



July 12, 2022

Homestead Land Holdings Limited
80 Johnson Street
Kingston, ON K7L 1X7

E-mail: JMangan@homestead.ca

Attention: Jack Mangan
Manager, Acquisitions & Corporate Development

Re: Noise Impact Study of the Proposed Residential Development
1300 McWatters Road, Ottawa, ON
Pinchin File: 290831

Pinchin Ltd. (Pinchin) was retained by Homestead Land Holdings Limited (Client) to prepare a noise impact study report of its proposed residential development (Development) at 1300 McWatters Road, Ottawa, ON. As per the comments from the City of Ottawa, this report has been prepared to evaluate the noise impacts from the road traffic on the Development and the Development on nearby noise sensitive receptors. The purpose of the study is to support the site plan control application for the proposed Development.

The proposed Development will include the construction of one residential building. The building will include two levels of underground parking, twenty-four levels of residential units, and one level of penthouse for amenity spaces and mechanical equipment.

Figure 1, Appendix B shows the locations of the proposed Development and nearby roads. Additional drawings showing the site plan, floor and elevation plans are included in Appendix C.

1.0 NOISE CRITERIA

In this study, noise criteria outlined in the City of Ottawa's Environmental Noise Control Guidelines (ENCG) [1] and the Ontario Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 [2] were adopted. The applicable noise criteria for this proposed redevelopment are described as follows:

1.1 Outdoor Noise Criteria

The daytime noise criterion for outdoor living areas (OLAs) is 55 dBA for road and rail noise sources. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, up to 60 dBA is permissible with warning clauses. Where the daytime sound level is greater than 60 dBA, control measures are required to reduce the sound level to 60 dBA or less.



The proposed development has made provisions for a variety of protected indoor amenities such as screening room, party and exercise rooms, etc. that are accessible to all future occupants/owners in the proposed Development. There are also outdoor rooftop terraces that have been provided. In addition, there are balconies and terraces for the respective suites, and it should be noted that typically, balconies in residential condominium buildings are not considered OLAs unless both of the following conditions exist: they are at least 4 m in depth and there is no provision for protected amenities within the development.

1.2 External Building Façade Criteria

Where the sound levels at the exterior of the building facades exceed 55 dBA at living/dining room windows during daytime hours and 50 dBA at bedroom windows during nighttime periods, the unit must be provided with forced air heating with provision for central air conditioning. Where the sound levels exceed by more than 10 dB (i.e. 65 dBA at living/dining room windows and 60 dBA at bedroom windows), central air conditioning must be incorporated into the building design prior to occupancy. Upgraded window glazing construction may be required and warning clauses are applicable as well.

It should be noted that in high and medium density residential developments, other forms of mechanical ventilation may be available. Ventilation methods other than central air conditioning are acceptable for high and medium density residential developments, subject to the following conditions:

- the noise produced by the proposed ventilation system in the space served does not exceed 40 dBA;
- the ventilation system complies with all national, provincial and municipal standards and codes;
- the ventilation system is designed by a heating and ventilation professional; and
- the ventilation system enables the windows and exterior doors to remain closed.

1.3 Noise Criteria for Stationary Sources

The applicable MECP noise criteria at a point of reception (POR) are dictated by MECP Publication NPC-300 [2] for Class 1 Areas. These guidelines state that the one-hour sound exposures (Leq, 1 hour) from stationary noise sources in Class 4 areas shall not exceed:

- the higher of 50 dBA or background noise between 0700h and 1900h;
- the higher of 50 dBA or background noise between 1900h and 2300h; and
- the higher of 45 dBA or background noise between 2300h and 0700h (excluding outdoor PORs).



The sound level limits for the testing of emergency generator are 5 dBA higher than the above limits.

2.0 POINT OF RECEPTION DESCRIPTION

To evaluate the noise impact from road traffic on the Development, five onsite noise sensitive receptors (ON-North, ON-West, ON-South, ON-OLA1 and ON-OLA2) were selected from the Development's most affected locations. Receptor ON-North, ON-West and ON-South represent 24th floor windows on the north, west and south facades, respectively. Receptors ON-OLA1 and ON-OLA2 represent the outdoor living areas on the penthouse level. The following table lists the selected receptor details:

Point of Reception ID	Point of Reception Location	Point of Reception Height, m
ON-North	North Façade, 24th Floor Windows	72.5
ON-West	West Façade, 24th Floor Windows	72.5
ON-South	South Façade, 24th Floor Windows	72.5
ON-OLA1	OLA on 25th Floor, North of Penthouse	75.5
ON-OLA2	OLA on 25th Floor, South of Penthouse	75.5

Locations of the selected receptors are shown in Figure 2, Appendix B.

It was confirmed by the Client that outdoor at-grade amenity space is not required by the zoning bylaw. Therefore, no at-grade OLAs were selected from the Development.

To evaluate the noise impact from the Development on nearby noise sensitive land uses, six receptors (R1 to R6) were selected from nearby noise sensitive areas. Receptor R1 represents a high-rise residential building located to the west of the Development. Receptor R2 represents another high-rise residential building located to the south of the Development. Receptors R3 to R5 represent the west façade windows on a high-rise residential building located to the east of the Development. Receptor R6 represents an apartment building located to the north of the Development.



The following table lists the selected receptor details:

Point of Reception ID	Point of Reception Location	Point of Reception Height, m
R1	Residential Building to West	45
R2	Residential Building to South	40
R3	Residential Building to East	50
R4	Residential Building to East	50
R5	Residential Building to East	50
R6	Residential Building to North	7.5

The locations of the selected external receptors are shown in Figures 4 and 5, Appendix A. Locations of the selected receptors are shown in Figure 2, Appendix B.

3.0 NOISE IMPACT ASSESSMENT

3.1 Noise Impact from External Stationary Sources on the Development

A review of aerial photos of the area shows that there are no significant stationary sources (e.g. industrial and commercial operations) within 100 m of the proposed Development. In accordance with the City's ENCG, the potential noise impact (if any) from external stationary sources has been deemed insignificant.

A CN railway line is located to the south of the Development approximately 1 km away. Since the distance is greater than the maximum setback of 300 m for principal main lines, the noise/vibration impact from the CN railway line on the Development was deemed insignificant.

The proposed redevelopment is located approximately 8 km to the northwest of the Ottawa International Airport. Annex 10 of the City's Official Plan shows that the Airport Vicinity Development Zone (AVDZ) extends up to the intersection of Baseline Road and Woodroffe Avenue to the northwest of the Airport. The distance from the proposed Development to the nearest AVDZ is approximately 2.2 km. Therefore, the aircraft noise impact was deemed insignificant and the aircraft warning clause is not required. A copy of the aircraft noise impact contour map is included in Figure 3, Appendix B.

3.2 Noise Impact from the Development on Nearby Sensitive Receptors

Based on the information provided by the Client, the significant noise sources associated with the proposed Development are provided in Table 3, Appendix A, and may include the following:



- One (1) emergency generator (source GEN);
- One (1) make-up air unit (source MUA); and
- One (1) cooling tower (sources CT_Air, CT_Back, CT_Motor, CT_End, and CT_Top).

Manufacturer sound data for the emergency generator and cooling tower were provided by the Client. The sound power level for the make-up air unit was taken from the similar equipment used at the Client's other development projects. Details of manufacturer sound data and sound power level calculations are provided in Appendix G. Table 3, Appendix A, lists the equipment sound power levels.

In modelling the noise impact from the proposed equipment, the following assumptions were used. The emergency generator was assumed testing for 30 minutes during daytime hours. The Client indicates that the cooling tower will be equipped with variable speed motors. Consequently, the cooling tower was conservatively assumed operating for 60 minutes during daytime hours, 45 minutes during evening hours, and 30 minutes during nighttime hours. The selected duty cycles are in line with operations of typical comfort heating equipment used at residential facilities. The make-up air unit was assumed operating continuously during daytime, evening, and nighttime hours.

The predicted noise impacts from stationary sources and emergency generator testing are summarized in Tables 3 and 4, Appendix A, respectively. Noise impact contour maps are presented in Figures 4 and 5, Appendix B.

3.3 Noise Impact from Transportation Sources on the Development

A review of aerial photos shows that there are two major roadways in proximity to the Development: Greenbank Road to the west and Baseline Road to the south of the Development. Highway 417 is located to the north of the Development, approximately 600 away. Since the distance is greater than the maximum setback of 500 m for 400 series freeways, the noise impact from Highway 417 on the Development was deemed insignificant.

The AADT volumes for Greenbank Road and Baseline Road were taken from Table 1, Appendix B of the ENCG. Details of traffic data and vehicle breakdowns are provided in Table D1, Appendix D.

The sound levels at the proposed development due to road traffic were calculated using the MECP program STAMSON, Version 5.04 [3]. STAMSON uses the traffic volumes for the road and basic topographical information for the site in its calculations. Details of calculation results are provided in Appendices A and D.



3.4 Noise Control Measures

Table 1, Appendix A provides the STAMSON calculation results at selected building facades and outdoor living areas. Table 2, Appendix A, summarizes the predicted sound levels at selected units and outdoor living areas, as well as the applicable noise control requirements.

In summary, the predicted traffic noise impacts range from 54 dBA to 71 dBA at the selected onsite receptors. The predicted levels indicate that the units should be designed with the installation of central air conditioning systems. Warning clause Type D is required to be included in agreements of offers of purchase and sale, lease/rental agreements and condominium declarations. In addition, the ENCG warning clause similar to Type D is also suggested to be included in agreements. Details of the warning clauses are included in Appendix F.

It was confirmed by the Client that all units will be equipped with air conditioning and HRV systems. The construction will exceed the City's and MECP ventilation requirements.

Since the predicted traffic noise impacts exceed 65 dBA and 60 dBA during daytime and nighttime hours, respectively, additional calculations were performed to determine the Acoustic Insulation Factor (AIF) and Sound Transmission Class (STC) requirements on building components (i.e. windows, doors and walls) at selected units. Specifically, the following building component upgrades are required.

West Façade Units – All Floors Except End Units

As shown in Table 2, Appendix A, the predicted sound levels at the planes of windows on the west facades are 71 dBA and 64 dBA during daytime and nighttime hours, respectively. Calculations show that slight upgrades to STC 32 for the bedroom windows/doors is required. For reference purpose, windows/doors and walls constructed to meet the Ontario Building Code (OBC) requirements typically have the STC rating of approximately 30 and 38, respectively.

For living spaces, windows and walls constructed to meet the OBC requirements would be sufficient to provide the required sound attenuation. Details of calculations are provided in Tables E1 and E2, Appendix E.

North Façade Bedrooms – All Floors

As shown in Table 2, Appendix A, the predicted sound levels at the planes of windows on the west facades are 68 dBA and 60 dBA during daytime and nighttime hours, respectively. Calculations show that windows and walls constructed to meet the OBC requirements would be sufficient to provide the required sound attenuation. Details of calculations are provided in Table E3, Appendix E.

Northwest Corner Living Spaces – Floors 22 to 24



These units are located at the northwest corner of the building on floors 22 to 24. All units have windows on both the west and north façades. The west facade faces Greenbank Road. Since these units have more windows on two sides, the window to floor ratios are relatively larger than the other units. As shown in Table 2, Appendix A, the predicted sound levels at the planes of windows on the west facades are 71 dBA and 64 dBA during daytime and nighttime hours, respectively. The predicted levels on the north façade windows are 3 dBA lower than that of the west facade.

Calculations show that the windows on the facades should be constructed to meet or exceed the STC rating of 34. The north façade windows may be constructed to meet the OBC requirements. Details of calculations are provided in Tables E4 and E5, Appendix E

Northwest Corner Living Spaces – Floors 1 to 3

These units, similar to the living spaces on floors 22 to 24, are located at the northwest corner of the building on floors 1 to 3. As shown in Table 2, Appendix A, the predicted sound levels at the planes of windows on the west facades are 71 dBA and 64 dBA during daytime and nighttime hours, respectively. The predicted levels on the north façade windows are 3-4 dBA lower than that of the west facade.

Calculations show that the windows on the west facade should be constructed to meet or exceed the STC rating of 34. The north façade windows and all walls may be constructed to meet the OBC requirements. Details of calculations are provided in Table E6, Appendix E.

Southwest Corner Living Spaces – All Floors

These units are located at the southwest corner of the building. All units have windows on both the west and north façades. The west facade faces Greenbank Road and the south façade faces Baseline Road. As shown in Table 2, Appendix A, the predicted sound levels at the planes of windows on the west facades are 71 dBA and 64 dBA during daytime and nighttime hours, respectively. The predicted levels on the north façade windows are 3 dBA lower than that of the west facades.

Calculations show that the windows on the both the west and south façades should be constructed to meet or exceed the STC rating of 34. The walls may be constructed to meet the OBC requirements. Details of calculations are provided in Tables E7 and E8, Appendix E.

South Façade Bedrooms – All Floors

These units are located on the south side of the building. All units have full exposure to Baseline Road and half exposure to Greenbank Road. The predicted sound levels at the planes of windows are 68 dBA and 60 dBA during daytime and nighttime hours, respectively.

Calculations show that all windows and may be constructed to meet the OBC requirements. Details of calculations are provided in Table E9, Appendix E.



It was confirmed by the Client that all windows and/or sliding doors on the north, west and south facades will be constructed to meet or exceed STC rating of 35. Therefore, it is our opinion that the selected windows will meet or exceed the noise control requirements.

The architectural drawings show that all walls will be constructed using primarily masonry walls. The masonry walls would provide an STC rating of approximately 55, far exceeding the minimum OBC requirements on walls.

4.0 CONCLUSIONS

A detailed noise assessment of the proposed Development was completed by modelling the noise impact from road traffic on the Development. The assessment and review show that the traffic noise impacts on the Development meet the NPC-300 noise criteria, with the upgrades on the windows of selected units. The predicted noise impacts from stationary sources and emergency generator testing at nearby noise sensitive receptors also meet the NPC-300 noise criteria.

5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.



6.0 CLOSURE

Should you have any questions or concerns regarding the contents of this study, please contact the undersigned.

Sincerely,

Pinchin Ltd.

Prepared by:

Reviewed by:

Weidong Li, PhD., P.Eng.
Senior Project Engineer
(647) 287-1677
wli@pinchin.com

Aidan Maher, P.Eng.
Senior Project Manager
(416) 271-9333
amahir@pinchin.com





7.0 REFERENCES

1. City of Ottawa, Environmental Noise Control Guidelines: Introduction and Glossary, January 2016.
2. Ministry of the Environment Publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", August 2013.
3. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04),

\\pinchin.com\Miss\Job\290000s\0290831.000 Homestead,1300&1310McWatters,ERC,NOISE\Deliverables\290831 Noise Impact Study, 1300 & 1310 McWatters, Homestead 20220712 (Rev3).docx

Template: Master Noise Impact Study Letter, ERC, March 5, 2020

APPENDIX A
Tables
(5 Pages)

Table 1 - Road Traffic Noise Prediction Results

Point of Reception ID	Point of Reception Location	Point of Reception Height, m	Daytime Sound Level, dBA ^[1]	Nighttime Sound Level, dBA ^[2]
ON-North	North Façade, 24th Floor Windows	72.5	68	60
ON-West	West Façade, 24th Floor Windows	72.5	71	64
ON-South	South Façade, 24th Floor Windows (Southwest Corner Units Only)	72.5	69	61
ON-OLA1	OLA on 25th Floor, North of Penthouse	75.5	55	-
ON-OLA2	OLA on 25th Floor, South of Penthouse	75.5	55	-

Notes

1. The daytime period is from 7 am to 11 pm.
2. The nighttime period is from 11 pm to 7 am.

Table 2: Summary of Noise Control Measures

Point of Reception ID [1]	Façade/Location Description [2]	Predicted Unmitigated Sound Level at Most Affected Facades (Leq, dBA) [3]		Approximate Distance to Road, m [4]	Exterior Window STC Requirements [5]	Ventilation Requirements [6]	Wall Requirements [7]	Approximate Barrier Height [8]	Warning Clauses [9]
		Daytime (16 hr)	Nighttime (8 hr)						
Bedroom, 13'2" x 10'-0"	West Façade, All Floors, Excluding End Units	71	64	27	32	Central AC	OBC	n/a	Type D
Living Room, 11'10" x 26'-3"	West Façade, All Floors, Excluding End Units	71	64	27	OBC	Central AC	OBC	n/a	Type D
Bedroom, 11'3" x 9'-8"	North Façade, All Floors	68	60	31	OBC	Central AC	OBC	n/a	Type D
Living Room, 16'11" x 17'-4"	West Façade, Northwest Corner, Floors 22-24	71	64	27	34	Central AC	n/a	n/a	Type D
Living Room, 16'11" x 17'-4"	North Façade, Northwest Corner, Floors 22-24	68	60	31	OBC	Central AC	n/a	n/a	Type D
Living Room, 17'11" x 16'-9"	Northwest Corner, West Side, Floors 1-3	71	64	27	34	Central AC	n/a	n/a	Type D
Living Room, 11'3" x 30'-5"	Southwest Corner, West Side, All Floors	71	64	33 / 185	35	Central AC	OBC	n/a	Type D
Living Room, 11'3" x 30'-5"	Southwest Corner, South Side, All Floors	69	61	33 / 185	34	Central AC	OBC	n/a	Type D
Bedroom, 11'1" x 10'-0"	South Façade, South Side, All Floors	68	60	44 / 185	OBC	Central AC	OBC	n/a	Type D
ON-OLA1	OLA on 25th Floor, North of Penthouse	55	-	33	n/a	n/a	n/a	1.2 m rooftop barrier	n/a
ON-OLA2	OLA on 25th Floor, South of Penthouse	55	-	33	n/a	n/a	n/a	1.2 m rooftop barrier	n/a

Notes:

- [1] Where applicable, the PORs are referred to the room dimensions. See the floor plans in Appendix C.
- [2] The north facade faces Greenbank Road.
- [3] STAMSON predicted sound levels at the planes of windows or outdoor living areas in dBA.
- [4] The distance is measured from the façade to the centerline of the road.
- [5] The windows are specified in pane-gap-pane for double glazing or pane-gap-pane-gap-pane for triple glazing.
OBC - the window should be designed to meet the Ontario Building Code requirements.
- [6] Provision - the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.
Central AC - installation of central air conditioning should be implemented.
- [7] OBC - the wall should be designed and constructed to meet the Ontario Building Code requirements.
- [8] Acoustic barriers for outdoor living areas on the roof.
- [9] For details on warning clauses, see Appendix F.

Table 3: Stationary Noise Source Summary Table

Source ID ^[1]	Source Description	Lw(A) ^[2]	Source Location ^[3]	Sound Characteristics ^[4]	Noise Control Measures ^[5]	Source of Data ^[6]
CT_Air	Cooling Tower - Air Inlet	89	O	S	U	Man + Cal
CT_Back	Cooling Tower - Back	83	O	S	U	Man + Cal
CT_End	Cooling Tower - End	81	O	S	U	Man + Cal
CT_Motor	Cooling Tower - Connection	83	O	S	U	Man + Cal
CT_Top	Cooling Tower - Top	89	O	S	U	Man + Cal
GEN	Back-up Generator - Ground	96	O	S	S, E	Man
MUA	Make-up Air Unit	88	O	S	U	Man

Notes:

- [1] Wherever possible, the Source ID is identical with that used in the ESDM report.
- [2] Sound Power Levels of continuous noise sources, in dBA, do not include sound characteristic adjustments per NPC-104.
 Sound Power Levels of impulsive noise sources, in dBAI, are A-weighted incorporating an impulsive time weighting.
- [3] Source Location:
 O - located/installed outside the building, including on the roof
 I - located/installed inside the building
- [4] Sound Characteristic
 S = Steady
 Q = Quasi-Steady Impulsive
- [5] Noise Control Measures
 S = Silencer/Muffler
 A = Acoustic lining, plenum
 B = Barrier, berm, screening
- [6] Mea - Measured
 Cal = Engineering Calculations

Table 4: Acoustic Assessment Summary Table - From Development on External Receptors, Stationary Sources

Point of Reception ID	Point of Reception Description	Time Period ^[1]	Total Level at POR (L _{eq} , 1-hr) ^[2]	Verified by Acoustic Audit (Yes/No)	Performance Limit (L _{eq} 1-hr) ^[3]	Compliance with Performance Limit (Yes/No)
R1	Residential Building to West	Daytime	31	No	50	Yes
		Evening	31	No	50	Yes
		Nighttime	29	No	45	Yes
R2	Residential Building to South	Daytime	31	No	50	Yes
		Evening	29	No	50	Yes
		Nighttime	28	No	45	Yes
R3	Residential Building to East	Daytime	43	No	50	Yes
		Evening	42	No	50	Yes
		Nighttime	40	No	45	Yes
R4	Residential Building to East	Daytime	42	No	50	Yes
		Evening	41	No	50	Yes
		Nighttime	39	No	45	Yes
R5	Residential Building to East	Daytime	43	No	50	Yes
		Evening	42	No	50	Yes
		Nighttime	40	No	45	Yes
R6	Residential Building to North	Daytime	30	No	50	Yes
		Evening	29	No	50	Yes
		Nighttime	28	No	45	Yes

Notes:

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L_{eq} for Class 1 Areas.

Table 5: Acoustic Assessment Summary Table - From Development on External Receptors, Emergency Generator

Point of Reception ID	Point of Reception Description	Time Period ^[1]	Total Level at POR (L _{eq} , 1-hr) ^[2]	Verified by Acoustic Audit (Yes/No)	Performance Limit (L _{eq} 1-hr) ^[3]	Compliance with Performance Limit (Yes/No)
R1	Residential Building to West	Daytime	39	No	55	Yes
R2	Residential Building to South	Daytime	42	No	55	Yes
R3	Residential Building to East	Daytime	46	No	55	Yes
R4	Residential Building to East	Daytime	47	No	55	Yes
R5	Residential Building to East	Daytime	48	No	55	Yes
R6	Residential Building to North	Daytime	46	No	55	Yes

Notes:

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary daytime sound level limit of one hour L_{eq} for Class 1 Areas, plus 5 dB for emergency generator testing.

APPENDIX B
Figures
(5 Pages)



Figure 1 - Scaled Area Plan, Showing Proposed Building and Roads

Homestead Land Holdings Limited, 1300 McWatters Road, Ottawa, ON

Pinchin Project: 290831



Drawn by: WNL

Scale: 1:6,500

Date: January 4, 2022



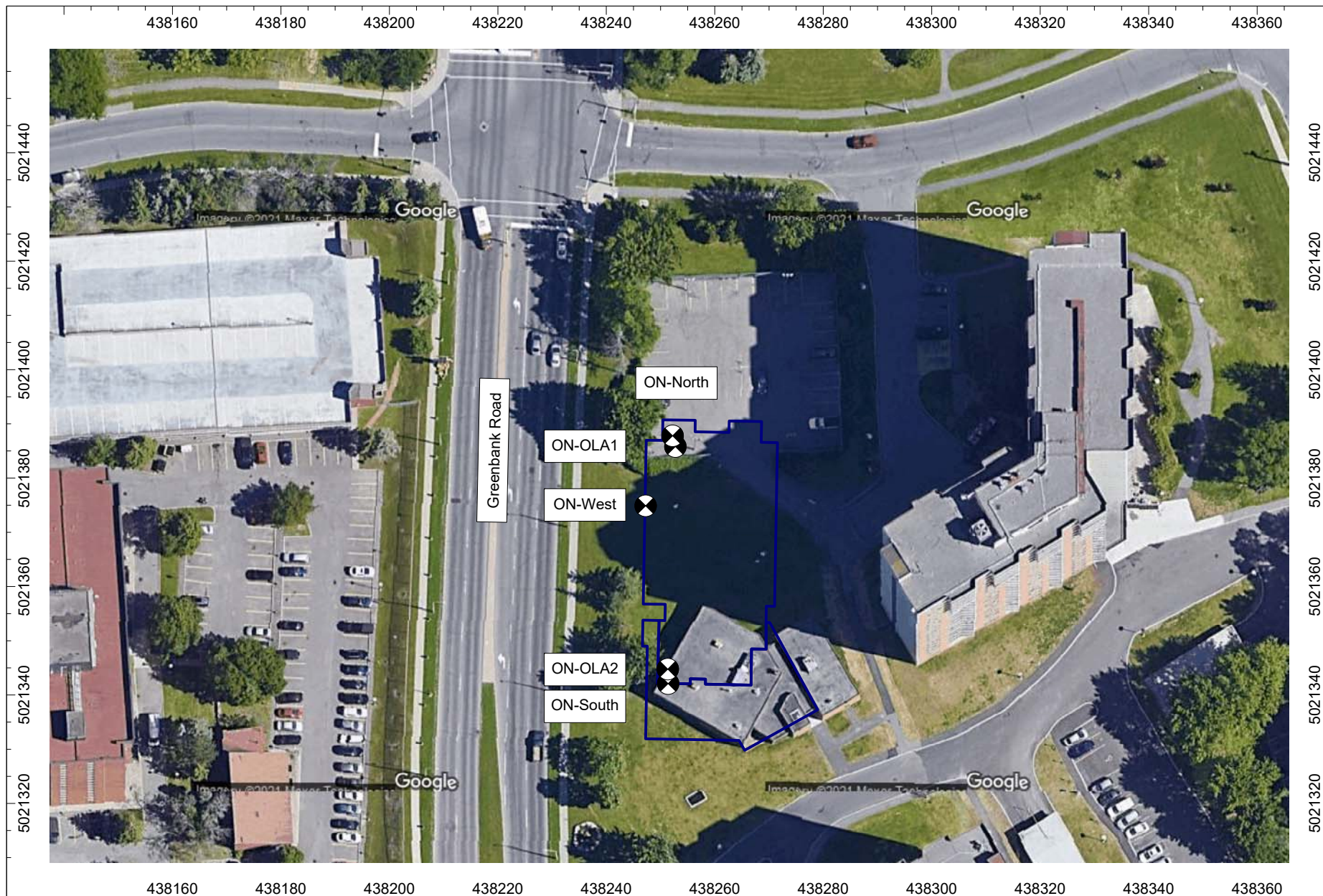


Figure 2 - Site Plan, Showing Onsite Receptors

Homestead Land Holdings Limited, 1300 McWatters Road, Ottawa, ON



Pinchin Project: 290831

Drawn by: WNL

Scale: 1:1,000

Date: January 4, 2022



OFFICIAL PLAN - ANNEX 10

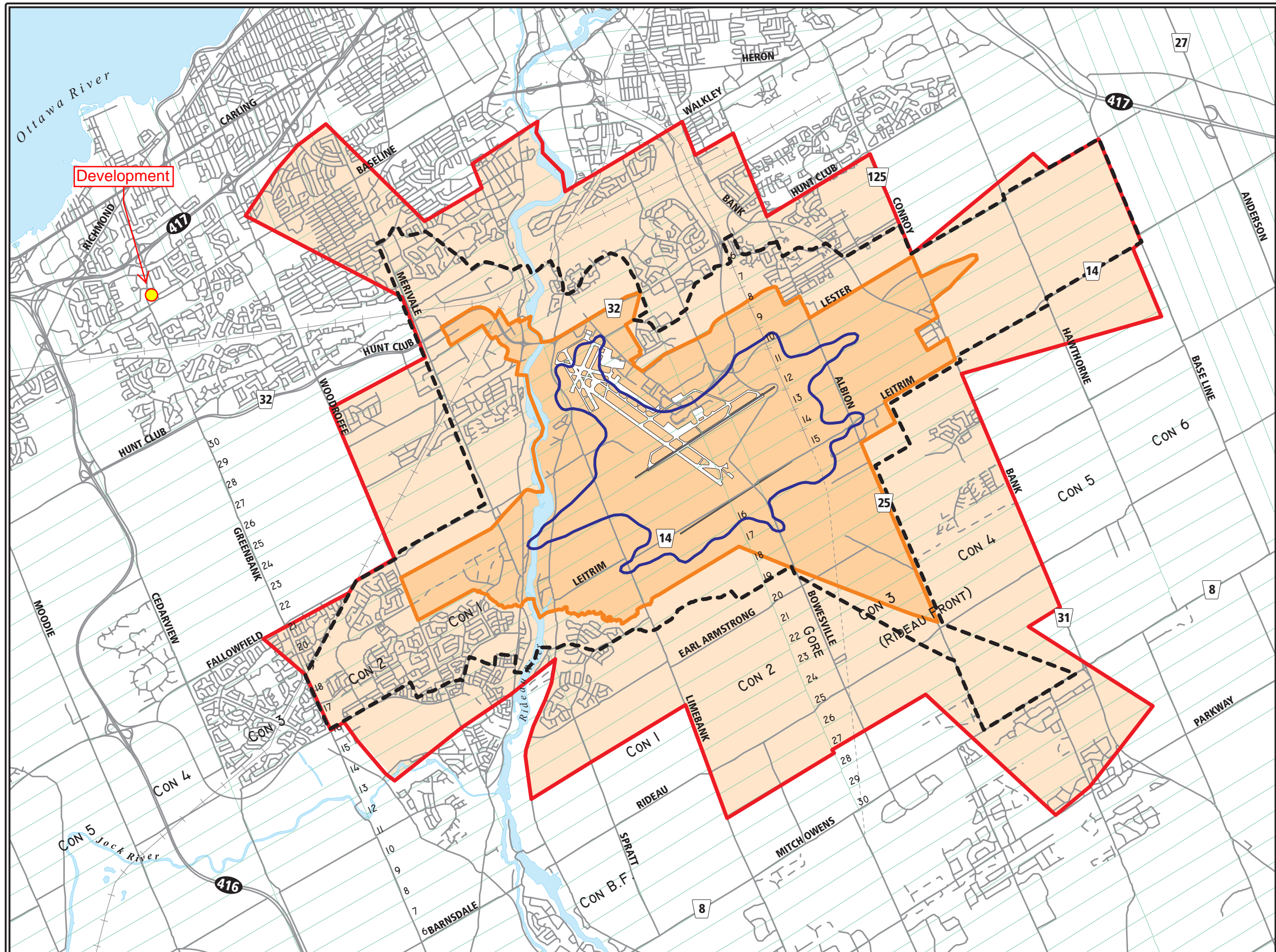
Land Use Constraints Due to Aircraft Noise

Prepared by: City of Ottawa,
Department of Planning, Transit and the Environment,
September 2011

PLAN OFFICIEL - APPENDICE 10

Contraintes limitant l'utilisation en raison du bruit des avions

Préparé par : Ville d'Ottawa,
Le Service de l'urbanisme, du transport en commun et de l'environnement,
septembre 2011



- Airport Vicinity Development Zone
Zone d'aménagement dans le voisinage de l'aéroport
- 25 Line (Composite of 25 NEF/NEP)
Ligne 25 (ensemble des courbes NEF et NEP 25)
- 35 Line Noise Exposure Protection (NEP 2023)
Ligne 35 : prévisions à long terme de l'ambiance sonore (NEP 2023)
- Airport Zoning Regulations
Règlements de zonage applicables à de l'Aéroport
- Airport Operating Influence Zone
Zone d'influence d'exploitation de l'aéroport

Note:
The boundaries of the Ottawa Airport Operating Influence Zone and the Airport Vicinity Development Zone, are not subject to interpretation and their precise locations should be read from a map at a scale of 1:50,000 available from the City of Ottawa and the Ottawa International Airport Authority.

Figure 3

Scale / Échelle
1km 0 1 2 3 km

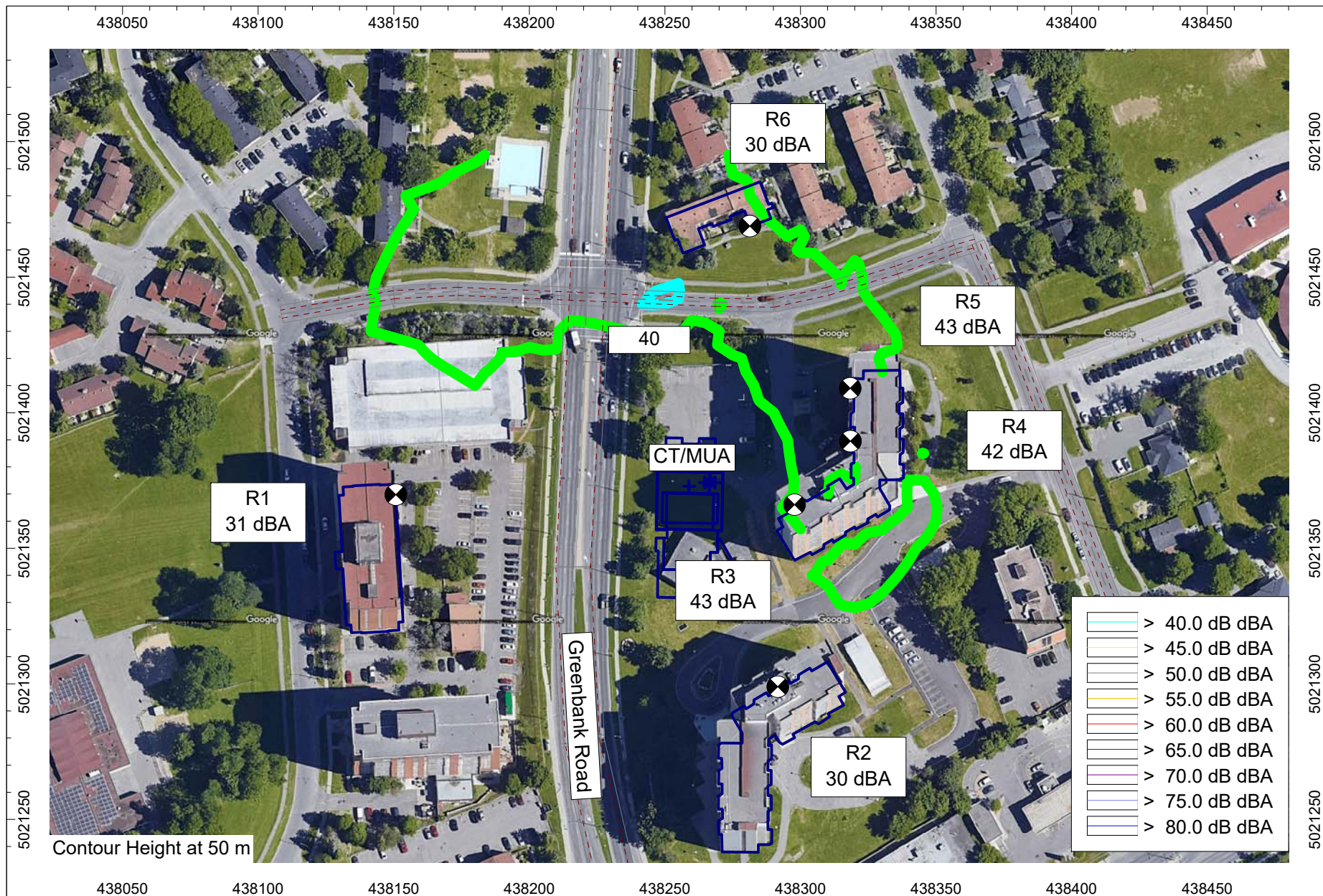


Figure 4 - Noise Impact Contour Map, Stationary Sources

Homestead Land Holdings Limited, 1300 McWatters Road, Ottawa, ON

Pinchin Project: 290831

Drawn by: WNL

Scale: 1:2,000

Date: July 4, 2022



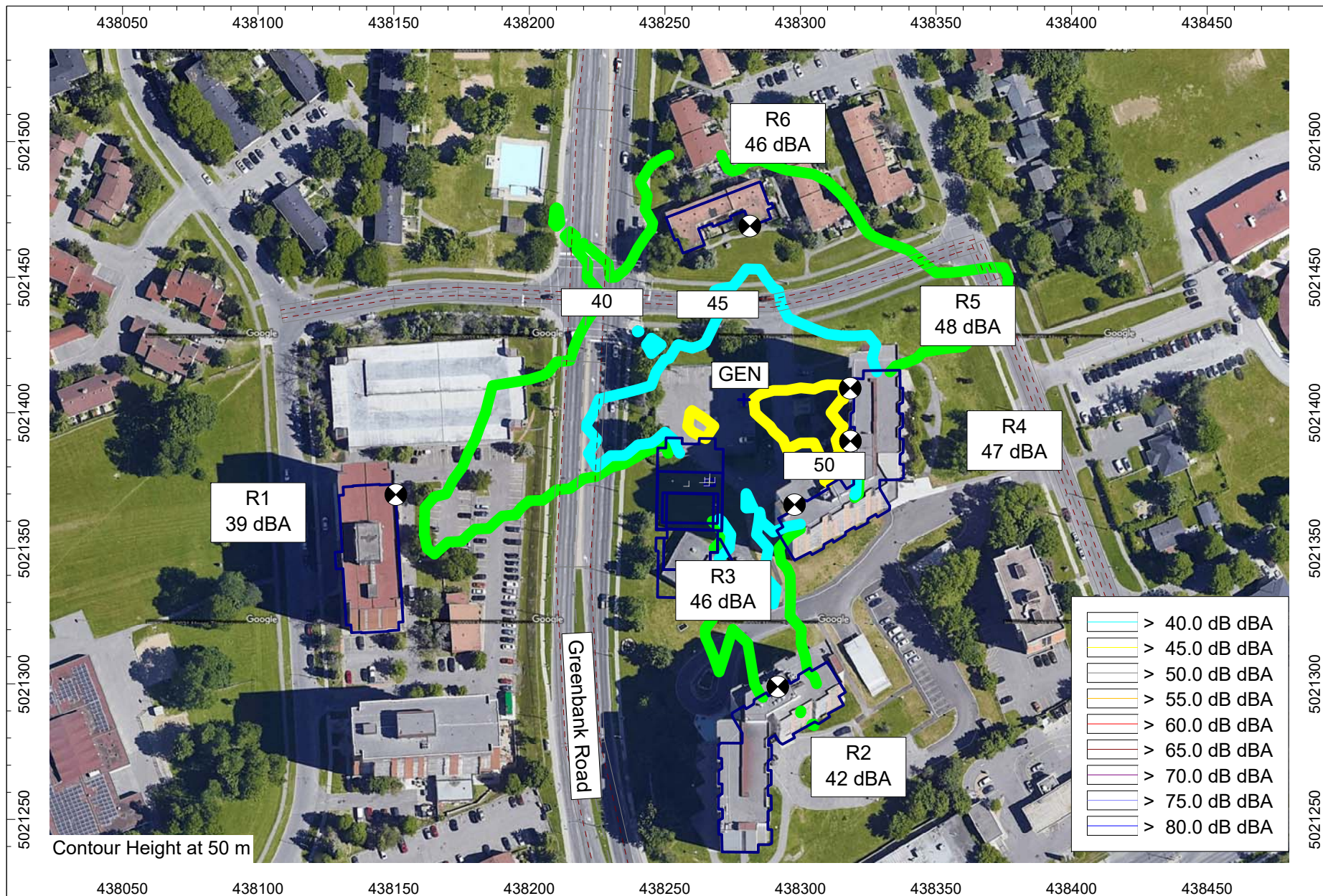


Figure 5 - Noise Impact Contour Map, Emergency Generator

Drawn by: WNL

Scale: 1:2,000

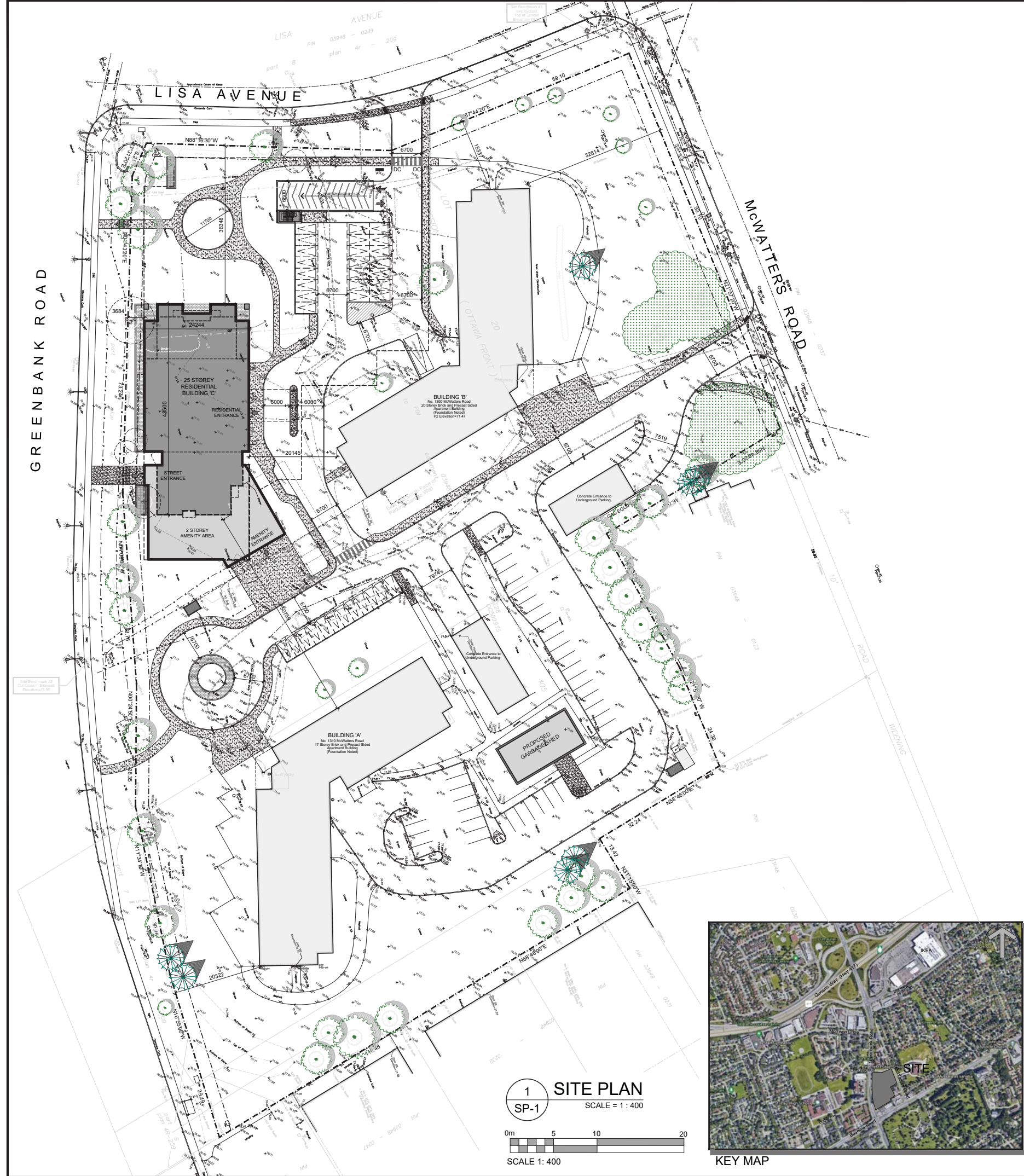
Date: July 4, 2022

Homestead Land Holdings Limited, 1300 McWatters Road, Ottawa, ON

Pinchin Project: 290831



APPENDIX C
Additional Drawings
(5 Pages)



SITE PLAN SYMBOLS:

- TERRACE/LANDSCAPE PLANTING
- ASPHALT DRIVE/SLE/PARKING
- CONCRETE SIDEWALK
- CONCRETE PAVERS, SEE LANDSCAPE DRAWINGS
- PAVERS @ TERRACE LEVEL
- PROPERTY LINE
- BUILDING SETBACK LINE
- FENCE LINE
- BIKE RACK
- ENTRANCE / EXIT DOOR
- COMMERCIAL / EXIT DOOR
- FIRE HYDRANT
- VEHICULAR DIRECTION
- EXISTING TREE TO REMAIN
- SIAMSE CONNECTION
- PROPOSED GRADE - SEE CIVIL DRAWINGS
- ROOF DRAIN

NOTE: SEE LANDSCAPE FOR ALL SURFACE MATERIAL AND PATTERN

GEOTECHNICAL ENGINEER
Paterson Group
 154 Colonnade Road South
 Ottawa, Ontario, K2E 7J5
 Tel: (613) 226-7381
 E-Mail: DGilbert@Patersongroup.ca
 E-Mail: mdarcy@Patersongroup.ca

WIND / SOUND ENGINEER
Gradient Wind
 127 Walgreen Road,
 Ottawa, ON, Canada K0A 1L0
 Tel: (613) 836-0934 ext. 116
 Cell: (613) 266-5273
 E-Mail: joshua.foster@gradientwind.com

ARBORIST
IFS Associates
 BOX 13593,
 Kanata, Ontario K2K 1X6
 Tel: (613) 838-5717
 E-Mail: aboyd@ifsassociates.ca

SURVEYOR
Annis O'Sullivan Vollebakk Ltd.
 14 Concourse Gate, Suite 500,
 Nepean, Ontario K2E 7S6
 Tel: (613) 727-0850
 Fax: (613) 727-1079
 E-Mail: BobV@aovtld.com

CIVIL ENGINEER
Stantec Geomatics Ltd.
 1331 Clyde Avenue, Suite 400
 Ottawa, ON K2C 3G4
 Phone: (613) 724-4096
 Fax: (613) 722-2799
 E-Mail: Sheridan.Gillis@stantec.com

LANDSCAPE ARCHITECT
Wentworth Landscapes
 13392 Loyalist Pkwy.,
 Picton, Ontario K0K 2T0
 Tel: (613) 476-1181
 E-Mail: scott@wentworthlandscapes.com
 E-Mail: danielle@wentworthlandscapes.com

TRANSPORTATION ENGINEER
CGH Transportation Inc.
 13 Markham Avenue
 Ottawa, ON K2G 3Z1
 Tel: (343) 999-9117
 Email: Vanessa.Skelton@ghd.com

PROJECT INFORMATION

ZONING BY-LAW 2008-250 RBS (H18)
SITE AREA 25,686.0 sq. m., 276,482 sq. ft.

REQUIRED
 GRADE (GEODETIC ELEVATION) 75.50m
 BUILDING HEIGHT 18.0m
 FRONT YARD SETBACK 3.0m
 CORNER YARD SETBACK 3.0m
 REAR YARD SETBACK 3.0m
 RESIDENTIAL PARKING PER UNIT (AFTER 12 UNITS) 0.5
 VISITOR PARKING PER UNIT (AFTER 12 UNITS) 0.2
 BICYCLE PARKING PER UNIT 0.5
 AMENITY AREA - PER UNIT 6.0 sq. m.
 MINIMUM DRIVEWAY WIDTH - EXTERIOR 6.7m
 MINIMUM DRIVEWAY / AISLE WIDTH - INTERIOR 6.0m
 LANDSCAPE AREA 30%

PROVIDED
 12 STOREY BUILDING HEIGHT 17.5m
 AMENITY / MECHANICAL PENTHOUSE HEIGHT 2.5m
 FRONT YARD SETBACK 3.0m
 CORNER YARD SETBACK 3.0m
 REAR YARD SETBACK 3.0m
 TOWER SEPARATION 1.0m
 AMENITY AREA - PER UNIT 6.0 sq. m.

DRAWING NOTES:

1. PROPERTY LINE
2. BUILDING SETBACK LINE
3. LINE OF 1.5m ROAD WIDENING ALLOWANCE - FROM FACE OF ROAD
4. CURBLINE OF TOWER
5. LINE OF FRONT LEVEL BALCONIES ABOVE
6. LINE OF TOWER BALCONIES ABOVE
7. LINE OF TERRACE/PAVING LEVEL
8. EXISTING 150mm DIA. WITH TRENCH DRAIN
9. EXISTING 150mm DIA. WITH TRENCH DRAIN
10. EXISTING 150mm DIA. WITH TRENCH DRAIN
11. EXISTING 150mm DIA. WITH TRENCH DRAIN
12. EXISTING 150mm DIA. WITH TRENCH DRAIN
13. EXISTING 150mm DIA. WITH TRENCH DRAIN
14. EXISTING 150mm DIA. WITH TRENCH DRAIN
15. EXISTING 150mm DIA. WITH TRENCH DRAIN
16. EXISTING 150mm DIA. WITH TRENCH DRAIN
17. EXISTING 150mm DIA. WITH TRENCH DRAIN
18. EXISTING 150mm DIA. WITH TRENCH DRAIN
19. EXISTING 150mm DIA. WITH TRENCH DRAIN
20. EXISTING 150mm DIA. WITH TRENCH DRAIN
21. EXISTING 150mm DIA. WITH TRENCH DRAIN
22. EXISTING 150mm DIA. WITH TRENCH DRAIN
23. EXISTING 150mm DIA. WITH TRENCH DRAIN
24. EXISTING 150mm DIA. WITH TRENCH DRAIN
25. EXISTING 150mm DIA. WITH TRENCH DRAIN
26. EXISTING 150mm DIA. WITH TRENCH DRAIN
27. EXISTING 150mm DIA. WITH TRENCH DRAIN
28. EXISTING 150mm DIA. WITH TRENCH DRAIN
29. EXISTING 150mm DIA. WITH TRENCH DRAIN
30. EXISTING 150mm DIA. WITH TRENCH DRAIN
31. EXISTING 150mm DIA. WITH TRENCH DRAIN
32. EXISTING 150mm DIA. WITH TRENCH DRAIN

CONTRACTOR
Homestead Land Holdings Ltd.
 80 Johnson Street
 Kingston, ON K7L 1X7
 Tel: (613) 546-3146
 Cell: (613) 329-0354
 E-Mail: JMangan@homestead.ca

PROJECT DEVELOPER
Homestead Land Holdings Ltd.
 80 Johnson Street
 Kingston, ON K7L 1X7
 Tel: (613) 546-3146
 Cell: (613) 329-0354
 E-Mail: JMangan@homestead.ca

URBAN PLANNER
Fotenn Consulting
 396 Cooper Street
 Suite 300
 Ottawa, ON K2P 2H7
 Tel: (613) 730-5709
 E-Mail: sutherland@fotenn.com

LEGAL DESCRIPTION
 TOPOGRAPHIC PLAN OF SURVEY OF
 PART OF LOT 20
 CONCESSION 2 (OTTAWA FRONT)
 GEOGRAPHIC TOWNSHIP OF NEPEAN AND
 PART OF LOTS 1 AND 2
 REGISTERED PLAN 482
 CITY OF OTTAWA
 Surveyed by Annis, O'Sullivan, Vollebakk Ltd.

PROPOSED - BUILDING "C"

BUILDING STATISTICS

GROSS BUILDING - AREA
 (CITY OF OTTAWA DEFINITION)
 PARKING LEVEL 0.0 sq. m.
 444.1 sq. m.
 4,790 sq. ft.
 GROUND FLOOR 640.0 sq. m.
 6,889 sq. ft.
 2nd FLOOR 885.5 sq. m.
 9,510 sq. ft.
 3rd FLOOR 18 x 791.26 sq. m. 14,242.6 sq. m.
 18 x 8,517 sq. ft. 153,306 sq. ft.
 2nd - 24th FLOOR 3 x 791.26 sq. m. 2,373.8 sq. m.
 3 x 8,517 sq. ft. 25,551 sq. ft.
 AMENITY / MECHANICAL PENTHOUSE 0.0 sq. m.
 0.00 sq. ft.
 TOTAL AREA 18,584.0 sq. m.
 200,036 sq. ft.

UNIT STATISTICS

STUDIO UNIT	0
1 BEDROOM UNIT	71
1 BEDROOM + DEN UNIT	24
2 BEDROOM UNIT	138
2 BEDROOM + DEN UNIT	1
TOTAL	234

CAR PARKING

REQUIRED BY ZONING BY-LAW

RESIDENCE - 0.5 PER UNIT (234 UNITS) (AFTER 12 UNITS)	117
VISITOR - 0.2 PER DWELLING UNIT (AFTER 12 UNITS)	44
TOTAL	156

PROVIDED

RESIDENCE - 0.6 PER UNIT	222
VISITOR - 0.2 PER DWELLING UNIT (AFTER 12 UNITS)	44
TOTAL	266

BICYCLE PARKING

REQUIRED

RESIDENCE - 0.5 PER UNIT (234 UNITS)	117
--------------------------------------	-----

PROVIDED

EXTERIOR	5
UNDERGROUND PARKING LEVEL	141
TOTAL	146

AMENITY SPACE

EXTERIOR COMMUNAL AT GRADE =	850.0 sq. m.
GROUND FLOOR COMMUNAL INTERIOR =	318.0 sq. m.
2nd FLOOR COMMUNAL INTERIOR =	496.0 sq. m.
25th FLOOR COMMUNAL EXTERIOR PATIO =	350.0 sq. m.
25th FLOOR COMMUNAL INTERIOR =	215.0 sq. m.
PRIVATE BALCONIES =	1,600.0 sq. m.
TOTAL =	3,829.0 sq. m.
TOTAL COMMUNAL =	2,229.0 sq. m.
REQUIRED - 6.0M ² PER UNIT (234) =	1,404.0 sq. m.
REQUIRED COMMUNAL @ 50% =	702.0 sq. m.

REFUSE REQUIREMENT (234 UNITS)

GARBAGE - 0.11 PER UNIT	26 YARDS
RECYCLING GMP - 0.018 PER UNIT	5 YARDS
RECYCLING FIBER - 0.038 PER UNIT	9 YARDS
COMPOST - 240L PER 50 UNITS	5

REVISIONS:

No.	DESCRIPTION	DATE	BY
1	ISSUED FOR CONSULTANT REVIEW	2021-12-08	
2	ISSUED FOR ZONING APPLICATION	2021-05-26	

CLIENT:
HOMESTEAD
 Homestead Land Holdings Ltd.
 80 Johnson Street, Kingston

ARCHITECT:
rla/architecture
 roderick lahey architect inc.
 56 beech street, ottawa, ontario K1S 3J6
 t: 613.724.9932 f: 613.724.1209 Aaarchitectre.ca

PROJECT TITLE:
1300 McWatters Road

OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN FULL SITE

DRAWN: R.V.
CHECKED: JS

SCALE: 1:400

SHEET No.: SP-1

PROJECT No.: 1706

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

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

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

DO NOT SCALE DRAWINGS.

COPYRIGHT RESERVED.

NOTATION SYMBOLS:

- INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON ADDO SERIES.
- INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON ADDO SERIES.
- DETAIL NUMBER
- TITLE
- SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

- REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON ADDO SERIES.
- ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.
- ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.
- ALL EXTERIOR WALLS ARE TO BE TYPE "W1" UNLESS NOTED OTHERWISE.
- ALL INTERIOR PARTITIONS ARE TO BE TYPE "P1" UNLESS NOTED OTHERWISE.

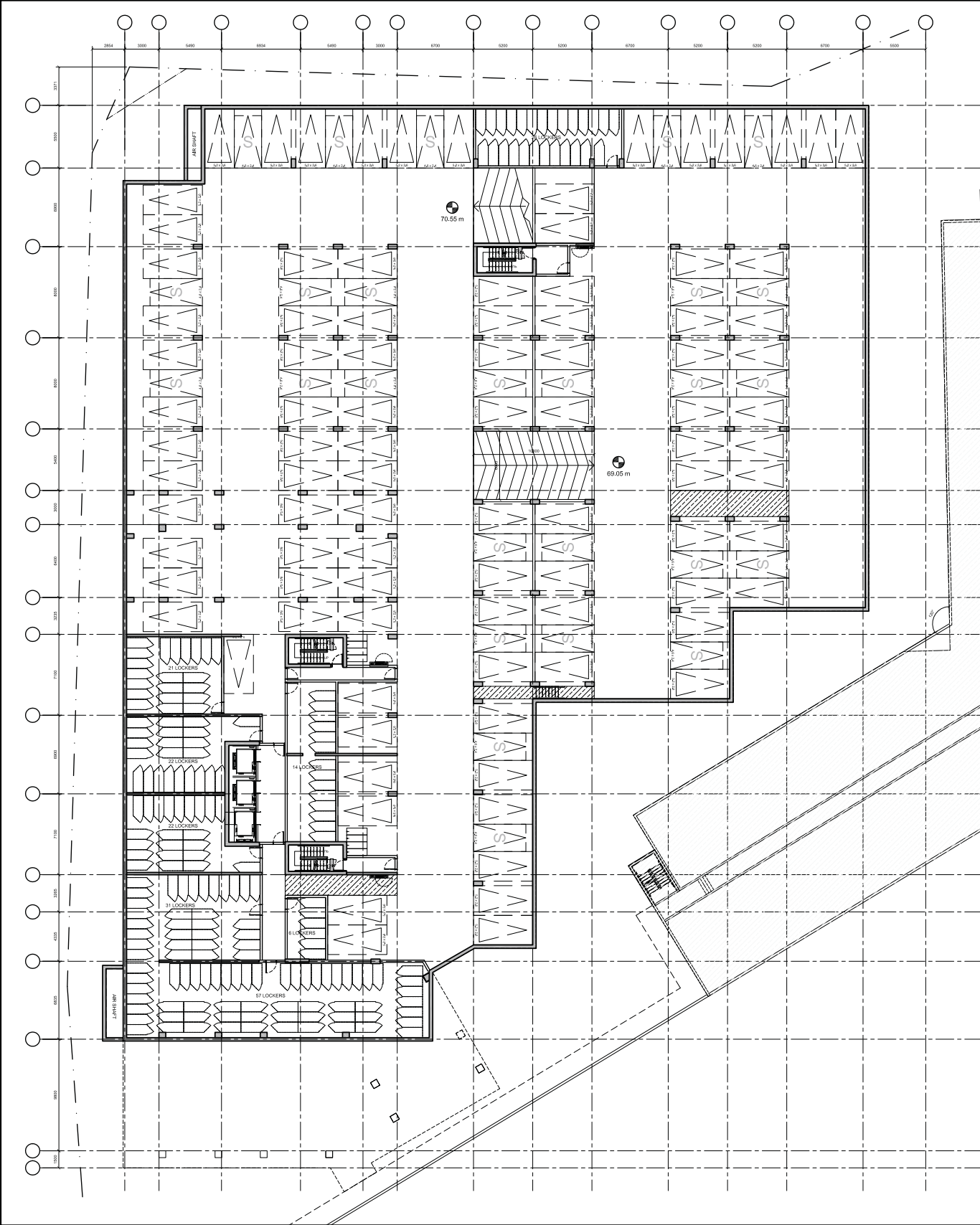
IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.
 ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.
 THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.
 DO NOT SCALE DRAWINGS.
 COPYRIGHT RESERVED.

NOTATION SYMBOLS:

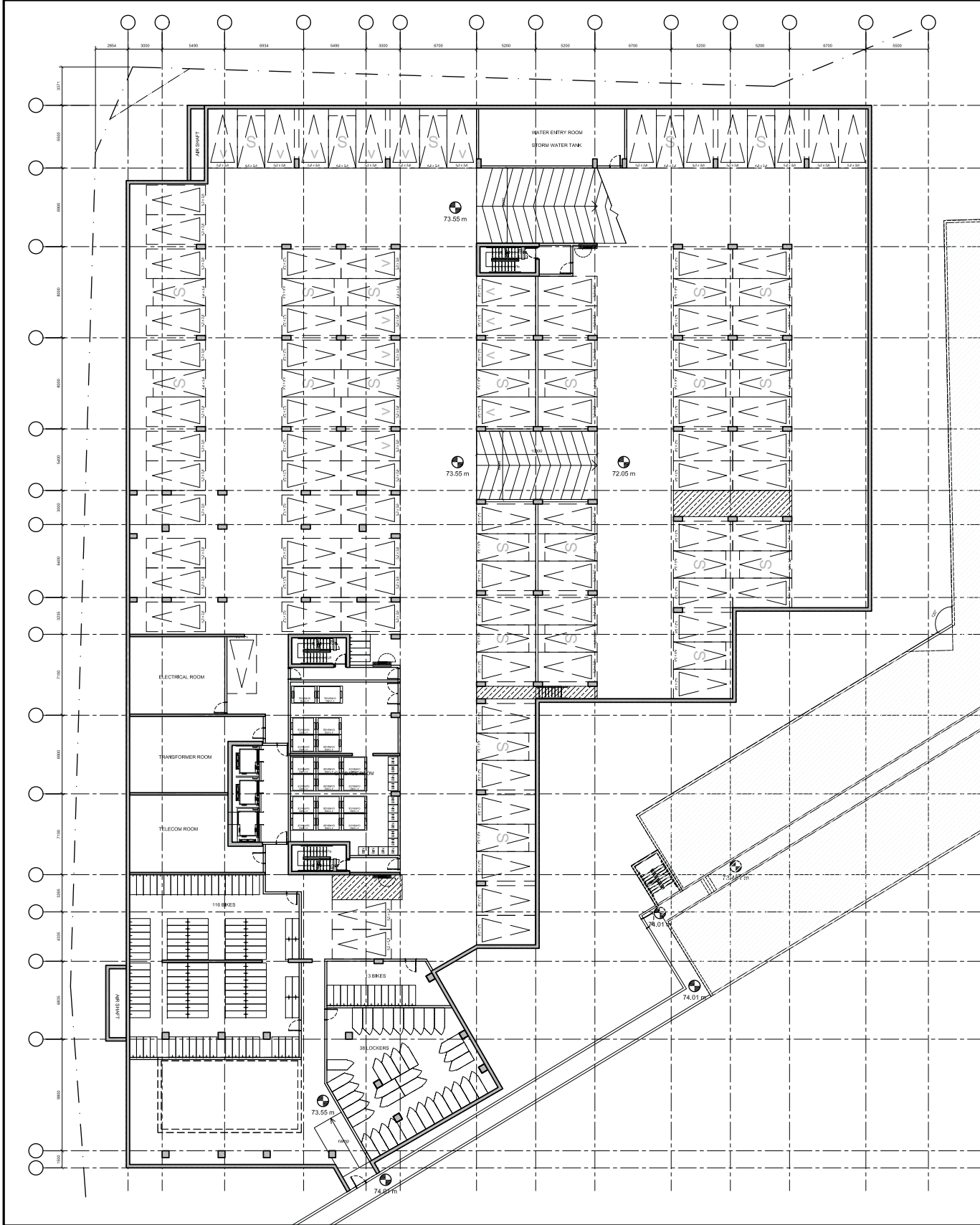
- (01) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (02) INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLY SCHEDULE.
- (03) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A300 SERIES.
- (04) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A300 SERIES.
- (05) -DETAIL NUMBER
- (06) TITLE
- (07) SCET
- (08) -DETAIL REFERENCE PAGE
- (09) -DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

- (A) REFER TO TYPICAL ASSEMBLY SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- (B) FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A300 SERIES.
- (C) ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.
- (D) ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.
- (E) ALL EXTERIOR WALLS ARE TO BE TYPE 'W1' UNLESS NOTED OTHERWISE.
- (F) ALL INTERIOR PARTITIONS ARE TO BE TYPE 'P1' UNLESS NOTED OTHERWISE.



P2 FLOOR PLAN



P1 FLOOR PLAN

ISSUED FOR SITE PLAN CONTROL 2021-12-09

No. DESCRIPTION DATE (MM/YY)

REVISIONS:

ARCHITECT SEAL:

NORTH ARROW:

SEAL DATE/STAMP DATE

HOMESTEAD

Homestead Land Holdings Ltd.
80 Johnson Street, Kingston

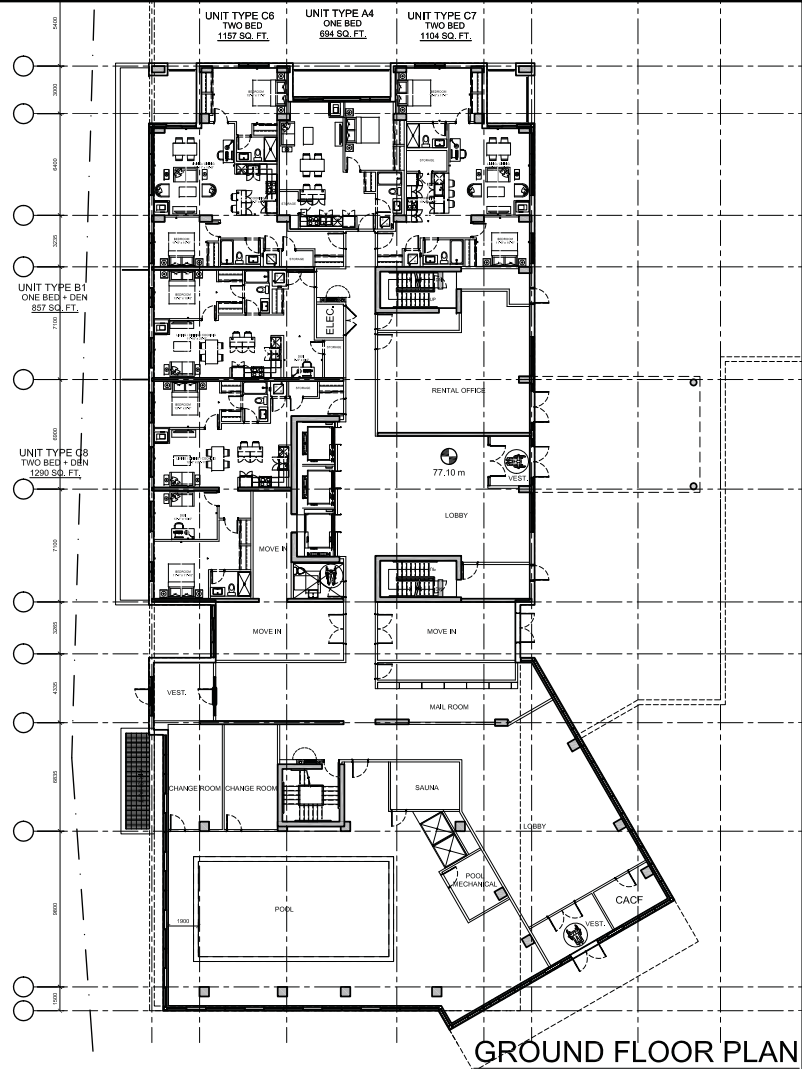
ARCHITECT:

 roderick lahey architect inc.
 50 beech street, ottawa, ontario K1S 3J6
 613.724.9932 f. 613.724.1209 aarchitecture.ca

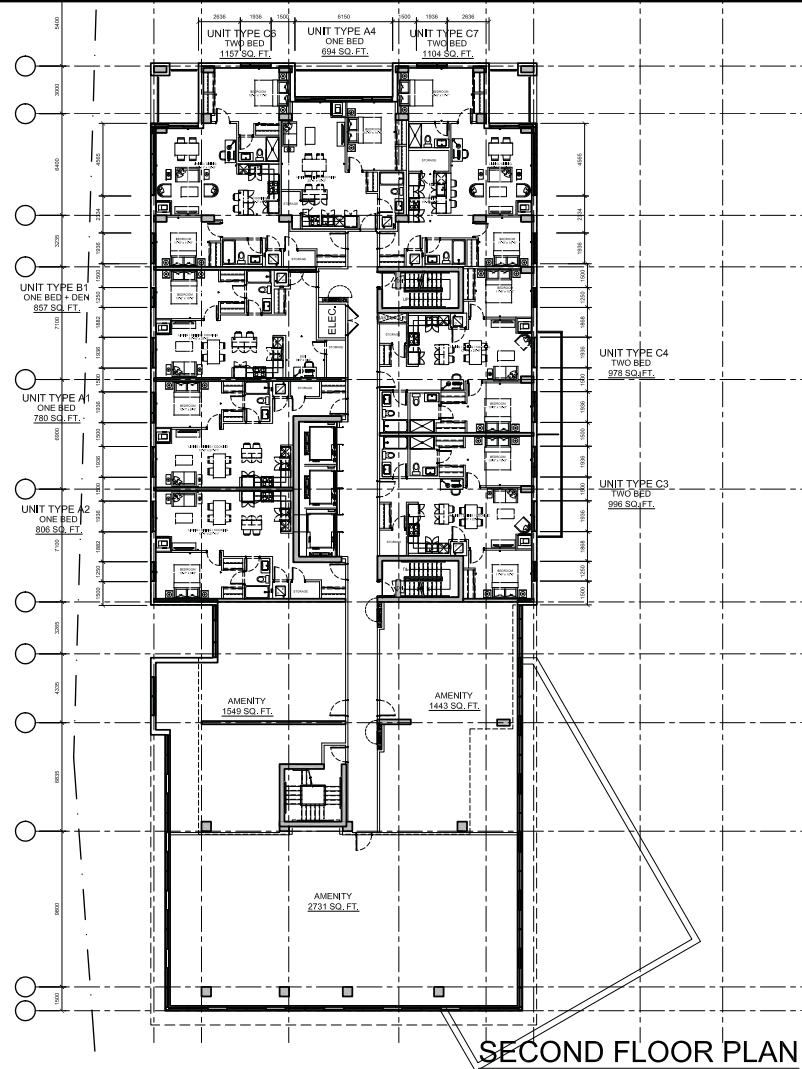
PROJECT TITLE:
1300 McWatters Road
 OTTAWA ONTARIO

SHEET TITLE:
FLOOR PLANS

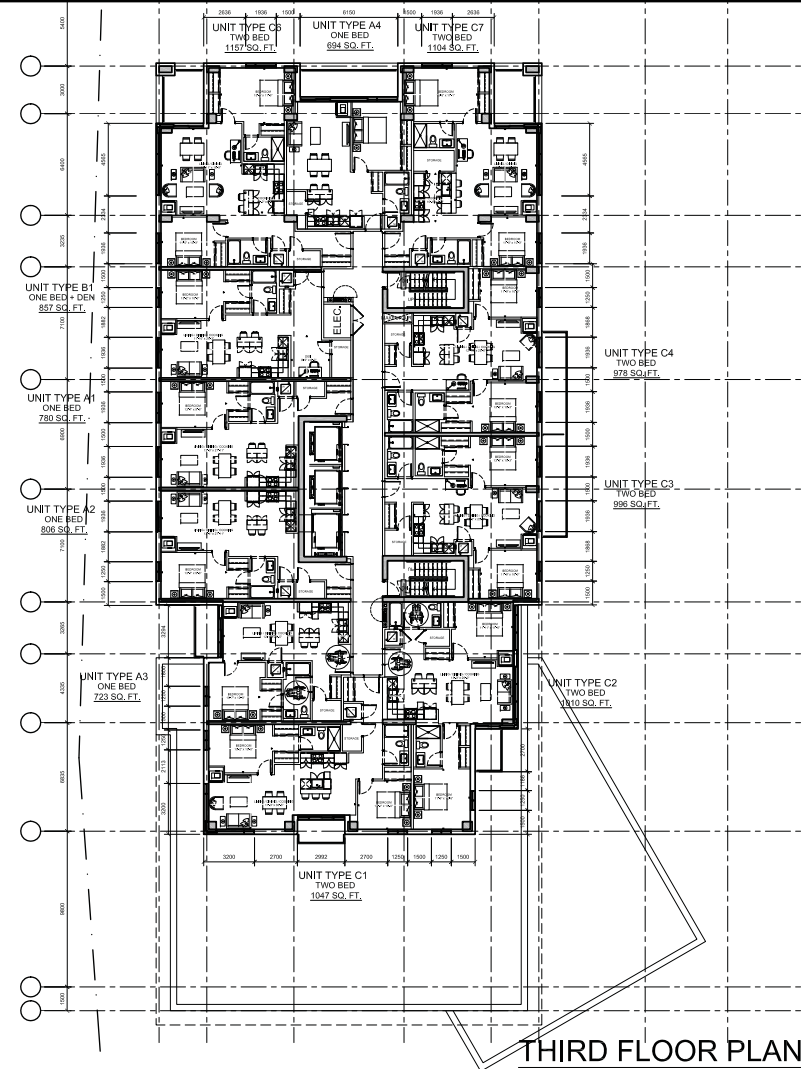
DRAWN: J.S.	CHECKED: RLA
SCALE: 1:200	SHEET No.:
PROJECT No.:	A001
1706	



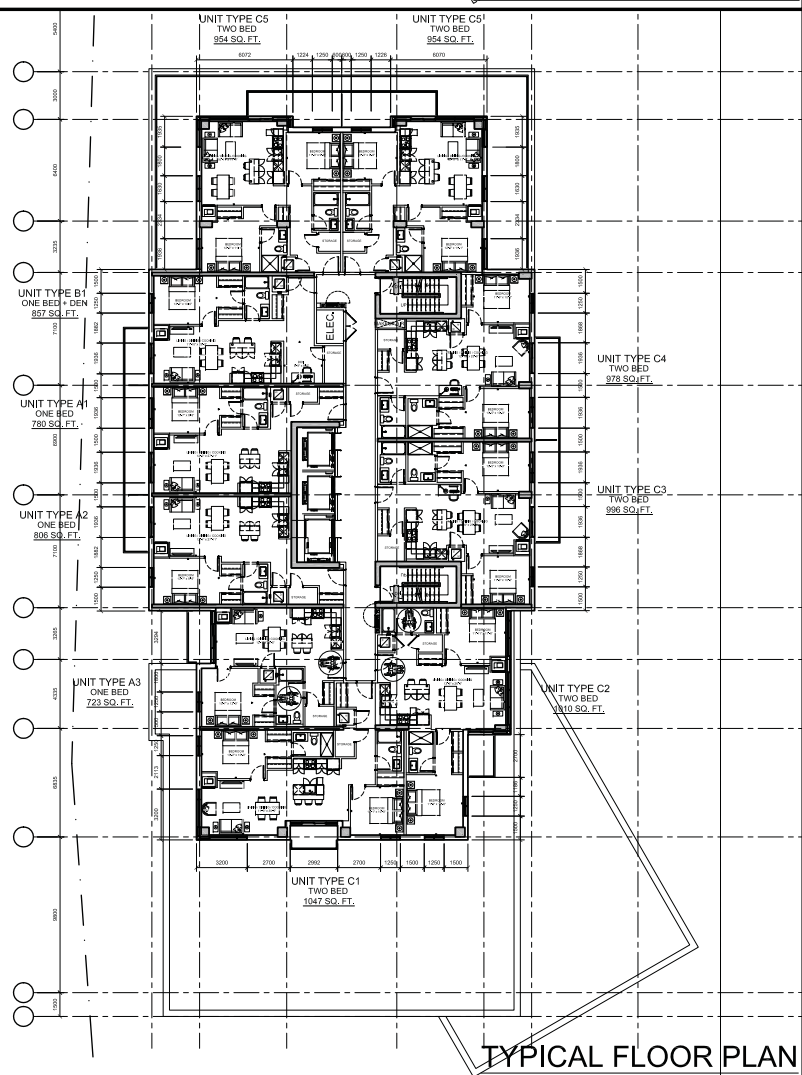
GROUND FLOOR PLAN



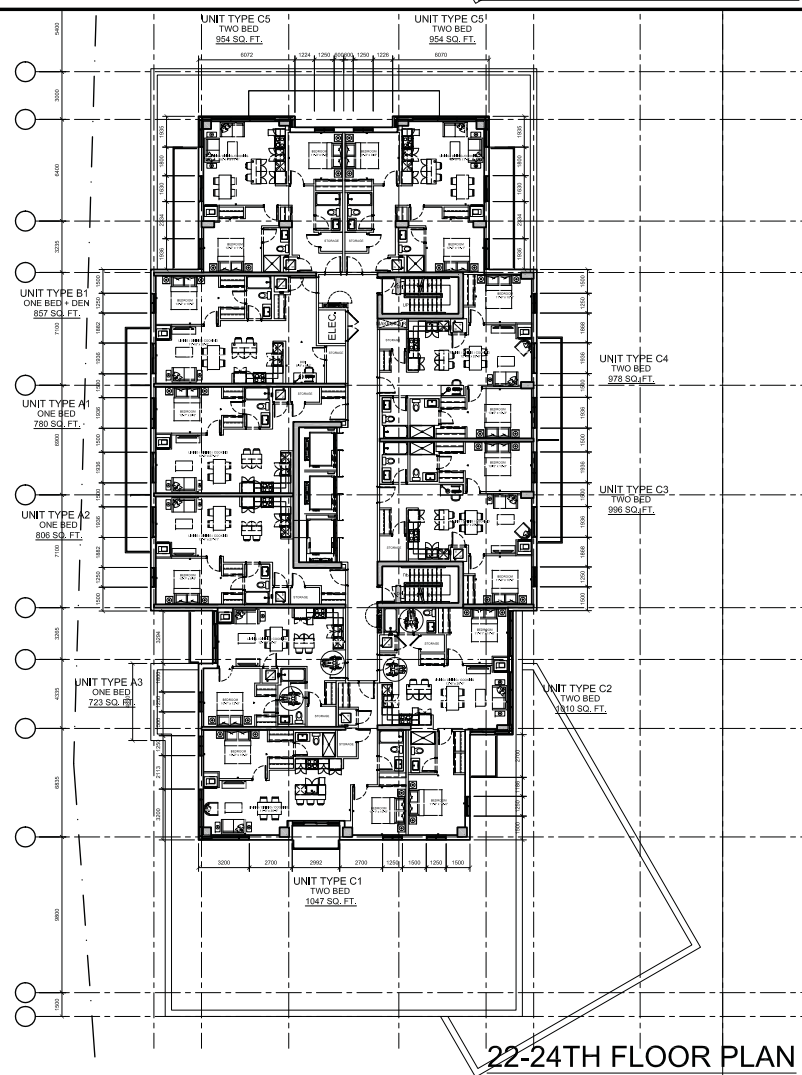
SECOND FLOOR PLAN



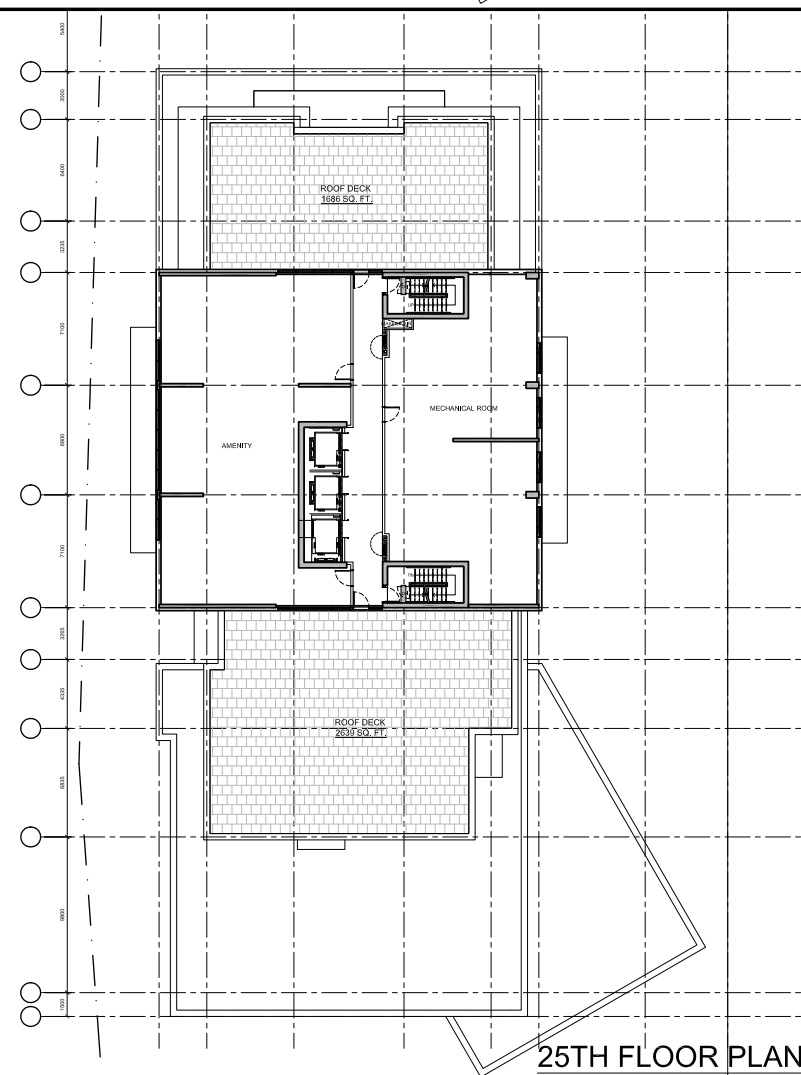
THIRD FLOOR PLAN



TYPICAL FLOOR PLAN



22-24TH FLOOR PLAN



25TH FLOOR PLAN

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.
ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.
THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.
DO NOT SCALE DRAWINGS.
COPYRIGHT RESERVED.

NOTATION SYMBOLS:

- (N) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- (A) INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.
- (W) INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A300 SERIES.
- (D) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A300 SERIES.
- (#) INDICATES DETAIL NUMBER.
- (R) TITLE
- (S) DETAIL REFERENCE PAGE
- (C) DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

- (A) REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- (B) FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A300 SERIES.
- (C) ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.
- (D) ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.
- (E) ALL EXTERIOR WALLS ARE TO BE TYPE "W1" UNLESS NOTED OTHERWISE.
- (F) ALL INTERIOR PARTITIONS ARE TO BE TYPE "P1" UNLESS NOTED OTHERWISE.

ISSUED FOR SITE PLAN CONTROL. 2021-12-09

REVISIONS:

ARCHITECT SEAL:

CLIENT: **HOMESTEAD**

ARCHITECT: **rla/architecture**

PROJECT TITLE: **1300 McWatters Road**

OTTAWA ONTARIO

SHEET TITLE: **FLOOR PLANS**

DRAWN: J.S. CHECKED: RLA

SCALE: 1:200 SHEET No. **A002**

PROJECT No. 1706

APPENDIX D
Traffic Data, STAMSON Calculations and Adjustment
(16 Pages)

Table D1 - Summary of Traffic Data and Projections

	Greenbank Road	Baseline Road	Notes
AADT - Ultimate	35000	35000	Table B1, City of Ottawa Environmental Noise Control Guidelines
Day Split	92%	92%	92 / 8 %, City of Ottawa Environmental Noise Control Guidelines
Cars	30800	30800	88%, City of Ottawa Environmental Noise Control Guidelines
Medium Trucks	2450	2450	7%, City of Ottawa Environmental Noise Control Guidelines
Heavy Trucks	1750	1750	5%, City of Ottawa Environmental Noise Control Guidelines

Filename: gb_n72.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on the North Façade Windows, ON-North

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

```
-----
Car traffic volume   : 28336/2464   veh/TimePeriod   *
Medium truck volume : 2254/196    veh/TimePeriod   *
Heavy truck volume  : 1610/140    veh/TimePeriod   *
Posted speed limit  :    60 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): 35000
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: GreenbankRd (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 : 31.00 / 31.00 m
Receiver height  : 72.50 / 72.50 m
Topography      : 1 (Flat/gentle slope; no barrier)
Reference angle  : 0.00
```

Results segment # 1: GreenbankRd (day)

Source height = 1.50 m

ROAD (0.00 + 67.51 + 0.00) = 67.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

```
-----
---
0      90      0.00  73.68  0.00  -3.15  -3.01  0.00  0.00  0.00
67.51
-----
---
```

Segment Leq : 67.51 dBA

Total Leq All Segments: 67.51 dBA

Results segment # 1: GreenbankRd (night)

Source height = 1.50 m

ROAD (0.00 + 59.92 + 0.00) = 59.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

 0 90 0.00 66.08 0.00 -3.15 -3.01 0.00 0.00 0.00
59.92

Segment Leq : 59.92 dBA

Total Leq All Segments: 59.92 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.51
 (NIGHT): 59.92

Filename: gb_w72.te Time Period: Day/Night 16/8 hours
Description: Traffic Noise Impact on the West Façade Windows, ON-West

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: GreenbankRd (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 : 27.00 / 27.00 m
Receiver height : 72.50 / 72.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: GreenbankRd (day)

Source height = 1.50 m

ROAD (0.00 + 71.12 + 0.00) = 71.12 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.00 73.68 0.00 -2.55 0.00 0.00 0.00 0.00
71.12

Segment Leq : 71.12 dBA

Total Leq All Segments: 71.12 dBA

Results segment # 1: GreenbankRd (night)

Source height = 1.50 m

ROAD (0.00 + 63.53 + 0.00) = 63.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 90 0.00 66.08 0.00 -2.55 0.00 0.00 0.00 0.00
63.53

Segment Leq : 63.53 dBA

Total Leq All Segments: 63.53 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.12
 (NIGHT): 63.53

Filename: gb_s72.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on the South Façade Windows, ON-South

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

```
-----
Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: GreenbankRd (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 : 33.00 / 33.00 m
Receiver height : 72.50 / 72.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: GreenbankRd (day)

Source height = 1.50 m

ROAD (0.00 + 67.24 + 0.00) = 67.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

```
-----
---
-90        0    0.00   73.68    0.00   -3.42   -3.01    0.00    0.00    0.00
67.24
-----
---
```

Segment Leq : 67.24 dBA

Total Leq All Segments: 67.24 dBA

Results segment # 1: GreenbankRd (night)

Source height = 1.50 m

ROAD (0.00 + 59.64 + 0.00) = 59.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 0 0.00 66.08 0.00 -3.42 -3.01 0.00 0.00 0.00
59.64

Segment Leq : 59.64 dBA

Total Leq All Segments: 59.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.24
 (NIGHT): 59.64

Filename: base_s.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on the South Façade Windows, ON-South

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

```
-----
Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: BaselineRd (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 : 185.00 / 185.00 m
Receiver height : 72.50 / 72.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: BaselineRd (day)

Source height = 1.50 m

ROAD (0.00 + 62.77 + 0.00) = 62.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

```
-----
---
-90      90      0.00    73.68    0.00   -10.91    0.00    0.00    0.00    0.00
62.77
-----
---
```

Segment Leq : 62.77 dBA

Total Leq All Segments: 62.77 dBA

Results segment # 1: BaselineRd (night)

Source height = 1.50 m

ROAD (0.00 + 55.17 + 0.00) = 55.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90	90	0.00	66.08	0.00	-10.91	0.00	0.00	0.00	0.00
-----	----	------	-------	------	--------	------	------	------	------

55.17

Segment Leq : 55.17 dBA

Total Leq All Segments: 55.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.77
(NIGHT): 55.17

Filename: gb_olal.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on OLA, ON-OLAl

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

```
-----
Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: GreenbankRd (day/night)

```
-----
Angle1 Angle2 : -55.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 32.00 / 32.00 m
Receiver height : 75.50 / 75.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -55.00 deg Angle2 : 90.00 deg
Barrier height : 1.20 m
Barrier receiver distance : 2.00 / 2.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 74.00 m
Reference angle : 0.00
```

Results segment # 1: GreenbankRd (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 ! 75.50 ! -3.13 ! 70.87
```

ROAD (0.00 + 55.01 + 0.00) = 55.01 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-55      90      0.00  73.68   0.00  -3.29  -0.94   0.00   0.00  -14.44
55.01
-----
---
```

Segment Leq : 55.01 dBA

Total Leq All Segments: 55.01 dBA

Results segment # 1: GreenbankRd (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	75.50	-3.13	70.87

ROAD (0.00 + 47.41 + 0.00) = 47.41 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-55      90      0.00  66.08   0.00  -3.29  -0.94   0.00   0.00  -14.44
47.41
-----
---
```

Segment Leq : 47.41 dBA

Total Leq All Segments: 47.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.01
 (NIGHT): 47.41

Filename: gb_ola2.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on OLA, ON-OLA2

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

```
-----
Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: GreenbankRd (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 65.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 33.50 / 33.50 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 65.00 deg
Barrier height : 1.20 m
Barrier receiver distance : 1.50 / 1.50 m
Source elevation : 0.00 m
Receiver elevation : 74.00 m
Barrier elevation : 74.00 m
Reference angle : 0.00
```

Results segment # 1: GreenbankRd (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 ! -1.81 ! 72.19
```

ROAD (0.00 + 53.45 + 0.00) = 53.45 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90      65    0.59  73.68    0.00  -5.54  -1.66    0.00    0.00  -13.02
53.45
-----
---
```

Segment Leq : 53.45 dBA

Total Leq All Segments: 53.45 dBA

Results segment # 1: GreenbankRd (night)

Source height = 1.50 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !          1.50 !          -1.81 !          72.19
```

ROAD (0.00 + 45.85 + 0.00) = 45.85 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90      65    0.59  66.08    0.00  -5.54  -1.66    0.00    0.00  -13.02
45.85
-----
---
```

Segment Leq : 45.85 dBA

Total Leq All Segments: 45.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.45
 (NIGHT): 45.85

Filename: base_ol2.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on OLA, ON-OLA2

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

```
-----
Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: BaselineRd (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 : 189.00 / 189.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 1.20 m
Barrier receiver distance : 1.50 / 3.00 m
Source elevation : 0.00 m
Receiver elevation : 74.00 m
Barrier elevation : 74.00 m
Reference angle : 0.00
```

Results segment # 1: BaselineRd (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 ! 0.91 ! 74.91
```

ROAD (0.00 + 49.14 + 0.00) = 49.14 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90      90      0.59  73.68   0.00 -17.48  -1.33   0.00   0.00  -5.73
49.14
-----
---
```

Segment Leq : 49.14 dBA

Total Leq All Segments: 49.14 dBA

Results segment # 1: BaselineRd (night)

Source height = 1.50 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !          1.50 !          0.33 !          74.33
```

ROAD (0.00 + 39.61 + 0.00) = 39.61 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90      90      0.59  66.08   0.00 -17.48  -1.33   0.00   0.00  -7.66
39.61
-----
---
```

Segment Leq : 39.61 dBA

Total Leq All Segments: 39.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.14
 (NIGHT): 39.61

Predicted Sound Level Adjustment at Selected Receptor Locations

Living Room, 11'3" x 30'-5", Southwest Corner, South Side, 24th Floor

	Daytime, 7 am – 11 pm	Nighttime, 11 pm – 7 am
Greenbank Road	67.3	59.6
Baseline Road	62.8	55.2
Combined Sound Levels	68.6	61.0

Bedroom, 11'1" x 10'-0", South Facade, South Side, All Floors

	Daytime, 7 am – 11 pm	Nighttime, 11 pm – 7 am
Greenbank Road	67.3	59.6
Greenbank Road – Distance Adjustment	-1.3	-1.3
Baseline Road	62.8	55.2
Combined Sound Levels	67.7	60.1

ON-OLA2, OLA on 25th Floor, South of Penthouse Floor

	Daytime, 7 am – 11 pm	Nighttime, 11 pm – 7 am
Greenbank Road	53.5	-
Baseline Road	49.1	-
Combined Sound Levels	54.8	-

APPENDIX E
Detailed Noise Control Calculations
(9 Pages)

Table E1: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Bedroom, 13'2" x 10'-0"
 Room Location West Façade, 24th Floor
 Room Type Bedroom
 Floor Area, m2 12.2

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	71	64	70	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	40	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	35	35	35	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-10	-5	-10	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	61	59	60	Used in Determining AIF
(Window, Wall) Area, m2	2.4	2.4	6.6	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	20%	20%	54%	
Number of Components	3	3	3	1 Window, 2 Walls
Acoustic Insulation Factor (AIF)	33	31	32	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	32	30	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	3-20-3	3-20-3	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

Table E2: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 11'10" x 26'-3"
 Room Location West Façade, 24th Floor
 Room Type Living
 Floor Area, m2 28.9

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	71	64	70	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	66	59	65	Used in Determining AIF
(Window, Wall) Area, m2	3.8	3.8	6.7	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	13%	13%	23%	
Number of Components	2	2	2	1 Window, 1 Wall
Acoustic Insulation Factor (AIF)	31	24	30	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	28	21	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	OBC	OBC	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

Table E3: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Bedroom, 11'3" x 9'-8"
 Room Location North Façade, 24th Floor
 Room Type Bedroom
 Floor Area, m2 10.1

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	68	60	66	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	40	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	35	35	35	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-10	-5	-10	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	58	55	56	Used in Determining AIF
(Window, Wall) Area, m2	2.4	2.4	8.1	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	24%	24%	80%	
Number of Components	2	2	2	1 Window, 1 Wall
Acoustic Insulation Factor (AIF)	28	25	26	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	28	25	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	OBC	OBC	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	-	-	Central AC Required
Warning Clause	Type D	-	-	

Table E4: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 16'11" x 17'-4"
 Room Location Northwest Corner, West Side, 24th Floor
 Room Type Living Room
 Floor Area, m2 27.2

	Windows - Day	Windows - Night	Notes
Predicted Outdoor Sound Level, dBA	71	64	GB_W72.te
Calculation Adjustment, dBA	-0.5	-0.5	Distance to Road + 3 m
Indoor Room Level, dBA	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	66	58	Used in Determining AIF
(Window, Wall) Area, m2	14.0	14.0	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	52%	52%	
Number of Components	2	2	All Windows
Acoustic Insulation Factor (AIF)	31	24	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	34	27	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	3-32-3	-	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	Central AC Required
Warning Clause	Type D	Type D	

Table E5: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 16'11" x 17'-4"
 Room Location Northwest Corner, North Side, 24th Floor
 Room Type Living Room
 Floor Area, m2 27.2

	Windows - Day	Windows - Night	Notes
Predicted Outdoor Sound Level, dBA	68	60	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	
Indoor Room Level, dBA	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	63	55	Used in Determining AIF
(Window, Wall) Area, m2	11.2	11.2	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	41%	41%	
Number of Components	2	2	All Windows
Acoustic Insulation Factor (AIF)	28	20	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	30	22	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	OBC	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	-	Central AC Required
Warning Clause	Type D	-	

Table E6: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 17'11" x 16'-9"
 Room Location Northwest Corner, West Side, Floors 1-3
 Room Type Living Room
 Floor Area, m2 27.9

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	71	64	70	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	66	59	65	Used in Determining AIF
(Window, Wall) Area, m2	9.0	9.0	7.5	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	32%	32%	27%	
Number of Components	3	3	3	Window, 2 x Walls
Acoustic Insulation Factor (AIF)	33	26	32	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	34	27	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	3-32-3	-	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

Table E7: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 11'3" x 30'-5"
 Room Location Southwest Corner, West Side, 24th Floor
 Room Type Living Room
 Floor Area, m2 31.8

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	71	64	70	GB_W72.te
Calculation Adjustment, dBA	-0.5	-0.5	-0.5	
Indoor Room Level, dBA	45	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	66	58	65	Used in Determining AIF
(Window, Wall) Area, m2	9.2	9.2	12.7	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	29%	29%	40%	
Number of Components	4	4	4	Window/Wall on Each Side
Acoustic Insulation Factor (AIF)	34	26	32	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	35	27	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	3-40-3	-	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

Table E8: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Living Room, 11'3" x 30'-5"
 Room Location Southwest Corner, South Side, 24th Floor
 Room Type Living Room
 Floor Area, m2 31.8

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	69	61	67	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	45	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	40	40	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-5	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	64	56	62	Used in Determining AIF
(Window, Wall) Area, m2	13.0	13.0	17.0	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	41%	41%	53%	
Number of Components	4	4	4	Window/Wall on Each Side
Acoustic Insulation Factor (AIF)	32	24	30	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	34	26	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	3-32-3	-	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

Table E9: Predicted Noise Levels and Control Measures

Room/Facade Reference Number Bedroom, 11'1" x 10'-0"
 Room Location South Facade, South Side, All Floors
 Room Type Bedroom
 Floor Area, m2 10.3

	Windows - Day	Windows - Night	Wall, 24-hour	Notes
Predicted Outdoor Sound Level, dBA	68	60	66	GB_W72.te
Calculation Adjustment, dBA	0.0	0.0	0.0	
Indoor Room Level, dBA	45	40	45	NPC-300 Table C-9, Road Traffic [1]
CMHC Room Target, dBA	35	35	40	CMHC Table 1, 24-Hour Criteria [2]
Criteria Adjustment, dBA	-10	-5	-5	CMHC-MOE
Adjusted Outdoor Sound Level, dBA	58	55	61	Used in Determining AIF
(Window, Wall) Area, m2	2.5	2.5	8.0	Based on Floor Plans
(Window, Wall)/Floor Ratio, %	24%	24%	78%	
Number of Components	2	2	2	Window/Wall on Each Side
Acoustic Insulation Factor (AIF)	28	25	31	CMHC: Table 6.1
Approximate Sound Transmission Class (STC)	28	25	-	CMHC: Tables D2, 6.3
Sample Window/Door Configuration	OBC	OBC	OBC	The Worst Case Requirement Is Displayed
Air Conditioning	Central AC	Central AC	-	Central AC Required
Warning Clause	Type D	Type D	-	

APPENDIX F
Warning Clauses
(1 Page)

Warning Clause Type D – From MECP NPC-300

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

Note:

As stated in Section 1.2 of this report, ventilation methods other than central air conditioning are acceptable for high and medium density residential developments, subject to the conditions outlined in this report.

Warning Clause from ENCG:

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- high sound transmission class walls.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

This dwelling unit has been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment.

APPENDIX G
Manufacturer Sound Data and Calculations
(4 Pages)

Cooling Tower PWL Calculations - LU5_CT, EX_CT2 (Top)

	31.5	63	125	250	500	1000	2000	4000	8000	dBA	Note
Air Inlet Measured SPL, dB		79	75	76	76	76	74	72	67		Provided by Manufacturer
Surface Area, m2		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		Based on AutoCAD Drawing
CT_Air - Sound Power Level, dB		87	83	84	84	84	82	80	75	89	
Back Side Measured SPL, dB		73	71	69	66	67	65	59	59		Provided by Manufacturer
Surface Area, m2		14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7		Based on AutoCAD Drawing
CT_Back - Sound Power Level, dB		85	83	81	78	79	77	71	71	83	
End Side Measured SPL, dB		77	71	68	68	68	63	59	55		Provided by Manufacturer
Surface Area, m2		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5		Based on AutoCAD Drawing
CT_End - Sound Power Level, dB		87	81	78	78	78	73	69	65	81	
Motor Side Measured SPL, dB		77	72	71	69	69	66	62	58		Provided by Manufacturer
Surface Area, m2		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5		Based on AutoCAD Drawing
CT_Motor - Sound Power Level, dB		87	82	81	79	79	76	72	68	83	
Top Side Measured SPL, dB		78	78	77	78	77	74	70	68		Provided by Manufacturer
Surface Area, m2		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3		Based on AutoCAD Drawing
CT_Top - Sound Power Level, dB		86	86	85	86	85	82	78	76	89	



Baltimore Aircoil Company
Closed Circuit Product Selection Report

Version:
 Product data correct as of:

7.8.2 NA
 April 23, 2021

Project Name:
 Selection Name:
 Project State/Province: Maryland
 Project Country: United States
 Date: May 02, 2021

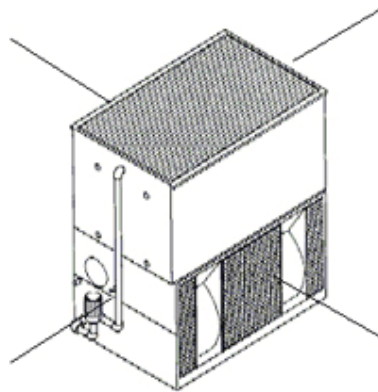
Model Information

Product Line: VF1 Fan Type: Standard Fan
 Model: VF1-096-31Q Fan Motor: (1) 50.00 = 50.00 HP/Unit
 Number of Units: 1 Total Standard Fan Power: Full Speed, 50.00 BHP/Unit
 Wet Coil Type: Standard Coil Total Pump Motor Power: (1) 3.00 = 3.00 HP/Unit
 Coil Finning: None
 Intake Option: None
 Internal or Const. Option: None
 Discharge Option: PCD w/ Tapered Discharge Hood
 External Static Pressure: 0 in. of H2O

Octave band and A-weighted sound pressure levels (Lp) are expressed in decibels (dB) reference 0.0002 microbar. Sound power levels (Lw) are expressed in decibels (dB) reference one picowatt. Octave band 1 has a center frequency of 63 Hertz.

Top Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	78	62
2	78	63
3	77	61
4	78	62
5	77	61
6	74	58
7	70	54
8	68	51
A-wgtd	81	65

Back Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	73	60
2	71	60
3	69	55
4	66	55
5	67	53
6	65	49
7	59	44
8	59	39
A-wgtd	72	58



End Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	77	65
2	71	61
3	68	56
4	68	56
5	68	54
6	63	50
7	59	46
8	55	41
A-wgtd	72	59

Connection End Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	77	65
2	72	61
3	71	56
4	69	56
5	69	54
6	66	50
7	62	46
8	58	41
A-wgtd	73	59

Sound Power (dB)		
Octave Band	Center Frequency (Hertz)	Lw
1	63	95
2	125	95
3	250	93
4	500	94
5	1000	93
6	2000	90
7	4000	86
8	8000	83
A-wgtd		97

Air Inlet Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	79	66
2	75	65
3	76	63
4	76	62
5	76	60
6	74	57
7	72	54
8	67	49
A-wgtd	81	65

Cooling Tower - CT

Note: The use of frequency inverters (variable frequency drives) can increase sound levels.
Extra Notes: Sound data provided by CTI ATC-128 sound test code revision 2019



Sound Data

C150N6

QSJ8.9G 60Hz

Sound Pressure Level @ 7 meters, dB(A)

See notes 1-6 listed below

Configuration	Exhaust System	Position (Note 1)								8 Position Average
		1	2	3	4	5	6	7	8	
Standard – Unhoused	Infinite Exhaust	79.5	82.2	82.6	83.9	79.3	82.6	82.5	81.7	82.0
F216-2 Weather Protective Aluminium	Mounted	82.0	80.6	76.2	81.0	79.2	85.4	79.4	82.8	81.6
F231-2 Sound Attenuated Level 1, Aluminium	Mounted	81.1	76.3	71.9	72.8	72.2	73.0	71.5	76.1	75.7
F217-2 Sound Attenuated Level 2, Aluminium	Mounted	72.8	72.5	69.3	71.5	70.9	71.3	69.4	71.8	71.3

Sound Power Level, dB(A)

See notes 2-4, 7 and 8 listed below

GEN @ 7m

Configuration	Exhaust System	Octave Band Center Frequency (Hz)										Overall Sound Power Level
		31.5	63	125	250	500	1000	2000	4000	8000	16000	
Standard – Unhoused	Infinite Exhaust	59.0	73.8	86.0	94.7	103.0	103.9	104.3	103.0	100.1	89.5	110.2
F216-2 Weather Protective Aluminium	Mounted	63.2	83.3	92.1	99.5	103.7	103.7	104.0	103.9	96.5	81.9	110.5
F231-2 Sound Attenuated Level 1, Aluminium	Mounted	62.2	77.2	87.2	92.4	96.2	97.0	96.5	94.3	96.7	80.0	103.7
F217-2 Sound Attenuated Level 2, Aluminium	Mounted	62.6	76.4	86.3	90.2	93.1	92.1	90.6	88.8	89.2	75.3	99.0

Exhaust Sound Power Level, dB(A)

See notes 2 & 9 listed below

Open Exhaust (No Muffler) @ Rated Load	Octave Band Center Frequency (Hz)										Overall Sound Power Level
	31.5	63	125	250	500	1000	2000	4000	8000	16000	
	56.0	89.6	97.4	101.2	108.2	110.5	113.0	115.7	114.4	105.8	120.3

Note:

1. Position 1 faces the Generator front per ISO 8528-10. The positions proceed around the generator set in a counter-clockwise direction in 45° increments. All positions are at 7m (23 ft) from the surface of the generator set and 1.2 m (48 inches) from floor level.
2. Sound levels are subject to instrumentation, measurement, installation and manufacturing variability.
3. Data based on full rated load.
4. Sound data for generator set with infinite exhaust do not include exhaust noise.
5. Sound Pressure Levels are measured per ANSI S1.13 and ANSI S12.18, as applicable.
6. Reference sound pressure is 20 µPa.
7. Sound Power Levels per ISO 3744 and ISO 8528-10, as applicable.
8. Reference power – 1 pW (10⁻¹² W)
9. Exhaust Sound Power Levels are per ISO 6798, as applicable.



ENGINEERED AIR

SUPPLY AIR FAN PERFORMANCE

JOB NAME: Barrett Court Condo # 2 JOB NO: (N-3796)

CUSTOMER: Veeda Inc

ENGINEER: Jain & Associates

EngA MODEL: LM15/C/O QTY: 1 TAG: MUA-1

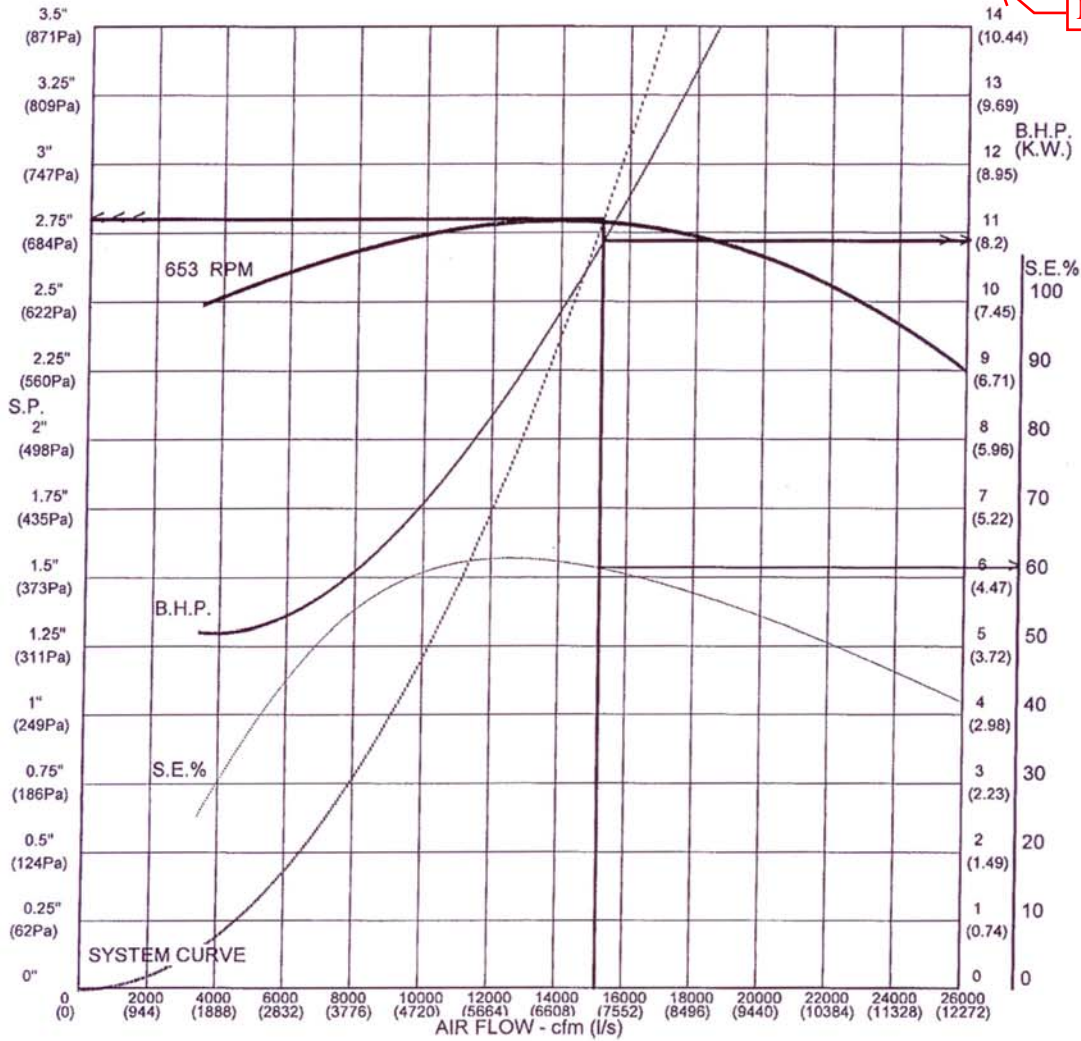
AIRFLOW 15220 CFM E.S.P. 1.5 in.w.c. FAN MANUFACTURER LAU INDUSTRIES

FANSIZE 25/25 FC DIDW QTY. 1

SOUND POWER DATA

TSP 2.8 in.w.c. RPM 653 REQ'D POWER 10.88 BHPHz 63 125 250 500 1000 2000 4000 8000

MOTOR SIZE 15 HP ODP (1750) INLET VANES^{NO} db: 92 89 86 86 81 80 75 69



Make-up Air - MUA