff spoke with the Plant Manager, Spencer Grenfield, who advised the above truck count and advised that was for their peak season. The business is open from 8am – 11pm. This business is regulated by the Ministry of Agriculture. dBA staff spoke to Michael Durst, Ministry of the Environment, and he advised that any noise complaints or other related issues do not fall under the Ministry of the Environment MECP NPC-300 noise guidelines, including D-6 guidelines.

7.2 TRUCK NOISE CALCULATIONS

Sound Propagation level calculations for a refrigerated trailer are listed in Appendix “B”. It is anticipated that these refrigerated trailers are idling for a full one-hour period. While the truck movement will not take an hour, a one-hour period was used to represent the worst-case scenario. We have calculated that all 20 trucks per hour are refrigerated to represent the worst-case scenario.

8.3 LCBO

The LCBO is located at 1561 Niagara Stone Road and is approximately 115m from the proposed development. There are six rooftop HVAC units, three 10-ton units and three 20-ton units, that we have accessed due to their proximity to the proposed development. The rooftop HVAC units sound level calculations are taken from the dBA library to represent the 10-ton unit and 20-ton units. The sound level propagation table is included in Appendix “B”. These rooftop HVAC units will not have an acoustical impact on the proposed development as the noise levels are below MECP noise guidelines noted in Section 6.1.

9.0 CALCULATED HVAC UNITS AT TWO LOCATIONS

There are nine rooftop HVAC units on the roofs of the two commercial businesses (Meridian Credit Union & LCBO) that may have an acoustical impact on the proposed development. The rooftop HVAC units sound power levels were derived from the dBA Acoustical Consultants library and applied. In these specifications, sound power levels are calculated for each of the HVAC inlet, outlet and casing. The overall sound power level was applied in the modelling and is summarized in Appendix “B”.

Table 10 – Combination of all HVAC units operating at once including 1 hour run time

Source ID	Source Description	Receptor Locations – 2 Plazas	
		Distance (m)	Leq Level (dBA)
5-TON HVAC	(1 Unit)	100	32.2
5-TON HVAC	(1 Unit)	100	32.2
5-TON HVAC	(1 Unit)	100	32.2
10-TON HVAC	(1 Unit)	115	38.8
10-TON HVAC	(1 Unit)	115	38.8
10-TON HVAC	(1 Unit)	115	38.8
20-TON HVAC	(1 Unit)	115	41.3
20-TON HVAC	(1 Unit)	115	41.3
20-TON HVAC	(1 Unit)	115	41.3
TOTAL: All Noise Sources Combined		--	48.3

The above Table 10 shows the combined HVAC units calculation based on 1-hour of run time and would be considered the worst-case scenario. However, these HVAC units typically cycle on for 40 minutes and then off for 20 minutes.

The calculation would be 40 minutes ÷ 60 minutes = (Log x 20) = -3.5 dBA. Therefore, the overall noise level from all of the HVAC units combined, taking into consideration the cycling time, would be 48.3 dBA – 3.5 dBA = 44.8 dBA total.

Table 11 – Combination of all HVAC units operating at once including 40-minute cycle time

Source ID	Source Description	Receptor Locations – 2 Plazas	
		Distance (m)	Leq Level (dBA)
5-TON HVAC	(1 Unit)	100	28.7
5-TON HVAC	(1 Unit)	100	28.7
5-TON HVAC	(1 Unit)	100	28.7
10-TON HVAC	(1 Unit)	115	35.3
10-TON HVAC	(1 Unit)	115	35.3
10-TON HVAC	(1 Unit)	115	35.3
20-TON HVAC	(1 Unit)	115	37.8
20-TON HVAC	(1 Unit)	115	37.8
20-TON HVAC	(1 Unit)	115	37.8
TOTAL: All Noise Sources Combined		--	44.4

10.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures are required for this development:

- OBC for Window, Door, and Wall construction as recommended in Table 7
- It is recommended that a qualified acoustical consultant certify that the required noise control measures have been incorporated into the builder’s plans prior to issuance of a building permit.
- It is recommended that a qualified acoustical consultant certify that the required control measures have been properly installed prior to an occupancy permit.

11.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has been retained by 2559165 Ontario Inc., to provide a noise impact study for the proposed “Virgil Apartment” located at 1570 Niagara Stone Road, Niagara-on-the -Lake, Region of Niagara.

The study determined the noise impact from Niagara Stone Road, Line 1 Road and Four Mile Creek Road traffic that does not impact the proposed townhouse development, as required for application approval for the Town of Niagara-on-the-Lake, Region of Niagara.

This study detailed noise impact relative to the site plan and recommended no noise control measures necessary to meet Ministry of Environment Conservation and Parks (MECP) Publication NPC-300 entitled “Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the Town of Niagara-on-the-Lake, Region of Niagara.

FIGURE 1 SITE LOCATION



FIGURE 2 SITE PLAN

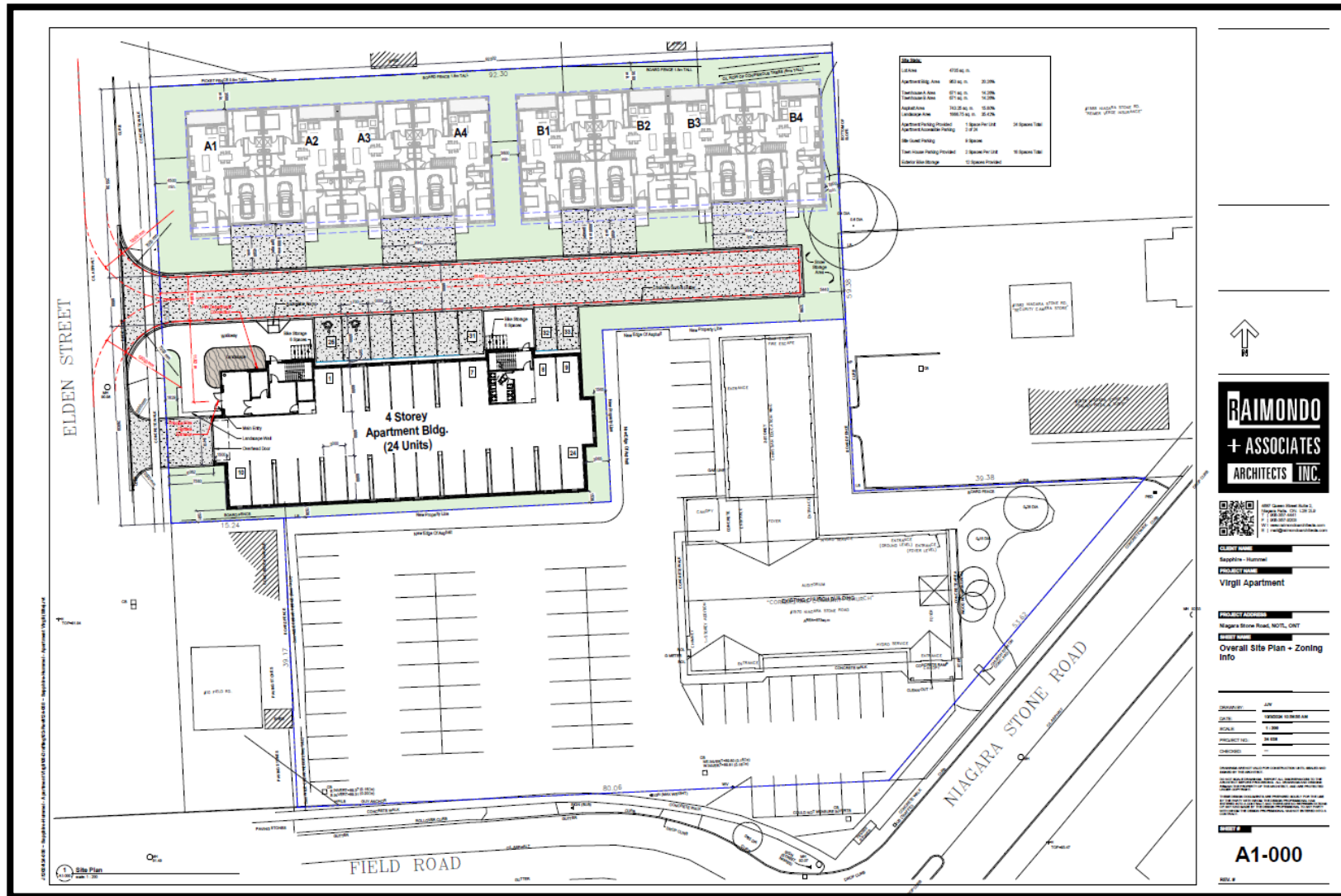
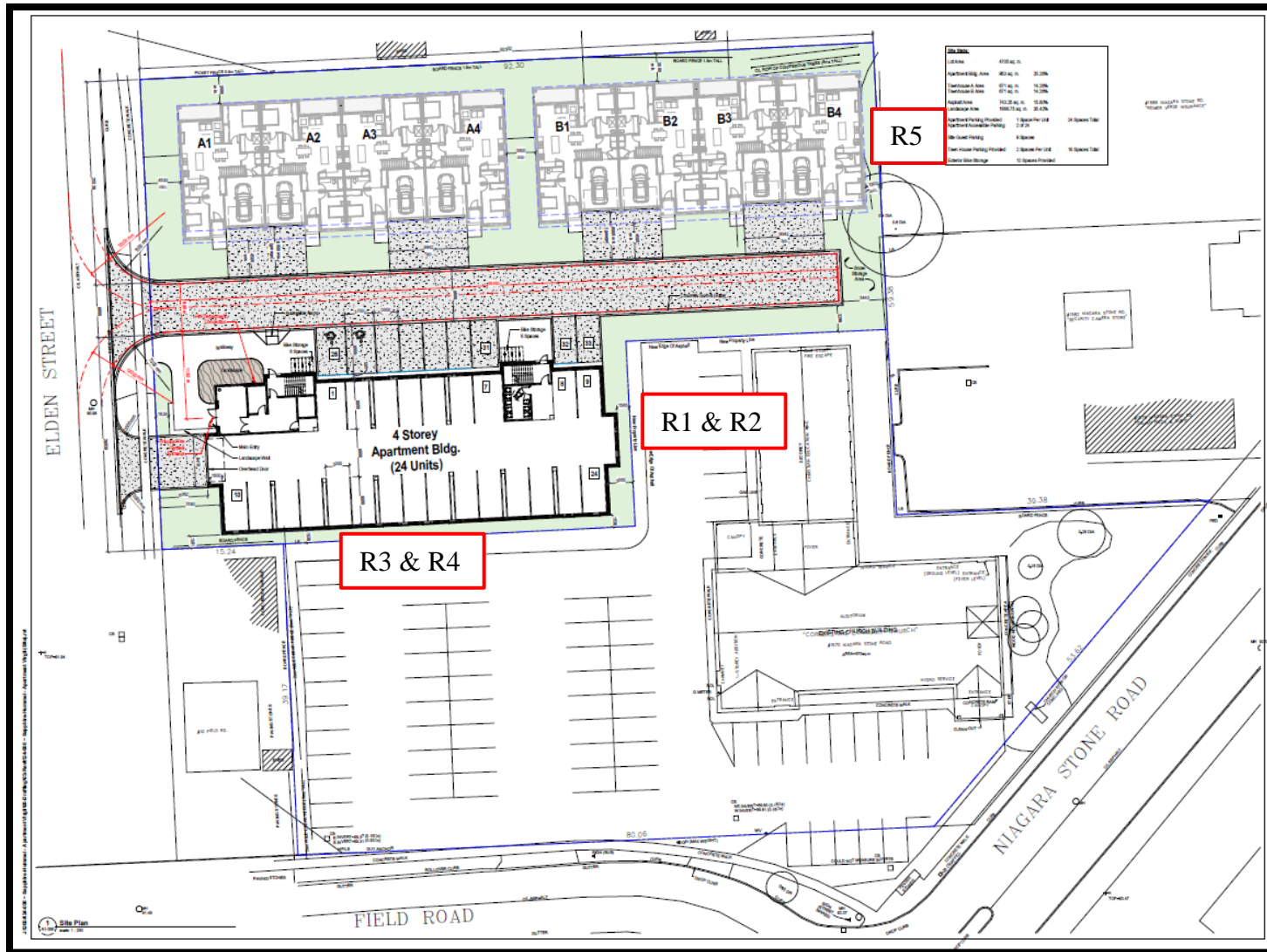


FIGURE 3 RECEPTOR LOCATIONS



APPENDIX “A”

2021 AADT REGION OF NIAGARA NIAGARA STONE ROAD

Hello Nicole,

Here are the AADTs Requested:

Niagara Stone Road - between Line 1 Road and Four Mile Creek Road – **13,500 (2021)**

Regards,
Manny Rataul, C.E.T., rcji
Road Safety Technician
Transportation Services Division, Niagara Region

Phone: 905-980-6000 Ext. 3711

Email: Manny.Rataul@niagararegion.ca

Address: 1815 Sir Isaac Brock Way St., Thorold ON, L2V4T7
www.niagararegion.ca

2020 AADT TOWN OF NIAGARA-ON-THE-LAKE LINE 1 ROAD & FOUR MILE CREEK ROAD

Apologies Nicole, here are the most recent valid counts from 2018 and 2020. We do have 2023 counts but the results are skewed because that section of Four Mile Creek Road and Penner Street (Line 1 Road in your request) are carrying a season of heavy bypass traffic due to the construction on Niagara Stone Road between Four Mile Creek Road and Penner-Line 1 Road.

Four Mile Creek Road between Niagara Stone Road and Line 1-Penner the AADT is 2,500 based on 2020 estimates on counts taken on adjacent sections.

Penner-Line 1 between Four Mile Creek Road and Niagara Stone Road is 2,463 based on an actual count on that section in 2020.

We estimate an annual growth rate of 1% for that area.

Please contact me should you have any questions or require further information.

Sincerely,
Marci

Marci Weston
Engineering Technologist – Traffic and Transit
Phone: 905-468-3061 ext.270 Fax: 905-468-1722
1593 Four Mile Creek Road, PO Box 100,
Virgil ON L0S 1T0

STAMSON CALCULATIONS

STAMSON 5.04 SUMMARY REPORT Date: 08-11-2024 11:30:25
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1stone.te Time Period: Day/Night 16/8 hours

Description: R1 East Facade 4 Storey Building 1st Floor Res.

**TOTAL Leq FROM ALL SOURCES (DAY): 51.97
 (NIGHT): 45.41**

Road data, segment # 1: Niagara Ston (day/night)

```
-----
Car traffic volume : 18761/2085 veh/TimePeriod *
Medium truck volume : 391/43 veh/TimePeriod *
Heavy truck volume : 391/43 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 13500
Percentage of Annual Growth : 2.00
Number of Years of Growth : 24.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Niagara Ston (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 : 110.00 / 110.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Result summary (day)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Niagara Ston ! 1.19 ! 51.97 ! 51.97
-----+-----+-----+
Total 51.97 dBA
```

Result summary (night)

```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Niagara Ston ! 1.19 ! 45.41 ! 45.41
-----+-----+-----+
Total 45.41 dBA
```

STAMSON 5.04 SUMMARY REPORT Date: 08-11-2024 11:36:00
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2stone.te Time Period: Day/Night 16/8 hours

Description: R2 East Facade 4 Storey Building 4th Floor Res.

TOTAL Leq FROM ALL SOURCES (DAY): 53.87
(NIGHT): 47.31

Road data, segment # 1: Niagara Ston (day/night)

 Car traffic volume : 18761/2085 veh/TimePeriod *
 Medium truck volume : 391/43 veh/TimePeriod *
 Heavy truck volume : 391/43 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 13500
 Percentage of Annual Growth : 2.00
 Number of Years of Growth : 24.00
 Medium Truck % of Total Volume : 2.00
 Heavy Truck % of Total Volume : 2.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Niagara Ston (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 : 110.00 / 110.00 m
 Receiver height : 10.50 / 10.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Niagara Ston	1.19	53.87	53.87
Total		53.87 dBA	

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Niagara Ston	1.19	47.31	47.31
Total		47.31 dBA	

STAMSON 5.04 SUMMARY REPORT Date: 08-11-2024 11:37:55
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3stone.te Time Period: Day/Night 16/8 hours

Description: R3 South Facade 4 Storey Building 1st Floor Res.

TOTAL Leq FROM ALL SOURCES (DAY): 53.87
 (NIGHT): 47.31

Road data, segment # 1: Niagara Ston (day/night)

 Car traffic volume : 18761/2085 veh/TimePeriod *
 Medium truck volume : 391/43 veh/TimePeriod *
 Heavy truck volume : 391/43 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 13500
 Percentage of Annual Growth : 2.00
 Number of Years of Growth : 24.00
 Medium Truck % of Total Volume : 2.00
 Heavy Truck % of Total Volume : 2.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Niagara Ston (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 : 110.00 / 110.00 m
 Receiver height : 10.50 / 10.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Niagara Ston	1.19	53.87	53.87
Total		53.87 dBA	

Result summary (night)

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Niagara Ston	1.19	47.31	47.31
Total		47.31 dBA	

STAMSON 5.04 SUMMARY REPORT Date: 08-11-2024 11:37:22
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4stone.te Time Period: Day/Night 16/8 hours

Description: R4 South Facade 4 Storey Building 4th Floor Res.

**TOTAL Leq FROM ALL SOURCES (DAY): 50.86
 (NIGHT): 44.30**

Road data, segment # 1: Niagara Ston (day/night)

 Car traffic volume : 18761/2085 veh/TimePeriod *
 Medium truck volume : 391/43 veh/TimePeriod *
 Heavy truck volume : 391/43 veh/TimePeriod *
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 13500
 Percentage of Annual Growth : 2.00
 Number of Years of Growth : 24.00
 Medium Truck % of Total Volume : 2.00
 Heavy Truck % of Total Volume : 2.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Niagara Ston (day/night)

 Angle1 Angle2 : -0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 110.00 / 110.00 m
 Receiver height : 10.50 / 10.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Niagara Ston	1.19	50.86	50.86
Total		50.86 dBA	

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Niagara Ston	1.19	44.30	44.30
Total		44.30 dBA	

STAMSON 5.04 SUMMARY REPORT Date: 08-11-2024 11:39:28
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5stone.te Time Period: Day/Night 16/8 hours

Description: R5 East Facade Townhouse Unit B4 Residential

TOTAL Leq FROM ALL SOURCES

(DAY): 51.83
(NIGHT): 46.07

Road data, segment # 1: Niagara Ston (day/night)

```
-----
Car traffic volume : 18761/2085 veh/TimePeriod *
Medium truck volume : 391/43 veh/TimePeriod *
Heavy truck volume : 391/43 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

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

```
24 hr Traffic Volume (AADT or SADT): 13500
Percentage of Annual Growth : 2.00
Number of Years of Growth : 24.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Niagara Ston (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 : 100.00 / 100.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

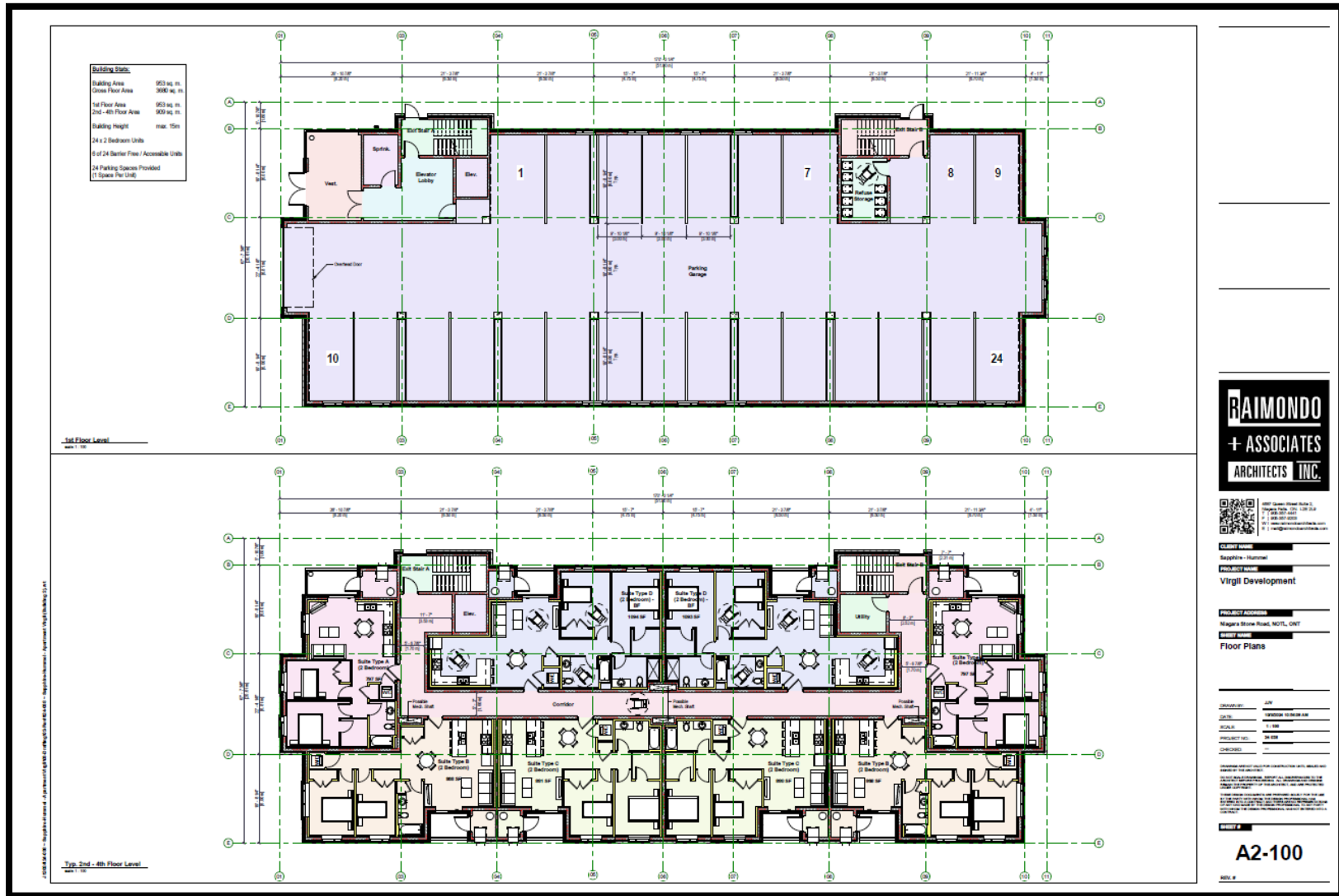
Result summary (day)

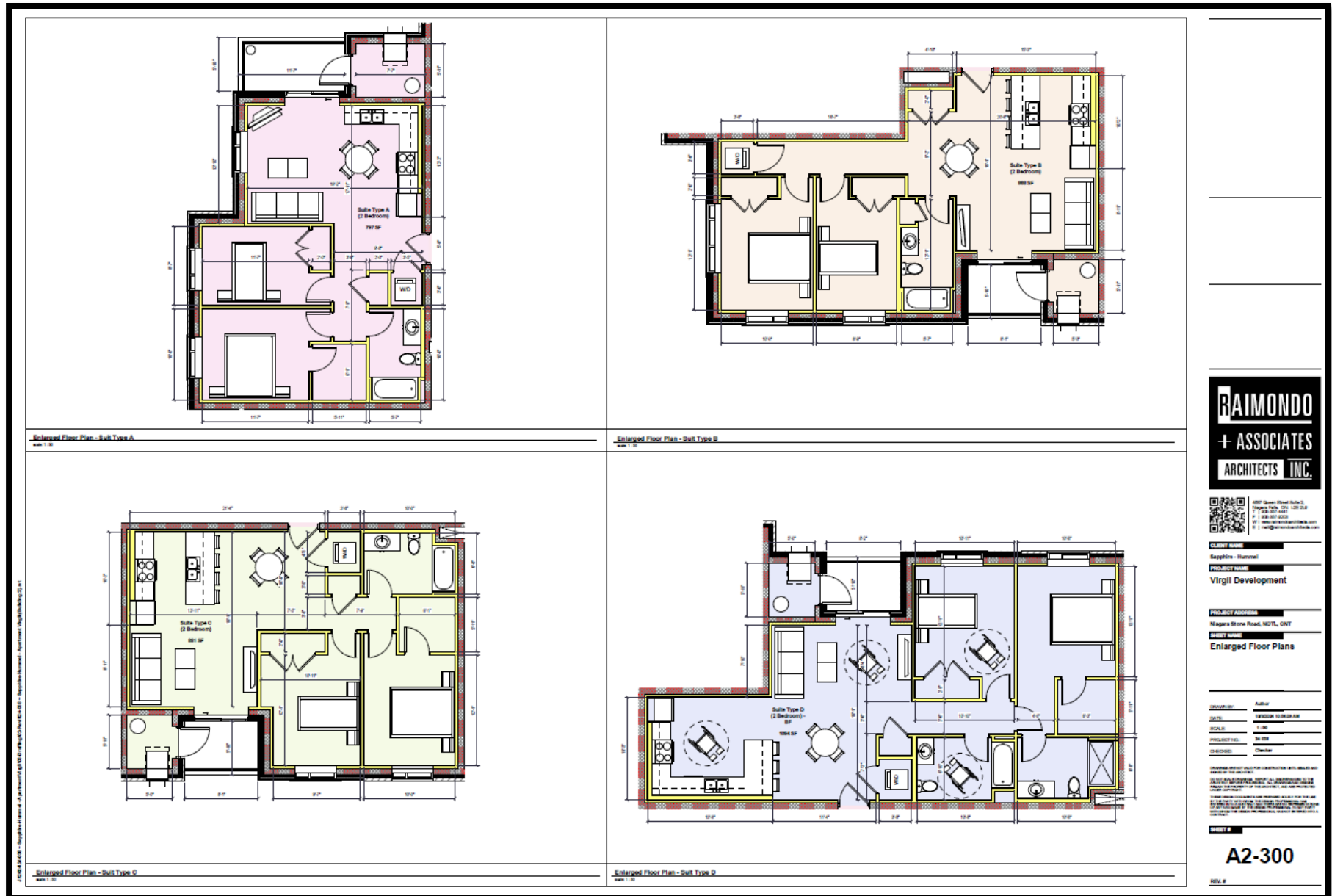
```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Niagara Ston ! 1.19 ! 51.83 ! 51.83
-----+-----+-----+
Total 51.83 dBA
```

Result summary (night)

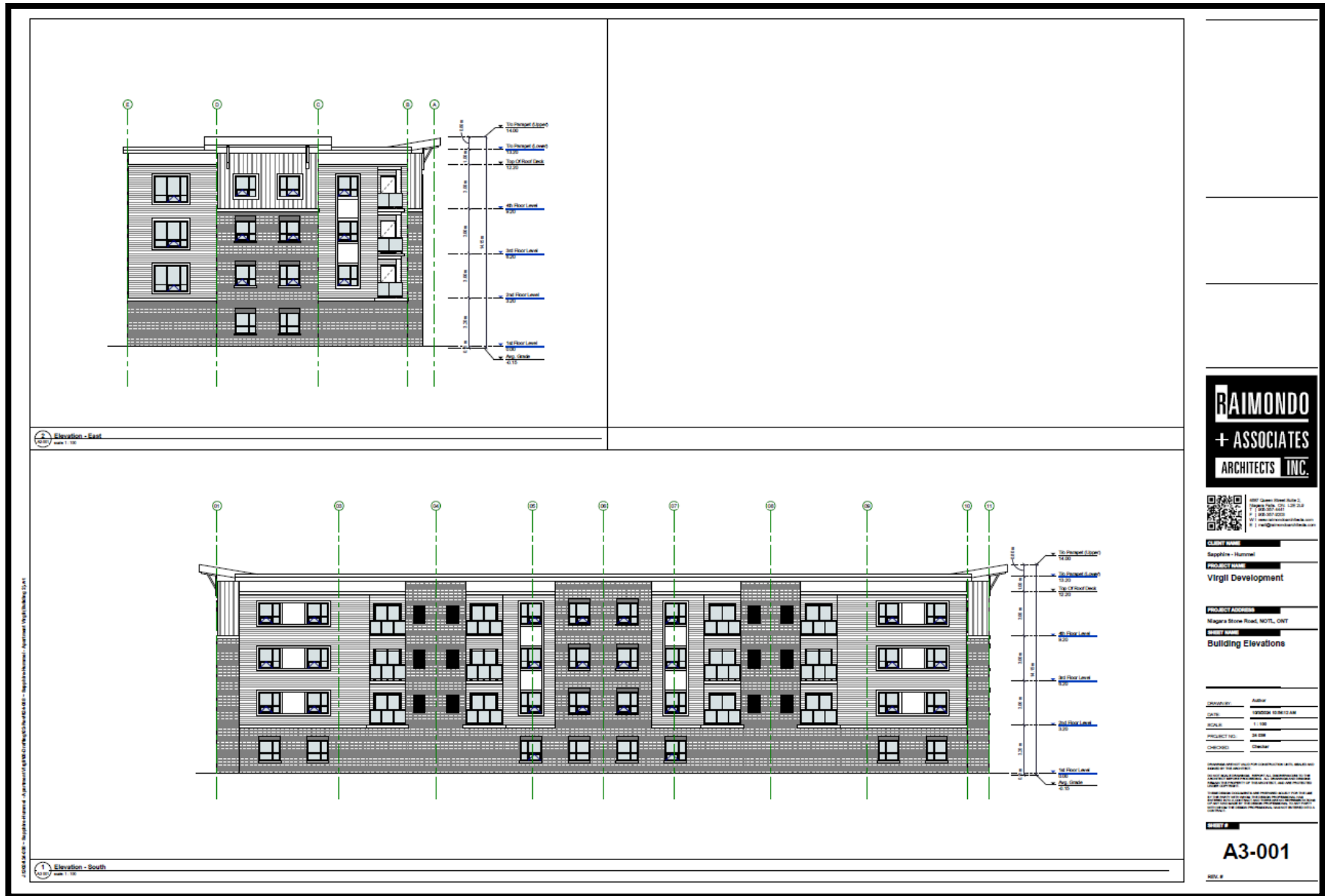
```
-----
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)
-----+-----+-----+
1.Niagara Ston ! 1.19 ! 46.07 ! 46.07
-----+-----+-----+
Total 46.07 dBA
```

FLOOR PLANS





ELEVATIONS



CLIENT NAME
 Sappire - Hummel

PROJECT NAME
 Virgil Development

PROJECT ADDRESS
 Niagara Stone Road, N0T1L, ONT

PROJECT TYPE
 Building Elevations

DATE
 11/20/24

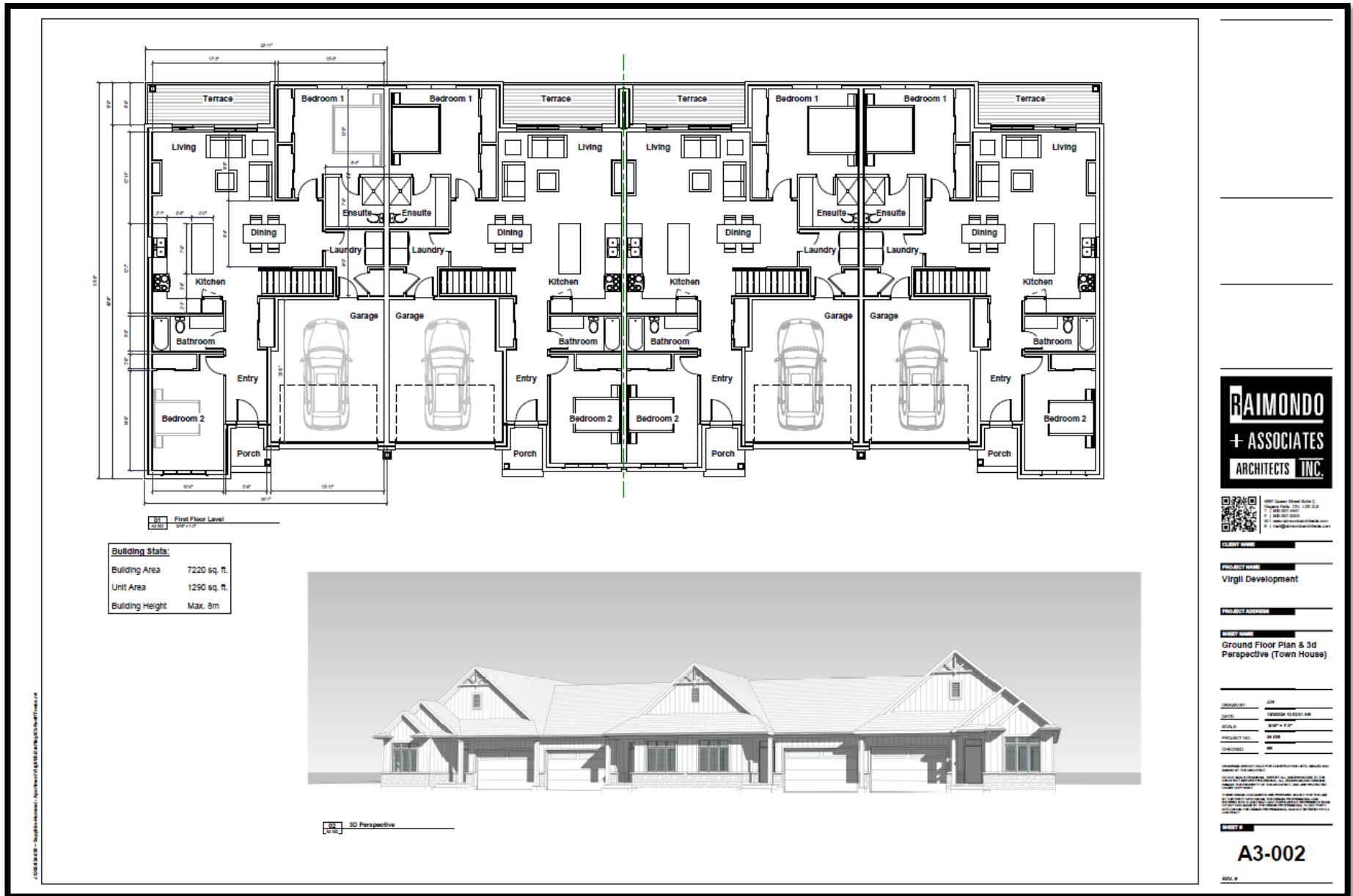
SCALE
 1/8" = 1'-0"

PROJECT NO.
 24-004

DESIGNER
 [Blank]

SHEET #
A3-001

TOWNHOUSES

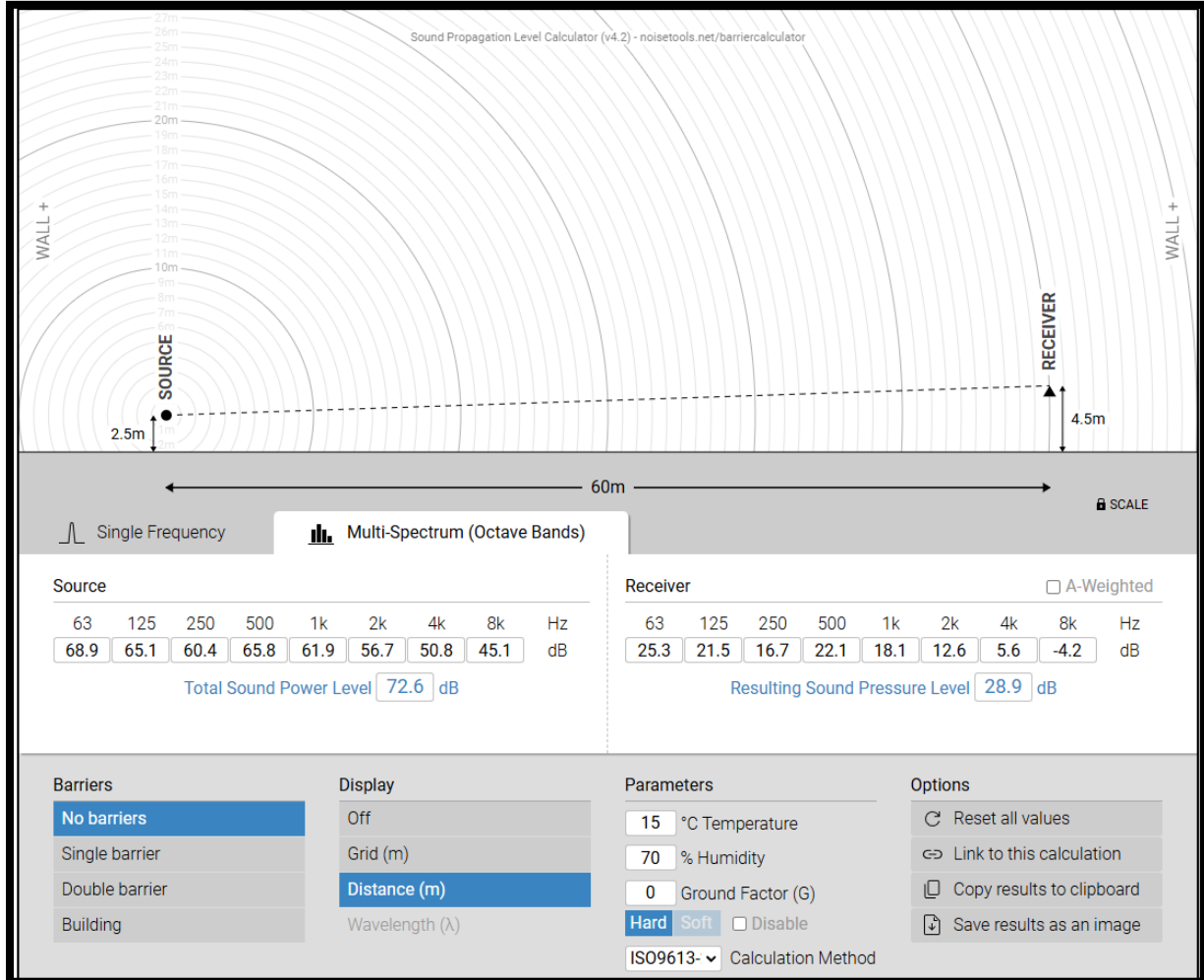


SITE STATISTICS

<u>Site Stats:</u>			
Lot Area	4705 sq. m.		
Apartment Bldg. Area	953 sq. m.	20.26%	
Townhouse A Area	671 sq. m.	14.26%	
Townhouse B Area	671 sq. m.	14.26%	
Asphalt Area	743.25 sq. m.	15.80%	
Landscape Area	1666.75 sq. m.	35.42%	
Apartment Parking Provided	1 Space Per Unit		24 Spaces Total
Apartment Accessible Parking	2 of 24		
Site Guest Parking	9 Spaces		
Town House Parking Provided	2 Spaces Per Unit		16 Spaces Total
Exterior Bike Storage	12 Spaces Provided		

APPENDIX “B”

SOUND PROPAGATION LEVEL ONE REFRIGERATED TRUCK IDLING 1st FLOOR RESIDENTIAL NORTH FAÇADE



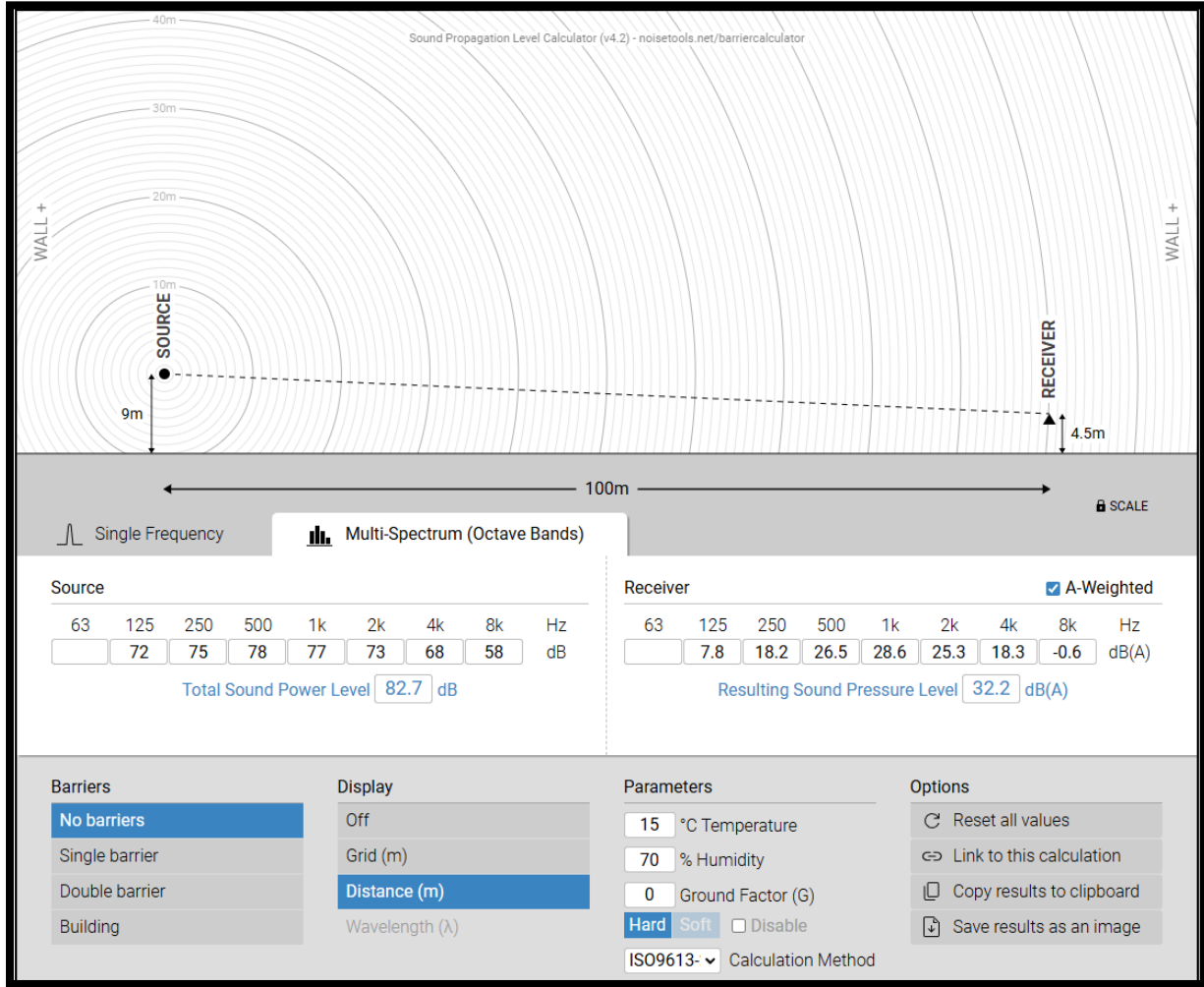
20 TRUCKS IDLING COMBINED

# Trucks per Hour	Sound Pressure Level (dBA)	
1	28.9	
2	28.9	
3	28.9	
4	28.9	
5	28.9	
6	28.9	
7	28.9	
8	28.9	
9	28.9	
10	28.9	
11	28.9	
12	28.9	
13	28.9	
14	28.9	
15	28.9	
16	28.9	
17	28.9	
18	28.9	
19	28.9	
20	28.9	Leq= 41.9 dBA

MERIDIAN CREDIT UNION LENNOX 5-TON ROOFTOP HVAC UNIT KCB060

ROOFTOP UNITS				2 TO 6 TONS								
² Test Conditions	External Static Pressure in. w.c.	CFM	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts								¹ Sound Rating Number (dBA)	
			Center Frequency - Hz									
			³ 63	125	250	500	1000	2000	4000	8000		
KCB/KGB/KHB												
Outdoor Sound Levels	KCB/KGB024, 030, 036, 048	---	---	---	62	66	70	69	66	60	50	74
	KCB/KGB060	5-TON	---	---	72	75	78	77	73	68	58	83

SOUND PROPAGATION LEVEL MERIDIAN CREDIT UNION ONE 5-TON ROOFTOP HVAC UNIT



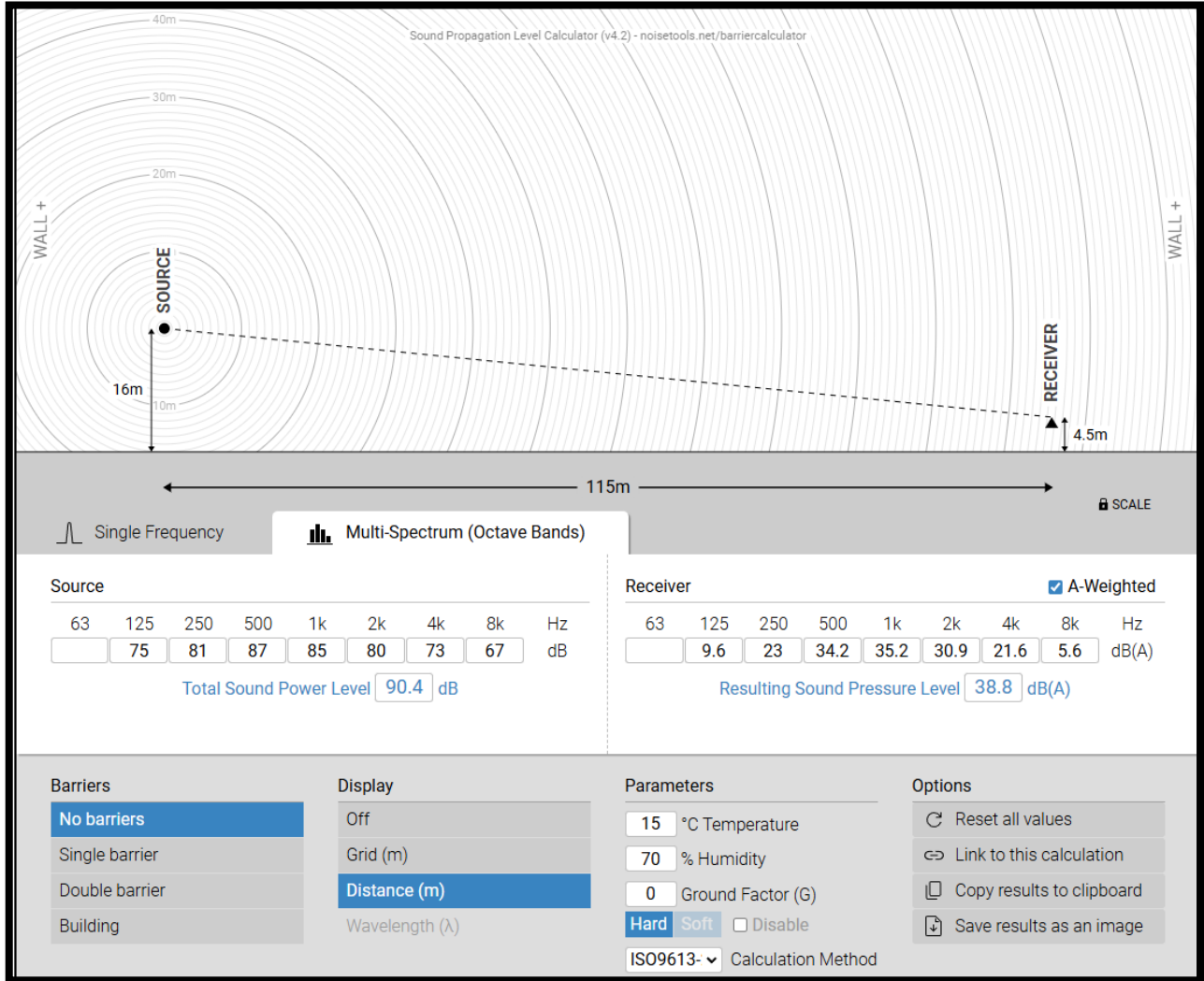
3 ROOFTOP HVAC UNITS COMBINED

# HVAC Units	Sound Pressure Level (dBA)
1	32.2
2	32.2
3	32.2
Leq= 37.0 dBA	

LCBO LENNOX 10-TON ROOFTOP HVAC UNIT KGC120

ROOFTOP UNITS				6.5 TO 12.5 TONS								
² Test Conditions	External Static Pressure in. w.c.	CFM	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts									¹ Sound Rating Number (dBA)
			Center Frequency - Hz									
			³ 63	125	250	500	1000	2000	4000	8000		
KCC/KGC/KHC												
Outdoor Sound Levels	KCC/KGC092, 102	---	---	---	76	79	84	83	79	73	66	88
	KCC/KGC120, 150	10-TON	---	---	75	81	87	85	80	73	67	90
	KHC092, 120, 0150	---	---	---	76	79	84	83	79	73	66	88

SOUND PROPAGATION LEVEL LCBO ONE 10-TON ROOFTOP HVAC UNIT



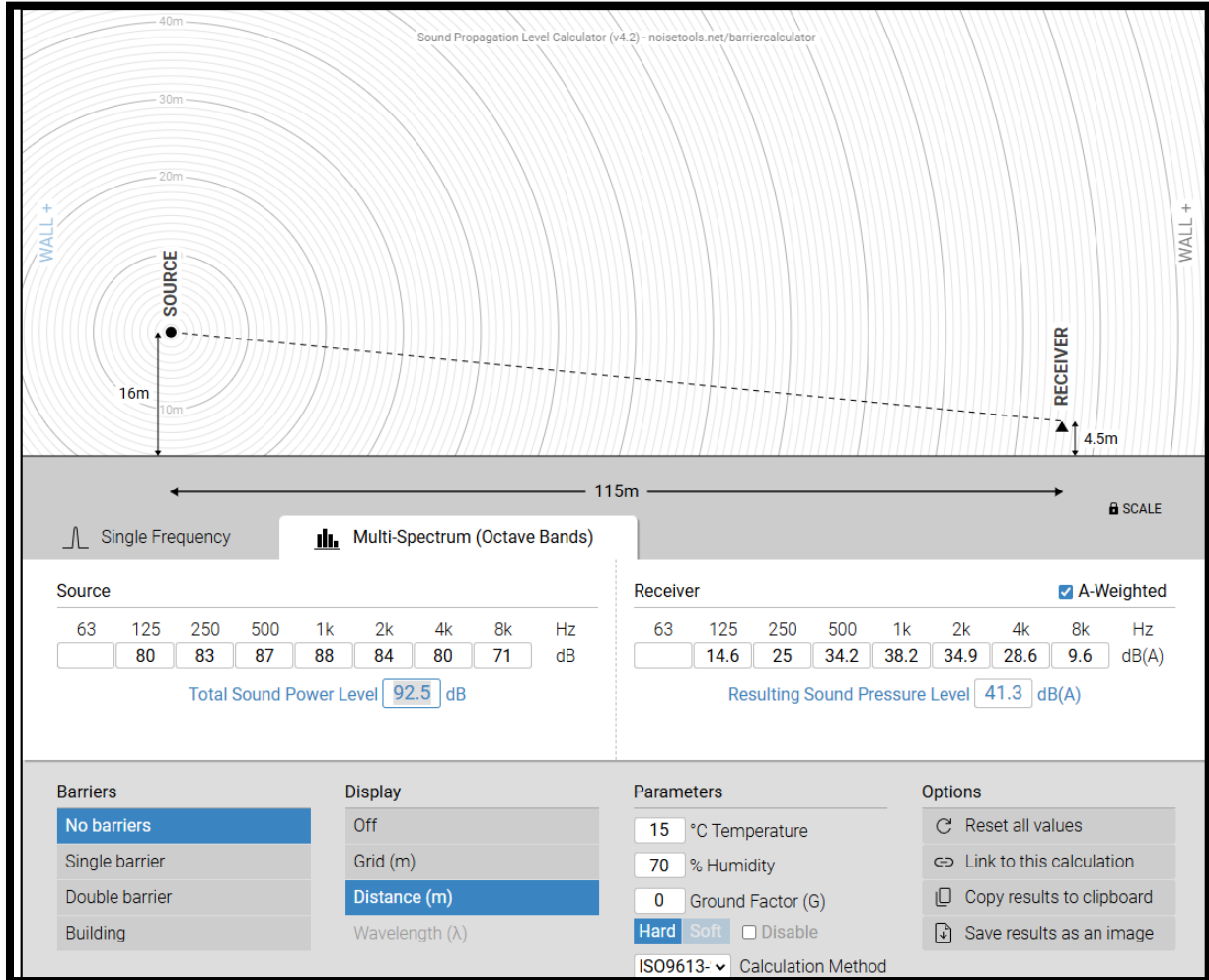
THREE 10-TON ROOFTOP HVAC UNITS COMBINED

# HVAC Units	Sound Pressure Level (dBA)	
1	38.8	
2	38.8	
3	38.8	Leq= 43.6 dBA

LCBO LENNOX 20-TON ROOFTOP HVAC UNITS LCT180

ROOFTOP UNITS				13 TO 25 TONS								
² Test Conditions		External Static Pressure in. w.c.	CFM	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts								¹ Sound Rating Number (dBA)
				Center Frequency - Hz								
				³ 63	125	250	500	1000	2000	4000	8000	
LCT/LGT/LDT/LHT												
Outdoor Sound Levels	LCT/LGT156	---	---	---	71	78	81	81	76	71	63	86
	LCT/LGT180	20-TON	---	---	80	83	87	88	84	80	71	93
	LCT/LGT210, 240, 300	---	---	---	79	84	88	89	85	82	73	94
	LDT/LHT180, 240	---	---	---	79	84	88	89	85	82	73	94

SOUND PROPAGATION LEVEL LCBO ONE 20-TON ROOFTOP HVAC UNIT



THREE 20-TON ROOFTOP HVAC UNITS COMBINED

# HVAC Units	Sound Pressure Level (dBA)	
1	41.3	
2	41.3	
3	41.3	Leq= 46.1 dBA

ALL NOISE SOURCES COMBINED WITH 40 MINUTE HVAC CYCLING

Noise Source	Sound Pressure Level (dBA)			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
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Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
Idling Truck	28.9			
5-TON HVAC	28.7			
5-TON HVAC	28.7			
5-TON HVAC	28.7			
10-TON HVAC	35.3			
10-TON HVAC	35.3			
10-TON HVAC	35.3			
20-TON HVAC	37.8			
20-TON HVAC	37.8			
20-TON HVAC	37.8	Leq=	46.4	dBA