

Environmental Noise Feasibility Study

Hilton Home Hotel

Proposed Hotel Development

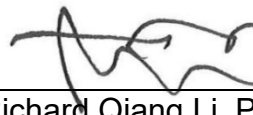
440 Dunlop Street West
City of Barrie

February 9, 2024
Project: 123-0385

Prepared for

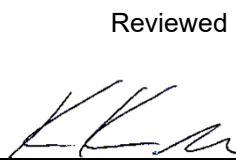
Innisfil Beach Development Inc.

Prepared by



Richard Qiang Li, Ph.D., P.Eng.

Reviewed by



Kathryn Katsiroumpas, B.Sc.E., P.Eng.



VALCOUSTICS

Canada Ltd.

Version History

Version #	Date	Comments
1.0	February 9, 2024	Final – Issued to Client

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Environmental Noise Feasibility Study

Hilton Home Hotel

Proposed Hotel Development 440 Dunlop Street West City of Barrie

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) has been retained to prepare an Environmental Noise Feasibility Study to support the Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) application submission to the City of Barrie. The proposed development consists of a 6-storey hotel with 101 suites.

The significant transportation noise source in the vicinity with the potential for impact at the subject site is road traffic on Highway 400, Dunlop Street West and Ferndale Drive North.

The sound levels on the subject site have been determined and compared to the noise guideline limits of the Ministry of the Environment, Conservation and Parks (MECP) to determine the need for noise mitigation.

The assessment shows that the indoor sound level criteria can be met with construction of exterior walls and windows meeting the minimum non-acoustical requirements of the Ontario Building Code (OBC).

The mechanical equipment associated with the development will need to be designed to comply with the MECP sound level limits at the noise sensitive receptors in the vicinity.

1.0 INTRODUCTION

VCL was retained to prepare an Environmental Noise Feasibility Study to support the OPA and ZBA application submissions to the City of Barrie.

The predicted sound levels and noise mitigation measures needed for the proposed development to comply with the MECP noise guidelines are outlined herein.

1.1 SITE LOCATION AND SURROUNDING AREA

The subject site is located at 440 Dunlop Street West in the City of Barrie and is bounded by:

- Lennox Drive, with existing auto and appliance services beyond, to the north;

- Existing commercial/industrial uses to the east;
- Commercially zoned vacant properties and an existing Petro Canada gas station, with Dunlop Street West beyond, to the south; and
- An existing auto service and vacant industrial lands, with Ferndale Drive North beyond, to the west.

The site is currently vacant.

A Key Plan is included as Figure 1.

The assessment is based on the architectural drawings, prepared by Mataj Architects Inc., dated August 24, 2023. The Site Plan from the drawings is included as Figure 2. The Floor Plans and Elevations are included as Appendix A.

1.2 THE PROPOSED DEVELOPMENT

The proposed development is a 6-storey hotel with 101 suites, as well as a meeting room, a fitness room, indoor swimming pool and two outdoor patios on the ground floor. Grade level parking spaces will be provided to the west, south and east of the building.

2.0 NOISE SOURCES

2.1 TRANSPORTATION NOISE SOURCES

The transportation noise source with potential for impact on the proposed development will be road traffic on Highway 400, Dunlop Street West and Ferndale Drive North.

Due to distance separation and/or low traffic volumes, other roadways in the vicinity of the site are not anticipated to have a significant impact at the subject site and thus have not been considered further in the assessment.

Ultimate road traffic data for Highway 400 was obtained from the Ministry of Transportation (MTO). The total truck percentage was split 75%/25% for heavy/medium trucks, as recommended by the MTO for freeways.

Turning movement counts (TMC's) applicable to the year 2035 for the intersection of Dunlop Street West and Ferndale Drive North were provided in the Traffic Impact Study (TIS) for the subject site [Reference 5]. Daily (24-hour) volumes were obtained by multiplying the maximum values from the AM and PM peak-hour TMC data by a factor of 10 (that is, the peak-hour period consists of 10% of the total daily traffic volume). The total truck percentage was calculated from the year 2023 TMC's provided by the City of Barrie. Heavy/medium trucks were assumed to be 60%/40% of the total truck percentage.

The road traffic data is shown in Table 1 and Appendix B.

2.2 STATIONARY NOISE SOURCES

There are existing stationary noise sources to the west, north and east of the subject site. These consist of various industrial/commercial buildings and auto service garages. The main noise sources associated with these facilities are anticipated to be the rooftop HVAC units, exhaust fans, and truck movements, and activities in the auto service garages with the overhead doors open.

Hotel buildings are considered noise sensitive commercial purpose buildings. However, it is understood that the proposed hotel building will be designed with inoperable (fixed or sealed) windows. As per the MECP noise guidelines, inoperable windows in a noise sensitive commercial purpose building are not considered points of reception for stationary noise sources. In addition, outdoor areas associated with a noise sensitive commercial purpose building, such as the proposed exterior patios, are not outdoor points of reception.

Therefore, there are no points of reception on the proposed development site where the stationary noise source guideline limits are applicable. Therefore, the stationary sources are not considered further in the assessment.

Notwithstanding the above, it is expected that exterior wall and window construction required to meet the transportation noise source indoor sound level limits will also be sufficient to provide a suitable indoor environment relative to noise from any existing stationary sources in the vicinity.

3.0 ENVIRONMENTAL NOISE GUIDELINES

3.1 MECP PUBLICATION NPC-300

3.1.1 Transportation Noise Sources

MECP Publication NPC-300, “Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning” includes good-practice design objectives for hotels. The objectives are shown in Table C-9, “Supplementary Indoor Source Level Limits” and Table C-10, “Supplementary Indoor Aircraft Noise Limits”. The environmental noise guidelines of the MECP, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix C.

3.1.1.1 Architectural Elements

For sleeping quarters of hotels, the suggested nighttime (2300 to 0700) indoor sound level for road noise is $L_{eq\ Night}$ of 45 dBA. For conference rooms, individual offices or semi-private offices the suggested daytime (0700 to 2300) sound level is an $L_{eq\ Day}$ of 45 dBA.

There are no suggested indoor sound levels for sleeping quarters in the daytime presented in Table C-9 of NPC-300. However, the nighttime 45 dBA criterion was also taken to apply during the daytime period.

The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve these indoor sound level limits, based on the outdoor sound level on the exterior facades.

3.1.1.2 Outdoors

For outdoor amenity areas (“Outdoor Living Areas” - OLA’s), the road traffic noise guideline is $L_{eq\ Day}$ of 55 dBA, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, provided warning clauses are registered on title.

4.0 EFFECT OF THE ENVIRONMENT ONTO THE PROJECT

4.1 TRANSPORTATION NOISE ASSESSMENT METHOD

Using the road traffic data in Table 1, the sound levels, in terms of $L_{eq\ Day}$ and $L_{eq\ Night}$, were determined using STAMSON V5.04 - ORNAMENT, the computerized road traffic noise prediction model of the MECP. The results are summarized in Table 2.

Based on the Elevations drawings, the daytime and nighttime sound levels at the building facades were calculated at a height of 17.3 m above grade, representing the 6th (top) floor windows. The daytime OLA sound levels were calculated at the centre of the exterior patio, 1.5 m above the grade. See Figure 2 for receptor locations.

Inherent screening of each building façade due to its orientation to the noise source was taken into account. For OLA assessment, screening from existing buildings in the vicinity was also considered.

4.2 ASSESSMENT RESULTS

The highest daytime sound level of 66 dBA is predicted to occur on the south facade (Location B), the closest to Dunlop Street West. The highest nighttime sound level of 65 dBA is predicted to occur on the east facade (Location A), the closest to Highway 400.

The highest unmitigated daytime OLA sound level of 55 dBA is predicted to occur at the exterior patio (Location C), southwest of the hotel building.

The predicted sound levels are summarized in Table 2. A sample calculation is included in Appendix D.

4.3 NOISE ABATEMENT REQUIREMENTS

4.3.1 Architectural Elements

The guideline indoor noise criteria for the hotel suites can be achieved by using appropriate construction for exterior walls, windows and doors. To determine the worst-case architectural requirements, wall and window areas were calculated from the Floor Plan and Elevations drawings. The calculations were based on the “King Suite” in rooms 202-602, located at the southeast corner of the building. The wall and window areas on the east facade were calculated to be 57% and 24%, respectively, of the associated floor area. On the south façade, there are no windows and the wall area was calculated to be 81% of the associated floor area.

Based on the predicted sound levels, exterior wall and window construction meeting the minimum non-acoustical requirements of the OBC will be sufficient to meet the indoor noise criteria. This should be confirmed if the detailed design changes.

Note, the window frames must also be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This will need to be confirmed by the window manufacturer through the submission of acoustical test data.

4.3.2 Ventilation

Although not a requirement under the MECP guidelines, it is expected that the hotel will be air conditioned due to windows being inoperable/sealed.

4.3.3 Outdoors

The maximum predicted daytime sound levels at the OLAs is within the 55 dBA sound level limit under the MECP noise guidelines. Therefore, mitigation is not required.

5.0 THE EFFECT OF THE PROJECT ON THE NEIGHBOURHOOD

The main noise sources associated with the proposed development with the potential to impact the neighbouring noise sensitive land uses will be the mechanical equipment at the hotel. Note that the surrounding uses in the immediate vicinity (commercial uses) are not considered noise sensitive relative to the noise from the subject site and therefore there is minimal potential for significant noise impact.

The mechanical design for the development has not been completed. Since there are many options for the mechanical design for this type of building, it is not possible to assess the noise impact to the environment at this time. The mechanical equipment at the proposed building interfacing to the outdoors will need to be designed to comply with the guideline limits in NPC 300. By proper engineering design, all requirements can be met and no significant noise impact would be created for surrounding uses. Appropriate choice of location, equipment type, and noise control features should be considered during detailed design for such items as rooftop equipment and air intakes and exhausts, including underground parking garage ventilation systems (if applicable).

For any emergency generators, appropriate steps should be taken to ensure that the equipment placement, treatment, and the routine testing schedule will not generate adverse noise impact on neighbouring properties. The generator will require silencers on the intake and exhaust cooling air paths, as well as a muffler on the combustion exhaust.

6.0 CONCLUSIONS

With the noise mitigation measures recommended above, the resultant indoor sound levels will meet the suggested criteria of the MECP.

7.0 REFERENCES

1. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment, Conservation and Parks.
2. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.
3. "Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, October 2013.
4. "Road and Rail Noise: Effects on Housing", Canada Mortgage and Housing Corporation, Publication NHA 5156, 81/10.
5. "440 Dunlop Street & 125 Ferndale Drive, City of Barrie – Traffic Impact Study for Dunlop Ferndale Inc.", by JD Northcote Engineering Inc., March 30, 2022.

TABLE 1 ROAD TRAFFIC DATA

Roadway	Year	AADT ⁽¹⁾ /SADT ⁽²⁾	% Trucks		Day / Night Split (%)	Posted Speed Limit (km/h)
			Medium	Heavy		
Dunlop Street West ⁽³⁾	2035	26 530 ⁽¹⁾	4.2 ⁽⁴⁾	6.2 ⁽⁴⁾	90/10	50
Ferndale Drive North ⁽³⁾	2035	22 110 ⁽¹⁾	1.8 ⁽⁴⁾	2.7 ⁽⁴⁾	90/10	50
Highway 400	Ultimate	275 000 ⁽²⁾	1.75 ⁽⁵⁾	5.25 ⁽⁵⁾	67/33	100

Notes:

- (1) AADT – Annual Average Daily Traffic.
- (2) SADT – Summer Average Daily Traffic. For Highway 400, the ultimate SADT was higher than ultimate AADT and was therefore used in the analysis.
- (3) The future 24-hour volume was obtained from the Year 2035 TMC provided in the TIS for the subject site.
- (4) The total truck traffic volume percentages were obtained from the latest existing TMC's (for the year 2023) provided by the City of Barrie. Medium/heavy trucks were assumed to be 40%/60% of the total truck volume.
- (5) Ultimate SADT and truck percentages were obtained from the Ministry of Transportation (MTO). The total truck percentage split was assumed to be 75%/25% heavy/medium.

TABLE 2 PREDICTED OUTDOOR SOUND LEVELS

Location ⁽¹⁾	Source	Distance (m) ⁽²⁾	L _{eq} Day (dBA)	L _{eq} Night (dBA)
A Southeast Corner (East Facade)	Highway 400, Northbound	618	62	62
	Highway 400, Southbound	597	62	62
	Dunlop Street West	112	57	51
	TOTAL	–	65	65
B Southeast Corner (South Facade)	Highway 400, Northbound	618	61	61
	Highway 400, Southbound	597	61	61
	Dunlop Street West	112	60	54
	Ferndale Drive North	129	55	49
	TOTAL	–	66	64
C Southwest Patio (OLA)	Dunlop Street West	118	50	–
	Ferndale Drive North	107	53	–
	TOTAL	–	55	–

Notes:

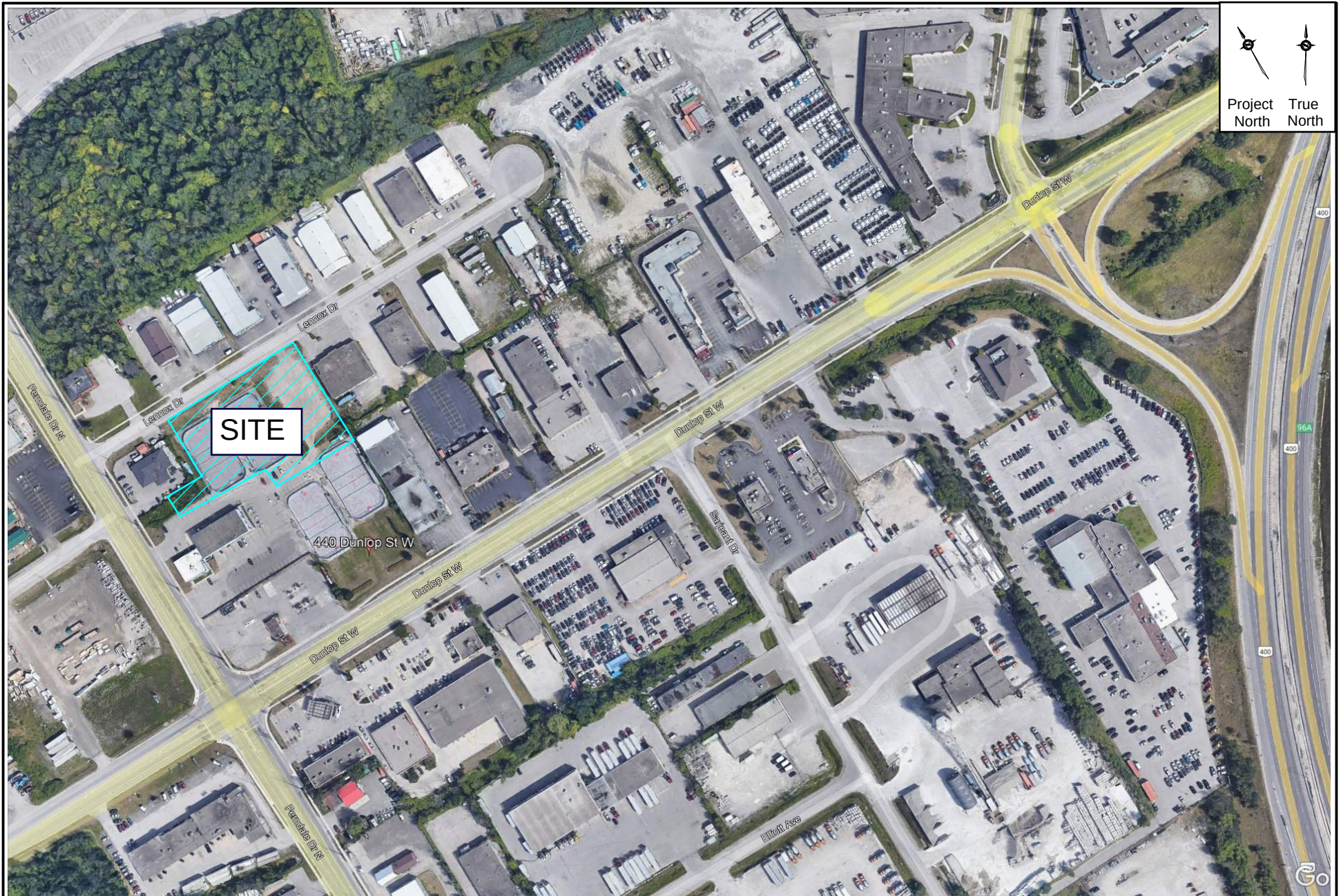
- (1) See Figure 2.
- (2) Distance indicated is taken from the centreline of the noise source to the point of reception.

TABLE 3 NOISE ABATEMENT REQUIREMENTS

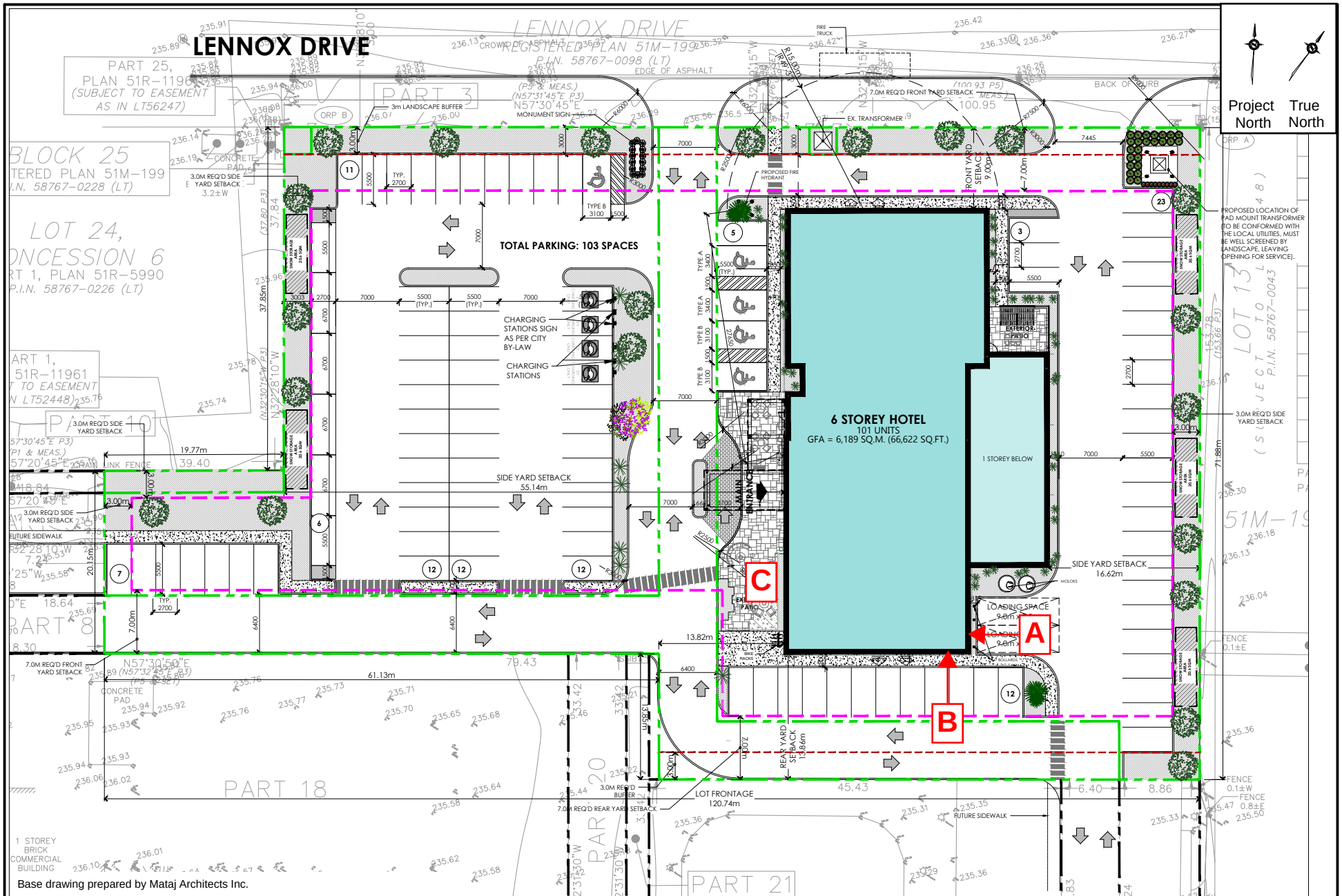
Location	Air Conditioning ⁽²⁾	Exterior Wall ⁽¹⁾	Exterior Window ^(1,2)
Hotel	Provided	No special acoustical requirements	Sealed/inoperable suite windows

Notes:

- (1) STC - Sound Transmission Class Rating (Reference ASTM-E413). Analyses were based on the floor plan and elevation drawings prepared by Mataj Architects Inc., dated August 24, 2023. The analysis should be reviewed if the drawings change significantly.
- (2) As part of the stationary source noise control measures, the windows to noise sensitive spaces in the hotel must be inoperable and the units must be provided with air conditioning.



 VALCOUSTICS Canada Ltd. consulting acoustical engineers	Title Key Plan	Date Jan 17, 2024	Figure 1
	Project Name Hilton Home Hotel - 440 Dunlop Street West, Barrie	Project No. 1230385.000	

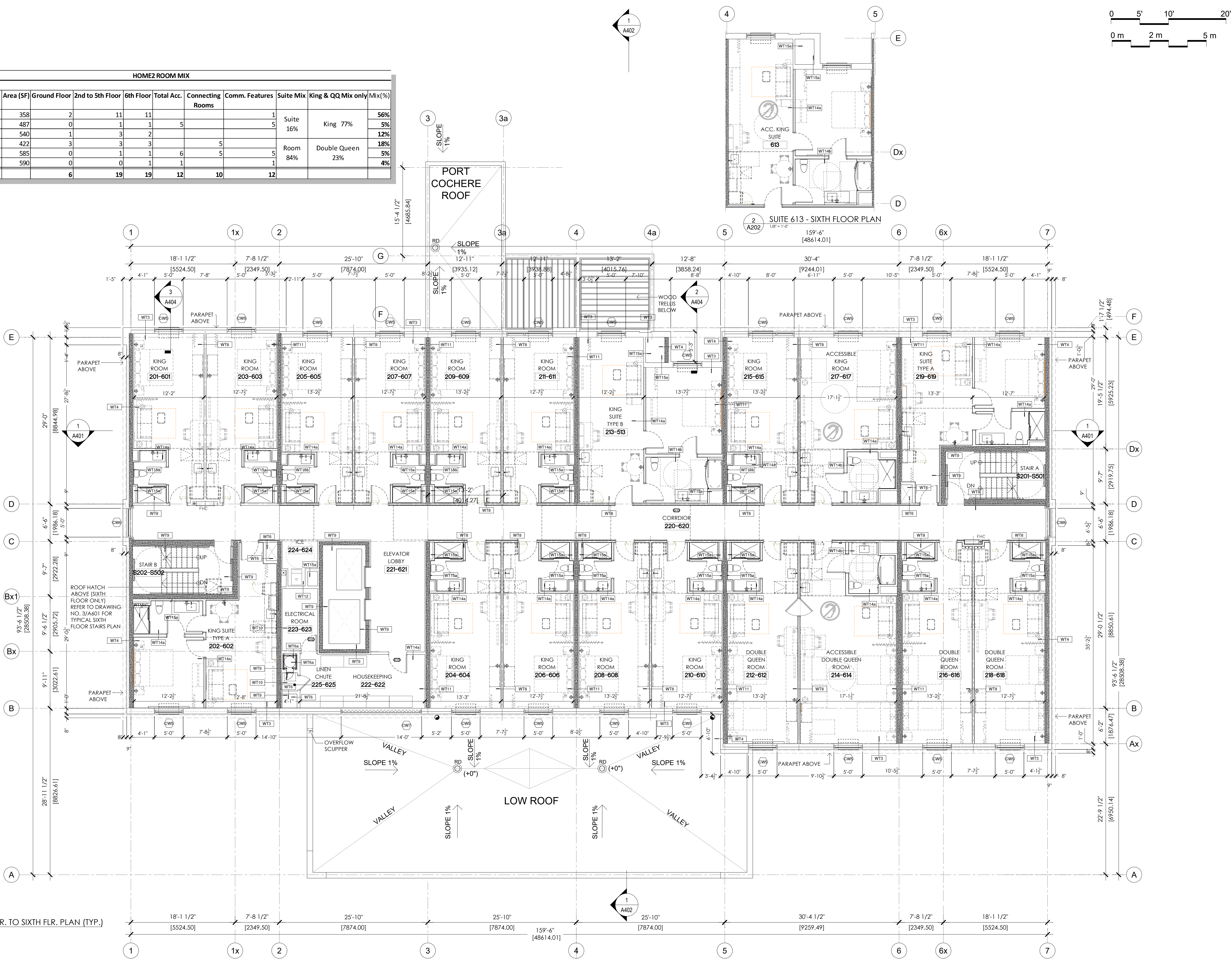


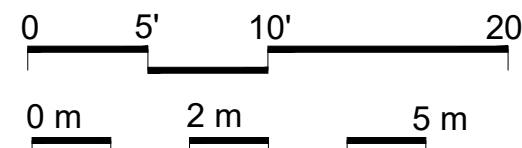
 VALCOUSTICS Canada Ltd. consulting acoustical engineers	Title Site Plan	Date Jan 17, 2024	Figure 2
	Project Name Hilton Home Hotel - 440 Dunlop Street West, Barrie	Project No. 1230385.000	

APPENDIX A

FLOOR PLANS AND ELEVATIONS

HOME2 ROOM MIX									
Guestroom type	Area (SF)	Ground Floor	2nd to 5th Floor	6th Floor	Total Acc.	Connecting Rooms	Comm. Features	Suite Mix	King & QQ Mix only (Mix %)
King Guestroom	358	2	11	11				Suite	King 77%
Acc. King Guestroom	487	0	1	1	5			16%	
King Suite	540	1	3	2				Room	Double Queen 23%
QQ Guestroom	422	3	3	3		5		84%	
Acc. QQ Guestroom	585	0	1	1	6	5			
Acc. King Suite	590	0	0	1	1		1		
TOTAL		6	19	19	12	10	12		

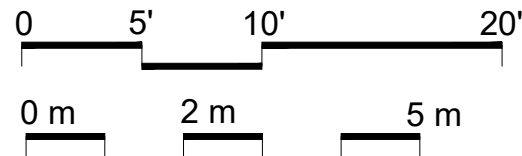




EXTERIOR FINISH SCHEDULE		
	MATERIAL/FINISH	COLOR
1	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT) - 20 1/2" x 60" LINE PATTERN	BLACK MAINE 1500
2	PREFABRICATED EIFS PANEL SANDSTONE FINISH (DURABOND OR EQUIVALENT)	BM 398 FLOWER POWER
3	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT)	WALNUT BEIGE 4020-2D
4	PREFABRICATED EIFS PANEL, SANDSTONE FINISH (DURABOND OR EQUIVALENT)	CHARCOAL VW6072
5	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT) - ± 13" HIGH LINE PATTERN	ATHABASCA LIGHT
6	PREFABRICATED EIFS PANEL, MARBLECOAT 1.0 FINISH (DURABOND OR EQUIVALENT)	BM CSP-10
7	ACM PANEL BY CM CLADDING OR EQUIVALENT	TIMBER TEAK BY ALPOLIC
8	ACM PANEL BY CM CLADDING OR EQUIVALENT	S-91 OFF WHITE PPG DURANAR
9	ILLUMINATED SIGNAGE, REFER TO BRAND STANDARDS	

EXTERIOR FINISH SCHEDULE		
	MATERIAL/FINISH	COLOR
10	ACCENT EIFS BAND, SANDSTONE FINISH	BLACK BM 2132-10
11	CLEAR LAMINATED GLASS HSHS 68% LIGHT TRANSMITTANCE	WHITE (ARCTIC SNOW)
12	CORRUGATED METAL SCREEN	
13	CLEARANCE SIGNAGE. REFER TO BRAND STANDARDS	
14	WALL SCONCE	
15	4'-0" HIGH DECORATIVE FENCE AROUND CONDENSING UNITS REFER TO DETAILS ON LANDSCAPE DRAWINGS	
16	MECHANICAL GRILL & PIPES / SOLID SERVICE DOORS	COLOR TO MATCH ADJACENT FINISH COLOR
17	OVERFLOW SCUPPER	PREFINISHED METAL COLOR TO MATCH ADJACENT FINISH COLOR

Sheet Title:		
EAST ELEVATION (REAR)		
Design By: A.M.	Drawn By: S.F.	Approved By: A.M.
Scale: 1/8"=1'-0"	Date: 22.12.21	Project No.: 22-013
Drawing No: A302		
Drawing Series:		



EXTERIOR FINISH SCHEDULE		
	MATERIAL/FINISH	COLOR
1	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT) - 20 1/2" x 60" LINE PATTERN	BLACK MAINE 1500
2	PREFABRICATED EIFS PANEL SANDSTONE FINISH (DURABOND OR EQUIVALENT)	BM 398 FLOWER POWER
3	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT)	WALNUT BEIGE 4020-2D
4	PREFABRICATED EIFS PANEL, SANDSTONE FINISH (DURABOND OR EQUIVALENT)	CHARCOAL VW6072
5	PREFABRICATED EIFS PANEL, GEMSTONE FINISH (DURABOND OR EQUIVALENT) - ± 13" HIGH LINE PATTERN	ATHABASCA LIGHT
6	PREFABRICATED EIFS PANEL, MARBLECOAT 1.0 FINISH (DURABOND OR EQUIVALENT)	BM CSP-10
7	ACM PANEL BY CM CLADDING OR EQUIVALENT	TIMBER TEAK BY ALPOLIC
8	ACM PANEL BY CM CLADDING OR EQUIVALENT	S-91 OFF WHITE PPG DURANAR
9	ILLUMINATED SIGNAGE. REFER TO BRAND STANDARDS	

EXTERIOR FINISH SCHEDULE		
	MATERIAL/FINISH	COLOR
10	ACCENT EIFS BAND, SANDSTONE FINISH	BLACK BM 2132-10
11	CLEAR LAMINATED GLASS HS/HS 68% LIGHT TRANSMITTANCE	WHITE (ARCTIC SNOW)
12	CORRUGATED METAL SCREEN	
13	CLEARANCE SIGNAGE. REFER TO BRAND STANDARDS	
14	WALL SCONE	
15	4'-0" HIGH DECORATIVE FENCE AROUND CONDENSING UNITS REFER TO DETAILS ON LANDSCAPE DRAWINGS	
16	MECHANICAL GRILL & PIPES / SOLID SERVICE DOORS	COLOR TO MATCH ADJACENT FINISH COLOR
17	OVERFLOW SCUPPER	PREFINISHED METAL COLOR TO MATCH ADJACENT FINISH COLOR

Key Plan:

The logo for Home2 Suites by Hilton. It features the word "HOME" in a large, bold, dark brown sans-serif font. To the right of "HOME" is a large, stylized number "2" in a light green color, which is partially enclosed by a green chevron shape pointing to the right. Below "HOME" and the "2" is the text "SUITES BY HILTON" in a smaller, dark brown sans-serif font. A registered trademark symbol (®) is located at the bottom right of the green chevron.

6	19/02/25	Issued in response to Zoning By-Law Amend. App.	A.R.
5	18/07/09	Issued for Building Permit Submission	A.R.
4	18/06/13	Issued for Zoning By-Law Amend. App.	A.R.
3	18/03/19	Issued for Brand Review	A.R.
2	18/03/08	Issued for Brand Review	A.R.
1	18/02/28	Issued for SPA Submission	A.R.
No.	Date:	Issue/Revision	By:
Drawing Issues/Revisions:			

WORK IN PROGRESS



Sheet Title:		
SOUTH ELEVATION (SIDE)		
Design By: A.M.	Drawn By: S.F.	Approved By: A.M.
Scale: 1/8"=1'-0"	Date: 22.12.21	Project No.: 22-013
Drawing No: A303		
Drawing Series:		

APPENDIX B

ROAD TRAFFIC DATA

Richard Li

From: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>
Sent: December 7, 2023 4:15 PM
To: Richard Li
Subject: RE: Request HWY 400 traffic data (VCL#1230385.000)

Importance: Low

Hi Richard,

In response to your request please find below the information available from this office for Highway 400 south of Dunlop Street West interchange.

2019 AADT:	122,100
2019 SADT:	162,700
Ultimate AADT:	206,700
Ultimate SADT:	275,000
Ultimate Number of Lanes:	3GPL + 1 HOV (per direction)
Posted Speed:	100 km/h
Percentage of Trucks (2019):	7%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future. Other information such as ratio of medium trucks to heavy trucks may be available from other offices.

Thank you

Arthur

Arthur Tai | Team Leader
Systems Analysis and Forecasting Office, Transportation Planning Branch,
Ministry of Transportation
T: 416-540-9421



A Strong Transportation Future Together

Confidentiality Warning: This message and any attachments may contain PRIVILEGED and CONFIDENTIAL INFORMATION and is intended only for the use of the recipient(s). If you are not the intended recipient, you are hereby notified that any review, retransmission, conversion to hard copy, copying, circulation or other use of this message and any attachments is strictly prohibited. If you have received this message in error, please immediately notify the sender by return e-mail, and delete this message and any attachments from your system. Thank you.

From: Richard Li <richard@valcoustics.com>
Sent: Monday, December 4, 2023 5:02 PM
To: Tai, Arthur (MTO) <Arthur.Tai@ontario.ca>

Cc: Kathy Katsiroumpas <kathy@valcoustics.com>; Alam, Ahsan (MTO) <Ahsan.Alam@ontario.ca>

Subject: Request HWY 400 traffic data (VCL#1230385.000)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Arthur,

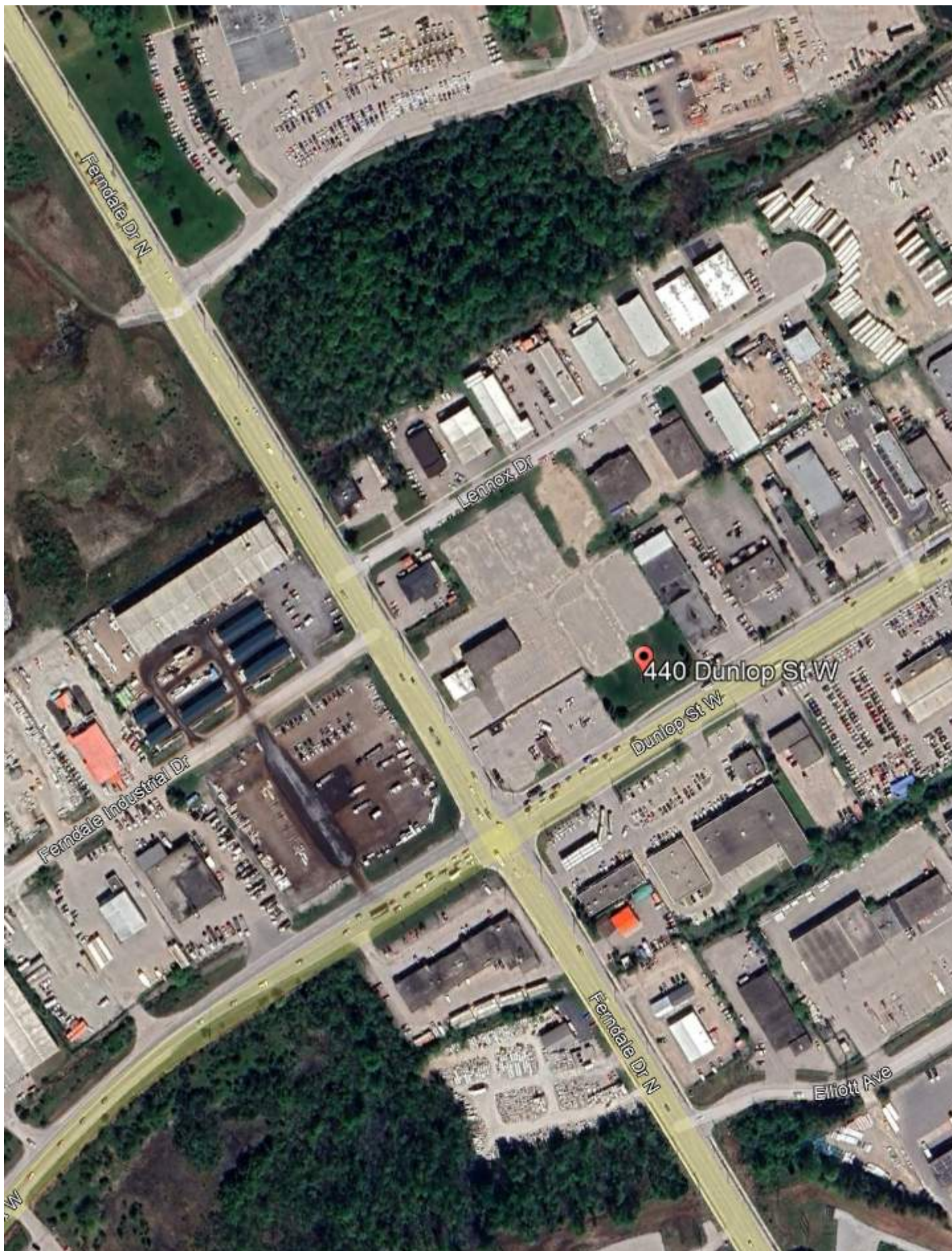
We are preparing a noise study for a project at 440 Dunlop St W, Barrie, ON L4N 1C2, 500-600 m west of Highway 400 at Dunlop Street West. See the location on the Google Image below. Would you please provide the ultimate or latest road traffic data of HWY 400 closest to our location?

Thank you,

Richard Qiang Li, Ph.D., P.Eng.
Acoustical Engineer



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 245
Direct: 647-954-1538
Fax: 905-764-6813
solutions@valcoustics.com





440 Dunlop Street & 125 Ferndale Drive

City of Barrie

Traffic Impact Study for Dunlop Ferndale Inc.

Type of Document:
Final Report

Project Number:
JDE – 21156

Date Submitted:
March 30th, 2022

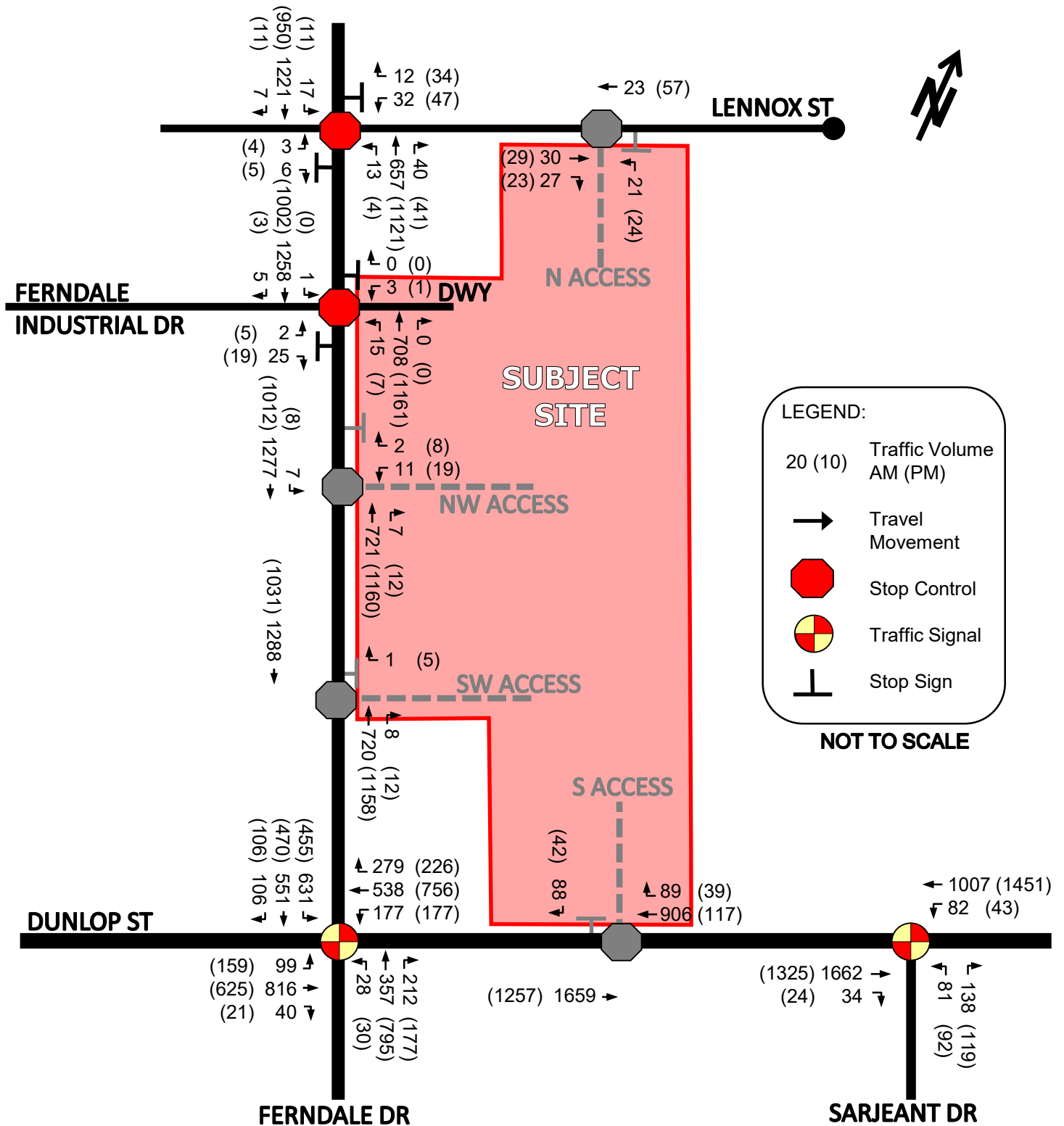


John Northcote, P.Eng.
Professional License #: 100124071



JD Northcote Engineering Inc.
86 Cumberland Street
Barrie, ON
705.725.4035
www.JDEngineering.ca

Figure 19: Total (2035) Traffic Volumes



Project #23-037 - City of Barrie

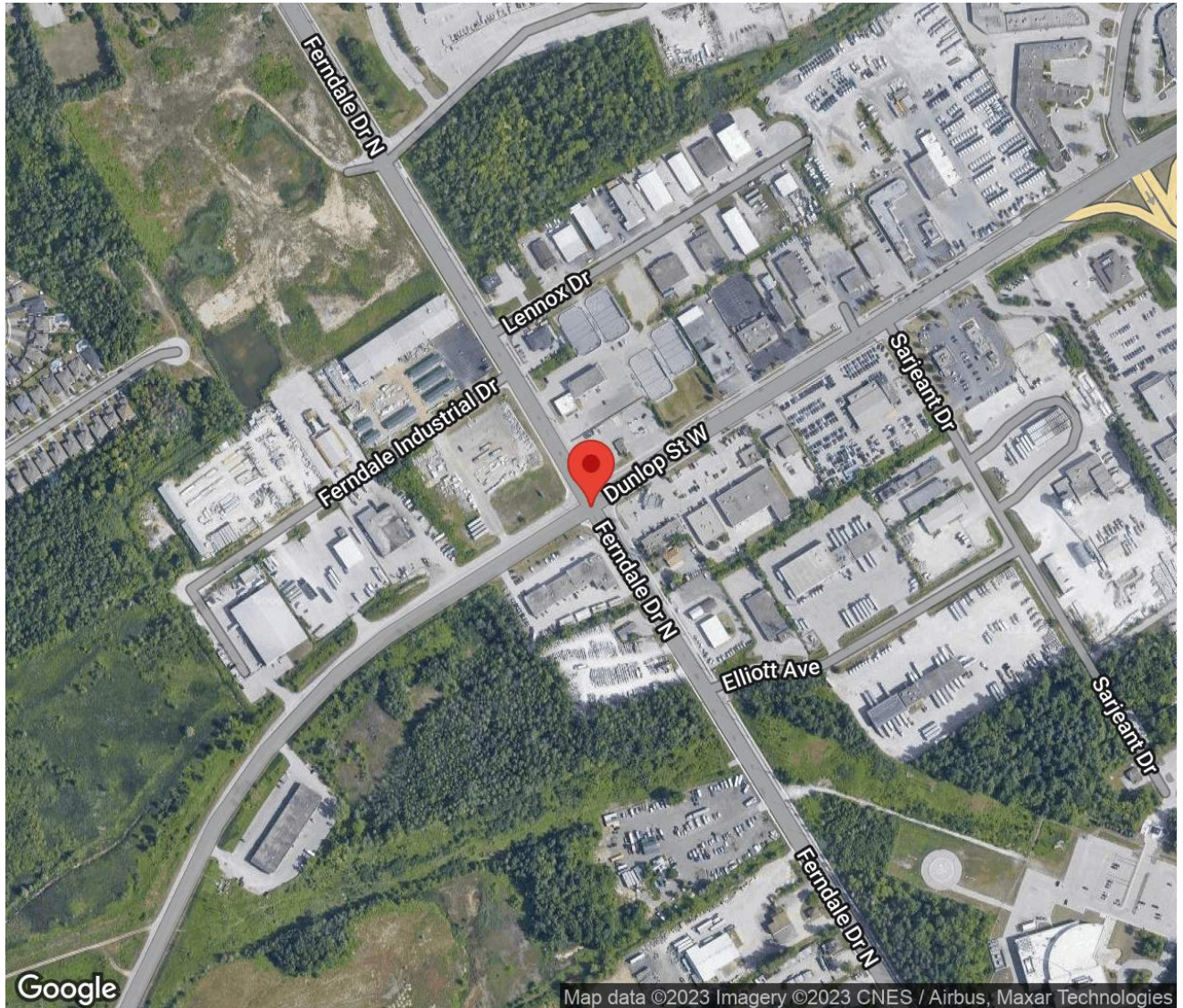
Intersection Count Report

Intersection: Dunlop St W & Ferndale Dr N
Municipality: Barrie
Count Date: Wednesday, Apr 12, 2023
Site Code: 2303700081
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-09:00, 11:00-14:00, 15:00-18:00
Weather: Clear
Comments:



Traffic Count Map

Intersection:	Dunlop St W & Ferndale Dr N
Site Code:	2303700081
Municipality:	Barrie
Count Date:	Apr 12, 2023



Traffic Count Summary

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

Ferndale Dr N - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	416	339	88	0	843	1	24	261	127	0	412	1	1255
08:00 - 09:00	381	383	55	2	821	0	17	307	122	0	446	2	1267
BREAK													
11:00 - 12:00	267	292	67	0	626	0	24	327	101	0	452	1	1078
12:00 - 13:00	269	319	58	0	646	1	29	344	130	0	503	1	1149
13:00 - 14:00	280	310	73	0	663	1	21	340	135	0	496	0	1159
BREAK													
15:00 - 16:00	328	373	93	0	794	3	31	548	125	0	704	1	1498
16:00 - 17:00	314	454	83	0	851	2	21	606	130	0	757	0	1608
17:00 - 18:00	344	349	84	0	777	2	18	591	109	0	718	1	1495
GRAND TOTAL	2599	2819	601	2	6021	10	185	3324	979	0	4488	7	10509

Traffic Count Summary

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

Dunlop St W - Traffic Summary

East Approach Totals							West Approach Totals						
Hour	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	80	420	264	0	764	5	63	557	22	0	642	0	1406
08:00 - 09:00	113	323	267	0	703	2	88	559	28	0	675	1	1378
BREAK													
11:00 - 12:00	103	362	229	0	694	6	75	437	25	0	537	2	1231
12:00 - 13:00	114	385	253	0	752	3	91	485	26	0	602	0	1354
13:00 - 14:00	116	358	242	0	716	1	65	517	30	0	612	1	1328
BREAK													
15:00 - 16:00	130	495	274	0	899	1	112	490	38	0	640	0	1539
16:00 - 17:00	133	520	334	0	987	6	132	568	34	0	734	0	1721
17:00 - 18:00	128	530	352	1	1011	5	120	516	25	0	661	0	1672
GRAND TOTAL	917	3393	2215	1	6526	29	746	4129	228	0	5103	4	11629

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

North Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	107	52	14	0	173	2	0	2	0	4	0	0	0	0	0	0
07:15	101	61	23	0	185	2	4	3	0	9	0	1	0	0	1	0
07:30	103	103	19	0	225	7	8	2	0	17	0	0	0	0	0	0
07:45	93	107	25	0	225	1	3	0	0	4	0	0	0	0	0	1
08:00	86	90	16	0	192	3	4	1	0	8	0	0	0	0	0	0
08:15	97	101	22	0	220	4	9	1	0	14	0	1	0	0	1	0
08:30	79	78	9	0	166	4	7	0	0	11	0	0	0	2	2	0
08:45	104	87	6	0	197	4	6	0	0	10	0	0	0	0	0	0
SUBTOTAL	770	679	134	0	1583	27	41	9	0	77	0	2	0	2	4	1

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

North Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	71	68	14	0	153	5	1	1	0	7	0	0	0	0	0	0
11:15	57	69	14	0	140	6	6	1	0	13	0	0	0	0	0	0
11:30	65	70	18	0	153	7	3	2	0	12	0	0	0	0	0	0
11:45	53	75	16	0	144	3	0	1	0	4	0	0	0	0	0	0
12:00	56	70	12	0	138	5	3	0	0	8	0	0	0	0	0	0
12:15	66	72	18	0	156	4	4	0	0	8	0	0	0	0	0	0
12:30	57	80	13	0	150	7	6	2	0	15	0	0	0	0	0	1
12:45	71	81	11	0	163	3	3	2	0	8	0	0	0	0	0	0
13:00	57	65	16	0	138	3	4	4	0	11	0	0	0	0	0	0
13:15	71	68	11	0	150	2	7	1	0	10	0	0	0	0	0	1
13:30	81	93	16	0	190	3	2	1	0	6	0	0	0	0	0	0
13:45	61	68	21	0	150	2	3	3	0	8	0	0	0	0	0	0
SUBTOTAL	766	879	180	0	1825	50	42	18	0	110	0	0	0	0	0	2

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

North Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	59	72	23	0	154	6	3	1	0	10	0	0	0	0	0	1
15:15	89	90	21	0	200	4	5	1	0	10	0	0	0	0	0	0
15:30	86	97	22	0	205	4	1	1	0	6	0	0	0	0	0	1
15:45	75	101	24	0	200	5	4	0	0	9	0	0	0	0	0	1
16:00	76	100	14	0	190	7	8	1	0	16	0	0	0	0	0	0
16:15	75	96	19	0	190	5	4	5	0	14	0	0	0	0	0	1
16:30	69	117	22	0	208	3	3	2	0	8	0	0	0	0	0	1
16:45	79	122	19	0	220	0	3	1	0	4	0	1	0	0	1	0
17:00	92	102	18	0	212	1	2	0	0	3	0	0	0	0	0	0
17:15	76	82	25	0	183	1	4	1	0	6	0	0	0	0	0	0
17:30	90	77	17	0	184	0	1	0	0	1	0	0	0	0	0	1
17:45	81	78	22	0	181	3	2	1	0	6	0	1	0	0	1	1
SUBTOTAL	947	1134	246	0	2327	39	40	14	0	93	0	2	0	0	2	7
GRAND TOTAL	2483	2692	560	0	5735	116	123	41	0	280	0	4	0	2	6	10

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

South Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	5	46	18	0	69	2	9	5	0	16	0	0	0	0	0	0
07:15	1	65	28	0	94	1	4	5	0	10	0	0	0	0	0	1
07:30	5	57	31	0	93	1	4	7	0	12	0	0	0	0	0	0
07:45	9	73	33	0	115	0	3	0	0	3	0	0	0	0	0	0
08:00	1	69	27	0	97	1	5	2	0	8	0	0	0	0	0	1
08:15	6	64	22	0	92	0	8	5	0	13	0	0	0	0	0	0
08:30	1	69	28	0	98	0	2	4	0	6	0	0	0	0	0	0
08:45	7	84	28	0	119	1	6	6	0	13	0	0	0	0	0	1
SUBTOTAL	35	527	215	0	777	6	41	34	0	81	0	0	0	0	0	3

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

South Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	4	67	20	0	91	0	4	3	0	7	0	0	0	0	0	0
11:15	5	86	22	0	113	0	6	3	0	9	0	0	0	0	0	0
11:30	5	74	22	0	101	3	6	3	0	12	0	0	0	0	0	1
11:45	7	79	24	0	110	0	5	4	0	9	0	0	0	0	0	0
12:00	9	74	32	0	115	0	0	6	0	6	0	0	0	0	0	0
12:15	4	86	28	0	118	0	4	2	0	6	0	0	0	0	0	1
12:30	4	89	32	0	125	1	2	3	0	6	0	0	0	0	0	0
12:45	10	87	24	0	121	1	2	3	0	6	0	0	0	0	0	0
13:00	4	84	30	0	118	1	4	4	0	9	0	0	0	0	0	0
13:15	4	63	33	0	100	1	8	4	0	13	0	0	0	0	0	0
13:30	6	99	29	0	134	0	0	6	0	6	0	0	0	0	0	0
13:45	4	77	25	0	106	1	5	4	0	10	0	0	0	0	0	0
SUBTOTAL	66	965	321	0	1352	8	46	45	0	99	0	0	0	0	0	2

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

South Approach - Ferndale Dr N

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	16	127	24	0	167	0	3	6	0	9	0	0	0	0	0	0
15:15	5	117	28	0	150	0	4	1	0	5	0	0	0	0	0	0
15:30	6	109	25	0	140	1	2	4	0	7	0	0	0	0	0	1
15:45	3	179	33	0	215	0	6	4	0	10	0	1	0	0	1	0
16:00	2	124	28	0	154	1	2	6	0	9	0	2	0	0	2	0
16:15	3	146	23	0	172	0	3	1	0	4	0	0	0	0	0	0
16:30	11	168	30	0	209	0	3	2	0	5	0	0	0	0	0	0
16:45	3	155	37	0	195	1	2	3	0	6	0	1	0	0	1	0
17:00	3	151	25	0	179	0	1	4	0	5	0	0	0	0	0	0
17:15	8	185	17	0	210	1	0	1	0	2	0	0	0	0	0	0
17:30	2	115	26	0	143	0	1	2	0	3	0	0	0	0	0	1
17:45	4	137	31	0	172	0	1	3	0	4	0	0	0	0	0	0
SUBTOTAL	66	1713	327	0	2106	4	28	37	0	69	0	4	0	0	4	2
GRAND TOTAL	167	3205	863	0	4235	18	115	116	0	249	0	4	0	0	4	7

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

East Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
07:00	15	88	54	0	157	7	27	13	0	47	0	0	0	0	0	0
07:15	16	90	59	0	165	4	11	8	0	23	0	0	0	0	0	3
07:30	15	93	58	0	166	4	26	3	0	33	0	0	0	0	0	1
07:45	15	68	64	0	147	4	17	5	0	26	0	0	0	0	0	1
08:00	20	73	78	0	171	8	9	9	0	26	0	0	0	0	0	0
08:15	21	49	60	0	130	6	18	4	0	28	0	0	0	0	0	0
08:30	24	80	59	0	163	3	21	7	0	31	0	0	0	0	0	1
08:45	24	61	47	0	132	7	12	3	0	22	0	0	0	0	0	1
SUBTOTAL	150	602	479	0	1231	43	141	52	0	236	0	0	0	0	0	7

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

East Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	21	66	56	0	143	4	13	3	0	20	0	0	0	0	0	1
11:15	16	78	52	0	146	5	21	5	0	31	0	0	0	0	0	4
11:30	20	78	49	0	147	4	15	5	0	24	0	0	0	0	0	0
11:45	26	71	56	0	153	7	20	3	0	30	0	0	0	0	0	1
12:00	29	77	53	0	159	3	19	4	0	26	0	0	0	0	0	0
12:15	16	85	52	0	153	4	21	5	0	30	0	0	0	0	0	2
12:30	28	92	77	0	197	7	16	1	0	24	0	0	0	0	0	0
12:45	24	68	55	0	147	3	7	6	0	16	0	0	0	0	0	1
13:00	28	71	55	0	154	5	13	2	0	20	0	0	0	0	0	1
13:15	21	75	61	0	157	5	15	4	0	24	0	0	0	0	0	0
13:30	24	83	59	0	166	5	14	4	0	23	0	0	0	0	0	0
13:45	22	74	55	0	151	6	13	2	0	21	0	0	0	0	0	0
SUBTOTAL	275	918	680	0	1873	58	187	44	0	289	0	0	0	0	0	10

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

East Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	30	109	70	0	209	2	9	7	0	18	0	0	0	0	0	0
15:15	25	117	75	0	217	1	14	2	0	17	0	0	0	0	0	0
15:30	34	130	67	0	231	4	8	2	0	14	0	0	0	0	0	0
15:45	27	98	50	0	175	7	10	1	0	18	0	0	0	0	0	1
16:00	32	99	74	0	205	10	14	6	0	30	0	0	0	0	0	2
16:15	33	114	77	0	224	0	6	1	0	7	0	0	0	0	0	1
16:30	27	136	76	0	239	6	8	3	0	17	0	0	0	0	0	3
16:45	22	138	97	0	257	3	5	0	0	8	0	0	0	0	0	0
17:00	40	136	86	0	262	1	8	1	0	10	0	0	0	0	0	1
17:15	32	127	73	0	232	1	8	2	0	11	0	0	0	0	0	0
17:30	24	126	114	0	264	0	5	1	0	6	0	0	0	0	0	1
17:45	27	114	73	1	215	3	6	2	0	11	0	0	0	0	0	3
SUBTOTAL	353	1444	932	1	2730	38	101	28	0	167	0	0	0	0	0	12
GRAND TOTAL	778	2964	2091	1	5834	139	429	124	0	692	0	0	0	0	0	29

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

West Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
07:00	8	94	2	0	104	0	15	1	0	16	0	0	0	0	0	0
07:15	15	96	6	0	117	0	19	0	0	19	0	0	0	0	0	0
07:30	13	137	4	0	154	2	25	1	0	28	0	0	0	0	0	0
07:45	20	148	8	0	176	5	23	0	0	28	0	0	0	0	0	0
08:00	28	143	6	0	177	0	17	1	0	18	0	0	0	0	0	0
08:15	12	109	5	0	126	0	35	2	0	37	0	0	0	0	0	0
08:30	20	121	6	0	147	2	20	1	0	23	0	0	0	0	0	1
08:45	24	89	6	0	119	2	25	1	0	28	0	0	0	0	0	0
SUBTOTAL	140	937	43	0	1120	11	179	7	0	197	0	0	0	0	0	1

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
 Site Code: 2303700081
 Municipality: Barrie
 Count Date: Apr 12, 2023

West Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
11:00	14	97	6	0	117	3	15	2	0	20	0	0	0	0	0	0
11:15	14	98	4	0	116	2	18	2	0	22	0	0	0	0	0	1
11:30	23	102	5	0	130	4	12	0	0	16	0	0	0	0	0	1
11:45	15	79	5	0	99	0	16	1	0	17	0	0	0	0	0	0
12:00	27	118	6	0	151	0	15	2	0	17	0	0	0	0	0	0
12:15	16	106	5	0	127	2	18	1	0	21	0	0	0	0	0	0
12:30	19	90	5	0	114	2	16	0	0	18	0	0	0	0	0	0
12:45	22	106	7	0	135	3	16	0	0	19	0	0	0	0	0	0
13:00	14	110	3	0	127	1	33	1	0	35	0	0	0	0	0	0
13:15	24	85	10	0	119	0	24	0	0	24	0	0	0	0	0	0
13:30	11	116	5	0	132	2	27	1	0	30	0	0	0	0	0	0
13:45	12	95	10	0	117	1	27	0	0	28	0	0	0	0	0	1
SUBTOTAL	211	1202	71	0	1484	20	237	10	0	267	0	0	0	0	0	3

Traffic Count Data

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Municipality: Barrie
Count Date: Apr 12, 2023

West Approach - Dunlop St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	←	↑	→	↺	Total	←	↑	→	↺	Total	←	↑	→	↺	Total	
15:00	23	121	18	0	162	2	7	0	0	9	0	0	0	0	0	0
15:15	24	111	4	0	139	2	10	3	0	15	0	0	0	0	0	0
15:30	32	109	4	0	145	0	3	2	0	5	0	0	0	0	0	0
15:45	27	113	6	0	146	2	16	1	0	19	0	0	0	0	0	0
16:00	44	139	12	0	195	0	16	3	0	19	0	0	0	0	0	0
16:15	27	138	10	0	175	1	21	0	0	22	0	0	0	0	0	0
16:30	29	120	2	0	151	1	12	2	0	15	0	0	0	0	0	0
16:45	29	111	3	0	143	1	11	2	0	14	0	0	0	0	0	0
17:00	32	116	7	0	155	1	9	0	0	10	0	0	0	0	0	0
17:15	42	112	5	0	159	1	20	1	0	22	0	0	0	0	0	0
17:30	18	115	4	0	137	1	7	1	0	9	0	0	1	0	1	0
17:45	25	127	3	0	155	0	10	3	0	13	0	0	0	0	0	0
SUBTOTAL	352	1432	78	0	1862	12	142	18	0	172	0	0	1	0	1	0
GRAND TOTAL	703	3571	192	0	4466	43	558	35	0	636	0	0	1	0	1	4

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 09:00:00

One Hour Peak

From: 07:30:00
To: 08:30:00

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dunlop St W runs E/W

North Approach

	Out	In	Total
	862	596	1458
	43	48	91
	1	0	1
Totals	906	644	1550

Ferndale Dr N

	0	1	0	0
	4	24	15	0
	82	401	379	0
Totals	86	426	394	0






East Approach

	Out	In	Total
	614	1029	1643
	113	129	242
	0	0	0
Totals	727	1158	1885

Dunlop St W

				Totals
0	0	0	0	0
0	7	73	80	80
0	100	537	637	637
0	4	23	27	27






Peds: 1

Peds: 0



Peds: 2

Peds: 1

Dunlop St W

Totals			
0	0	0	0
281	260	21	0
353	283	70	0
93	71	22	0






West Approach

	Out	In	Total
	633	386	1019
	111	76	187
	0	0	0
Totals	744	462	1206

				
Totals	23	283	127	0
	21	263	113	0
	2	20	14	0
	0	0	0	0

Ferndale Dr N

South Approach

	Out	In	Total
	397	495	892
	36	50	86
	0	1	1
Totals	433	546	979

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023
Period: 07:00 - 09:00

Peak Hour Data (07:30 - 08:30)

Start Time	North Approach Ferndale Dr N						South Approach Ferndale Dr N						East Approach Dunlop St W						West Approach Dunlop St W						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
07:30	110	111	21	0	0	242	6	61	38	0	0	105	19	119	61	0	1	199	15	162	5	0	0	182	728
07:45	94	110	25	0	1	229	9	76	33	0	0	118	19	85	69	0	1	173	25	171	8	0	0	204	724
08:00	89	94	17	0	0	200	2	74	29	0	1	105	28	82	87	0	0	197	28	160	7	0	0	195	697
08:15	101	111	23	0	0	235	6	72	27	0	0	105	27	67	64	0	0	158	12	144	7	0	0	163	661
Grand Total	394	426	86	0	1	906	23	283	127	0	1	433	93	353	281	0	2	727	80	637	27	0	0	744	2810
Approach %	43.5	47	9.5	0	-	-	5.3	65.4	29.3	0	-	-	12.8	48.6	38.7	0	-	-	10.8	85.6	3.6	0	-	-	-
Totals %	14	15.2	3.1	0	-	32.2	0.8	10.1	4.5	0	-	15.4	3.3	12.6	10	0	-	25.9	2.8	22.7	1	0	-	26.5	-
PHF	0.9	0.96	0.86	0	-	0.94	0.64	0.93	0.84	0	-	0.92	0.83	0.74	0.81	0	-	0.91	0.71	0.93	0.84	0	-	0.91	0.96
Cars	379	401	82	0	-	862	21	263	113	0	-	397	71	283	260	0	-	614	73	537	23	0	-	633	2506
% Cars	96.2	94.1	95.3	0	-	95.1	91.3	92.9	89	0	-	91.7	76.3	80.2	92.5	0	-	84.5	91.3	84.3	85.2	0	-	85.1	89.2
Trucks	15	24	4	0	-	43	2	20	14	0	-	36	22	70	21	0	-	113	7	100	4	0	-	111	303
% Trucks	3.8	5.6	4.7	0	-	4.7	8.7	7.1	11	0	-	8.3	23.7	19.8	7.5	0	-	15.5	8.8	15.7	14.8	0	-	14.9	10.8
Bicycles	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles	0	0.2	0	0	-	0.1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	4
% Peds	-	-	-	-	25	-	-	-	-	-	25	-	-	-	-	-	50	-	-	-	-	-	0	-	-

Peak Hour Diagram

Specified Period

From: 11:00:00
To: 14:00:00

One Hour Peak

From: 12:45:00
To: 13:45:00

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dunlop St W runs E/W

North Approach

	Out	In	Total
	641	634	1275
	35	36	71
	0	0	0
Totals	676	670	1346

Ferndale Dr N

	0	0	0	0
	8	16	11	0
	54	307	280	0
Totals	62	323	291	0






East Approach

	Out	In	Total
	624	813	1437
	83	128	211
	0	0	0
Totals	707	941	1648

Dunlop St W

				Totals
0	0	0	0	0
0	6	71	77	77
0	100	417	517	517
0	2	25	27	27






Peds: 1



Peds: 0

Peds: 2

Peds: 0

Dunlop St W

Totals			
0	0	0	0
246	230	16	0
346	297	49	0
115	97	18	0






West Approach

	Out	In	Total
	513	375	888
	108	60	168
	0	0	0
Totals	621	435	1056

Totals				
27	347	133	0	0
	24	333	116	0
	3	14	17	0
	0	0	0	0

Ferndale Dr N

South Approach

	Out	In	Total
	473	429	902
	34	36	70
	0	0	0
Totals	507	465	972

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023
Period: 11:00 - 14:00

Peak Hour Data (12:45 - 13:45)

Start Time	North Approach Ferndale Dr N						South Approach Ferndale Dr N						East Approach Dunlop St W						West Approach Dunlop St W						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
12:45	74	84	13	0	0	171	11	89	27	0	0	127	27	75	61	0	1	163	25	122	7	0	0	154	615
13:00	60	69	20	0	0	149	5	88	34	0	0	127	33	84	57	0	1	174	15	143	4	0	0	162	612
13:15	73	75	12	0	1	160	5	71	37	0	0	113	26	90	65	0	0	181	24	109	10	0	0	143	597
13:30	84	95	17	0	0	196	6	99	35	0	0	140	29	97	63	0	0	189	13	143	6	0	0	162	687
Grand Total	291	323	62	0	1	676	27	347	133	0	0	507	115	346	246	0	2	707	77	517	27	0	0	621	2511
Approach %	43	47.8	9.2	0	-	-	5.3	68.4	26.2	0	-	-	16.3	48.9	34.8	0	-	-	12.4	83.3	4.3	0	-	-	-
Totals %	11.6	12.9	2.5	0	-	26.9	1.1	13.8	5.3	0	-	20.2	4.6	13.8	9.8	0	-	28.2	3.1	20.6	1.1	0	-	24.7	-
PHF	0.87	0.85	0.78	0	-	0.86	0.61	0.88	0.9	0	-	0.91	0.87	0.89	0.95	0	-	0.94	0.77	0.9	0.68	0	-	0.96	0.91
Cars	280	307	54	0	-	641	24	333	116	0	-	473	97	297	230	0	-	624	71	417	25	0	-	513	2251
% Cars	96.2	95	87.1	0	-	94.8	88.9	96	87.2	0	-	93.3	84.3	85.8	93.5	0	-	88.3	92.2	80.7	92.6	0	-	82.6	89.6
Trucks	11	16	8	0	-	35	3	14	17	0	-	34	18	49	16	0	-	83	6	100	2	0	-	108	260
% Trucks	3.8	5	12.9	0	-	5.2	11.1	4	12.8	0	-	6.7	15.7	14.2	6.5	0	-	11.7	7.8	19.3	7.4	0	-	17.4	10.4
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	3
% Peds	-	-	-	-	33.3	-	-	-	-	-	0	-	-	-	-	-	66.7	-	-	-	-	-	0	-	-

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 16:30:00
To: 17:30:00

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Dunlop St W runs E/W

North Approach

	Out	In	Total
	823	1123	1946
	21	16	37
	1	1	2
Totals	845	1140	1985

Ferndale Dr N

	0	1	0	0
	4	12	5	0
	84	423	316	0
Totals	88	436	321	0






East Approach

	Out	In	Total
	990	884	1874
	46	67	113
	0	0	0
Totals	1036	951	1987

Dunlop St W

				Totals
0	0	0	0	0
0	4	132	136	136
0	52	459	511	511
0	5	17	22	22






Peds: 1



Peds: 0

Peds: 4

Peds: 0

Dunlop St W

Totals			
0	0	0	0
338	332	6	0
566	537	29	0
132	121	11	0






West Approach

	Out	In	Total
	608	646	1254
	61	35	96
	0	0	0
Totals	669	681	1350

Totals				
27	666	119	0	0
	25	659	109	0
	2	6	10	0
	0	1	0	0

Ferndale Dr N

South Approach

	Out	In	Total
	793	561	1354
	18	28	46
	1	1	2
Totals	812	590	1402

 - Cars

 - Trucks

 - Bicycles

Comments

Peak Hour Summary

Intersection: Dunlop St W & Ferndale Dr N
Site Code: 2303700081
Count Date: Apr 12, 2023
Period: 15:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Ferndale Dr N						South Approach Ferndale Dr N						East Approach Dunlop St W						West Approach Dunlop St W						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
16:30	72	120	24	0	1	216	11	171	32	0	0	214	33	144	79	0	3	256	30	132	4	0	0	166	852
16:45	79	126	20	0	0	225	4	158	40	0	0	202	25	143	97	0	0	265	30	122	5	0	0	157	849
17:00	93	104	18	0	0	215	3	152	29	0	0	184	41	144	87	0	1	272	33	125	7	0	0	165	836
17:15	77	86	26	0	0	189	9	185	18	0	0	212	33	135	75	0	0	243	43	132	6	0	0	181	825
Grand Total	321	436	88	0	1	845	27	666	119	0	0	812	132	566	338	0	4	1036	136	511	22	0	0	669	3362
Approach %	38	51.6	10.4	0	-	-	3.3	82	14.7	0	-	-	12.7	54.6	32.6	0	-	-	20.3	76.4	3.3	0	-	-	-
Totals %	9.5	13	2.6	0	-	25.1	0.8	19.8	3.5	0	-	24.2	3.9	16.8	10.1	0	-	30.8	4	15.2	0.7	0	-	19.9	-
PHF	0.86	0.87	0.85	0	-	0.94	0.61	0.9	0.74	0	-	0.95	0.8	0.98	0.87	0	-	0.95	0.79	0.97	0.79	0	-	0.92	0.99
Cars	316	423	84	0	-	823	25	659	109	0	-	793	121	537	332	0	-	990	132	459	17	0	-	608	3214
% Cars	98.4	97	95.5	0	-	97.4	92.6	98.9	91.6	0	-	97.7	91.7	94.9	98.2	0	-	95.6	97.1	89.8	77.3	0	-	90.9	95.6
Trucks	5	12	4	0	-	21	2	6	10	0	-	18	11	29	6	0	-	46	4	52	5	0	-	61	146
% Trucks	1.6	2.8	4.5	0	-	2.5	7.4	0.9	8.4	0	-	2.2	8.3	5.1	1.8	0	-	4.4	2.9	10.2	22.7	0	-	9.1	4.3
Bicycles	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles	0	0.2	0	0	-	0.1	0	0.2	0	0	-	0.1	0	0	0	0	-	0	0	0	0	0	-	0	0.1
Peds	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	5
% Peds	-	-	-	-	20	-	-	-	-	-	0	-	-	-	-	-	80	-	-	-	-	-	0	-	-

APPENDIX C

ENVIRONMENTAL NOISE GUIDELINES

APPENDIX C

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: “*Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*”.

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, sleeping quarters of hotels/motels, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30 [#]
	Stationary Source		
	Class 1 Area	07:00 to 19:00 ⁽¹⁾	50* dBA
		19:00 to 23:00 ⁽¹⁾	50* dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾	50* dBA
		19:00 to 23:00 ⁽²⁾	45* dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾	45* dBA
		19:00 to 23:00 ⁽³⁾	40* dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾	55* dBA
		19:00 to 23:00 ⁽⁴⁾	55* dBA

..../cont'd

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source Class 1 Area	07:00 to 19:00 ⁽¹⁾	50* dBA
		19:00 to 23:00 ⁽¹⁾	50* dBA
		23:00 to 07:00 ⁽¹⁾	45* dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾	50* dBA
		19:00 to 23:00 ⁽²⁾	50* dBA
		23:00 to 07:00 ⁽²⁾	45* dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾	45* dBA
		19:00 to 23:00 ⁽³⁾	45* dBA
		23:00 to 07:00 ⁽³⁾	40* dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾	60* dBA
		19:00 to 23:00 ⁽⁴⁾	60* dBA
		23:00 to 07:00 ⁽⁴⁾	55* dBA

- # may not apply to in-fill or re-development.
 * or the minimum hourly background sound exposure $L_{eq(1)}$, due to road traffic, if higher.
 (1) Class 1 Area: Urban.
 (2) Class 2 Area: Urban during day; rural-like evening and night.
 (3) Class 3 Area: Rural.
 (4) Class 4 Area: Subject to land use planning authority's approval.

Reference: MECP Publication ISBN 0-7729-2804-5, 1987: *"Environmental Noise Assessment in Land-Use Planning"*.

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX D

SAMPLE CALCULATION

STAMSON 5.04 NORMAL REPORT Date: 23-01-2024 15:45:23
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: se_sf.te Time Period: Day/Night 16/8 hours
Description: **Predicted Sound Levels - SE Corner, South Facade**

Road data, segment # 1: HWY400, NB (day/night)

Car traffic volume : 85254/42621 veh/TimePeriod *
Medium truck volume : 1604/802 veh/TimePeriod *
Heavy truck volume : 4813/2406 veh/TimePeriod *
Posted speed limit : 100 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): 137500
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.75
Heavy Truck % of Total Volume : 5.25
Day (16 hrs) % of Total Volume : 66.67

Data for Segment # 1: HWY400, NB (day/night)

Angle1 Angle2 : -32.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 618.00 / 618.00 m
Receiver height : 17.30 / 17.30 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: HWY400, SB (day/night)

Car traffic volume : 85254/42621 veh/TimePeriod *
Medium truck volume : 1604/802 veh/TimePeriod *
Heavy truck volume : 4813/2406 veh/TimePeriod *
Posted speed limit : 100 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): 137500
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.75
Heavy Truck % of Total Volume : 5.25
Day (16 hrs) % of Total Volume : 66.67

Data for Segment # 2: HWY400, SB (day/night)

Angle1 Angle2 : -32.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 597.00 / 597.00 m
Receiver height : 17.30 / 17.30 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Dunlop ST W (day/night)

Car traffic volume : 21394/2377 veh/TimePeriod *
Medium truck volume : 1003/111 veh/TimePeriod *
Heavy truck volume : 1480/164 veh/TimePeriod *
Posted speed limit : 50 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): 26530
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 4.20
Heavy Truck % of Total Volume : 6.20
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Dunlop ST W (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 : 112.00 / 112.00 m
Receiver height : 17.30 / 17.30 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: Ferndale Dr (day/night)

Car traffic volume : 19004/2112 veh/TimePeriod *
Medium truck volume : 358/40 veh/TimePeriod *
Heavy truck volume : 537/60 veh/TimePeriod *
Posted speed limit : 50 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): 22110
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.80
Heavy Truck % of Total Volume : 2.70
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 4: Ferndale Dr (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 : 129.00 / 129.00 m
Receiver height : 17.30 / 17.30 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: HWY400, NB (day)

Source height = 1.51 m

ROAD (0.00 + 60.75 + 0.00) = 60.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	90	0.19	81.96	0.00	-19.15	-2.07	0.00	0.00	0.00	60.75

Segment Leq : 60.75 dBA

Results segment # 2: HWY400, SB (day)

Source height = 1.51 m

ROAD (0.00 + 60.93 + 0.00) = 60.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	90	0.19	81.96	0.00	-18.97	-2.07	0.00	0.00	0.00	60.93

Segment Leq : 60.93 dBA

Results segment # 3: Dunlop ST W (day)

Source height = 1.58 m

ROAD (0.00 + 60.33 + 0.00) = 60.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.18	71.16	0.00	-10.33	-0.50	0.00	0.00	0.00	60.33

Segment Leq : 60.33 dBA

Results segment # 4: Ferndale Dr (day)

Source height = 1.28 m

ROAD (0.00 + 55.33 + 0.00) = 55.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	67.68	0.00	-9.34	-3.01	0.00	0.00	0.00	55.33

Segment Leq : 55.33 dBA

Total Leq All Segments: 65.85 dBA

Results segment # 1: HWY400, NB (night)

Source height = 1.51 m

ROAD (0.00 + 60.75 + 0.00) = 60.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	90	0.19	81.96	0.00	-19.15	-2.07	0.00	0.00	0.00	60.75

Segment Leq : 60.75 dBA

Results segment # 2: HWY400, SB (night)

Source height = 1.51 m

ROAD (0.00 + 60.93 + 0.00) = 60.93 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	90	0.19	81.96	0.00	-18.97	-2.07	0.00	0.00	0.00	60.93

Segment Leq : 60.93 dBA

Results segment # 3: Dunlop ST W (night)

Source height = 1.58 m

ROAD (0.00 + 53.78 + 0.00) = 53.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.18	64.61	0.00	-10.34	-0.50	0.00	0.00	0.00	53.78

Segment Leq : 53.78 dBA

Results segment # 4: Ferndale Dr (night)

Source height = 1.28 m

ROAD (0.00 + 48.81 + 0.00) = 48.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	61.17	0.00	-9.34	-3.01	0.00	0.00	0.00	48.81

Segment Leq : 48.81 dBA

Total Leq All Segments: 64.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.85
(NIGHT): 64.38