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 m^2, 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.

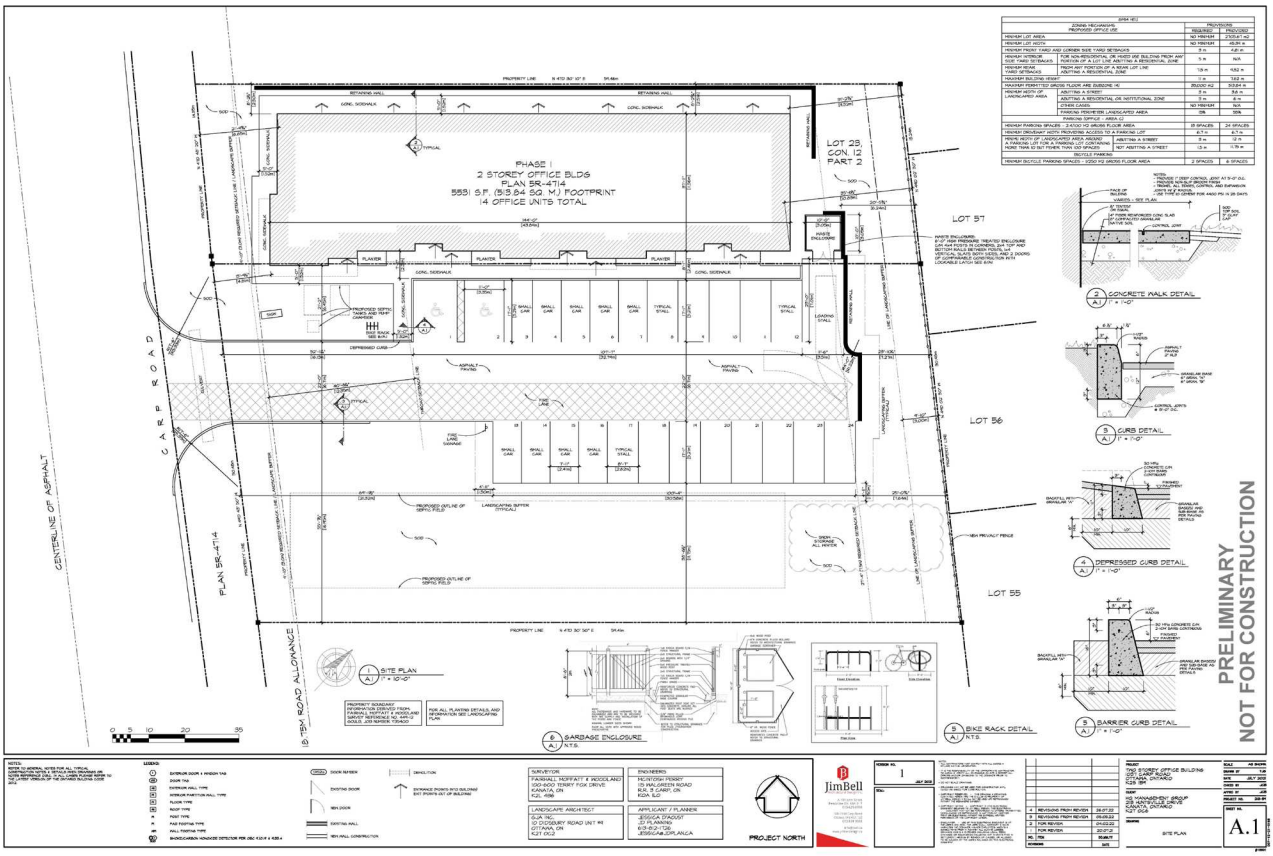

Figure 2: Site Plan

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/m^3 density and a minimum 2 m height, to adequately mitigate the noise.

Report Prepared by:

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Reviewed and Approved by:

Steven Taylor, P.Eng.

Appendix A

Site Plan

BT ENGINEERING

NOTES:
1. GENERAL NOTES FOR ALL TYPICAL CONSTRUCTION DETAILS AND DRAWINGS OR NOTES REFERENCE O.B.C. IN ALL CASES PLEASE REFER TO THE LATEST VERSION OF THE ONTARIO BUILDING CODE 2012.

LEGEND:

- (1) EXTERIOR DOOR & WINDOW TAG
- (D2) DOOR TAG
- (W) EXTERIOR WALL TYPE
- (I) INTERIOR PARTITION WALL TYPE
- (F) FLOOR TYPE
- (R) ROOF TYPE
- (P) POST TYPE
- (F) PAD FOOTING TYPE
- (F) WALL FOOTING TYPE
- SMOKE/CARBON MONOXIDE DETECTOR PER OBC 9.10.19 & 9.33.4

D152a DOOR NUMBER

EXISTING DOOR

NEW DOOR

EXISTING WALL

NEW WALL CONSTRUCTION

DEMOLITION

ENTRANCE (POINTS INTO BUILDING) EXIT (POINTS OUT OF BUILDING)

PROJECT NORTH

0 5 10 20 35

CENTERLINE OF ASPHALT

CARP ROAD

PLAN 5R-4714

PROPERTY LINE N 49D 43' 50" W 30.48m

9'-10" (3.0m) REQUIRED SETBACK LINE / LANDSCAPE BUFFER

18.75M ROAD ALLOWANCE

R171'-6" [R52.33m]

[52.39m] 171'-9"

CULVERT

SOD

PROPERTY LINE N 47D 48' 20" W 14.55m

15'-9¼" [4.81m]

21'-9¾" [6.65m]

8'-2½" [2.50m]

SIGN

CONC. SIDEWALK

5'-0" [1.52m]

CONC. SIDEWALK

5'-0" [1.52m]

55'-7½" [16.95m]

22'-0" [6.71m]

52'-11¼" [16.13m]

21'-2" [6.45m]

PROPOSED SEPTIC TANKS AND PUMP CHAMBER

BIKE RACK SEE 6/A1

DEPRESSED CURB

PLANTER

5'-0" [1.52m]

CONC. SIDEWALK

7'-1" [2.3m]

PLANTER

40'-8¼" [12.35m]

3 A1 TYPICAL

4 A1

THROAT SETBACK LINE

CONC. SIDEWALK

2 A1 TYPICAL

5'-0" [1.52m]

RETAINING WALL

PROPERTY LINE N 47D 30' 10" E 54.46m

CONC. SIDEWALK

PHASE 1
2 STOREY OFFICE BLDG
PLAN 5R-4714
5531 S.F. (513.84 SQ. M.) FOOTPRINT
14 OFFICE UNITS TOTAL

144'-0" [43.89m]

64'-1¼" [21.32m]

PROPOSED OUTLINE OF SEPTIC FIELD

SOD

PROPOSED OUTLINE OF SEPTIC FIELD

FIRE LANE SIGNAGE

4'-11" [1.50m]

LANDSCAPING BUFFER (TYPICAL)

ASPHALT PAVING

111'-0" [3.35m]

17'-1" [5.21m]

SMALL CAR

SMALL CAR

SMALL CAR

SMALL CAR

SMALL CAR

SMALL CAR

TYPICAL STALL

TYPICAL STALL

TYPICAL STALL

FIRE LANE

7'-11" [2.41m]

8'-7" [2.62m]

101'-7" [32.74m]

100'-4" [30.59m]

38'-6½" [11.75m]

17'-1" [5.21m]

22'-0" [6.71m]

17'-1" [5.21m]

8'-1" [2.46m]

37'-11" [11.56m]

8'-2¾" [2.51m]

PLANTER

CONC. SIDEWALK

RETAINING WALL

ASPHALT PAVING

SNOW STORAGE ALL WINTER

SOD

23'-0" [7.01m]

LOADING STALL

11'-6" [3.51m]

10'-0" [3.05m]

WASTE ENCLOSURE

10'-0" [3.05m]

RETAINING WALL

27'-4" (7.5m) REQUIRED SETBACK LINE

4'-11" [1.50m]

LANDSCAPING BUFFER (TYPICAL)

23'-10¾" [7.27m]

LINE OF LANDSCAPING BUFFER

25'-0¾" [7.64m]

LINE OF LANDSCAPING BUFFER

9'-10" [3.00m]

N 44D 02' 30" W 30.48m

PROPERTY LINE

N 44D 02' 30" W

35'-6½" [10.83m]

SOD

20'-5¾" [6.24m]

31'-2¾" [9.52m]

15.24m

LOT 23, CON. 12 PART 2

LOT 57

LOT 56

LOT 55

NEW PRIVACY FENCE

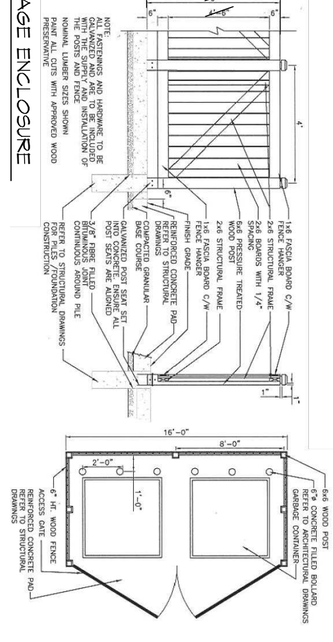
WASTE ENCLOSURE:
6'-0" HIGH PRESSURE TREATED ENCLOSURE W/ 4x4 POSTS @ CORNERS, 2x4 TOP AND BOTTOM RAILS, 1x4 @ 6" O.C. VERTICAL SLATS BOTH SIDES, AND 2 DOORS OF COMPARABLE CONSTRUCTION WITH LOCKABLE LATCH SEE 6/A1

1 SITE PLAN
A1 — 1" = 10'-0"

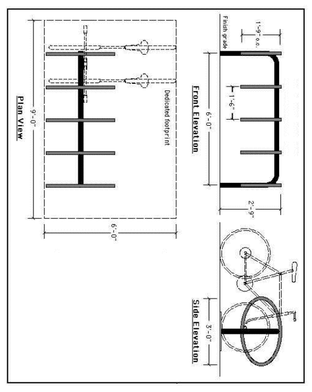
PROPERTY BOUNDARY INFORMATION DERIVED FROM: FAIRHALL MOFFATT & WOODLAND SURVEY REFERENCE NO. 449-12 GOULB. JOB NUMBER Y35400

FOR ALL PLANTING DETAILS, AND INFORMATION SEE LANDSCAPING PLAN

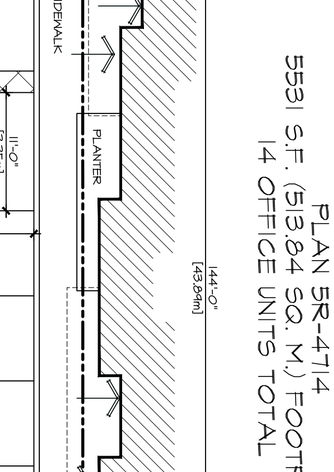
6 GARBAGE ENCLOSURE
A1 — N.T.S.



5 BIKE RACK DETAIL
A1 — N.T.S.

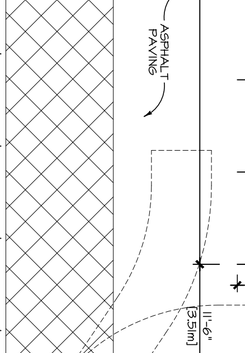


2 CONCRETE WALK DETAIL
A1 — 1" = 1'-0"

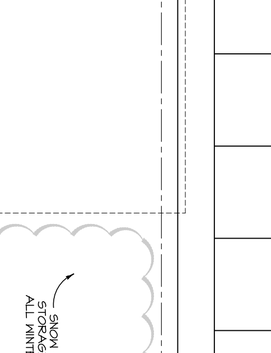


NOTES:
- PROVIDE 1" DEEP CONTROL JOINT AT 5'-0" O.C.
- PROVIDE NON-SLIP BROOM FINISH
- TROWEL ALL EDGES. CONTROL AND EXPANSION JOINTS W/ ¼" RADIUS.
- USE TYPE 10 CEMENT FOR 4400 PSI IN 28 DAYS

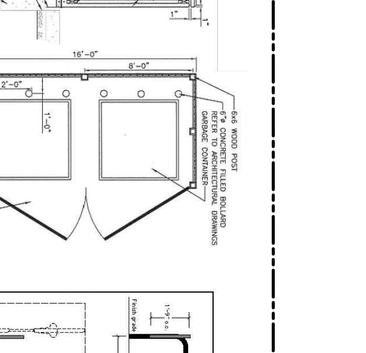
3 CURB DETAIL
A1 — 1" = 1'-0"



4 DEPRESSED CURB DETAIL
A1 — 1" = 1'-0"



5 BARRIER CURB DETAIL
A1 — 1" = 1'-0"



ZONING MECHANISMS PROPOSED OFFICE USE	6M14 H(ii) REQUIRED	PROVISIONS PROVIDED
MINIMUM LOT AREA	NO MINIMUM	2705.67 m2
MINIMUM LOT WIDTH	NO MINIMUM	45.34 m
MINIMUM FRONT YARD AND CORNER SIDE YARD SETBACKS	3 m	4.81 m
MINIMUM INTERIOR SIDE YARD SETBACKS — FOR NON-RESIDENTIAL OR MIXED USE BUILDING FROM ANY PORTION OF A LOT LINE ABUTTING A RESIDENTIAL ZONE	5 m	N/A
MINIMUM REAR YARD SETBACKS — FROM ANY PORTION OF A REAR LOT LINE ABUTTING A RESIDENTIAL ZONE	7.5 m	9.52 m
MAXIMUM BUILDING HEIGHT	11 m	7.62 m
MAXIMUM PERMITTED GROSS FLOOR ARE (SUBZONE 14)	35,000 m2	513.84 m
MINIMUM WIDTH OF LANDSCAPED AREA — ABUTTING A STREET	3 m	3.6 m
MINIMUM WIDTH OF LANDSCAPED AREA — ABUTTING A RESIDENTIAL OR INSTITUTIONAL ZONE	3 m	6 m
MINIMU WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT FOR A PARKING LOT CONTAINING MORE THAN 10 BUT FEWER THAN 100 SPACES — OTHER CASES	NO MINIMUM	N/A
MINIMU WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT CONTAINING MORE THAN 100 SPACES — PARKING PERIMETER LANDSCAPED AREA	15%	55%
MINIMUM PARKING SPACES - 2.4/100 M2 GROSS FLOOR AREA — PARKING (OFFICE - AREA C)	13 SPACES	24 SPACES
MINIMUM DRIVEWAY WIDTH PROVIDING ACCESS TO A PARKING LOT	6.7 m	6.7 m
MINIMU WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT CONTAINING MORE THAN 100 SPACES — ABUTTING A STREET	3 m	12 m
MINIMU WIDTH OF LANDSCAPED AREA AROUND A PARKING LOT CONTAINING MORE THAN 100 SPACES — NOT ABUTTING A STREET	1.5 m	11.75 m
MINIMUM BICYCLE PARKING SPACES - 1/250 M2 GROSS FLOOR AREA — BICYCLE PARKING	2 SPACES	6 SPACES

SURVEYOR
FAIRHALL MOFFATT & WOODLAND
100-600 TERRY FOX DRIVE
KANATA, ON
K2L 4B6

ENGINEERS
MCINTOSH PERRY
115 WALGREEN ROAD
R.R. 3 CARP, ON
K0A 1L0

LANDSCAPE ARCHITECT
GJA INC.
10 DISBURY ROAD UNIT #1
OTTAWA, ON
K2T 0C2

APPLICANT / PLANNER
JESSICA D'AOUST
JD PLANNING
613-612-1726
JESSICA@JDPLAN.CA

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A-184 John Street
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613-629-6988
101-3108 Carp Road
Ottawa, ON K0A 1L0
613-831-9688
info@bell.ca
www.jimbelldesign.ca

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NO.	ITEM	DATE
REVISIONS		
4	REVISIONS FROM REVIEW	26.01.22
3	REVISIONS FROM REVIEW	05.05.22
2	FOR REVIEW	04.02.22
1	FOR REVIEW	20.07.21

PROJECT
TWO STOREY OFFICE BUILDING
1037 CARP ROAD
OTTAWA, ONTARIO
K2S 1B9

CLIENT
HQ MANAGEMENT GROUP
213 HUNTSVILLE DRIVE
KANATA, ONTARIO
K2T 0C6

DRAWING
SITE PLAN

SCALE: AS SHOWN
DRAWN BY: TJS
DATE: JULY 2021
CHKED BY: JCB
APPRD BY: JCB
PROJECT NO.: 210-54
SHEET NO.: A.1

PRELIMINARY
NOT FOR CONSTRUCTION

#18601
D07-12-21-0168

Appendix B

iNoise Software Assessment Reports

BT ENGINEERING

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

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