



Noise Feasibility Study

1037 Carp Road, Ottawa, Ontario

December 2022

Submitted by:
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1.0 INTRODUCTION

BT Engineering Inc. was retained by McIntosh Perry to undertake a Noise Feasibility Assessment for the proposed two-storey office building located at 1037 Carp Road in Stittsville, Ottawa, Ontario, see **Figure 1**. The building is approximately 513 m², comprised of 14 office units. The proposed development is within a residential land use area with residential properties to the north, east, south, and west of the site. The residential properties are considered to be Noise Sensitive Land Uses.

This report summarizes the objective, methodology, results and mitigation recommendations for the Noise Feasibility Study for stationary noise sources. The scope of work involves assessing the projected noise impacts generated by stationary noise sources associated with the proposed development. This Noise Feasibility Study follows the City of Ottawa’s Environmental Noise Control Guidelines (ENCG) as well as the Environmental Noise Guideline (NPC-300) published by the Ministry of the Environment, Conservation and Parks (MECP).



Figure 1: Project Location

2.0 TERMS OF REFERENCE

A noise assessment has been completed for stationary noise sources, with the location based on a site plan by Jim Bell Architectural Design Inc., see **Figure 2** and **Appendix A**. The assessment determines the projected sound levels of the stationary noise sources on surrounding Noise Sensitive Land Uses (residential properties) adjacent to the proposed site and recommends mitigation measures if required. The primary sources of stationary noise for the proposed development include mechanical air units by the Lennox

Commercial Air Conditioning and Heating Model L rooftop units. Representative receiver sites adjacent to the proposed site were chosen to determine the sound levels at the closest receiver sites. Should the sound level be above 50 dBA for a 1 h Leq in the Outdoor Point of Reception (OPOR) during the daytime, mitigation measures will be recommended to reduce the sound levels to an appropriate daytime level. The proposed use for the development is office buildings; therefore, no nighttime uses are proposed and no stationary noise sources will be running at night.

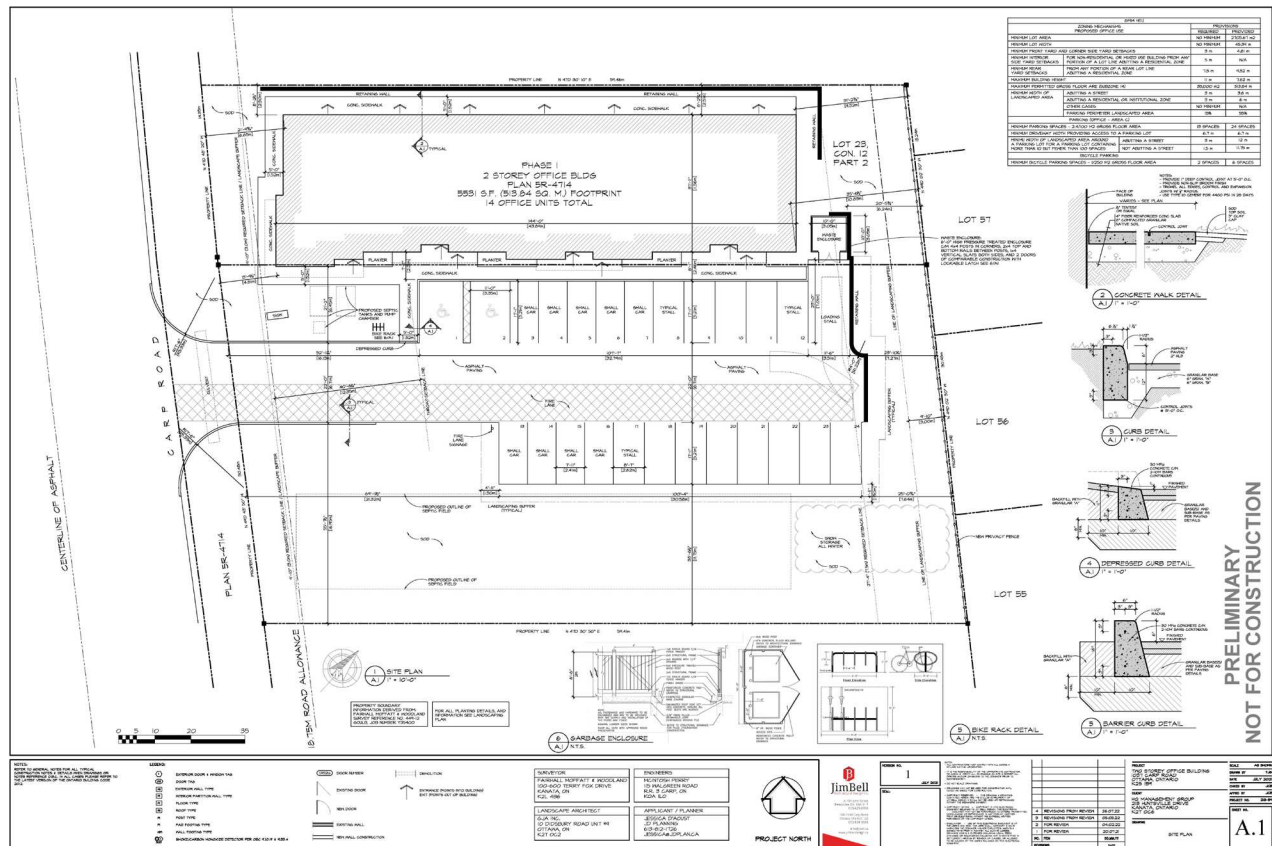


Figure 2: Site Plan

3.0 METHODOLOGY

3.1. Background

An assessment was conducted within the Study Area to determine the impact to noise sensitive areas and what mitigations measures, if any, should be incorporated into the site plan design. The assessment is in accordance with the ENCG to enforce environmental noise policies with adequate planning and urban design. The guidelines define the equivalent sound level criteria for OPOR and the plane of windows.

The impact of the stationary noise sources on the existing residential areas was determined using the computer modelling software iNoise. Receiver sites were selected for OPOR that are closest to the stationary noise sources, see **Figure 3**.



Figure 3: Receiver Sites

3.2. Stationary Noise Criteria

The subject property is within a General Urban Area as defined in Schedule B of the City of Ottawa Official Plan. The land use is considered a Class 1 Area, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as “urban hum”. This site is located within 1.4 km of the Ottawa Queensway and 500 m from Hazeldean Road. The exclusion limit for a Class 1 Area during the daytime, at the OPOR, is 50 dBA, see **Figure 4**.

Table 3.2a: Guidelines for Stationary Noise – Steady and Varying Sound
 Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)

Time of Day	Class 1 Area		Class 2 Area		Class 3 Area		Class 4 Area	
	Outdoor Point of Reception	Plane of Window	Outdoor Point of Reception	Plane of Window	Outdoor Point of Reception	Plane of Window	Outdoor Point of Reception	Plane of Window
07:00 – 19:00	50	50	50	50	45	45	55	60
19:00 – 23:00	50	50	45	50	40	40	55	60
23:00 – 07:00	-	45	-	45	-	40	-	55

Figure 4: Guidelines for Stationary Noise - Steady and Varying Sound

3.3. Stationary Source Noise Predictions

The iNoise software was used to predict the sound levels at the five receiver sites identified in **Figure 3**. The predicted noise levels on the five receiver sites are shown in **Table 1** and **Appendix B**.

Table 1: Sound Levels at Receiver Sites without Mitigation

Receiver Site ID No.	Address	Leq (Daytime) (dBA)
1	85 Lloydalex Crescent	54.7
2	1034 Carp Road	40.3
3	87 Lloydalex Crescent	54.6
4	1051 Carp Road	42.2
5	1027 Carp Road	54.3

The predicted noise levels at three of the five receiver sites exceed the exclusion limit of 50 dBA. A second scenario was developed to test the ability of a 2 m noise barrier around central rooftop units to mitigate the noise levels. The results of the second scenario are shown in **Table 2** and **Appendix B**. The limits of the 2 m barrier are illustrated in **Figure 5**.

Table 2: Sound Levels with 2m Barrier and Central Units

Receiver Site ID No.	Address	Leq (Daytime) (dBA)
1	85 Lloydalex Crescent	48.7
2	1034 Carp Road	41.4
3	87 Lloydalex Crescent	46.5
4	1051 Carp Road	44.5
5	1027 Carp Road	47.2

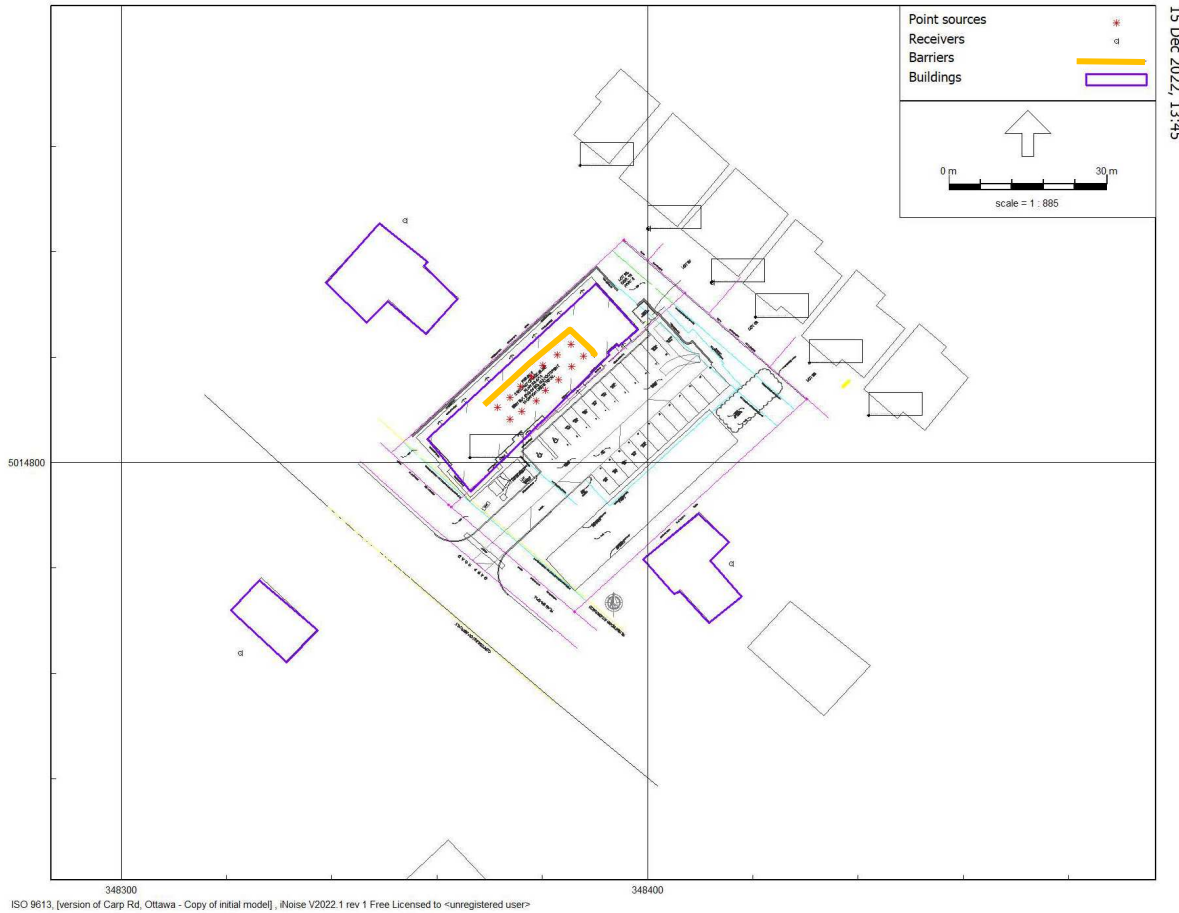


Figure 5: Limits of 2 m Noise Barrier and Central Units

4.0 CONCLUSIONS

A 2 m noise barrier, shown in **Figure 5**, is required to mitigate the sound levels from stationary noise sources within the proposed development on neighbouring OPOR. The barrier/acoustical screen layout, if different from the orientation shown in **Figure 5**, should be reviewed to ensure that the line of sight and insertion loss continue to be achieved for the noise sensitive adjacent residential properties. An alternate approach would be to shield individual units. The noise barrier shall be a minimum 20 kg/m³ density and a minimum 2 m height, to adequately mitigate the noise.

Report Prepared by:



Darcie Dillon, P.Eng.

Reviewed and Approved by:



Steven Taylor, P.Eng.

Appendix A

Site Plan

NOTES:

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS AND REPORT TO ARCHITECT IMMEDIATELY UPON DISCOVERY OF DISCREPANCY. ALL DIMENSIONS SHALL BE GIVEN TO THE CENTERLINE OF ASPHALT UNLESS OTHERWISE NOTED.

2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF CHICAGO AND ILLINOIS BUILDING CODES AND ALL APPLICABLE ORDINANCES.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF CHICAGO AND THE STATE OF ILLINOIS.

4. ALL CONSTRUCTION SHALL BE COMPLETED BY THE DATE SPECIFIED IN THE PERMITTING PROCESS.

5. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.

6. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE CITY OF CHICAGO.

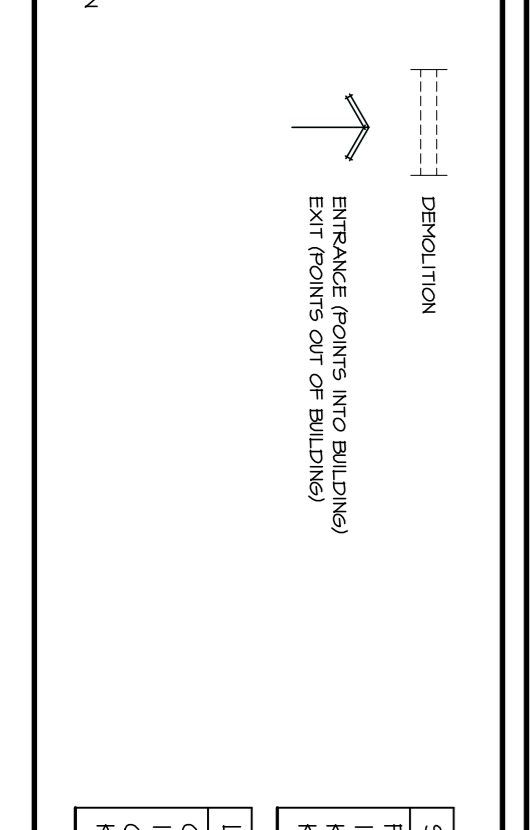
7. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND STRUCTURES.

8. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION.

9. THE CONTRACTOR SHALL MAINTAIN CLEARANCE OF ALL PUBLIC RIGHT-OF-WAY.

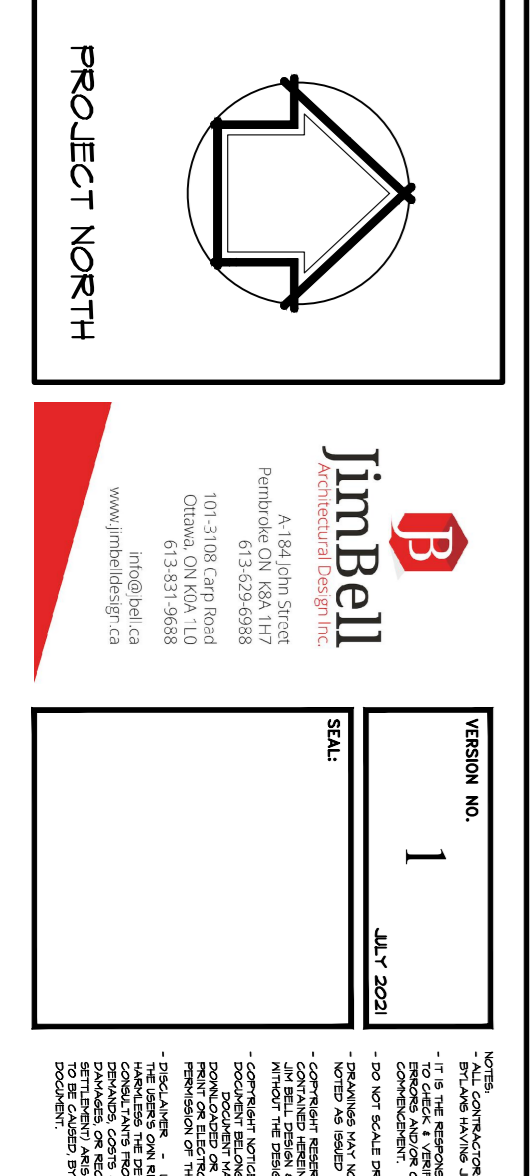
10. ALL UTILITIES SHALL BE PROTECTED AND DEEPENED AS NECESSARY.

11. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF CHICAGO AND ILLINOIS BUILDING CODES AND ALL APPLICABLE ORDINANCES.



1. SITE PLAN
 A1 | 1" = 10'-0"

6. GARBAGE ENCLOSURE
 A1 | N.T.S.



REVISIONS

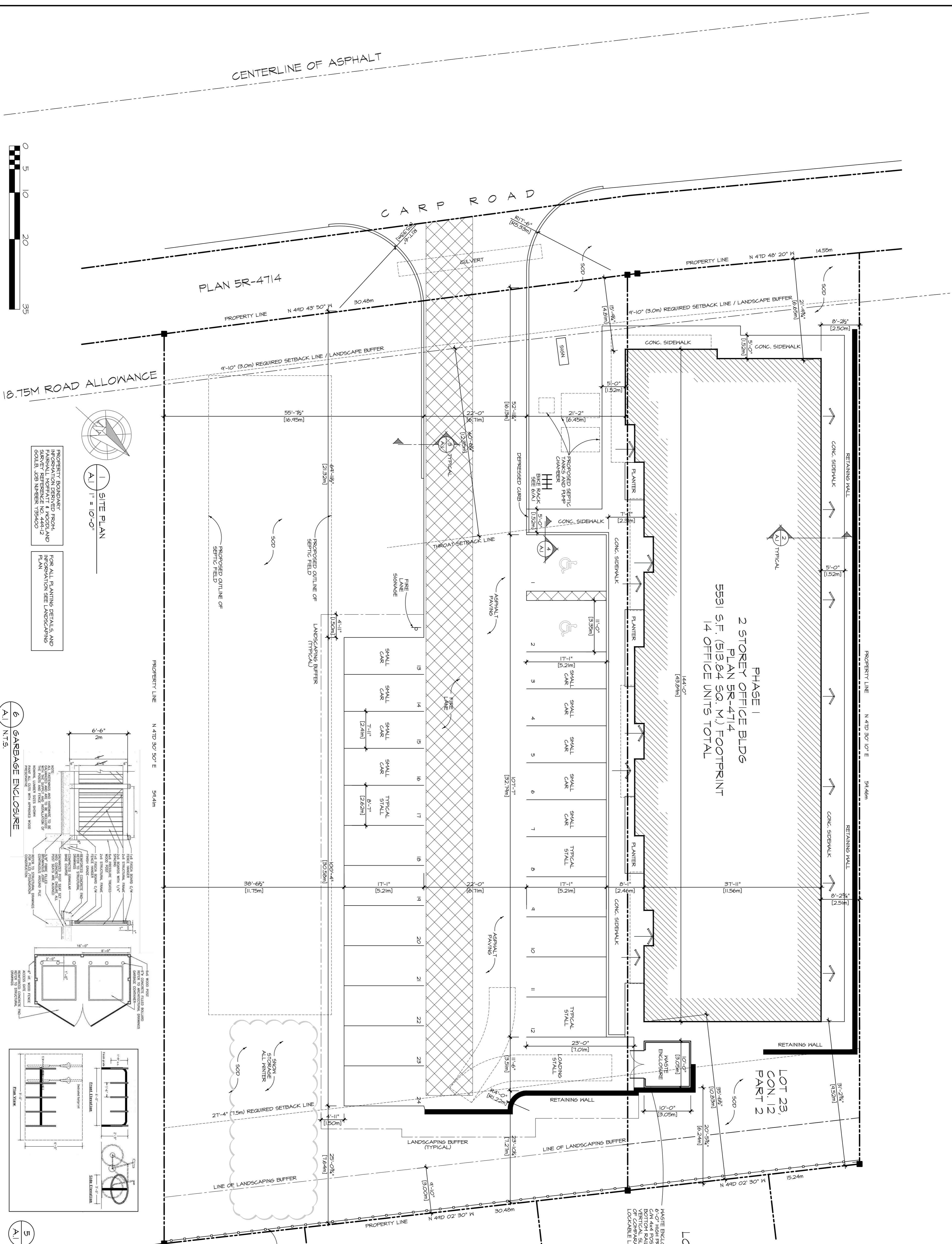
NO.	DATE	BY	REVISION
1	20/07/21	DML	ISSUED FOR PERMITTING
2	20/07/21	DML	FOR REVIEW
3	20/07/21	DML	FOR REVIEW
4	26/07/22	DML	REVISIONS FROM REVIEW
5	05/05/22	DML	FOR REVIEW
6	04/02/22	DML	FOR REVIEW
7	20/07/21	DML	FOR REVIEW
8	20/07/21	DML	FOR REVIEW
9	20/07/21	DML	FOR REVIEW
10	20/07/21	DML	FOR REVIEW
11	20/07/21	DML	FOR REVIEW
12	20/07/21	DML	FOR REVIEW
13	20/07/21	DML	FOR REVIEW
14	20/07/21	DML	FOR REVIEW
15	20/07/21	DML	FOR REVIEW
16	20/07/21	DML	FOR REVIEW
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57	20/07/21	DML	FOR REVIEW
58	20/07/21	DML	FOR REVIEW
59	20/07/21	DML	FOR REVIEW
60	20/07/21	DML	FOR REVIEW

CLIENT: HIG MANAGEMENT GROUP

ARCHITECT: JIMBELL

ENGINEERS: JESSICA DYKOST

PLANNER: JESSICA DYKOST



ZONE	MINIMUM LOT AREA	MINIMUM FRONT YARD AND CORNER SIDE YARD SETBACKS	MINIMUM SIDE YARD SETBACKS	MINIMUM REAR YARD SETBACKS	MINIMUM BUILDING HEIGHT	MINIMUM FRONT OR REAR YARD SETBACKS	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A PARKING LOT	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A STREET	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A STREET	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A STREET	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A STREET	MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A STREET
RESIDENTIAL OFFICE USE	27,000 sq ft	5' m	3' m	15' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m
RESIDENTIAL	27,000 sq ft	5' m	3' m	15' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m
RESIDENTIAL	27,000 sq ft	5' m	3' m	15' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m
RESIDENTIAL	27,000 sq ft	5' m	3' m	15' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m	11' m

NOTES:

1. SEE GENERAL NOTES AT 5'-0" O.C.

2. PROVIDE CURB AND GROUND FINISH.

3. PROVIDE NOISE BARRIER WALL.

4. PROVIDE ALL DOORS, CONTROL AND EXPANSION JOINTS TO BE OF THE TYPE TO BE USED FOR 4000 PSI IN 28 DAYS.

5. PROVIDE ALL DOORS, CONTROL AND EXPANSION JOINTS TO BE OF THE TYPE TO BE USED FOR 4000 PSI IN 28 DAYS.

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30. PROVIDE ALL DOORS, CONTROL AND EXPANSION JOINTS TO BE OF THE TYPE TO BE USED FOR 4000 PSI IN 28 DAYS.

Appendix B

iNoise Software Assessment Reports

1037 Carp Road
Noise Assessment

Stationary Noise Assessment - No Barrier

Report: Table of Results
Model: initial model
LAeq: total results for receivers
Group: (main group)
Group Reduction: No

Name											
Receiver	Description		X	Y	Height	Day	Evening	Night	Lden	Li	
87 Lloydal	Receiver Site 3		348400.15	5014844.34	1.50	54.6	54.6	54.6	61.0	54.6	
85 Lloydal	Receiver Site 1		348412.22	5014834.20	1.50	54.7	54.7	54.7	61.1	54.7	
1051 Carp_	Receiver Site 4		348415.96	5014780.76	1.50	42.2	42.2	42.2	48.6	42.2	
1034 Carp_	Receiver Site 2		348322.59	5014763.88	1.50	40.3	40.3	40.3	46.7	40.3	
1027 Carp_	Receiver Site 5		348353.95	5014845.87	1.50	54.3	54.3	54.3	60.7	54.3	

All shown dB values are A-weighted

1037 Carp Road
Noise Assessment

Stationary Noise Assessment - 2 m Barrier

Report: Table of Results
Model: Copy of initial model
LAeq: total results for receivers
Group: (main group)
Group Reduction: No

Name										
Receiver	Description		X	Y	Height	Day	Evening	Night	Lden	Li
87 Lloydal	Receiver Site 3		348400.15	5014844.34	1.50	46.5	46.5	46.5	52.9	46.5
85 Lloydal	Receiver Site 1		348412.22	5014834.20	1.50	48.7	48.7	48.7	55.1	48.7
1051 Carp_	Receiver Site 4		348415.96	5014780.76	1.50	44.5	44.5	44.5	50.9	44.5
1034 Carp_	Receiver Site 2		348322.59	5014763.88	1.50	41.4	41.4	41.4	47.8	41.4
1027 Carp_	Receiver Site 5		348353.95	5014845.87	1.50	47.2	47.2	47.2	53.6	47.2

All shown dB values are A-weighted