

Jade
Acoustics
Inc.

Consulting
Engineers

411 Confederation Parkway
Unit 19
Concord, Ontario
L4K 0A8

Tel: (905) 660-2444
Fax: (905) 660-4110

PRELIMINARY ENVIRONMENTAL NOISE REPORT

PROPOSED RESIDENTIAL DEVELOPMENT
2570 TO 2590 ARGYLE ROAD
CITY OF MISSISSAUGA
REGION OF PEEL



Prepared for
2570-2590 Argyle Road
c/o Ranee Management

May 26, 2020
File: 19-136

TABLE OF CONTENTS

	SUMMARY.....	1
1.0	INTRODUCTION	2
2.0	NOISE SOURCES	3
2.1	Transportation Sources	3
2.2	Stationary Sources	3
2.2.1	Stationary Sources within the Development.....	3
2.2.2	Stationary Sources External to the Development.....	4
3.0	ENVIRONMENTAL NOISE CRITERIA.....	5
3.1	Transportation Sources	5
3.1.1	Indoors.....	5
3.1.2	Outdoors.....	5
3.2	Stationary Sources	6
3.3	City of Mississauga Noise Control By-law.....	7
4.0	NOISE IMPACT ASSESSMENT	8
4.1	Road Traffic.....	8
4.2	Stationary Sources	8
4.2.1	Stationary Sources within the Development.....	8
4.2.2	Stationary Sources External to the Development.....	9
5.0	NOISE ABATEMENT MEASURES	10
5.1	Road Traffic	10
5.1.1	Indoors.....	10
5.1.2	Outdoors.....	11
5.2	Stationary Sources	12
6.0	CONCLUSIONS AND RECOMMENDATIONS.....	13
7.0	REFERENCES	14

LIST OF TABLES

TABLE 1	SUMMARY OF ROAD TRAFFIC INFORMATION.....	15
TABLE 2	PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS DUE TO ROAD TRAFFIC.....	16
TABLE 3	SUMMARY OF MINIMUM NOISE ABATEMENT MEASURES.....	17

LIST OF FIGURES

FIGURE 1	KEY PLAN
FIGURE 2	PLAN OF DEVELOPMENT SHOWING NOISE ABATEMENT MEASURES

LIST OF APPENDICES

APPENDIX A	CORRESPONDENCE REGARDING TRAFFIC DATA	A-1
APPENDIX B	ENVIRONMENTAL NOISE CRITERIA.....	B-1
APPENDIX C	SAMPLE CALCULATION OF PREDICTED UNMITIGATED SOUND LEVELS	C-1
APPENDIX D	SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION.....	D-1

SUMMARY

The proposed residential development is located at 2570-2590 Argyle Road in the City of Mississauga on the south side of Dundas Street West, between Mason Heights to the west and Confederation Parkway to the east. The proposed development includes one (1) residential tower and associated podium. The proposed development is subject to road traffic noise from Dundas Street West. Additionally, potential noise associated with existing commercial developments has been evaluated. The site is not affected by rail or aircraft noise sources.

The environmental noise guidelines NPC-300 for transportation and stationary noise sources of the Ministry of the Environment, Conservation and Parks (MOE) set out sound level limits for both the indoor (transportation sources only) and outdoor space (both transportation and stationary sources). Sound levels due to the nearby roads were determined and compared to the MOE and the Region of Peel/City of Mississauga guidelines to determine the appropriate mitigation measures.

Using road traffic data obtained from the City of Mississauga, the sound levels for various locations in the residential development were determined using ORNAMENT, the noise prediction model of the MOE for road traffic.

The results of the road traffic noise predictions were used to determine the required mitigation measures to address the transportation noise sources. These measures include the provision for central air conditioning.

It is predicted that standard exterior wall and window construction will be acoustically satisfactory for the proposed residential tower. When final building plans are available, sound level predictions and architectural requirements should be verified, to ensure applicable guidelines are met.

Where minor excesses exist and noise mitigation measures are required, future occupants will be advised through the use of a warning clause.

Based on the separation distances and other conditions discussed in Section 2.2 of this report, the existing commercial uses are not expected to be acoustically significant at the proposed residential development; therefore, noise mitigation measures to address these are not required.

1.0 INTRODUCTION

Jade Acoustics Inc. was retained to prepare a Preliminary Environmental Noise Report to investigate the potential impact of external noise sources including transportation and stationary sources on the proposed residential development to the satisfaction of the City of Mississauga and the Region of Peel.

An evaluation of the potential acoustic impact between the suite units and all internal acoustic matters is outside the scope of work of this report as is construction noise and vibration.

The proposed residential development is located on the south side of Dundas Street West between Mason Heights to the west and Confederation Parkway to the east, in the City of Mississauga. Surrounding land uses are the existing residential developments and existing commercial developments.

The proposed development is identified as:

Part of Block A
Registered Plan E-23
2570-2590 Argyle Road
City of Mississauga
Region of Peel

The analysis was based on:

- Site Plan and Conceptual Architectural drawings prepared by IBI Group received January 8, 2020;
- Road traffic information provided by the City of Mississauga; and
- Site visit conducted by Jade Acoustics Inc. on November 5, 2019.

A Key Plan is attached as Figure 1.

Figure 2 shows the proposed residential development which includes one (1) tower and associated podium, indoor amenity spaces and an outdoor amenity space. In the surrounding area are existing commercial areas and existing low-rise/high-rise residential.

2.0 NOISE SOURCES

2.1 Transportation Sources

The major noise source of potentially adverse impact is the road traffic on Dundas Street West.

The ultimate traffic data for Dundas Street West was provided by the City of Mississauga on October 17, 2019.

Based on the traffic volumes, separation distance and existing intervening uses, road traffic on Confederation Parkway is expected to be acoustically insignificant; and therefore, was not considered further in this report.

Argyle Road is expected to have low road traffic volumes and is expected to be acoustically insignificant; therefore, it was not considered further in this report.

See Appendix A for correspondence regarding the road traffic information and Table 1 for a summary of road traffic information.

This site is not impacted by rail or aircraft traffic.

2.2 Stationary Sources

2.2.1 Stationary Sources within the Development

The identified mechanical sources of noise which may acoustically impact the adjacent residential developments include at-grade and rooftop HVAC equipment as well as garage exhaust fans. Information regarding the mechanical equipment is not available at this time. These potential noise sources will be addressed in a detailed noise report.

In regards to potential HVAC equipment, there are various noise mitigation measures that could be implemented if exceedances are determined. For example, higher rooftop parapets, local rooftop barriers or quieter units are all possible mitigation measures. As stated above, these potential noise sources will be addressed at the detailed stage of the project.

For potential garage exhaust fans, it is recommended that they be located away from existing residential dwellings, as well as proposed residential dwellings. To mitigate the impact of fan noise, a carbon monoxide sensor system that operates the fans when the CO levels exceed a pre-set limit should be installed. Typically with this system, the fans will operate during peak road traffic periods when the ambient environment noise (due to the road traffic) is relatively high.

Depending on the garage exhaust location and fan selected, additional mitigation in the form of a silencer may need to be installed. To create an effective silencer, internal baffles of absorptive material may also need to be installed.

2.2.2 Stationary Sources External to the Development

There are several existing commercial buildings located to the north of the proposed site along Dundas Street West. The commercial buildings are shown on Figure 1 and include:

- Multi-tenant commercial plaza to the north with tenants that include but are not limited to:
 - Intrepid Health Group Inc.
 - CIMT College
 - Wholehealth Pharmacy
 - Mississauga Foot Clinic
 - Aujla Law Group
 - Cora Dental

- South side of Dundas Street West at Argyle Road, north of the proposed development:
 - Auto 8000;
 - KC Auto Repair;
 - Capital Motors; and
 - Danny & Sons Auto Sales.

A detailed noise source inventory for the existing commercial developments was not completed. There are existing low-rise and high-rise residential developments located in relatively similar proximity to the commercial developments as the subject site. The commercial developments are expected to be achieving the applicable sound level limits at the existing residential receptors. Due to the separation distance, road traffic on Dundas Street West and expected compliance at existing residential developments, noise sources associated with the commercial developments are not anticipated to be acoustically significant at the subject site.

3.0 ENVIRONMENTAL NOISE CRITERIA

The MOE document “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300”, dated August, 2013, released October 21, 2013 (updated final version # 22) was used in the analysis. A brief summary of the NPC-300 guidelines is given in Appendix B.

The environmental noise criteria used for residential developments in the City of Mississauga, Region of Peel and the MOE environmental noise criteria are summarized below.

3.1 Transportation Sources

3.1.1 Indoors

If the nighttime (11:00 p.m. to 7:00 a.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window is 60 dBA or greater and/or if the daytime (7:00 a.m. to 11:00 p.m.) sound level in terms of Leq at the exterior face of a bedroom or living/dining room window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For nighttime sound levels (LeqNight) greater than 50 dBA to less than 60 dBA on the exterior face of a bedroom or living/dining room window or daytime sound levels (LeqDay) greater than 55 dBA to less than or equal to 65 dBA on the exterior face of a bedroom or living/dining room window, there need only be the provision for adding central air conditioning by the occupant at a later date. This typically involves a ducted heating system sized to accommodate the addition of central air conditioning by the occupant at a later date. A warning clause advising the occupant of the potential interference with some activities is also required.

In all cases, air cooled condenser units must not exceed an AHRI sound rating of 7.6 bels. The air cooled condenser units must be sited in accordance with the zoning by-laws with respect to setbacks as well as location.

As required by the MOE, indoor noise criteria for road traffic noise is 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for living/dining rooms during nighttime hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria are used to determine the architectural requirements.

3.1.2 Outdoors

For the outdoor amenity areas, a design goal of 55 dBA daytime (7:00 a.m. to 11:00 p.m.) sound level is used for road traffic. In some cases an excess not exceeding 5 dBA is considered acceptable. Where the unmitigated sound levels during the day exceed 55 dBA

(Leq16hour, daytime) but are less than 60 dBA (Leq16hour, daytime), a warning clause is required and mitigation should be considered. Where the unmitigated sound levels during the daytime hours exceed 60 dBA, mitigation measures and a warning clause are required.

The definition of outdoor amenity area as defined by the MOE is given below.

"Outdoor Living Area (OLA)

(applies to impact assessments of transportation sources) means that part of a noise sensitive land use that is:

- intended and designed for the quiet enjoyment of the outdoor environment; and
- readily accessible from the building.

The OLA includes:

- backyards, front yards, gardens, terraces or patios;
- balconies and elevated terraces (e.g. rooftops), with a minimum depth of 4 metres, that are not enclosed, provided they are the only outdoor living area (OLA) for the occupant; or
- common outdoor living areas (OLAs) associated with high-rise multi-unit buildings.”

In this case all proposed balconies of the residential units are less than 4.0 m deep and as such are not considered to be noise sensitive receptors.

For both the indoor and outdoor conditions where the acoustical criteria are exceeded, warning clauses must be placed in offers of purchase and sale and/or lease agreements and included in the development agreement.

3.2 Stationary Sources

MOE Noise Guidelines

The guidelines of the Ontario Ministry of the Environment and Climate Change (MOE) for stationary sources are to be used for commercial/industrial facilities.

The MOE has recently published the document NPC-300 titled “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”.

The MOE also has vibration guidelines with respect to stationary sources, NPC-207. These guidelines require that the peak vibration velocities not exceed 0.3 mm/s at the point of reception during the day or night.

The MOE recognizes the need for back-up beepers/alarms as safety devices and as such does not have any guidelines or criteria to address these sources.

It should be noted that the MOE guidelines do not require that the source be inaudible, but rather that specific sound level limits be achieved.

With respect to stationary sources of noise in urban areas, the MOE guidelines require that the sound level due to the stationary source at the building façade and outdoor amenity spaces not exceed the sound level due to road traffic and in certain situations due to rail traffic in any hour of source operation, subject to specific exclusions. Tables C-5, C-6, C-7 and C-8 of NPC-300 included in Appendix B provided the exclusion limit values of one-hour equivalent sound level (Leq,dBA) and impulsive sound level (L_{LM},dBAI).

In general, if the criteria for a stationary source of noise are exceeded, the MOE recommends that control be implemented at the source rather than at the receiver. Alternatively, if the receiver is set back from the source or if a physical barrier is constructed so that the criteria can be met at the receiver, no additional mitigative measures are required. Treatment of the receptor building by the use of suitable wall and window construction and central air conditioning to keep windows closed is not an acceptable solution to the MOE in Class 1 and 2 areas (urban). In addition, a warning clause in offers of purchase and sale and/or lease agreement noting the proximity of dwellings to such a source should be considered.

3.3 City of Mississauga Noise Control By-law

The City of Mississauga has a by-law to prohibit or regulate unusual noises likely to disturb the inhabitants of the City; Noise Control By-law Number 360-79. The by-law does not provide specific sound level limits, but rather provides qualitative information with respect to sources and provides prohibitions by time and place.

4.0 NOISE IMPACT ASSESSMENT

4.1 Road Traffic

For road traffic noise the sound levels in terms of Leq, the energy equivalent continuous sound levels for both day (16 hours) and night (8 hours), were predicted using ORNAMENT, the MOE Traffic Noise Prediction Model for road traffic.

The site plan prepared by IBI Group was used in the analysis. The topography between the source and the receiver has been taken into account. Shielding provided by the buildings has also been accounted for in the analysis.

Where applicable, screening by the existing and proposed residential and commercial developments surrounding the proposed site was included in the predictions.

For Building C, north façade, the unmitigated sound levels at the façade are predicted to be up to 62 dBA for the daytime period (16 hours) between 7:00 a.m. and 11:00 p.m. and up to 56 dBA for the nighttime period (8 hours) between 11:00 p.m. and 7:00 a.m.

For Building C, the outdoor amenity area located on the fifth storey rooftop, the unmitigated sound levels are predicted to be less than 55 dBA for the daytime period (16 hours) between 7:00 a.m. and 11:00 p.m.

See Table 2 for a detailed summary. Appendix C contains sample calculations of the sound levels.

Where the sound level limits are expected to be exceeded, mitigative measures and warning clauses are required.

4.2 Stationary Sources

4.2.1 Stationary Sources within the Development

As discussed in Section 2.2.1, potential noise sources associated with the proposed development should be addressed in a detailed noise report.

A general comment can be provided now for garbage collection and deliveries. As the garbage pickup activities and delivery activities are infrequent and generally of short duration, the potential noise impact is not expected to be significant. These activities generally take place during daytime hours and they do not require specific mitigative measures.

4.2.2 Stationary Sources External to the Development

As discussed in Section 2.2.2, noise sources associated with the surrounding commercial uses are not expected to be acoustically significant at the subject site and were not assessed further in this report.

5.0 NOISE ABATEMENT MEASURES

5.1 Transportation Sources

5.1.1 Indoors

Architectural Component Requirements

Indoor sound level criteria for road traffic can be achieved in all cases by using appropriate architectural elements for external wall, roof, window and exterior door construction. MOE indoor criteria for road traffic noise are 40 dBA (Leq8hour) for the bedrooms during nighttime hours, 45 dBA (Leq8hour) for the living/dining rooms during nighttime hours and 45 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria have been used in this report. The characteristic spectra for the noise sources have been accounted for in the determination of the architectural components. Appendix D contains a sample calculation of architectural component selection.

Architectural plans including suite layouts were not available at this time. Once final dwelling plans become available, the noise control requirements should be re-evaluated.

In determining the architectural requirements, it is assumed that the worst case residential condition would involve a corner living/dining room. The exterior walls would be 20% and the windows 60% of the associated floor area for both the wall perpendicular to the noise source and the wall parallel to the noise source.

Based on the preliminary analysis, for the worst case receptors, windows and exterior doors need to be STC 27 and exterior walls need to be STC 27 to provide the mitigation required for noise due to road traffic.

An STC 27 rating for windows and exterior doors and an STC 27 rating for exterior walls are typically achieved with the minimum structural and safety requirements provided by standard construction practices; therefore, standard window and exterior wall construction is acoustically acceptable for the proposed building.

Ventilation Requirements

Where the sound level from road traffic is 60 dBA or greater (at night) on the outside face of a bedroom or living/dining room window or greater than 65 dBA (during the day) on the outside face of a bedroom or living/dining room window, the indoor noise criteria would not be met with open windows and provisions must be made to permit the windows to remain closed. The Regional Municipality of Peel guidelines require central air conditioning and warning clauses.

Where the sound level during nighttime hours is greater than 50 dBA to less than or equal to 59 dBA and during daytime hours is greater than 55 dBA to less than or equal to 65 dBA, provision for adding central air conditioning by the occupants must be made. Based on the analysis, the provision for adding central air conditioning is required for the proposed building.

The provision for adding central air conditioning is not practical in a high-rise building. It is anticipated that all residential units will be provided with central air conditioning, thereby satisfying the acoustical requirements.

Warning clauses will also be required to be placed in offers of purchase and sale and/or lease agreements and in the development agreement for all relevant dwelling units to make future occupants aware of the potential noise environment.

See Table 3 and notes to Table 3 for details of minimum noise abatement measures required.

5.1.2 Outdoors

The outdoor amenity area is required to be exposed to a sound level of 55 dBA or less during the day. A 5 dBA increase is considered acceptable in certain situations. Typically, if the sound level is above 55 dBA, some form of mitigation is recommended and warning clauses are required. Where the sound levels exceed 60 dBA, mitigation and warning clauses are required.

Since the predicted sound level is less than 55 dBA at the common outdoor amenity area associated with the building, sound barriers are not required and are therefore not proposed at the subject site.

Once the final outdoor amenity space layouts are available, the required mitigation measures, if required can be determined.

All balconies and other elevated private terraces which are less than 4.0 m in depth are not considered a noise sensitive space that require mitigation.

Where an excess will remain or where mitigation measures are required, a warning clause should be placed in offers of purchase and sale and/or lease agreements and in the development agreement. Warning clause requirements are listed in Table 3 and specific wording is included in the Notes to Table 3.

5.2 Stationary Sources

As discussed in Section 2.2.2, noise sources associated with the surrounding commercial uses are not expected to be acoustically significant at the subject site and were not assessed further in this report.

All units should be provided with a proximity warning clause notifying the purchasers/tenants that the activities associated with the existing commercial buildings may at times be audible. See Table 3, Notes to Table 3 and Figure 2.


6.0 CONCLUSIONS AND RECOMMENDATIONS

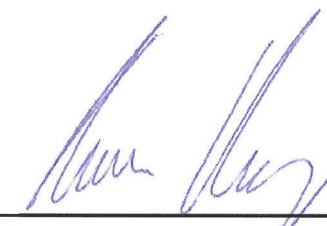
Based on the acoustical analysis, with the incorporation of the mitigation requirements stipulated in Section 5.0 and Table 3 and shown on Figure 2, the sound levels for the proposed residential development will be within the applicable environmental noise criteria.


Once final details of the building are available, a detailed environmental noise report should be prepared to ensure the applicable environmental noise criteria is achieved.

Respectfully submitted,

JADE ACOUSTICS INC.

Per: 
Kristofer Tassis, E.I.T.

Per: 
Aaron Keey, P.Eng.



KT/AK/sh
J:\Reports\19-136 May 26-20 Dundas Street West & Confederation Parkway.doc

7.0 REFERENCES

1. "Model Municipal Noise Control By-Law", Final Report, by the Ontario Ministry of the Environment, August, 1978.
2. ORNAMENT – "Ontario Road Noise Analysis Method for Environment and Transportation", Ontario Ministry of the Environment, October, 1989.
3. "Building Practice Note No. 56: Controlling Sound Transmission into Buildings", by J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.
4. "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).
5. "Impulse Vibration in Residential Buildings", Ontario Ministry of Environment Publication NPC-207 (Draft), November, 1983.
6. "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", Region of Peel, November, 2012
7. "Noise Control By-law Number 360-79 latest amendment 125-18", City of Mississauga, January 28, 1980".

TABLE 1
PROPOSED RESIDENTIAL DEVELOPMENT
2570 TO 2590 ARGYLE ROAD
CITY OF MISSISSAUGA

SUMMARY OF ROAD TRAFFIC INFORMATION

ROAD	DUNDAS STREET WEST
AADT*	26,000 (ultimate)
No. of Lanes	4
Posted Speed (km/hr)	60
Trucks (%)	2
Medium/Heavy Split (%)	55/45
Gradient (%)	2
Day/Night Split (%)	90/10
Right of Way (m)	35

* AADT: Annual Average Daily Traffic.

TABLE 2
PROPOSED RESIDENTIAL DEVELOPMENT
2570 TO 2590 ARGYLE ROAD
CITY OF MISSISSAUGA

PREDICTED UNMITIGATED SOUND LEVELS
OUTDOORS DUE TO ROAD TRAFFIC

Building*	Location**	Source	Distance (m)	Leq (dBA)	
				Day (7:00 a.m. to 11:00 p.m.)	Night (11:00 p.m. to 7:00 a.m.)
Building C	North Wall	Dundas Street West	89	62	56
Building C Rooftop Terrace	5 th Floor	Dundas Street West	121	47	--

* See Figure 2 for receptor locations.

** North façade wall receivers for Building C is 24 m above ground. The wall receiver locations were selected as the representative worst case locations. The outdoor amenity area receiver location was taken at the centre of the area 1.5 m above the 5th storey at a height of 13.9 m.

TABLE 3
PROPOSED RESIDENTIAL DEVELOPMENT
2570 TO 2590 ARGYLE ROAD
CITY OF MISSISSAUGA

SUMMARY OF MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning ⁽¹⁾	Exterior Wall ⁽²⁾	Window ⁽²⁾	Sound Barrier	Warning Clause ⁽³⁾
All Residential Units within Building C	Mandatory*	Standard**	Standard**	No	A, B, C

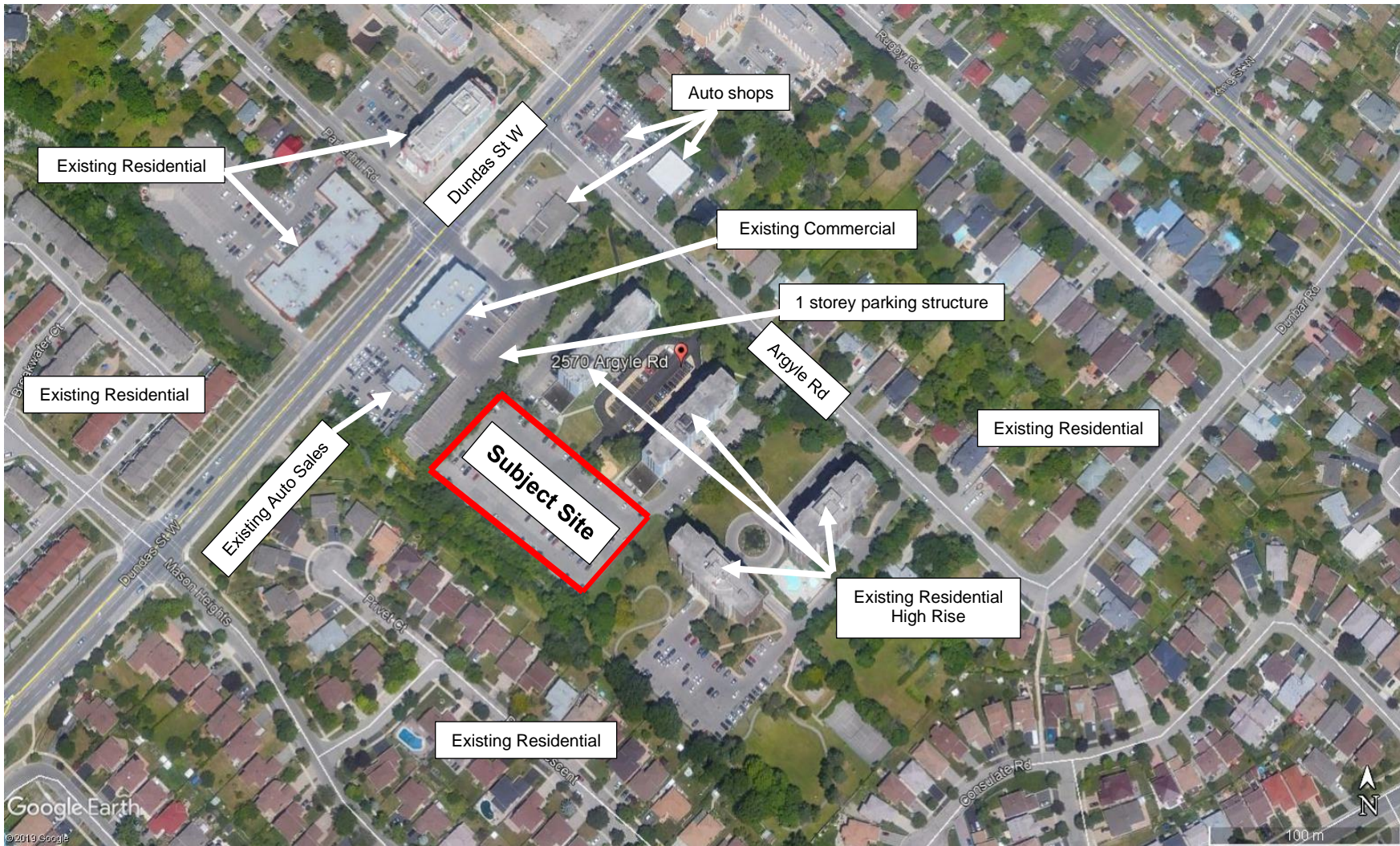
* See Section 5.1.1 for details. Dwelling designs are anticipated to include central air conditioning.

** Construction meeting the minimum structural and safety requirements provided by standard construction practices. See Section 5.1.1 for details.

See Notes to Table 3 on following pages.

NOTES TO TABLE 3

1. It is anticipated that all residential units will be provided with central air conditioning that will allow windows to remain closed for noise control purposes.
2. STC – Sound Transmission Class Rating (Reference ASTM-E413). See Section 5.1.1 for details.
3. Warning Clauses to be placed in the development agreement and to be included in offers of purchase and sale or lease agreements on designated units:
 - A. "Purchasers/tenants are advised that despite the inclusion of noise control features in this development area and within the dwelling units, noise due to increasing road traffic may continue to be of concern, occasionally interfering with the activities of the occupants as the sound level may exceed the noise criteria of the Municipality and the Ontario Ministry of the Environment, Conservation and Parks. I, the purchaser hereby agree to place this clause in all subsequent offers of purchase and sale when I sell the property."
 - B. "Purchasers/tenants are advised that the dwelling was fitted with a central air conditioning system in order to permit closing of windows for noise control."
 - C. "Purchasers/tenants are advised that the dwelling unit is in proximity to existing commercial uses, whose activities may at times be audible."



N.T.S.

**Proposed Residential Development
2570 to 2590 Argyle Road
City of Mississauga**

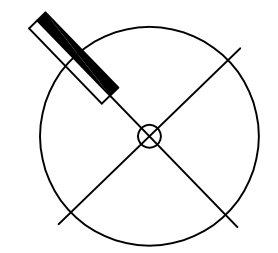
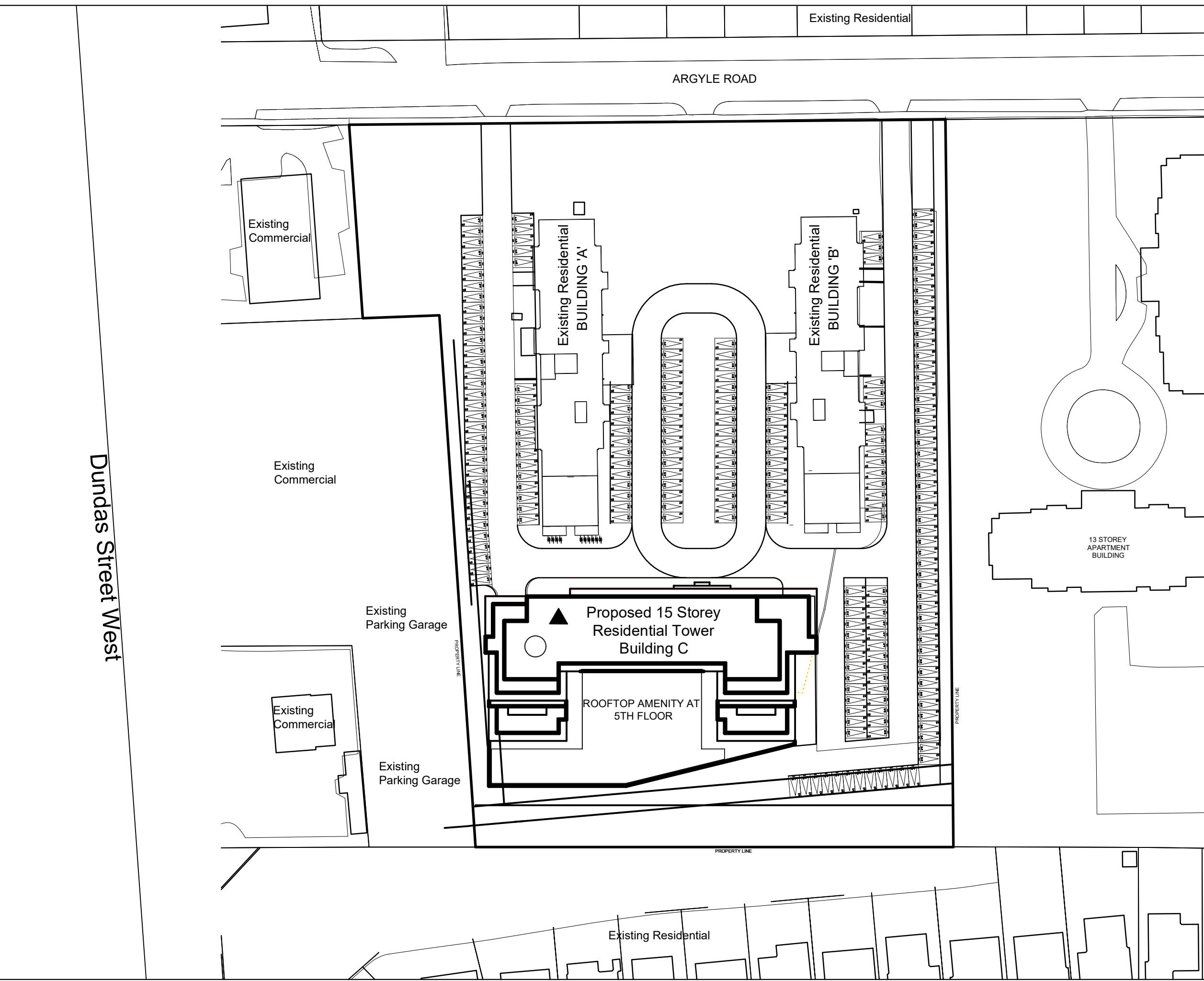
Date: May 2020

File: 19-136

KEY PLAN

FIGURE 1





- Legend:
- ▲ Mandatory Central Air Conditioning and Warning Clause (See text and Table 3 for details)
 - Analyzed Building
- Note: (See text, Table 3 and notes to Table 3 for details)

N.T.S.

Proposed Residential Development
2570 to 2590 Argyle Road
City of Mississauga

Date: May 2020 Our File: 19-136



PLAN OF
DEVELOPMENT
SHOWING NOISE
ABATEMENT
MEASURES

FIGURE 2

APPENDIX A

CORRESPONDENCE REGARDING TRAFFIC DATA

Date: 17-Oct-19

NOISE REPORT FOR PROPOSED DEVELOPMENT

REQUESTED BY:

Name: Michael Bechbache

Company: Jade Acoustics Inc



PREPARED BY:

Name: Bertuen Mickle

Tel#: (905) 615-3200

Location:

Dundas Street West- South/West of Confederation Parkway
Confederation Parkway -South of Dundas Street West

ID#:

432

ON SITE TRAFFIC DATA

Specific	Street Names			
	Dundas Street West	Confederation Parkway		
AADT:	26,000	13,000		
# of Lanes:	4 Lanes	3 Lanes		
% Trucks:	4.5%	2%		
Medium/Heavy Trucks Ratio:	55/45	55/45		
Day/Night Traffic Split:	90/10	90/10		
Posted Speed Limit:	60 km/h	50 km/h		
Gradient of Road:	<2%	<2%		
Ultimate R O W:	35m	30m		

Comments:

Ultimate Traffic Data Only

APPENDIX B

ENVIRONMENTAL NOISE CRITERIA

ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MOE)

Reference: "Environmental Noise Guidelines Stationary and Transportation Sources – Approval and Planning", Publication NPC-300, August, 2013, released October 21, 2013 (updated final version #22).

SOUND LEVEL CRITERIA FOR ROAD AND RAIL NOISE

TABLE C-1

**Sound Level Limit for Outdoor Living Areas
Road and Rail**

Time Period	L_{eq} (16) (dBA)
16 hr, 07:00 - 23:00	55

TABLE C-2

**Indoor Sound Level Limits
Road and Rail**

Type of Space	Time Period	L_{eq} (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping Quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

SOUND LEVEL CRITERIA FOR AIRCRAFT NOISE

TABLE C-3
Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

TABLE C-4
Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, nursing/retirement homes, schools, daycare centres, etc.	5
Sleeping Quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

SOUND LEVEL CRITERIA FOR STATIONARY SOURCES

TABLE C-5

**Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq} , dBA)
Outdoor Points of Reception**

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

TABLE C-6

**Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq} , dBA)
Plane of Window of Noise Sensitive Spaces**

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

TABLE C-7
Exclusion Limit Values for Impulsive Sound Level (L_{LM} , dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

TABLE C-8
Exclusion Limit Values of Impulsive Sound Level (L_{LM} , dBAI)
Plane of Window - Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00-23:00) / (23:00-07:00)	Class 2 Area (07:00-23:00) / (23:00-07:00)	Class 3 Area (07:00-19:00) / (19:00-07:00)	Class 4 Area (07:00-23:00) / (23:00-07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

SUPPLEMENTARY SOUND LEVEL LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

TABLE C-9
Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L _{eq} (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

TABLE C-10
Supplementary Indoor Aircraft Noise Limit
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

APPENDIX C

SAMPLE CALCULATION OF PREDICTED UNMITIGATED SOUND LEVELS

APPENDIX C-1
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 19-136
NAME: 2570 – 2590 Argyle Road
REFERENCE DRAWINGS: Site Plan
LOCATION: Building C, 5th Floor Outdoor Amenity Area

Noise Source:	Dundas Street West
Segment Angle:	-90 to -29
Time Period:	16 hr. (day)
Distance (m):	121.00

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	70.01
Height and/or Distance Correction (dBA):	-11.75
Finite Element Correction (dBA):	-5.82
Allowance for Future Growth (dBA):	incl.

LeqDay (dBA):	47.12
---------------	-------

* Leq determined using the computerized model of the Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

Filename: Sola.te **Time Period: Day 16 hours**
Description: 5th Storey OLA

Road data, segment # 1: DUNDASW (day)

```
-----
Car traffic volume : 22347 veh/TimePeriod *
Medium truck volume : 580 veh/TimePeriod *
Heavy truck volume : 473 veh/TimePeriod *
Posted speed limit : 60 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): 26000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.48
Heavy Truck % of Total Volume : 2.02
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: DUNDASW (day)

```
-----
Angle1 Angle2 : -90.00 deg -29.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 121.94 m
Receiver height : 1.50 m
Topography : 4 (Elevated; with barrier)
Barrier angle1 : -90.00 deg Angle2 : -29.00 deg
Barrier height : 0.10 m
Elevation : 12.40 m
Barrier receiver distance : 19.70 m
Source elevation : 0.00 m
Receiver elevation : 12.40 m
Barrier elevation : 12.40 m
Reference angle : 0.00
```

Results segment # 1: DUNDASW (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
-----
Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.19 ! 1.50 ! -0.55 ! 11.85
```

ROAD (0.00 + 47.12 + 0.00) = 47.12 dBA

```
-----
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90 -29 0.29 70.01 0.00 -11.75 -5.82 0.00 0.00 -5.31 47.12
-----
```

Segment Leq : 47.12 dBA

Total Leq All Segments: 47.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.12

**APPENDIX C-2
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS**

FILE: 19-136
NAME: 2570 – 2590 Argyle Road
REFERENCE DRAWINGS: Site Plan
LOCATION: Building C, North Wall

Noise Source:	Dundas Street West
Segment Angle:	-90 to 90
Time Period:	16 hr. (day)
Distance (m):	89.00

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	70.01
Height and/or Distance Correction (dBA):	-7.73
Finite Element Correction (dBA):	0.00
Allowance for Future Growth (dBA):	incl.

LeqDay (dBA):	62.27
---------------	-------

* Leq determined using the computerized model of the Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

APPENDIX C-3
SAMPLE CALCULATION OF PREDICTED SOUND LEVELS

FILE: 19-136
NAME: 2570 – 2590 Argyle Road
REFERENCE DRAWINGS: Site Plan
LOCATION: Building C, North Wall

Noise Source:	Dundas Street West
Segment Angle:	-90 to 90
Time Period:	8 hr. (night)
Distance (m):	89.00

CALCULATION OF PREDICTED SOUND LEVELS*

Reference Leq (dBA)*:	63.49
Height and/or Distance Correction (dBA):	-7.73
Finite Element Correction (dBA):	0.00
Allowance for Future Growth (dBA):	incl.

LeqNight (dBA):	55.75
-----------------	-------

* Leq determined using the computerized model of the Ministry of the Environment Noise Assessment Guidelines, STAMSON Version 5.04 (ORNAMENT). See attached printouts.

Filename: 9n.te Time Period: Day/Night 16/8 hours
Description: 9th Storey Building Requirement

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

```
-----
Car traffic volume : 22347/2483 veh/TimePeriod *
Medium truck volume : 580/64 veh/TimePeriod *
Heavy truck volume : 473/53 veh/TimePeriod *
Posted speed limit : 60 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): 26000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.48
Heavy Truck % of Total Volume : 2.02
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: DUNDASW (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 : 89.00 / 89.00 m
Receiver height : 24.00 / 24.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: DUNDASW (day)

Source height = 1.19 m

ROAD (0.00 + 62.27 + 0.00) = 62.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	70.01	0.00	-7.73	0.00	0.00	0.00	0.00	62.27

Segment Leq : 62.27 dBA

Total Leq All Segments: 62.27 dBA

Results segment # 1: DUNDASW (night)

Source height = 1.19 m

ROAD (0.00 + 55.75 + 0.00) = 55.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.49	0.00	-7.73	0.00	0.00	0.00	0.00	55.75

Segment Leq : 55.75 dBA

Total Leq All Segments: 55.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.27
 (NIGHT): 55.75

APPENDIX D

SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION

