HGC ENGINEERING

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Noise Feasibility Study
Proposed Residential Development
2170 Ghent Avenue
Burlington, Ontario

Prepared for:

Argo Northern Cardinal Ghent LP
4900 Palladium Way, Suite 105
Burlington, Ontario
L3R 4T9

Prepared by:

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Reviewed by



Victor Garcia, PEng

HGC Project No.: 02400630

October 25, 2024

VERSION CONTROL

Noise Feasibility Study,
2170 Ghent Avenue,
Burlington, Ontario.

Ver.	Date	Version Description / Changelog	Prepared By
1.0	October 25, 2024	Noise Feasibility Study in support of the planning and approvals process	E. Jaklic

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1 Introduction & Summary

HGC Engineering was retained by Argo Northern Cardinal Ghent LP to conduct a noise feasibility study for a proposed townhouse development to be located at 2170 Ghent Avenue in the City of Burlington, Ontario. The proposed development will consist of three blocks of 3-storey townhouses. The surrounding lands are primarily existing residential. The study is required by the municipality as part of their planning and approvals process.

The primary noise source impacting the site was determined to be road traffic on Ghent Avenue. Road traffic data for Ghent Avenue was obtained from the City of Burlington and used to predict future traffic sound levels at the locations of the proposed residential dwelling units and in the outdoor living areas. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP) and the municipality.

The sound level predictions indicate that with suitable noise control measures integrated into the design of the buildings, it is feasible to achieve MECP guideline sound levels. Forced air ventilation will be required for the development. Noise warning clauses are required to inform future occupants of the sound level excesses. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the dwelling units. Associated acoustical requirements are specified in this report.

An assessment of the impact of the development on the existing residences was also determined. Results indicate that the sound levels from the proposed air conditioning units are below MECP minimum exclusionary criteria.

2 Site Description & Noise Sources

The site is located at 2170 Ghent Avenue in Burlington, Ontario. Figure 1 is a key plan illustrating the location of the proposed site. The latest site plan of the development prepared by Limberlost Building Design, last revised August 8, 2024, is shown in Figure 2 also showing the prediction locations. The proposed development will consist of three blocks of 3-storey townhouses, totalling 21 units.

A site visit was made by HGC Engineering personnel in August 2024 to make observations of the acoustic environment, and to identify the significant noise sources in the vicinity. The acoustical environment surrounding the site is urban in nature, with existing residences surrounding the site. Sounds were not audible from these sources during the time of the site visit. There are no significant sources of stationary noise within 500 m of the subject site.

3 Noise Level Criteria

3.1 Road Traffic Noise

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", release date October 21, 2013, and are listed in Table 1 below. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table 1: MECP Road Traffic Noise Criteria (dBA)

Area	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ}(8 hour) Road
Outdoor Living Area	55 dBA	--
Living/Dining Room	45 dBA	45 dBA
Bedroom	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom or living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom or living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road traffic.

3.2 Criterial Governing Stationary (Industrial) Noise Sources

MECP Guideline NPC-300 is the MECP guideline for use in investigating Land Use Compatibility issues with regard to noise. Noise from the proposed development may potentially impact neighbouring noise sensitive land uses due to the air conditioning units. The proposed development is located in an urban acoustical environment classifies as Class I according to MECP guidelines, which can be characterized by the background sound level being dominated by traffic or human activity.

The façade of a residence (i.e., in the plane of a window), or any associated usable outdoor area, is considered a sensitive point of reception. NPC-300 stipulates that the exclusionary minimum sound level limit for a stationary noise source in an urban Class I area is 50 dBA during daytime (07:00 to 19:00) and evening (19:00 to 23:00) hours, and 45 dBA during nighttime hours (23:00 to 07:00). If the background sound levels due to road traffic exceed the exclusionary limits, then the background sound level becomes the criterion. The background sound level is defined as the sound level that

occurs when the source under consideration is not operating and may include traffic noise and natural sounds.

The developer's responsibilities are identified in NPC-300, which states that it is the developer's responsibility to ensure that the applicable sound level criteria are met. If noise sources are identified which generate excessive sound levels, source controls are generally favoured by the MECP although NPC-300 further states that outdoor noise control measures at the noise sensitive land use are acceptable.

4 Traffic Noise Assessment

4.1 Road Traffic Data

Traffic data for Ghent Avenue was obtained from the City of Burlington, in the form of Annual Average Daily Traffic (AADT) for the year 2022, provided in Appendix A. A commercial vehicle percentage of 3.0% was calculated from the data and was further split into 1.2% medium trucks and 1.8% heavy trucks. A posted speed limit of 40 km/h along with a 90/10 day/night split was used in the analysis. Traffic volumes were conservatively assumed to grow at a rate of 2.5% per year to the year 2034. The resulting future traffic volumes are listed in Table 2.

Table 2: Projected Road Traffic Data for 2034

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Ghent Avenue	Daytime	2 313	29	43	2 384
	Nighttime	257	3	5	265
	Total	**2 570**	**32**	**48**	**2 649**

4.2 Road Traffic Noise Prediction

To assess the levels of road traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. All STAMSON outputs are included in Appendix B.

Prediction locations were chosen around the site to obtain a good representation of the future sound levels at various dwelling units. The worst-case prediction location was chosen at the north façades at the top floor (3rd storey) of the proposed townhouse blocks 'A' and 'B,' as indicated in Figure 2. Due to the distance setback of these units being equal, only block 'A' is considered in the analysis; However, results apply to both locations The results of these predictions are summarized in Table 3.

The distance setbacks of the buildings indicated on the site plan were used in the analysis, along with an aerial photo of the area to determine the distance to the surrounding roadways. The acoustic requirements may be subject to modifications if the site plan is changed significantly.

Table 3: Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Prediction Location	Description	Daytime $L_{EQ(16)}$	Nighttime – at Façade $L_{EQ(8)}$
[A]	Proposed townhouse block 'A,' north façade adjacent to Ghent Ave	56	<50
[B]	Outdoor Living Area of block 'A,' unit 'A' adjacent to Ghent Ave	<55	--

Note: Reflective ground surface has been used in the analysis.

5 Traffic Noise Discussion and Recommendations

The predictions indicate that the future traffic sound levels during the daytime at the dwelling units will exceed the MECP guidelines at the north façades adjacent to Ghent Avenue of the proposed Blocks A and B. Recommendations to address these excesses are discussed in the following sections.

5.1 Outdoor Living Areas

The predicted sound level in the outdoor living area of Block A, adjacent to Ghent Avenue (prediction location [B]) will be within the MECP guidelines. An acoustic barrier is not recommended for the amenity space.

5.2 Indoor Living Areas and Ventilation Requirements

The predicted future sound levels at the northern façades of the proposed blocks A and B will be greater than 55 dBA and less than 65 dBA during the daytime hours. To address these excesses, the

MECP guidelines require the provision to install air conditioning, at the occupant's discretion. Associated warning clauses are also recommended. Figure 3 shows the ventilation requirements.

Window or through-the-wall air conditioning units are not recommended because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall sound insulating properties of the envelope. Acceptable units are those housed in their own insulated closet with an access door for maintenance. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-216 and NPC-300 as required.

5.3 Building Facade Constructions

The dwelling units within the development will have daytime and nighttime sound levels at the top storey façade that are less than 65 and 60 dBA respectively. For these units, any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

6 Stationary Source Assessment

An analysis was conducted to consider the potential for noise from the residential buildings, specifically the air conditioning condenser units, at the neighbouring noise sensitive receptors. The calculations included sound emissions form the air conditioning condenser equipment assumed to be located along the rear facades of the building (20 air conditioning units). There are no other stationary sources of noise associated with the residential buildings.

YORK LX Series Split-System Air Conditioners, with model number YC2D24SB21S, are proposed. Each condenser is assumed to have a sound level of 74 dBA. Manufacturer's data is provided in Appendix C. As a general note, the location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-216 and NPC-300, as required.

Manufacturer's sound level data and the site geometry were used as input to a predictive computer model (Cadna/A), in order to estimate the offsite sound levels at the neighbouring residences.

Cadna/A is a computer implementation of ISO Standard 9613-2 "Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation," which takes into account attenuation due to distance (geometrical spreading), shielding by intervening structures (such as buildings and bush), air attenuation and ground absorption.

The closest noise sensitive receptors, R1 and R2, are one-storey dwellings located to the north of the subject site; R3 is a 2-storey dwelling located to the east of the site; and R4 and R5 are 3-storey buildings to the west of the proposed site. Figures 4 and 5 show resulting sound level contours at 4.5 m in height for daytime and nighttime hours, respectively. The results are contained in the following table.

Table 4: Predicted Stationary Sound Levels, [dBA], Without Mitigation

Receptor	Address	Criteria OLA/Day /Night	OLA $L_{EQ-1\ hr}$	Daytime $L_{EQ-1\ hr}$	Nighttime $L_{EQ-1\ hr}$
R1	2182 Ghent Avenue (1-storey dwelling)	50/50/45	47	43	40
R2	2186 Clarendon Park Dr (1-storey dwelling)	50/50/45	46	41	38
R3	2167 Deyncourt Drive (2-storey dwelling)	50/50/45	46	42	39
R4	2154 Lilnan Court (3-storey residential building)	50/50/45	--	44	41
R5	2160 Ghent Avenue (3-storey residential building)	50/50/45	--	47	44

Note: A/C units were assumed to operate for 60 minutes during a daytime and 30 minutes during a nighttime hour.

As shown above, the predicted sound levels are well below the minimum MECP guideline limits during daytime and nighttime hours at all noise sensitive receptor locations. No further mitigation is required.

7 Warning Clauses

The MECP guidelines recommend that warning clauses be include in the property and tenancy agreements for all units with anticipated traffic sound level excesses. Examples are provided below.

Suggested wording for future dwellings with sound level excesses.

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 sound level limits of the Municipality and the Ministry of the Environment.

Suitable wording for future dwellings requiring forced air ventilation systems is given below.

Type C:

> This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound limits of the Municipality and the Ministry of the Environment.

8 Summary of Recommendations

The predictions indicate that the future traffic sound levels during the daytime at the dwelling units will exceed the MECP guidelines. Sound levels from the condenser units will be below the minimum MECP guideline limits during daytime and nighttime hours at all noise sensitive receptor locations. The following recommendations are provided with regard to noise control. Please refer to previous sections of this report where these recommendations are discussed in more detail.

1. The units directly adjacent to Ghent Avenue in Blocks A and B, should be provided with the provision to install central air conditioning at the occupant's discretion.

2. Warning clauses A and C are required in the property and tenancy agreements and offers of purchase and sale in order to inform the future owners/tenants of the traffic sound level excesses for the units in Blocks A and B directly adjacent to Ghent Avenue.

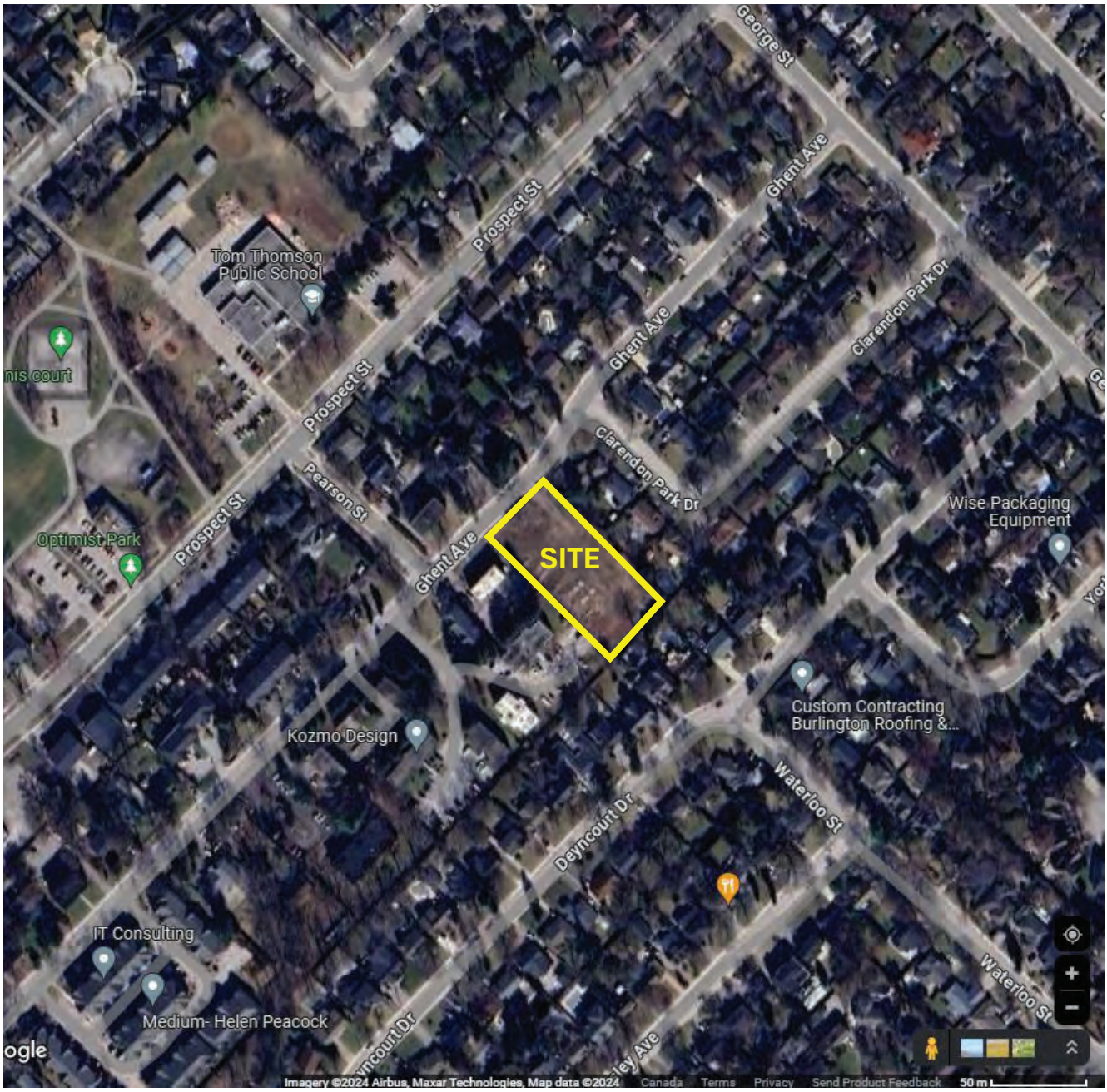


Figure 1 – Key Plan

TOWNHOMES

TYPE	FOOTPRINT	FLOOR AREA	# OF UNITS
A	877.99 SQF	2,633.97 SQF	4 UNITS
B	571.28 SQF	1,713.84 SQF	6 UNITS
C	685.54 SQF	2,056.62 SQF	5 UNITS
D	597.16 SQF	1,791.48 SQF	2 UNITS
E	597.16 SQF	1,791.48 SQF	4 UNITS
			21 UNITS

SETBACKS

YARD	REQUIRED	PROPOSED
STREET	7.50m	4.00m
SIDE (EAST)	9.00m	6.00m
SIDE (WEST)	4.50m	3.00m
REAR	9.00m	6.00m

PRIVACY AREA REQUIRED
20 SQM PER UNIT
TOTAL REQ. PRIVACY AREA = 20 UNITS x 20 SQM = 400 SQM

PRIVACY AREA PROPOSED	BLOCK A UNIT A	BLOCK A UNIT C	BLOCK B UNIT A	BLOCK B UNIT B	BLOCK C UNIT D	BLOCK C UNIT E
AT FRONT COVERED PORCH	3.66	3.83	3.66	3.83	4.35	4.35
AT FRONT YARD	7.32	7.66	7.32	7.66	8.70	8.70
AT REAR RAISED DECK	11.70	9.09	9.36	5.99	6.75	6.75
AT REAR YARD	39.34	30.72	17.22	11.20	17.70	17.70
TOTAL (SQM)	62.02	51.30	37.56	28.68	37.50	37.50

AMENITY AREA REQUIRED
25 SQM PER 3 BEDROOM UNIT
TOTAL REQ. AMENITY AREA = 20 UNITS x 3 BDRMS x 25 SQM = 1,500 SQM

AMENITY AREA PROPOSED	
AREA A	82.78 SQM
AREA B	75.68 SQM
AREA C	176.07 SQM
AREA D	140.70 SQM
AREA E	125.60 SQM
AREA F	61.97 SQM
TOTAL AMENITY AREAS	662.80 SQM
TOTAL PRIVACY AREA	852.74 SQM (SEE TABLE BELOW FOR UNIT CALCS)
GRAND TOTAL	1,515.54 SQM



1 SITE PLAN
3/32" = 1'-0"

Figure 2 - Proposed Site Plan Showing Prediction Locations

LIMBERLOST BUILDING DESIGN
EMAIL: office@limberlostdesign.com
TORONTO OFFICE: (647) 607-9693
887 DUNDAS STREET WEST
TORONTO, ON M6J 1Y9
MUSKOKA OFFICE: (705) 704-9615
1038 FIELDALE ROAD
HUNTSVILLE, ON P1H 2J6

NO.	DATE	REVISION
0	08/08/2024	PRELIMINARY DESIGN

PROJECT NORTH: TRUE NORTH:

PROJECT:
2170 GHENT AVENUE
BURLINGTON, ON L7R 1Y6

DRAWING TITLE:
SITE PLAN

DATE: 08/08/2024
DRAWING NO.: SP1
SCALE: 3/32" = 1'-0"
DRAWN BY: AG
PROJECT NO.: 2413

TOWNHOMES

TYPE	FOOTPRINT	FLOOR AREA	# OF UNITS
A	877.99 SQF	2,633.97 SQF	4 UNITS
B	571.28 SQF	1,713.84 SQF	6 UNITS
C	685.54 SQF	2,056.62 SQF	5 UNITS
D	597.16 SQF	1,791.48 SQF	2 UNITS
E	597.16 SQF	1,791.48 SQF	4 UNITS
			21 UNITS

SETBACKS

YARD	REQUIRED	PROPOSED
STREET	7.50m	4.00m
SIDE (EAST)	9.00m	6.00m
SIDE (WEST)	4.50m	3.00m
REAR	9.00m	6.00m

PRIVACY AREA REQUIRED
20 SQM PER UNIT
TOTAL REQ. PRIVACY AREA = 20 UNITS x 20 SQM = 400 SQM

PRIVACY AREA PROPOSED	BLOCK A UNIT A	BLOCK A UNIT C	BLOCK B UNIT A	BLOCK B UNIT B	BLOCK C UNIT D	BLOCK C UNIT E
AT FRONT COVERED PORCH	3.66	3.83	3.66	3.83	4.35	4.35
AT FRONT YARD	7.32	7.66	7.32	7.66	8.70	8.70
AT REAR RAISED DECK	11.70	9.09	9.36	5.99	6.75	6.75
AT REAR YARD	39.34	30.72	17.22	11.20	17.70	17.70
TOTAL (SQM)	62.02	51.30	37.56	28.68	37.50	37.50

AMENITY AREA REQUIRED
25 SQM PER 3 BEDROOM UNIT
TOTAL REQ. AMENITY AREA = 20 UNITS x 3 BDRMS x 25 SQM = 1,500 SQM

AMENITY AREA PROPOSED	
AREA A	82.78 SQM
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AREA F	61.97 SQM
TOTAL AMENITY AREAS	662.80 SQM
TOTAL PRIVACY AREA	852.74 SQM (SEE TABLE BELOW FOR UNIT CALCS)
GRAND TOTAL	1,515.54 SQM



1 SITE PLAN
3/32" = 1'-0"

Figure 3 - Ventilation Requirements

LIMBERLOST BUILDING DESIGN
EMAIL: office@limberlostdesign.com
TORONTO OFFICE: (647) 607-9693
887 DUNDAS STREET WEST
TORONTO, ON M6J 1Y9
MUSKOKA OFFICE: (705) 704-9615
1038 FIELDALE ROAD
HUNTSVILLE, ON P1H 2J6

NO.	DATE	REVISION
0	08/08/2024	PRELIMINARY DESIGN

PROJECT:
2170 GHENT AVENUE
BURLINGTON, ON L7R 1Y6

DRAWING TITLE:
SITE PLAN

DATE: 08/08/2024
SCALE: 3/32" = 1'-0"
DRAWN BY: AG
PROJECT NO: 2413
DRAWING NO: SP1

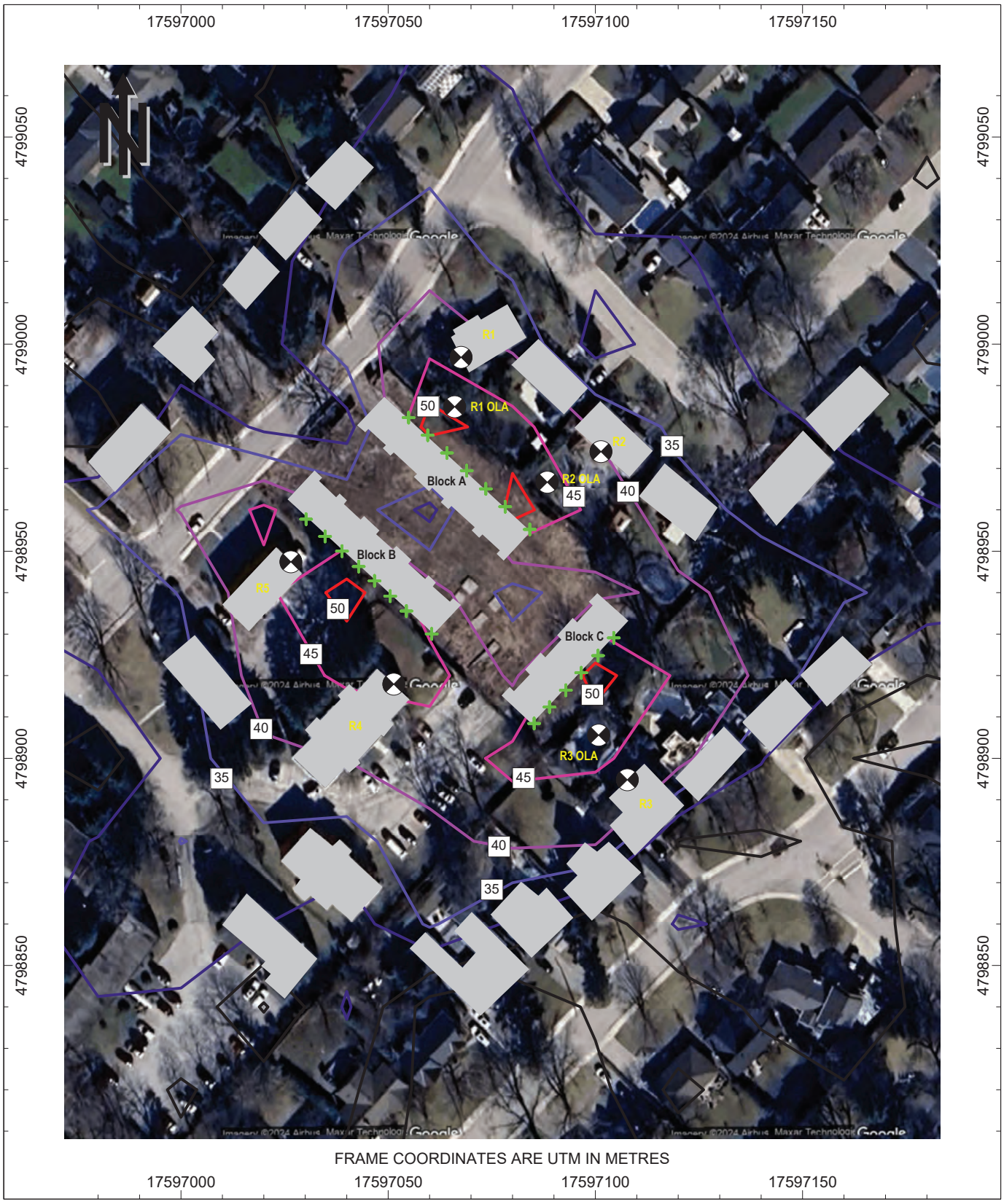


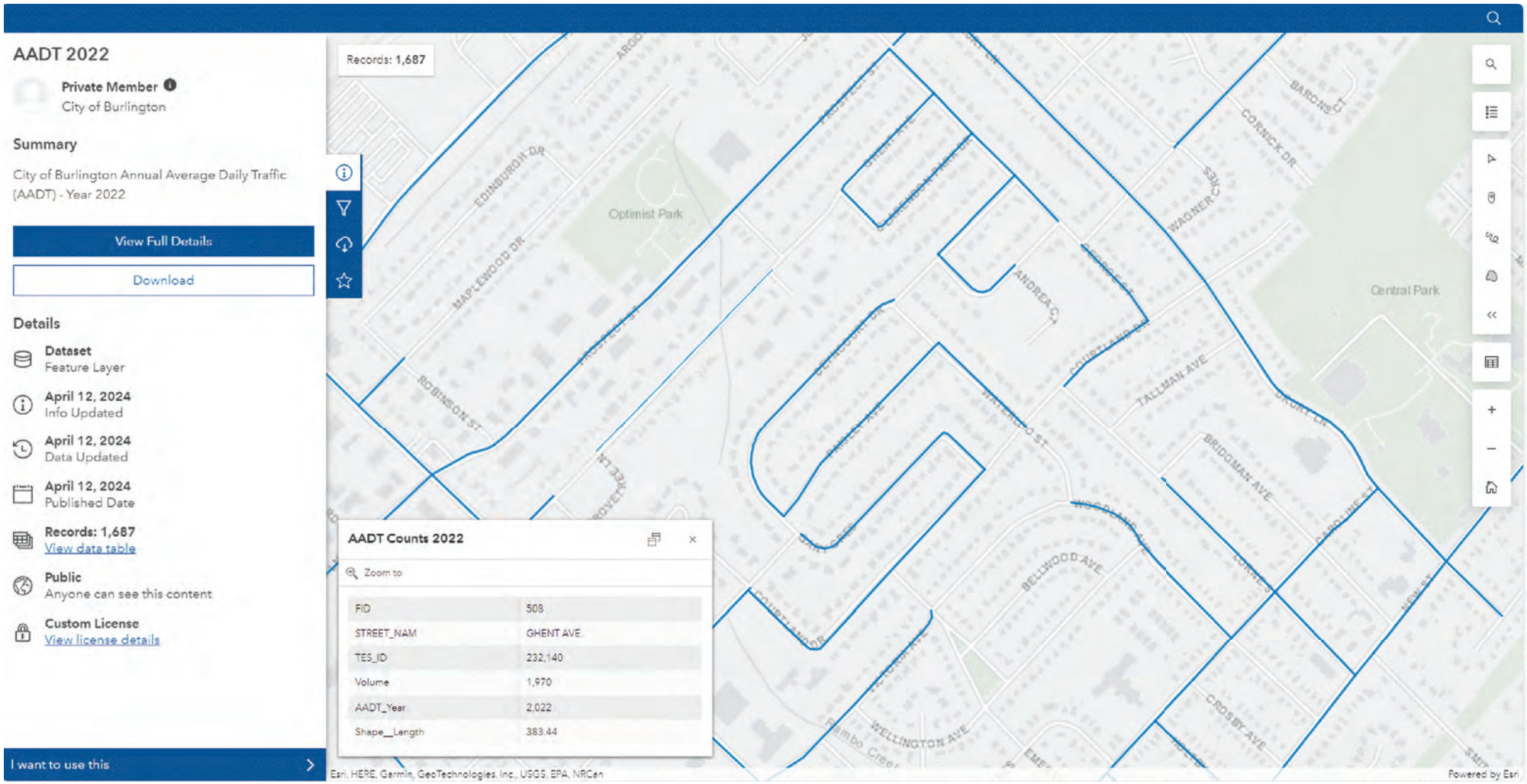
Figure 4 - Daytime Noise Level Contours at 4.5 m Height



Figure 5 - Nighttime Noise Level Contours at 4.5 m Height

Appendix A

Road Traffic Data


AADT 2022
Private Member
City of Burlington
Summary
City of Burlington Annual Average Daily Traffic (AADT) - Year 2022
View Full Details
Download
Details
Dataset
Feature Layer
April 12, 2024
Info Updated
April 12, 2024
Data Updated
April 12, 2024
Published Date
Records: 1,687
View data table
Public
Anyone can see this content
Custom License
View license details
I want to use this
Records: 1,687
AADT Counts 2022
Zoom to
FID 508
STREET_NAM GHENT AVE.
TES_ID 232,140
Volume 1,970
AADT_Year 2,022
Shape__Length 383.44
Optimist Park
Central Park
Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, NRCan
Powered by Esri

Appendix B

Sample STAMSON 5.04 Output

```
STAMSON 5.0        NORMAL REPORT        Date: 25-10-2024 10:48:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: aday.te              Time Period: 16 hours
Description: A Day

Road data, segment # 1: Ghent ave
---------------------------------
Car traffic volume  :  2313 veh/TimePeriod  *
Medium truck volume :    29 veh/TimePeriod  *
Heavy truck volume  :    43 veh/TimePeriod  *
Posted speed limit  :    40 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Ghent ave
-------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 m
Receiver height           :   7.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Ghent ave
-------------------------------

Source height = 1.16 m

ROAD (0.00 + 55.41 + 0.00) = 55.41 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  55.41   0.00   0.00   0.00   0.00   0.00   0.00  55.41
-------------------------------------------------------------------------------

Segment Leq : 55.41 dBA

Total Leq All Segments: 55.41 dBA

TOTAL Leq FROM ALL SOURCES:       55.41
```

Minimum allowable distance in STAMSON is 15 m, actual distance is 11.75 m.

56.47 dBA when adjusted to actual distance of 11.75 m for Ghent Avenue.

STAMSON 5.0 NORMAL REPORT Date: 25-10-2024 11:03:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a_ola.te Time Period: 16 hours
Description: A OLA

Road data, segment # 1: Ghent ave

Car traffic volume : 2313 veh/TimePeriod *
Medium truck volume : 29 veh/TimePeriod *
Heavy truck volume : 43 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Ghent ave

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 18.90 m
Receiver height : 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ghent ave

Source height = 1.16 m

ROAD (0.00 + 52.29 + 0.00) = 52.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	55.41	0.00	-1.67	-1.46	0.00	0.00	0.00	52.29

Segment Leq : 52.29 dBA

Total Leq All Segments: 52.29 dBA

TOTAL Leq FROM ALL SOURCES: 52.29

Appendix C

Supporting Information

YORK Technical Guide: LX Series YC2D Models - 13.4 SEER2 Split-System Air Conditioner - Single-Phase

R-410A - 1.5 ton to 5 Nominal ton



York International Corporation, 5005 York Drive, Norman, OK 73069

6268883-YTG-B-0823

Supersedes: 6268883-YTG-A-1122

2023-08-03

Touch-up Paint (S1-5130153**:** Color matched aerosol paint for touching up unit chassis and panels. Refer to the *Price Pages* or *Source 1 SmartSearch* for the correct color for each application.

Compressor Sound Blanket (S1-01007xxx000): A field installed dense foam cover that provides 2 dBA sound level reduction. Refer to the *Price Pages* or *Source 1 SmartSearch* for the correct blanket for each application.

Thermostat: Compatible thermostat controls are available through accessory sourcing. For optimum performance, these outdoor units are fully compatible with our residential *Hx™ Touch Screen Thermostats* available through *Source 1*. For more information, refer to the *Thermostats & Controllers* section at http://www.simplygettingthejobdone.com..

Sound power rating

Table 15: Sound power data – cooling – octave band sound power level (db re. 1-pW)

Outdoor unit model	Power level 63 (Hz)	Power level 125 (Hz)	Power level 250 (Hz)	Power level 500 (Hz)	Power level 1000 (Hz)	Power level 2000 (Hz)	Power level 4000 (Hz)	Power level 8000 (Hz)	dBA	SQI
YC2D18SB21S	68.2	68.5	66.2	67.3	68.0	66.7	62.4	56.4	73.0	19.0
YC2D24SB21S	69.2	70.9	65.8	68.2	66.1	63.1	58.6	54.5	74.0	19.1
YC2D30SB21S	67.8	71.8	64.4	68.0	64.3	61.7	58.5	54.1	73.0	19.1
YC2D36SB21S	68.1	76.5	68.3	75.4	66.2	63.0	59.5	56.0	74.0	19.1
YC2D42SB21S	69.4	72.9	67.8	69.9	67.2	64.7	63.3	59.3	76.0	19.1
YC2D48SB21S	68.6	76.8	71.4	71.4	70.9	63.8	60.9	58.7	76.0	19.0
YC2D60SB21S	69.1	71.9	73.2	72.3	71.1	69.4	66.3	63.3	77.0	19.1

Mechanical specifications

Manufacture and certifications

- Units shall be assembled at a facility with an ISO 9001:2015-certified Quality Management System.
- Units shall be certified by CSA to UL 1995/CSA 22.2 and performance certified to ANSI/AHRI Standard 210/240.
- Units shall be sound tested according to ANSI/AHRI Standard 270.
- Certified matched system ratings shall be available for download from the AHRI online directory at www.ahridirectory.org.

Unit application

- Units shall be approved for cooling operation between 55ºF and 115°F without modification.
- Units shall be approved for line sets up to 80 ft equivalent length without modification.
- Units shall be approved for installation within 6 in. of a flat vertical wall without modification, according to the instructions in the technical literature.
- Units shall be certified to the 5th Edition (2014) of the Florida Building Code for a combined allowable lateral and uplift wind force of 200 psf and 100 psf, respectively, for both ground-mounted and rooftop-mounted applications up to 200 ft above grade with approved mounting kit.
- Units shall be designed to 76 dBA or less to minimize sound pollution.

Unit access

- Units shall have a removable fan guard that can be removed independently of the top for interior access through the top of the unit without damaging the coil.
- Units shall have two removable stamped steel coil guards for exterior coil access.