

Noise Feasibility Study

Proposed Residential Development

900 & 904 Mississauga Heights Drive

Mississauga, Ontario

Prepared for:

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1 Introduction & Summary

HGC Engineering was retained by Diamond Luxury (900 Mississauga Heights) Inc. and Maria & Mario Polla to conduct a noise feasibility study for a proposed residential development that will be located at 900 and 904 Mississauga Heights Drive in Mississauga, Ontario. The proposed development will consist of 18 lots, two retained and 16 new lots. The area surrounding the site is mainly residential with The Mississauga Golf and Country Club to the south. The study is required by the Municipality as part of their planning and approvals process and follows the Ministry of Environment, Conservation and Parks (MECP) guidelines for noise.

This report is an update of the previous noise report, titled “Noise Feasibility Study, Proposed Residential Development, 900 Mississauga Heights Drive, Mississauga, Ontario” dated December 14, 2021, to include the latest concept plan, containing additional lands on the 904 Mississauga Heights Drive property.

The primary noise source impacting the site was determined to be road traffic on Queensway West while a secondary noise source is road traffic on Mississauga Heights Drive. Relevant road traffic data was obtained from the City of Mississauga. The data was used to predict future traffic sound levels at the locations of the proposed residential dwelling facades and in the rear yards. The predicted sound levels were compared to the guidelines of the MECP and the City of Mississauga to develop noise control recommendations.

The results of the study indicate that the proposed development is feasible. The sound level predictions indicate that the future road traffic sound levels will not exceed MECP guidelines at all of the proposed lots. There are no specific acoustic recommendations for the development and noise warning clauses will not be required. Any building construction meeting the minimum requirements of the Ontario Building Code will provide adequate sound insulation for all the dwelling units.

2 Site Description & Noise Sources

The proposed development is located to the east of Queensway West in Mississauga, Ontario. Figure 1 is a key plan indicating the location of the proposed development. Figure 2 shows the proposed concept site plan prepared by Glen Schnarr & Associates Inc., dated February 14, 2023.

The development will include 18 lots, two retained and 16 new lots. Noise prediction locations are indicated on Figure 2 for reference.

HGC Engineering personnel visited the site in January 2019 and 2021 to make note of the acoustical environment. The area surrounding the site is mainly residential, with The Mississauga Golf and Country Club to the south. The primary sources of noise impacting the site were found to be road traffic on Queensway West and Mississauga Heights Drive. Queensway West currently consists of one lane in each direction (two lanes total). Mississauga Heights Drive is a residential roadway currently consisting of one lane in each direction.

There are no significant off-site stationary sources of noise within 500 m of the site. The proposed development is not expected to have significant on-site stationary sources of noise that could affect other existing developments.

3 Noise Level Criteria

3.1 Road Traffic Noise

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

Table I: MECP Road Traffic Noise Criteria (dBA)

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

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

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

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

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

4 Traffic Noise Predictions

4.1 Road Traffic

Road traffic data for Queensway West was obtained from the City of Mississauga in the form of ultimate Annual Average Daily Average (AADT) traffic data, and is provided in Appendix A. A day/night split of 90%/10% was used in conjunction with a posted speed limit of 40 km/h. A commercial vehicle percentage of 1% was used in the analysis and was further split into 0.55%/0.45% for medium and heavy trucks respectively. A road grade of 2% was also applied in the analysis.

The traffic data for Mississauga Heights Drive is also in the form of an ultimate AADT volume and is provided in Appendix A. A day/night split of 90%/10% was used in conjunction with a posted speed limit of 40 km/h. A commercial vehicle percentage of 1% was used in the analysis and was further split into 0.55%/0.45% for medium and heavy trucks respectively. A road grade of 2% was also applied in the analysis.



Table II summarizes the traffic volume data used in this study.

Table II: Ultimate Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Queensway West	Daytime	7 128	40	32	7 200
	Nighttime	792	4	4	800
	Total	7 920	44	36	8 000
Mississauga Heights Drive	Daytime	1 782	10	8	1 800
	Nighttime	198	1	1	200
	Total	1 980	11	9	2 000

4.2 Road Traffic Noise Prediction

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

Prediction locations were chosen around the residential site to obtain a representation of the future sound levels at various dwellings with exposure to the various roadways. Sound levels were predicted at the plane of the second storey of the single detached lots and in the rear yards. The results of these predictions are summarized in Table III.

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

Prediction Location	Description	Daytime – in the OLA L _{EQ(16)}	Daytime - at Façade L _{EQ(16)}	Nighttime - at Façade L _{EQ(8)}
[A]	Lot 1	<55	<55	<50
[B]	Lot 18	<55	<55	<50

5 Traffic Noise Recommendations

The sound level predictions indicate that the sound levels at the single detached units will not exceed the MECP guidelines listed in Table I. Physical mitigation, specific ventilation requirements or the use of warning clauses will not be required.

5.1 Outdoor Living Areas

The rear yards of the units within the development will have predicted sound levels less than 55 dBA. Mitigation is not required.

5.2 Indoor Living Areas and Ventilation Requirements

The predicted future sound levels at all the lots are less than 50 dBA and 55 dBA during nighttime and daytime, respectively. This is below the MECP limit and thus there are no specific ventilation requirements for the proposed development.

5.3 Building Façade Constructions

Since the future road traffic sound levels outside all the dwelling units within the development will be less than 60 dBA at night and less than 65 dBA during the daytime, any exterior wall, insulated metal exterior door and double glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

6 Summary of Recommendations

The following list and Table IV summarize the recommendations made in this report.

1. There are no specific ventilation requirements or noise warning clauses required.
2. Any building construction meeting the minimum requirements of the Ontario Building Code will provide adequate acoustical insulation for all units within the development.

Table IV: Summary of Noise Control Requirements and Noise Warning Clauses

Description	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Building Façade Constructions
All lots	--	--	--	OBC

Notes:

-- no specific requirement

* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300.

OBC – Ontario Building Code

Limitations

This report was prepared by HGC Engineering solely for the client to whom it is addressed and is to be used exclusively for the purposes set out in the report. Any conclusions and/or recommendations herein reflect the judgment of HGC Engineering based on information available at the time of preparation, and has relied in good faith on information provided by others, as noted in the report, which has been assumed to be factual and accurate. Changed conditions or information occurring or becoming known after the date of this report could affect the results and conclusions presented.

Any use, reliance or decisions made based on this report by any third party are the responsibilities of such third parties. HGC Engineering accepts no responsibility for damages, if any, suffered by any third party that may arise through the use, reliance or decisions made based on this report. If a third party requires reliance on this report, written authorization from HGC Engineering must be sought and granted. HGC Engineering disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs.



ACOUSTICS



NOISE



VIBRATION

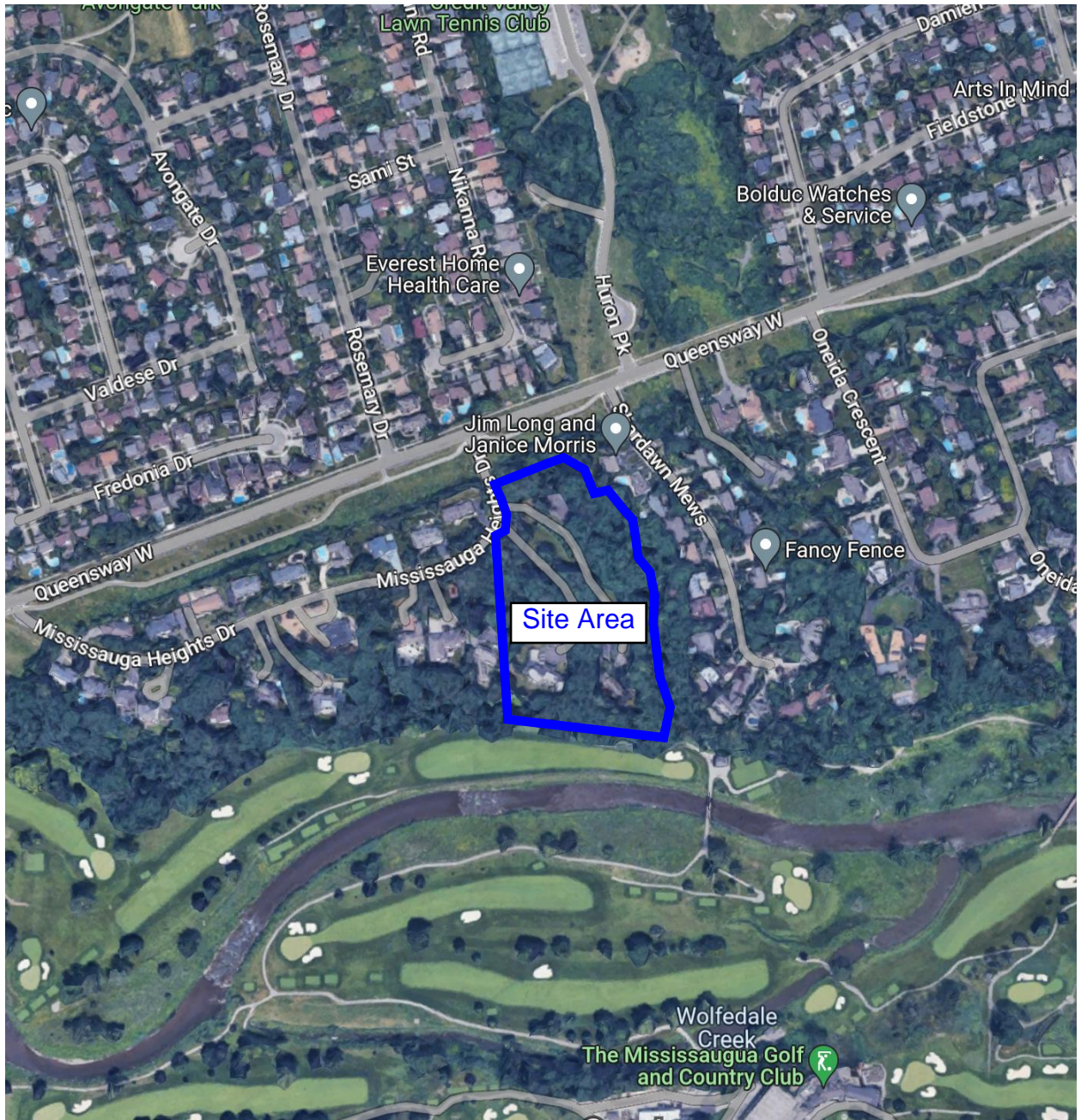


Figure 1: Key Plan

**DEVELOPMENT CONCEPT PLAN
CEC R16-EXCEPTION DETACHED**

900 & 904 MISSISSAUGA HEIGHTS DRIVE
PART OF LOTS 1 & 2,
REGISTERED PLAN 342
CITY OF MISSISSAUGA
REGIONAL MUNICIPALITY OF PEEL

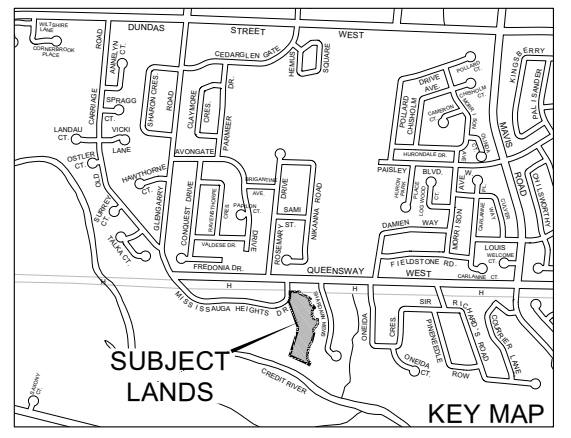


Figure 2: Concept Plan Showing Prediction Locations

DEVELOPMENT STATISTICS - 904 MISSISSAUGA HEIGHTS

DEVELOPABLE LOT AREA: 7,899m² (1.95ac)
COMMON ELEMENTS AREA: 1,527m² (0.38ac)
NHS COMPENSATION AREA: 1,145m² (0.28ac)
NHS & BUFFERS AREA: 2,027m² (0.50ac)
TOTAL AREA: 12,598m² (3.11ac)

NET DEVELOPABLE AREA: 9,426m² (2.33ac)
TOTAL UNITS: 9 UNITS
SITE DENSITY: 9 UNITS / 0.94ha = 9.6 UPHA

DEVELOPMENT STATISTICS - 900 MISSISSAUGA HEIGHTS

DEVELOPABLE LOT AREA: 6,704m² (1.66ac)
WOODLAND LOT AREA: 179m² (0.04ac)
TABLELAND WOODLOT AREA: 530m² (0.13ac)
COMMON ELEMENTS AREA: 848m² (0.21ac)
NHS COMPENSATION AREA: 698m² (0.17ac)
NHS & BUFFERS AREA: 10,817m² (2.67ac)
TOTAL AREA: 19,776m² (4.88ac)

NET DEVELOPABLE AREA: 6,704m² + 848m² = 7,552m² (1.87ac)
TOTAL UNITS: 9 UNITS
SITE DENSITY: 9 UNITS / 0.755ha = 11.9 UPHA



SCALE 1:1000
FEBRUARY 14, 2023

GSAI
Glen Schnarr & Associates Inc.

APPENDIX A

Road Traffic Data



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VIBRATION

Date: 14-Jan-19

NOISE REPORT FOR PROPOSED DEVELOPMENT

REQUESTED BY:

Name: Mustafa Yousuf

Company: HGC Engineering



PREPARED BY:

Name: Loudel Uy

Tel#: (905) 615-3200

Location: - Queensway West, West of Mavis Road
- Mississauga Heights

Look Up ID#: 398

ON SITE TRAFFIC DATA

Specific	Street Names			
	Queensway W	Mississauga Heights		
AADT:	8,000	2,000		
# of Lanes:	2 lanes	2 lanes		
% Trucks:	1%	1%		
Medium/Heavy Trucks Ratio:	55/45	55/45		
Day/Night Traffic Split:	90/10	90/10		
Posted Speed Limit:	40km	40km		
Gradient of Road:	<2%	<2%		
Ultimate R O W:	20.5m	20m		

Comments: Ultimate Traffic Data Only.

APPENDIX B

Sample Stanson Output



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Filename: a.te Time Period: Day/Night 16/8 hours
Description: Pred. Loc. [A], Lot 1

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

Car traffic volume : 7128/792 veh/TimePeriod *
Medium truck volume : 40/4 veh/TimePeriod *
Heavy truck volume : 32/4 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 0.55
Heavy Truck % of Total Volume : 0.45
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Queensway (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 : 70.00 / 45.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mississauga (day/night)

Car traffic volume : 1782/318 veh/TimePeriod
Medium truck volume : 10/1 veh/TimePeriod
Heavy truck volume : 8/1 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mississauga (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 15.00 / 15.00 m



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VIBRATION

Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Queensway (day)

Source height = 0.82 m

ROAD (0.00 + 45.83 + 0.00) = 45.83 dBA

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

-90 90 0.59 57.81 0.00 -10.64 -1.34 0.00 0.00 0.00 45.83

Segment Leq : 45.83 dBA

Results segment # 2: Mississauga (day)

Source height = 0.82 m

ROAD (0.00 + 48.78 + 0.00) = 48.78 dBA

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

-90 0 0.00 51.79 0.00 0.00 -3.01 0.00 0.00 0.00 48.78

Segment Leq : 48.78 dBA

Total Leq All Segments: 50.56 dBA

Results segment # 1: Queensway (night)

Source height = 0.84 m

ROAD (0.00 + 42.50 + 0.00) = 42.50 dBA

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

-90 90 0.59 51.42 0.00 -7.59 -1.34 0.00 0.00 0.00 42.50

Segment Leq : 42.50 dBA

Results segment # 2: Mississauga (night)

Source height = 0.75 m



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VIBRATION

ROAD (0.00 + 43.77 + 0.00) = 43.77 dBA

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

-90 0 0.00 46.78 0.00 0.00 -3.01 0.00 0.00 0.00 43.77

Segment Leq : 43.77 dBA

Total Leq All Segments: 46.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.56
(NIGHT): 46.19



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VIBRATION

Filename: a_ola.te Time Period: Day/Night 16/8 hours
Description: Rear yard OLA of Lot 1, Pred. Loc. [A]

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

Car traffic volume : 7489/832 veh/TimePeriod *
Medium truck volume : 42/5 veh/TimePeriod *
Heavy truck volume : 34/4 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 2.00
Medium Truck % of Total Volume : 0.55
Heavy Truck % of Total Volume : 0.45
Day (16 hrs) % of Total Volume : 90.00

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

Angle1 Angle2 : -20.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mississauga (day/night)

Car traffic volume : 1872/318 veh/TimePeriod
Medium truck volume : 10/1 veh/TimePeriod
Heavy truck volume : 9/1 veh/TimePeriod
Posted speed limit : 40 km/h
Road gradient : 2 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Mississauga (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 90 %
Surface : 1 (Absorptive ground surface)



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VIBRATION

Receiver source distance : 35.00 / 45.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Queensway (day)

Source height = 0.82 m

ROAD (0.00 + 43.63 + 0.00) = 43.63 dBA

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

-20 90 0.66 58.04 0.00 -11.11 -3.31 0.00 0.00 0.00 43.63

Segment Leq : 43.63 dBA

Results segment # 2: Mississauga (day)

Source height = 0.83 m

ROAD (0.00 + 36.20 + 0.00) = 36.20 dBA

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

-90 90 0.66 52.09 0.00 -6.11 -1.46 0.00 -8.32 0.00 36.20

Segment Leq : 36.20 dBA

Total Leq All Segments: 44.35 dBA

Results segment # 1: Queensway (night)

Source height = 0.83 m

ROAD (0.00 + 37.19 + 0.00) = 37.19 dBA

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

-20 90 0.66 51.60 0.00 -11.11 -3.31 0.00 0.00 0.00 37.19

Segment Leq : 37.19 dBA

Results segment # 2: Mississauga (night)

Source height = 0.75 m



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NOISE



VIBRATION

ROAD (0.00 + 29.25 + 0.00) = 29.25 dBA

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

-90 90 0.66 46.78 0.00 -7.92 -1.46 0.00 -8.15 0.00 29.25

Segment Leq : 29.25 dBA

Total Leq All Segments: 37.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 44.35
(NIGHT): 37.84



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VIBRATION