



November 16, 2021

2655321 Ontario Limited
726 Gorham Road
Ridgeway, ON, L0S 1N0

E-mail: markspadafora@hotmail.com

Attention: Mark Spadafora

Re: Noise Impact Study of the Proposed Residential Development

726 Gorham Road, Ridgeway, ON
Pinchin File: 294192

Pinchin Ltd. (Pinchin) was retained by 2655321 Ontario Limited (the Client) to prepare a noise impact study report for its proposed residential development (development) at 726 Gorham Road, Ridgeway, ON. This report has been prepared to satisfy the comments provided in the Pre-Consultation Agreement, dated April 22, 2021.

Based on the information available to Pinchin, it is understood that the Client is proposing to create six (6) residential lots (lots A to F). Lot G represents the retained lot, which would contain the existing dwelling.

Figure 1, Appendix B, shows the site plan for the development and selected receptors.

1.0 NOISE CRITERIA

In this study, the applicable guideline limits were taken from the Niagara Region Publication [1] and the Ontario Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 [2]. The guideline limits outlined in the two publications are very similar. Note that the Niagara Region requires the prediction of traffic noise impact shall be based on a 20-year traffic forecast. The applicable noise criteria for this proposed development are described as follows:

1.1 Outdoor Noise Criteria

The daytime noise criterion for outdoor living areas (OLAs) is 55 dBA for road 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.

1.2 External Building Façade Criteria

Where the sound levels at the exterior of the building facades exceed 55 dBA at bedroom or living/dining room windows during daytime hours and 50 dBA during nighttime periods, the unit should be designed



with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

Where the sound levels exceed by more than 10 dB (i.e. 65 dBA during daytime hours and 60 dBA during nighttime hours), installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits.

1.3 Noise Impact from Stationary Sources

A review of aerial photos shows that there are no significant stationary sources in the vicinity of the development. Consequently, the noise impact from stationary sources was deemed insignificant.

2.0 POINT OF RECEPTION DESCRIPTION

To evaluate the traffic noise impact from Gorham Road on the development, two noise sensitive receptors (POW and OLA) were selected from the most affected development locations. Receptor POW represents the Lot C upper floor windows on the west façade facing Gorham Road. Receptor OLA represents an outdoor living area at the rear yard of Lot A. Since the distances between the selected receptors to the centerline of the road are essentially the same for all other lots, the predicted traffic noise impacts would apply to all lots.

3.0 NOISE IMPACT ASSESSMENT

3.1 Noise Impact from External Sources on the Development

The Annual Average Daily Traffic (AADT) volume data for 2019 on Gorham Road was provided by Niagara Region. The AADT volume was projected to year 2042 using an annual growth rate of 2%, typical for regional roads in the Region. Similar to other noise studies in the Region, "Small Trucks" were considered to be medium trucks. "Tractor Trailers" were considered to be heavy trucks. "Trucks/Buses" were split at 60% and 40% for medium and heavy trucks, respectively. Day/night split of cars and trucks was taken from the STAMSON guidelines.

Details of traffic count data and vehicle volume projections are provided in Appendix C.

3.2 Traffic Noise Modelling Results

Traffic noise impacts were predicted using the MECP computer program STAMSON (Version 5.04) [3]. STAMSON uses the traffic volumes for the road and basic topographical information for the site in its calculations. The program accounts for adjustments in sound levels with vehicle volume, distance, finite segment, pavement surface, and acoustical shielding. Details of STAMSON calculations are included in Appendix C.



The traffic noise impact prediction results are provided in Table 1, Appendix A.

The predicted total sound levels at the planes of windows (POW) are 62 dBA and 55 dBA during daytime and nighttime hours, respectively. As such, the dwellings should be designed with the provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning Clause Type C is also required to be included in agreements of offers of purchase/sale, and lease/rental. Details of Warning Clause Type C are provided in Appendix D.

If central air conditioning devices are going to be installed in the units, the devices should meet the applicable requirements outlined in MECP Publication NPC-216 [5], and applicable local by-laws.

The predicted sound level at the rear yard OLA is 45 dBA, less than the criterion of 55 dBA. Therefore, noise mitigation measures and a warning clause are not required.

Building components such as windows and doors should be constructed to meet the minimum non-acoustical requirements outlined in the Ontario Building Code (OBC).

4.0 CONCLUSIONS AND RECOMMENDATIONS

A noise impact assessment of the proposed development was completed by modelling the noise impact of road traffic at selected receptor locations on the redevelopment. The predicted noise impacts from road traffic on the development meet the NPC-300 criteria, with the provision for the installation of central air conditioning in the future, at the occupant's discretion, and the inclusion of warning clause Type C. Consequently, the development meets MECP and the Niagara Region's noise requirements.

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

Contact the undersigned with any questions.

Sincerely,

Pinchin Ltd.

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7.0 REFERENCES

1. Niagara Region, Regional Road Traffic Noise Control, November 1, 2006.
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), 1989.
4. Ministry of the Environment Publication NPC-216, Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, September 1994.

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

APPENDIX A
Table
(1 Page)

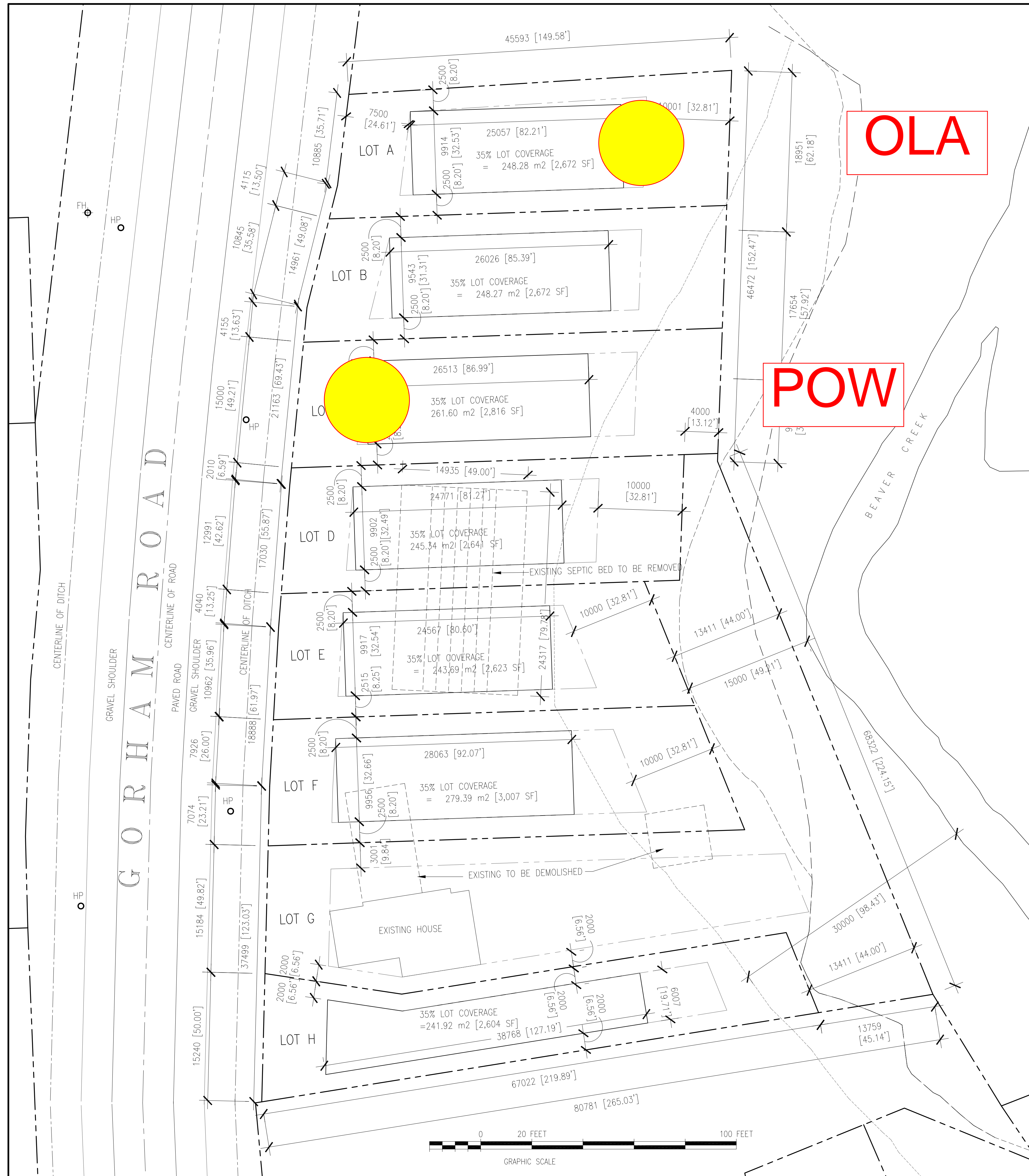
Table 1 - Road Traffic Noise Impact Predictions

Receptor ID	Receptor Description	Height Above Ground, m [1]	Total Noise Level (Leq, dBA) [2]		Windows / Doors [3]	Noise Control Measures [4]	Warning Clause [5]
			Daytime (16 hr)	Nighttime (8 hr)			
POW	Planes of Windows, West Façade, All Lots	4.5	62	55	OBC	Provision for Central AC	Type C
OLA	Outdoor Living Area, Lot A Rear Yard	1.5	45	-	n/a	Not Required	Not Required

Notes:

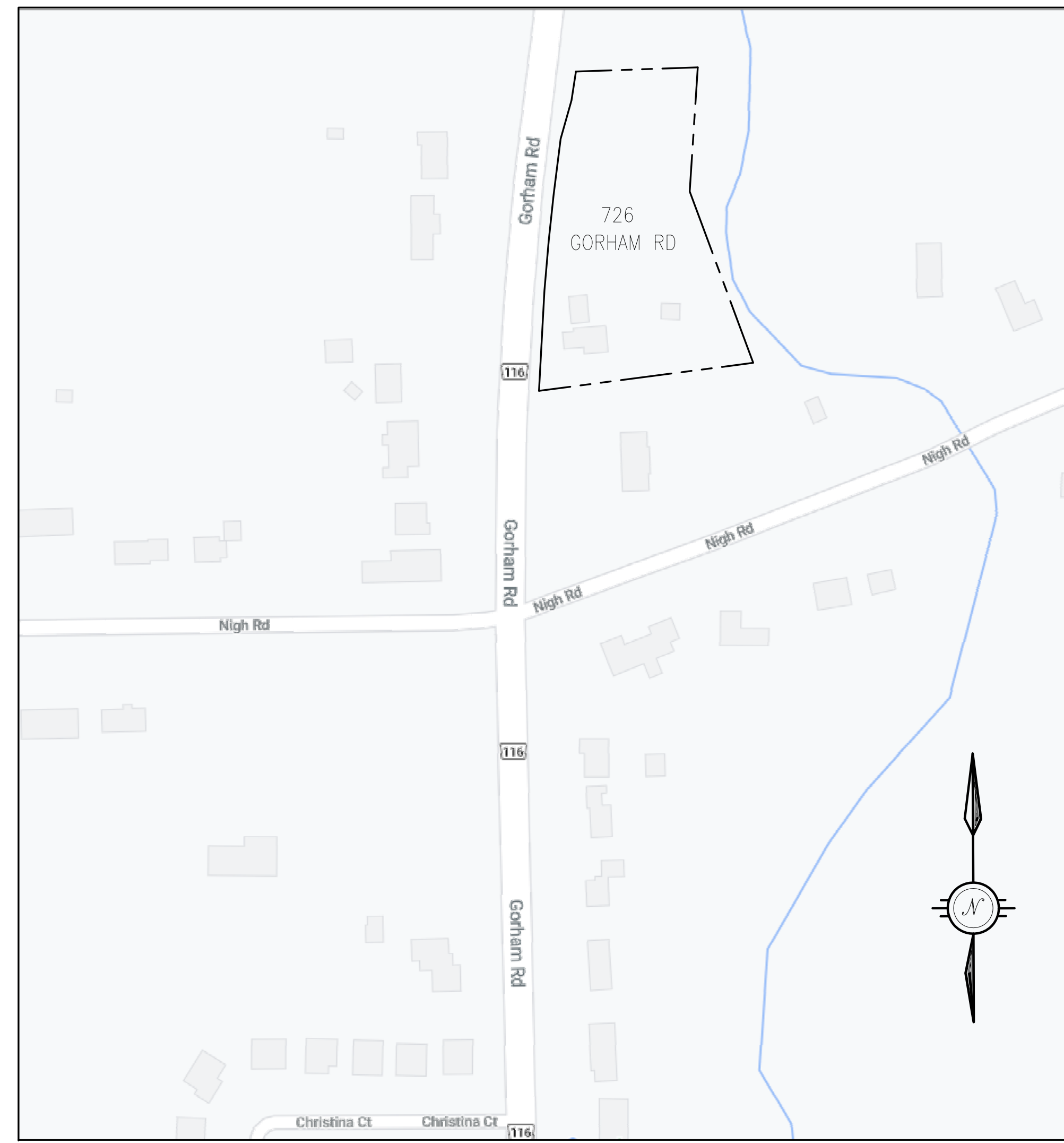
- Daytime hours are between 7:00 am and 11:00 pm and nighttime hours are between 11:00 pm and 7:00 am.
- [1] The heights are measured from the ground surface to the approximate centre of the windows.
- [2] STAMSON predicted sound levels at the planes of windows or outdoor living areas in dBA.
- [3] OBC - means the windows and doors should be constructed to meet the minimum requirements outlined in the Ontario Building Code.
- [4] Provision for Central AC - means the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.
- [5] For details on warning clause, see Appendix D.

APPENDIX B
Figure
(1 Page)



OLA

POW



2 CONTEXT PLAN
41.1 SCALE 1:1500

SITE STATISTICS

LOT	AREA		Lot Coverage (35%)	
	s.f.	m2	s.f.	m2
A	7,635	709.38	2,672	248.28
B	7,635	709.33	2,672	248.27
C	8,044	747.42	2,816	261.60
D	7,545	700.98	2,641	245.34
E	7,494	696.27	2,623	243.69
F	8,592	798.25	3,007	279.39
G	19,011	1,766.32		
H	7,439	691.20	2,604	241.92

LEGEND

⊕	EXISTING FIRE HYDRANT	---	PROPERTY LINE
⊙	EXISTING HYDRO POLE	---	ZONING SETBACK LINE
⊙	EXISTING LIGHT POST	---	NPCA - FLOOD PLAIN
		---	NPCA - REGULATED AREA
		---	EDGE OF CREEK
		---	30 M SETBACK FROM CREEK

NOTE:
PROPERTY INFORMATION OBTAINED FROM OWNER. THIS DRAWING IS NOT A SURVEY.

Figure 1 - Site Plan, Showing the Development and Receptors

APPENDIX C
Traffic Data and STAMSON Calculations
(7 Pages)

Table C.1 - Summary of Road Traffic Counts on Gorham Road

AAADT - 2019 [1]	8324				By Niagara Region
AAADT - Projected to 2042, 2% Annual Increase [2]	13126				Projected volume
Day / Night (90/10)	Breakdown	24-hour	Day - 90%	Night - 10%	Per STASMSOON protocol
Passenger Cars	94.1%	12352	11117	1235	Estimated from 24-hour count
Medium Trucks [3]	4.9%	643	579	64	Estimated from 24-hour count
Heavy Trucks [4]	1.0%	131	118	13	Estimated from 24-hour count

Notes

1. The road traffic data were provided by the Niagara Region.
2. The volumes in 2042 were projected based on an annual 2% compounded growth rate.
3. Medium trucks include small trucks and 60% of trucks/buses.
4. Heavy trucks include 40% of trucks/buses and tractor trailers.

MH Corbin Traffic Analyzer Study
Computer Generated Summary Report
City: Niagara Region
Street: 610207 - NB
Location: 7417

A study of vehicle traffic was conducted with the device having serial number 134750. The study was done in the NB lane at 610207 - NB in Niagara Region, ON in county. The study began on 2019-03-21 at 12:00 AM and concluded on 2019-03-22 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 4,192 vehicles passed through the location with a peak volume of 104 on 2019-03-21 at [07:30 AM-07:45 AM] and a minimum volume of 0 on 2019-03-21 at [12:15 AM-12:30 AM]. The AADT count for this study was 4,192.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classified vehicles was 57 KM/H with 84.54% vehicles exceeding the posted speed of 50 KM/H. 0.00% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 65.17 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
116	116	399	1109	1028	689	360	165	70	30	0	0	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin. Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was 3707 which represents 91 percent of the total classified vehicles. The number of Small Trucks in the study was 280 which represents 7 percent of the total classified vehicles. The number of Trucks/Buses in the study was 74 which represents 2 percent of the total classified vehicles. The number of Tractor Trailers in the study was 21 which represents 1 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
1559	2148	280	74	13	4	2	2							

CHART 2

HEADWAY

During the peak traffic period, on 2019-03-21 at [07:30 AM-07:45 AM] the average headway between vehicles was 8.571 seconds. During the slowest traffic period, on 2019-03-21 at [12:15 AM-12:30 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 5.00 and 15.00 degrees C.

**MH Corbin Traffic Analyzer Study
 Computer Generated Summary Report
 City: Niagara Region
 Street: 610207 - SB
 Location: 7417**

A study of vehicle traffic was conducted with the device having serial number 113292. The study was done in the SB lane at 610207 - SB in Niagara Region, ON in county. The study began on 2019-03-21 at 12:00 AM and concluded on 2019-03-22 at 12:00 AM, lasting a total of 24.00 hours. Traffic statistics were recorded in 15 minute time periods. The total recorded volume showed 4,132 vehicles passed through the location with a peak volume of 130 on 2019-03-21 at [05:30 PM-05:45 PM] and a minimum volume of 0 on 2019-03-21 at [02:15 AM-02:30 AM]. The AADT count for this study was **4,132**.

SPEED

Chart 1 lists the values of the speed bins and the total traffic volume for each bin. At least half the vehicles were traveling in the 50 - 55 KM/H range or lower. The average speed for all classified vehicles was 50 KM/H with 59.60% vehicles exceeding the posted speed of 50 KM/H. 0.00% percent of the total vehicles were traveling in excess of 89 KM/H. The mode speed for this traffic study was 50KM/H and the 85th percentile was 56.85 KM/H.

< to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 to 94	95 to 99	100 to 104	105 to >
189	390	1063	1612	541	170	63	25	7	4	0	0	0	0	0

CHART 1

CLASSIFICATION

Chart 2 lists the values of the classification bins and the total traffic volume accumulated for each bin. Most of the vehicles classified during the study were Passenger Vehicles. The number of Passenger Vehicles in the study was **3956** which represents 97 percent of the total classified vehicles. The number of Small Trucks in the study was **53** which represents 1 percent of the total classified vehicles. The number of Trucks/Buses in the study was **38** which represents 1 percent of the total classified vehicles. The number of Tractor Trailers in the study was **17** which represents 0 percent of the total classified vehicles.

< to 4.9	5.0 to 7.9	8.0 to 9.9	10.0 to 12.9	13.0 to 15.9	16.0 to 18.9	19.0 to 21.9	22.0 to >							
2586	1370	53	38	10	4	1	2							

CHART 2

HEADWAY

During the peak traffic period, on 2019-03-21 at [05:30 PM-05:45 PM] the average headway between vehicles was 6.87 seconds. During the slowest traffic period, on 2019-03-21 at [02:15 AM-02:30 AM] the average headway between vehicles was 900 seconds.

WEATHER

The roadway surface temperature over the period of the study varied between 5.00 and 15.00 degrees C.

Filename: gor.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on Second Floor Windows

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

```
-----
Car traffic volume : 11117/1235 veh/TimePeriod *
Medium truck volume : 579/64 veh/TimePeriod *
Heavy truck volume : 118/13 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): 8324
Percentage of Annual Growth : 2.00
Number of Years of Growth : 23.00
Medium Truck % of Total Volume : 4.90
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: GorhamRd (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 : 23.00 / 23.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: GorhamRd (day)

Source height = 1.00 m

ROAD (0.00 + 61.95 + 0.00) = 61.95 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 90 0.59 66.22 0.00 -2.94 -1.33 0.00 0.00 0.00
61.95
-----
---
```

Segment Leq : 61.95 dBA

Total Leq All Segments: 61.95 dBA

Results segment # 1: GorhamRd (night)

Source height = 1.00 m

ROAD (0.00 + 55.40 + 0.00) = 55.40 dBA

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

SubLeq

-90	90	0.59	59.67	0.00	-2.94	-1.33	0.00	0.00	0.00
-----	----	------	-------	------	-------	-------	------	------	------

55.40

Segment Leq : 55.40 dBA

Total Leq All Segments: 55.40 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.95
(NIGHT): 55.40

Filename: gor_ola.te Time Period: Day/Night 16/8 hours
 Description: Traffic Noise Impact on Rear Yard OLA

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

```
-----
Car traffic volume : 11117/1235 veh/TimePeriod *
Medium truck volume : 579/64 veh/TimePeriod *
Heavy truck volume : 118/13 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): 8324
Percentage of Annual Growth : 2.00
Number of Years of Growth : 23.00
Medium Truck % of Total Volume : 4.90
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: GorhamRd (day/night)

```
-----
Angle1 Angle2 : 60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 52.50 / 52.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: GorhamRd (day)

Source height = 1.00 m

ROAD (0.00 + 45.29 + 0.00) = 45.29 dBA

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

```
-----
---
60 90 0.66 66.22 0.00 -9.03 -11.90 0.00 0.00 0.00
45.29
-----
---
```

Segment Leq : 45.29 dBA

Total Leq All Segments: 45.29 dBA

Results segment # 1: GorhamRd (night)

Source height = 1.00 m

ROAD (0.00 + 38.75 + 0.00) = 38.75 dBA

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

SubLeq

60 90 0.66 59.67 0.00 -9.03 -11.90 0.00 0.00 0.00
38.75

Segment Leq : 38.75 dBA

Total Leq All Segments: 38.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 45.29
(NIGHT): 38.75

APPENDIX D
Warning Clause
(1 Page)

Warning Clause Type C

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