Jade Acoustics Inc. Consulting Engineers
411 Confederation Parkway
Unit 19
Concord, Ontario
L4K 0A8
Tel: (905) 660-2444
Fax: (905) 660-4110

ENVIRONMENTAL NOISE REPORT

PROPOSED INDUSTRIAL DEVELOPMENT
DEZEN INDUSTRIAL LANDS, PHASE 2
HIGHWAY 10 AND HIGHWAY 407
CITY OF MISSISSAUGA

JADE ACOUSTICS

PREPARED FOR
DeZen Realty Co. Ltd.

March 12, 2025
File: 14-064-02

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES - Continued

LIST OF APPENDICES

SUMMARY

The proposed industrial development is to be located within the southwest quadrant of Highway 407 and Hurontario Street (Highway 10), in the City of Mississauga. The proposed development will consist of seven (7) industrial buildings, parking/loading areas at grade, and internal roads.

The noise sources associated with the proposed development are rooftop mechanical equipment, non-refrigerated truck passbys and idling, as well as impulses associated with the loading/unloading operations.

The environmental noise guidelines of the City of Mississauga and the Ministry of the Environment, Conservation and Parks (MECP) set a sound level limit due to the stationary sources based on the existing ambient sound level without the source in operation with the lower limits of 50 dBA during daytime and evening hours and 45 dBA during nighttime hours.

Based on the preliminary analysis, the applicable sound levels are not predicted to be in compliance with the applicable MECP guidelines at some of the nearest existing sensitive receptor locations; therefore, mitigation measures are required.

With the installation of two local acoustic barriers up to 3.6 m high, sound level limit compliance at all surrounding noise sensitive receptors will be predicted.

Garbage collection operations should be limited to daytime hours between 7:00 a.m. and 7:00 p.m., Monday to Friday.

1.0 INTRODUCTION

Jade Acoustics Inc. was retained by DeZen Realty Co. Ltd. to prepare an Environmental Noise Report in support of the development application for the subject site. This report has been prepared to investigate the potential impact of the proposed industrial development on the neighbouring sensitive receptors to the satisfaction of the City of Mississauga and Region of Peel. The report also investigates the impact of the neighbourhood on the development and the impact of the development upon itself.

The proposed development will consist of seven industrial buildings, parking/loading areas at grade and internal roads.

The proposed development is located within the southwest quadrant of Highway 407 and Hurontario Street in the City of Mississauga.

Surrounding land uses include existing residential developments to the southwest, existing golf course to the south, existing commercial and industrial developments to the southeast, other lands owned by the applicant to the northeast, and existing hydro station immediately to the north of the proposed site. There is also an existing hotel to the east/northeast of the subject site, on the east side of Hurontario Street.

Figure 1 shows the Key Plan. Figure 2 shows the Site Plan of the proposed development.

In preparing this report, the following information has been used:

- Site visit conducted by Jade Acoustics Inc. staff on January 23, 2025;
- Composite Draft Grading Plan prepared by Skira and Associates Ltd. (including topographic survey information by others), dated November, 2024, received February 25, 2025;
- Grading information from Jade files for existing residential developments to the southwest;
- Proposed Draft Plan of Subdivision prepared by Design Plan Services Inc., dated March 7, 2025, received March 10, 2025;
- Trucking information through correspondence with GHD Ltd.; and
- Site plan prepared by Baldassarra Architects Inc. dated December 2024, received March 10, 2025.

At the time of writing this report, information on specific future uses and tenants of the proposed buildings is not known.

2.0 NOISE SOURCES

Noise Sources Within the Development

Noise sources associated with the proposed industrial development include rooftop mechanical equipment, non-refrigerated truck passbys and idling, as well as impulses associated with the loading/unloading operations at the loading bays of Buildings A to C, inclusive. Impulses associated with loading/unloading operations have not been included for the other buildings as loading docks are not expected to be included, based on the site plan.

At the time of preparation of this report, information on rooftop mechanical equipment is not available and was therefore assumed based on information from Jade files for similar developments. Once final mechanical equipment information is available, additional analysis may need to be conducted to ensure compliance with the guidelines at the noise sensitive receptors.

Based on information provided by GHD Ltd., 84 non-refrigerated tractor trailer round-trips are anticipated to occur within the overall site, with varying quantities per building. The truck volumes on a per-building basis are shown in Appendix B. The tractor trailers will access and leave the site from Vicksburgh Drive, near the east corner of the subject site. The truck routes to the respective buildings are as shown on Figures 4 and 6.

Impulses associated with the loading/unloading operations at the loading bays of proposed Buildings A to C were also included, as shown on Figures 5 and 7.

Sound power levels for the analyzed rooftop mechanical equipment, non-refrigerated truck passbys and idling, as well as loading/unloading operations were based on information from Jade files for similar developments. Details are included in Appendix B.

Noise Sources External to the Development

The subject site is potentially impacted by transportation noise due to road traffic on Hurontario Street and Highway 407, as well as aircraft noise due to the Toronto Pearson International Airport.

There are additionally external stationary noise sources in the area of the subject site.

Based on the nature of the development, the anticipated uses are generally not considered to be noise sensitive, as defined by the MECP. On this basis, assessment of the impact of external noise on the subject site is not explicitly required and has not been included in this report; however, see Section 5.1 for additional discussion.

That said, the City of Mississauga Official Plan requires the assessment of aircraft noise for industrial developments if they are located above the NEF 35 contour. As a portion of Buildings D and E is located at the NEF 35 contour, aircraft noise has been considered in this report.

3.0 ENVIRONMENTAL NOISE GUIDELINES

The MECP (formerly 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 for the analysis. A brief summary of the NPC-300 guidelines is given in Appendix A. The guidelines are also summarized below.

For the purpose of this analysis, the area of the proposed development was considered to be a Class 1 Residential Area.

The MECP guidelines require that the sound level due to the stationary source not exceed the ambient sound level due to road traffic in any hour of operation, or the values of 50 dBA between 7:00 a.m. and 11:00 p.m. applicable to any location on the premises of a person including outdoor areas and the plane of any window and 45 dBA between 11:00 p.m. and 7:00 a.m. applicable to the plane of any open window but not to outdoor areas, whichever is higher. Tables C-5, C-6, C-7 and C-8 of NPC-300, included in Appendix A, provide the exclusion limit values of one-hour equivalent sound level (Leq, dBA) and impulsive sound level (Llm, dBAI).

The sound level limits applicable within the City of Mississauga are generally consistent with the above noted MECP criteria.

The most critical hour is usually the quietest hour of road traffic in which the stationary source is also operating. If the guidelines are exceeded, the MECP requires mitigation measures, preferably at the source. The sounds from the stationary source are measured in terms of Leq, the energy equivalent continuous sound level over a defined time period (in this case, one hour) and Llm, the logarithmic average of sound levels (impulses) measured using the impulsive settings of sound level meters.

The MECP 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 MECP 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 MECP guidelines do not require that the source be inaudible but rather that specific sound level limits be achieved.

In addition to the requirements of the MECP, the City of Mississauga Official Plan (Chapter 6 – Value the Environment) includes considerations with respect to noise, which generally align with the MECP guidelines.

That said, the City's Official Plan requires the assessment of aircraft noise for typically non-noise sensitive uses based on the location of the site and associated NEF exposure. Relevant to this development, the city requires for industrial uses that aircraft noise be considered at or above NEF 35.

The City of Mississauga also has an idling control by-law to provide for the control of the idling of vehicles, By-law No. 0194-2009. The By-law generally prohibits idling of a vehicle while parked or stopped for a duration greater than three minutes, though certain exceptions apply (e.g. emergency situations or if idling is required to support the basic function of the vehicle).

4.0 NOISE RECEPTORS AND APPLICABLE SOUND LEVEL LIMITS

The most critical receptors are the existing residential developments located on the west side of Fletchers Creek. Additionally, there is an existing hotel east of Hurontario Street. These areas/uses are shown on Figure 1.

There is also a vacant lot to the southwest of the site, within the existing residential community. Based on current zoning information, the permitted uses on this lot include a place of worship. As a place of worship is considered a noise sensitive use, a receptor at this vacant lot has been included in the analysis, accounting for the setback and building height provisions of the current zoning. The future place of worship has been considered during daytime and evening hours only, aligning with anticipated hours of operation of such a use. It should be noted that the current zoning for the lands does not indicate sleeping quarters to be permitted.

Single and two-storey dwellings were modelled at 2.5 m and 4.5 m above ground level, respectively. The residential receptors are labelled R1 to R4, R6, and R7 on Figures 4 to 7. The future place of worship (R5 on Figures 4 to 7) is modelled at 10 m above ground level.

The MECP noise guidelines require that the sounds from the proposed development not exceed the existing ambient Leq due to road traffic in any hour of operation or the exclusion limits discussed in Section 3.0, whichever is higher.

For the purpose of this noise assessment, the MECP exclusion sound limits were considered to be the applicable sound level limits. Table A below summarizes the sound level limits used in the analysis.

TABLE A

SUMMARY OF SOUND LEVEL LIMITS

Receptors	Sound Level Limit, Leq 1 hour (dBA/dBAI)*		
	Daytime (7:00 a.m. to 7:00 p.m.)	Evening (7:00 p.m. to 11:00 p.m.)	Nighttime (11:00 p.m. to 7:00 a.m.)
R1 to R4, R6, and R7 Plane of Window**	50	50	45
R5 Plane of Window**	50	50	N/A***

* MECP exclusion sound level limit for Class 1 area.

** Any window associated with noise sensitive spaces.

*** Nighttime hours not considered for the future place of worship.

5.0 NOISE IMPACT ASSESSMENT

5.1 The Effect of the Neighbourhood on the Development

As discussed in Section 2.0, the subject site is located near to existing sources of transportation and stationary noise.

As the anticipated uses at the subject site are not considered to be noise sensitive, the subject site has not been considered in the analysis of external noise, as it pertains to MECP criteria. That said, as the intended zoning for the site permits limited noise sensitive uses, should a noise sensitive use be proposed at the subject site in the future, a noise analysis will need to be conducted to ensure the applicable sound level limits are met.

In terms of the potential future assessment of stationary noise, it should be noted that the MECP guidelines generally permit the use of inoperable windows into noise sensitive spaces as a design measure which would eliminate the receptor. It is therefore recommended that all windows within the subject site be inoperable.

Notwithstanding the MECP criteria, the City of Mississauga requires the assessment of aircraft noise for typically non-noise sensitive uses based on the level of exposure to aircraft noise. For industrial developments, consideration of aircraft noise is required (based on the City's Official Plan) when the buildings are located at or above NEF 35.

At the time of writing, detailed information on building design required to assess architectural façade requirements is not available. When the detailed information becomes available, an assessment will need to be conducted to determine the roof, exterior wall, and window/exterior door requirements needed to achieve the applicable indoor sound level criteria. Based on the NEF contours of the Toronto Pearson International Airport, this would apply only to proposed Buildings D and E at the south of the site.

For Buildings D and E, it should be expected that upgraded roof, exterior wall, and window/exterior door above the base provisions of the applicable building codes could be needed. Constructing the exterior walls of brick veneer or acoustically equivalent construction would assist in reducing the glazing requirements and should be considered in the design of the buildings.

5.2 The Effect of the Development on the Neighbourhood

As discussed in Section 2.0, the analyzed noise sources associated with the proposed industrial development are:

- Non-refrigerated truck passby, maneuvering and idling (idling considered at loading bay areas);

- Impulses associated with the loading/unloading operations at loading bays of Buildings A to C; and
- Rooftop mechanical equipment.

For the rooftop heat/cool units associated with the office areas and the heaters associated with the warehouse areas, duty cycles of 100% for daytime hours, 70% for evening hours, and 40% for nighttime hours were used.

Based on information provided by GHD Ltd., 84 non-refrigerated tractor trailer roundtrips have been considered within the overall site, with varying quantities per building. The truck volumes on a per-building basis are shown in Appendix B. The tractor trailers will access and leave the site from Vicksburgh Drive, near the east corner of the subject site. The truck routes to the respective buildings are as shown on Figures 4 and 6. Idling of the trucks while on site at the loading bay areas has been considered, as previously noted.

Although the city's anti-idling by-law generally restricts idling to three minutes while on the property, increased truck idling times of 20 minutes per truck have been considered, in support of the use of heating or air conditioning of the truck cab for the operator comfort based on an exception of the by-law due to outdoor temperatures.

Screening from the proposed buildings at the site has been included in this analysis.

The predicted sound level during daytime, evening, and nighttime periods in terms of Leq1hour (continuous noise sources) and Llm (impulsive noise sources) were determined for the critical receptor locations. The CadnaA computer program (Version 2025) which uses International Standard Analytical Code ISO 9613-2 (1996) was used for the analysis.

As required by the MECP guidelines, impulsive noise sources were analyzed separately in the report. The impulsive noise was evaluated at the loading bays of proposed Buildings A to C, inclusive. The modelling included all time periods for the loading/unloading operations. The impulsive sound level used in the analysis is representative of industrial loading/unloading activities.

Figures 4 and 5 show the results of the analysis without the addition of mitigation measures.

As can be seen from Figures 4 and 5, the unmitigated sound levels are predicted to exceed the MECP sound level limits at some of the critical noise sensitive receptors; therefore, noise mitigation measures are required.

If additional changes are to be made to the site plan or building layout, further analysis may need to be conducted by an acoustical consultant to assess the noise impact on surrounding noise sensitive receptors.

The analysis has currently been prepared for the base building construction without known final uses. Once tenancy information is known, the analysis may need to be revisited accounting for any changes in the assumptions of the current analysis, to ensure predicted compliance with the applicable sound level limits. The responsibility to ensure compliance above and beyond the construction and considerations related to the base shell buildings (as assessed in this report) will be the responsibility of the future owner/tenant of the respective spaces.

5.3 The Effect of the Development on Itself

As previously noted, the nature of the subject site and associated uses are considered not to be noise sensitive. On this basis, the impact of the development on itself does not warrant assessment and has not been included in this report.

Should a noise sensitive use be proposed within the subject site in the future, a noise analysis will need to be conducted to ensure the applicable sound level limits are met; however, as previously noted it is recommended that all windows in the development be inoperable. This would be sufficient to address any potential impact of the site on a noise sensitive use within the development itself.

6.0 NOISE ABATEMENT MEASURES

As discussed in Section 5.0, noise mitigation measures are required to meet the MECP guidelines at the closest receptor locations.

In order to meet the applicable sound level limits, acoustic barriers are required at the locations shown on Figures 6 and 7, with the respective associated heights as shown.

Figures 6 and 7 show the predicted sound levels at the nearby noise sensitive receptors with the implementation of the above noted acoustic barriers. As shown in the figures, compliance with the applicable sound level limits is predicted with implementation of the noted acoustic barriers.

Generally, if a sound barrier is to be used, the sound barrier may be an acoustic fence, berm, or a berm/acoustic fence combination. The acoustic fence must be solid with no gaps along its length and have a minimum surface density of 20 kg/m^2 (4 lb/ft^2). Appropriate treatment of the sound barrier at all discontinuities and points of termination would be required to ensure that the sound barrier is effective.

If gaps at the bottom of the acoustic fence are necessary for drainage, special design techniques to create interrupted line of sight under the acoustic fence are required. Any drainage treatment proposed for the subject site should be reviewed by Jade Acoustics Inc. prior to its implementation.

In general, garbage collection operations should be limited to daytime hours between 7:00 a.m. and 7:00 p.m., Monday to Friday.

Further to the above discussion, the proposed mitigation is related to the assessment of the shell buildings and associated mechanical systems only, based on known information at the time of writing. Should future tenants/owners of the building units require additional mechanical systems, a noise analysis will need to be prepared to confirm compliance with the applicable sound level limits. The responsibility of the future assessment and to ensure ongoing sound level limit compliance will be that of the future tenant/owner of each respective use. This should be done in advance of issuance of any additional building permits to support future tenant fit-up of each respective space. This future analysis is typically required as part of provincial Environmental Compliance Approvals (MECP approval) generally required for the uses to be permitted at the subject site.

If there is a change to the shell buildings or site design, the current analysis and this report should be updated to account for the changes and ensure continued predicted compliance with the sound level criteria.

7.0 CONCLUSION

Based on the preliminary analysis, the City/MECP sound level limits are predicted to be met at the existing and future noise sensitive receptors with the addition of mitigation measures as discussed in Section 6.0.

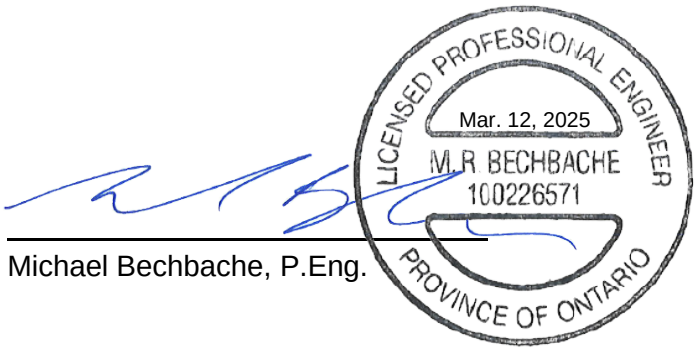
An updated analysis may be needed by the future tenants of the respective uses within the site based on the fit-up design to ensure continued predicted compliance with the applicable sound level limits.

Prior to issuance of building permits, an acoustical consultant should review the plans and mechanical equipment to ensure compliance with the MECP guidelines.

Prior to final occupancy an acoustical consultant should inspect the installed equipment and mitigation measures.

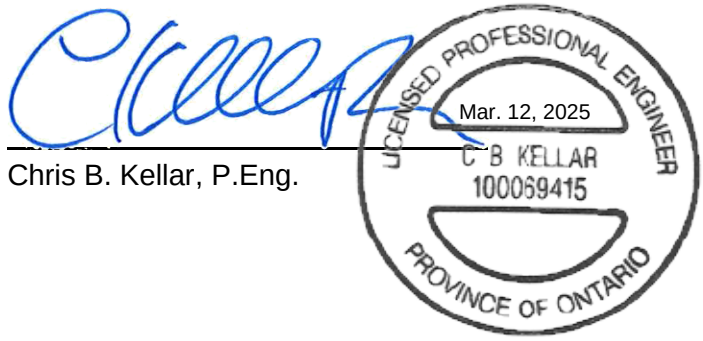
Respectfully submitted,

JADE ACOUSTICS INC.



Per: _____

Michael Bechbache, P.Eng.



Per: _____

Chris B. Kellar, P.Eng.

MB/CK/jg
L:\Reports\14-064-02 Mar 12-25 DeZen Industrial Lands-Phase 2 (ENR).docx

8.0 REFERENCES

1. "Model Municipal Noise Control By-Law", Final Report, 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'", J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.

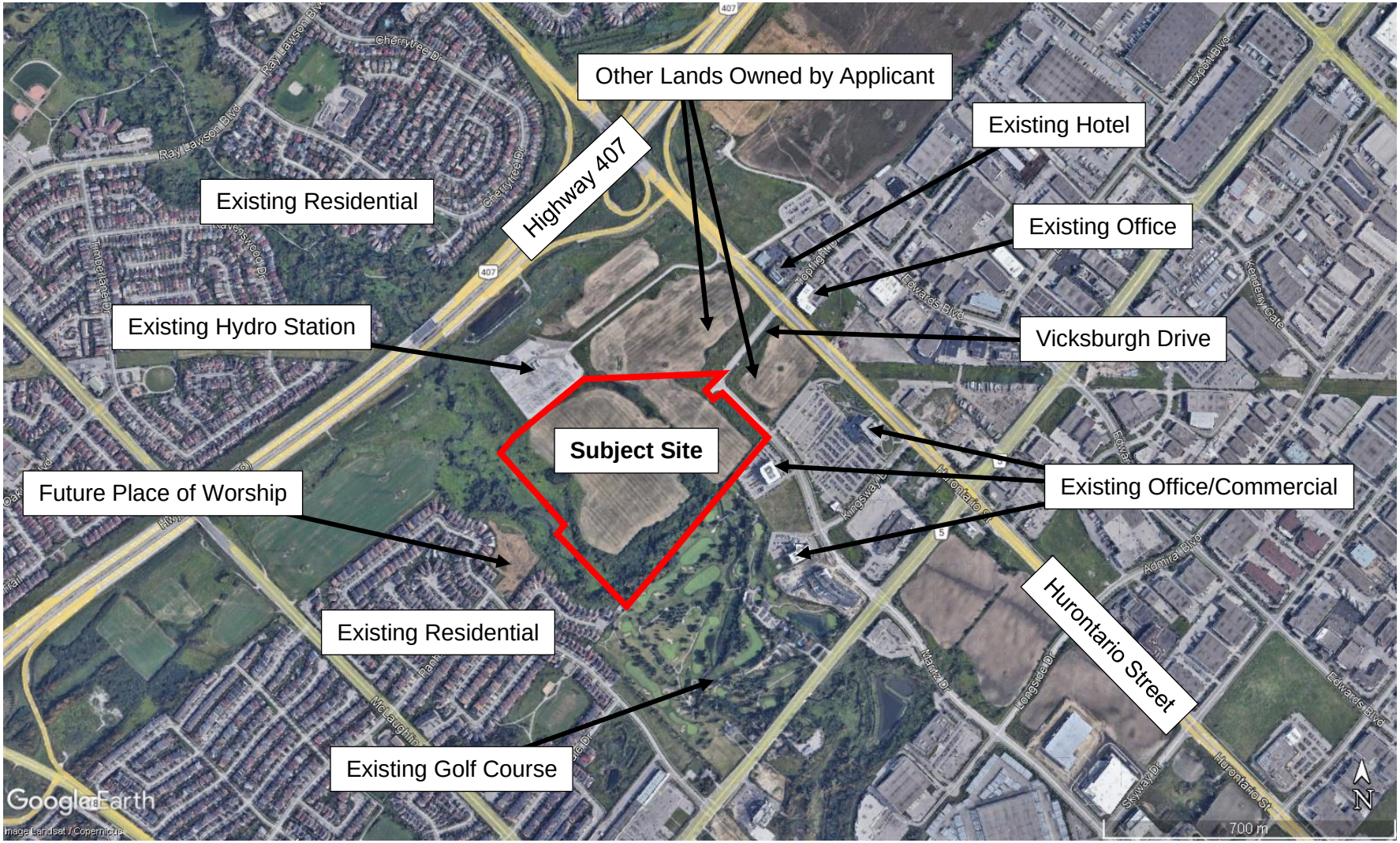
4. "Impulse Vibration in Residential Buildings", Ontario Ministry of Environment Publication NPC-207 (Draft), November, 1983.

5. "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment and Climate Change, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

6. "Mississauga Zoning By-Law No. 0225-2007", City of Mississauga, June 20, 2007, including amendments up to March 2024.

7. "Noise Control By-law 0360-1979" (as amended by By-laws 0077-1985, 1298-1986, 0755-1987, 0063-1992, 0230-1994, 0303-2000, 0495-2003, 0124-2005, 0110-2006, 0092-2007, 0120-2007, 0127-2007, 0248-2007, 0073-2008, 0099-2008, 0299-2008, 0325-2009, 0243-2013, 0043-2015, 0060-2015, 0120-2017, 0125-2018, 0166-2020, 0188-2020, 0192-2020, 0238-2020, 0245-2021, 0122-2023, 0131-2023, 0188-2023, 0215-2023, 0218-2023, 0220-2023, and 0122-2024), City of Mississauga, May 28, 1979.

8. "Idling Control By-law 0194-2009", City of Mississauga, June 24, 2009.



N.T.S.

Proposed Industrial Development
DeZen Industrial Lands, Phase 2
Highway 10 and Highway 407
City of Mississauga

Date: March 2025 **File: 14-064-02**

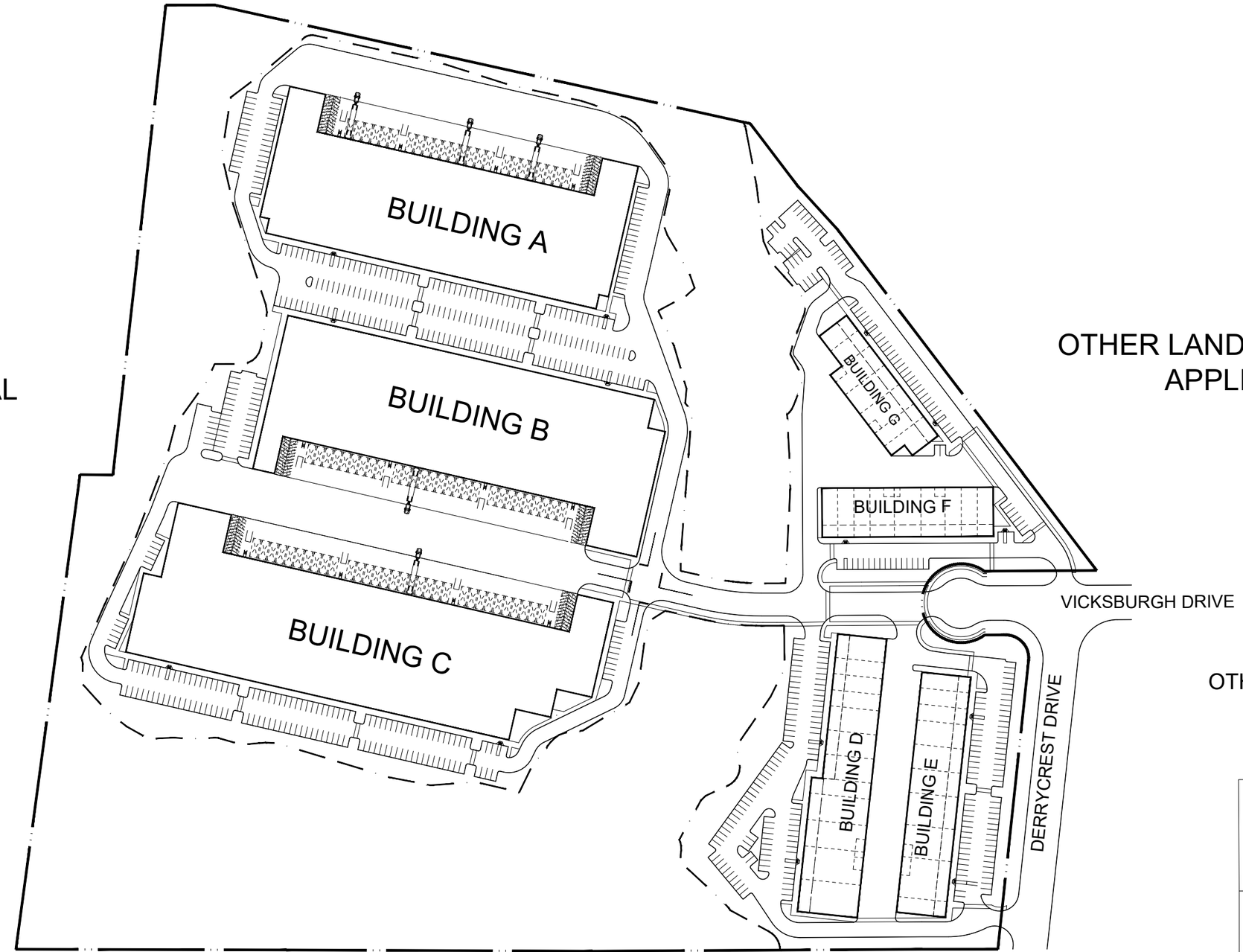
KEY PLAN

FIGURE 1

JADE ACOUSTICS

EXISTING HYDRO STATION

EXISTING RESIDENTIAL TO WEST



OTHER LANDS OWNED BY APPLICANT

OTHER LANDS OWNED BY APPLICANT

EXISTING GOLF COURSE

N.T.S.

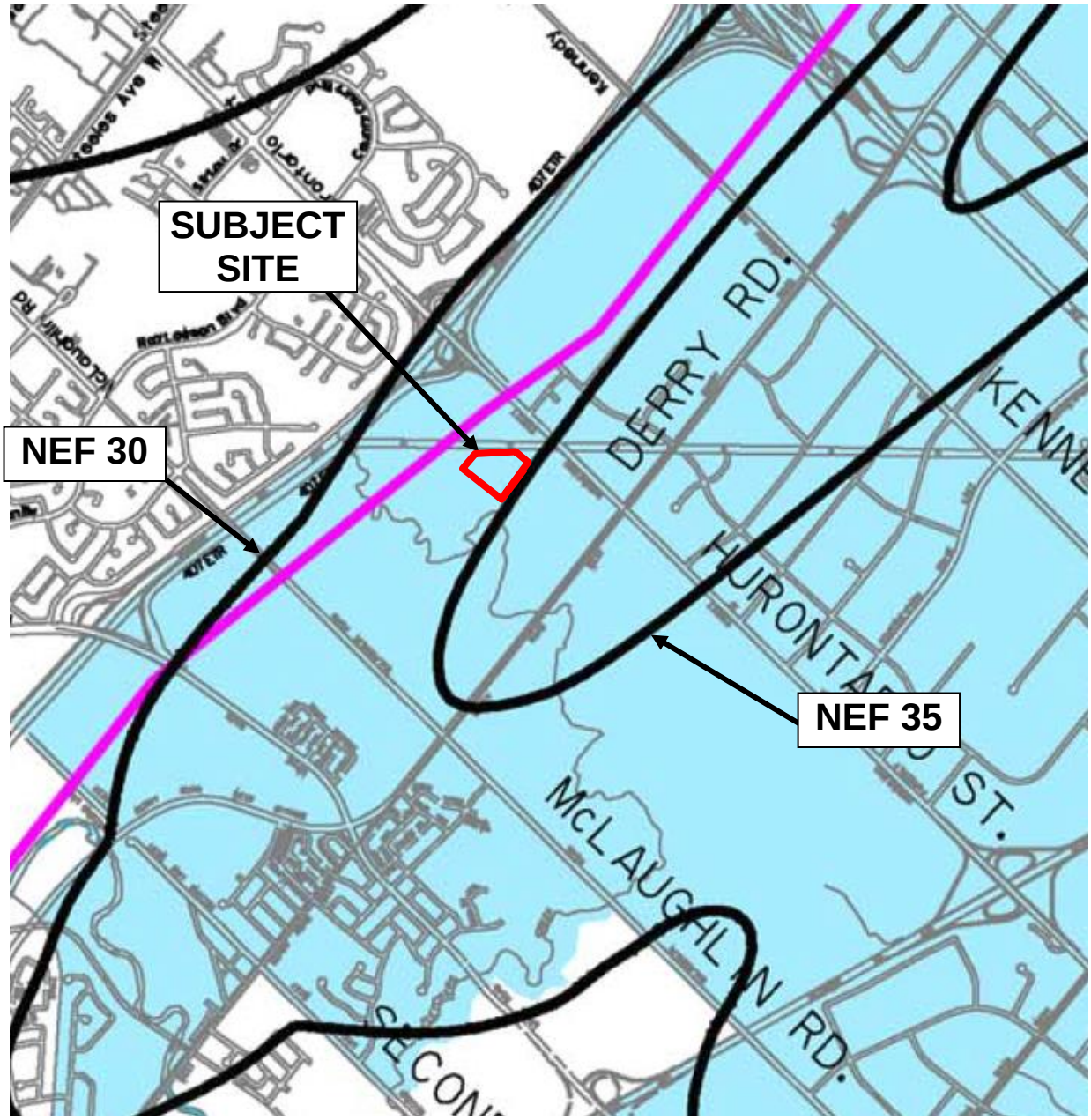
Proposed Industrial Development
DeZen Industrial Lands, Phase 2
Highway 10 and Highway 407
City of Mississauga

Date: March 2025 Our File: 14-064-02

JADE ACOUSTICS

SITE PLAN

FIGURE 2



N.T.S

Proposed Industrial Development
DeZen Industrial Lands, Phase 2
Highway 10 and Highway 407
City of Mississauga

Date: March 2025 **File: 14-064-02**

TORONTO PEARSON INTERNATIONAL AIRPORT COMPOSITE NEF/NEP CONTOUR MAP

FIGURE 3

JADE ACOUSTICS

JADE ACOUSTICS
Jade Acoustics Inc.
411 Confederation Parkway
Unit 19
Concord, Ontario L4K 0A8
Tel: 905-660-2444
Fax: 905-660-4110

Date: March 2025 | Jade File: 14-064-02

PROPOSED INDUSTRIAL DEVELOPMENT
HIGHWAY 10 AND HIGHWAY 407
CITY OF MISSISSAUAGA

PLAN SHOWING ANALYZED SOURCES OF CONTINUOUS NOISE AND PREDICTED SOUND LEVELS WITHOUT MITIGATION MEASURES

FIGURE 4

JADE ACOUSTICS

Jade Acoustics Inc.
411 Confederation Parkway
Unit 19
Concord, Ontario L4K 0A8
Tel: 905-660-2444
Fax: 905-660-4110

Date: March 2025 | Jade File: 14-064-02

PROPOSED INDUSTRIAL DEVELOPMENT
HIGHWAY 10 AND HIGHWAY 407
CITY OF MISSISSAUAGA

PLAN SHOWING ANALYZED SOURCES OF IMPULSIVE NOISE AND PREDICTED SOUND LEVELS WITHOUT MITIGATION MEASURES

FIGURE 5

NOTES:
Unless otherwise labelled, all rooftop point sources consist of heat/cool units for office/retail/commercial spaces and rooftop heaters for the industrial spaces.

Unless otherwise labelled, the line sources shown represent the truck route to the respective building.

Unless otherside labelled,, the area sources shown represent truck idling at each respective building.

Highway 407

Other Lands Owned by Applicant

R7
LeqD 46 dBA
LeqE 45 dBA
LeqN 44 dBA

Highway 10
(Hurontario Street)

Existing Hydro Station

Building G

Building F

Building E

Building D

Other Lands Owned by Applicant

3.5 m High Acoustic Barrier

Building A

Building B

Building C

Existing Office

Existing Office

Existing Office

R6
LeqD 41 dBA
LeqE 41 dBA
LeqN 40 dBA

3.6 m High Acoustic Barrier

R2
LeqD 43 dBA
LeqE 42 dBA
LeqN 41 dBA

R3
LeqD 43 dBA
LeqE 43 dBA
LeqN 42 dBA

Predicted Exceedance

Predicted Compliance

R5 - Future Place of Worship
LeqD 48 dBA
LeqE 48 dBA

R4
LeqD 42 dBA
LeqE 40 dBA
LeqN 39 dBA

R1
LeqD 42 dBA
LeqE 40 dBA
LeqN 39 dBA

17602800 17602900 17603000 17603100 17603200 17603300 17603400 17603500 17603600 17603700 17603800 17603900 17604000 17604100 17604200

4833900 4833800 4833700 4833600 4833500 4833400 4833300 4833200 4833100

JADE ACOUSTICS
Jade Acoustics Inc.
411 Confederation Parkway
Unit 19
Concord, Ontario L4K 0A8
Tel: 905-660-2444
Fax: 905-660-4110

Date: March 2025 | Jade File: 14-064-02

PROPOSED INDUSTRIAL DEVELOPMENT
HIGHWAY 10 AND HIGHWAY 407
CITY OF MISSISSAUAGA

PLAN SHOWING ANALYZED SOURCES OF CONTINUOUS NOISE AND PREDICTED SOUND LEVELS WITH MITIGATION MEASURES

FIGURE 6

JADE ACOUSTICS

Jade Acoustics Inc.
411 Confederation Parkway
Unit 19
Concord, Ontario L4K 0A8
Tel: 905-660-2444
Fax: 905-660-4110

Date: March 2025 | Jade File: 14-064-02

PROPOSED INDUSTRIAL DEVELOPMENT
HIGHWAY 10 AND HIGHWAY 407
CITY OF MISSISSAUAGA

PLAN SHOWING ANALYZED SOURCES OF IMPULSIVE NOISE AND PREDICTED SOUND LEVELS WITH MITIGATION MEASURES

FIGURE 7

APPENDIX A

ENVIRONMENTAL NOISE CRITERIA

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

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

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

APPENDIX B

SAMPLE CADNAA CALCULATIONS

Point sources

Name	Sel.	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
				Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
				(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m^2)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603368.9	4833457.02	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603375.6	4833462.02	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603480.6	4833544.69	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603488.6	4833549.69	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603421.3	4833429.34	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603427.6	4833434.68	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603538.6	4833524.69	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603546.3	4833531.03	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603485.9	4833278.99	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603492.3	4833285.66	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603617.6	4833405.34	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603624	4833410.34	213.5
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603576.4	4833628.38	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603585.7	4833628.13	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603596	4833627.88	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603607.9	4833627.72	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603619	4833627.3	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603629.1	4833627.47	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603639	4833627.72	208.35
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603639.8	4833574.71	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603645	4833580.63	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603649.5	4833585.96	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603655	4833593.96	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603662.8	4833603.55	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603670.6	4833613.88	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603676.2	4833620.96	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603681.3	4833626.55	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603686.7	4833632.13	208.8
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603702.1	4833545.18	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603708.7	4833538.15	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603715.4	4833531.95	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603719.5	4833527.96	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603726	4833520.5	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603734.4	4833511.58	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603742.3	4833503.28	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603748.7	4833495.62	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603755.2	4833488.69	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603764.6	4833478.92	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603775.1	4833468.11	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603785.7	4833458.86	208.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603738.5	4833564.87	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603744.2	4833559.86	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603750	4833554.53	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603756.5	4833547.2	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603765.5	4833539.7	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603774.5	4833530.86	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603782.7	4833522.36	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603793.9	4833511.19	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603805.5	4833499.52	209.25
Rooftop Heat/Cool Unit			I000000!	88.5	88.5	88.5	Lw	HVAC		0	0	0				60	42	24	0		(none)	1.5	g	17603814.2	4833489.35	209.25
Rooftop Heater			I000000!	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603375.9	4833497.73	213.5

Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603416.9	4833531.87	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603461.4	4833567.33	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603386	4833485.3	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603427.3	4833519.43	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603469.6	4833556.21	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603454.2	4833439.52	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603493.9	4833471.54	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603532.3	4833503.29	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603464.8	4833424.7	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603505.6	4833456.72	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603545.3	4833489.27	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603502.4	4833332.36	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603546.1	4833366.76	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603585.2	4833397.98	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603512.7	4833318.86	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603556.6	4833353	213.5
Rooftop Heater			I000000I	87	87	87	Lw	HEAT		0	0	0				60	42	24	0		(none)	1.5	g	17603595.5	4833385.28	213.5

Line sources

Name	Sel.	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			KO	Freq.	Direct.	Moving Pt. Src				Src. Ht.
				Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed	
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m^2)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)	(m)
Truck Route A			!000001!	101.7	101.7	101.7	71.7	71.7	71.7	PWL-Pt	TP		0	0	0							0		(none)	19	19	19	10	2.4
Truck Route B			!000001!	100	100	100	71.9	71.9	71.9	PWL-Pt	TP		0	0	0							0		(none)	20	20	20	10	2.4
Truck Route C			!000001!	100.5	100.5	100.5	72.1	72.1	72.1	PWL-Pt	TP		0	0	0							0		(none)	21	21	21	10	2.4
Truck Route D			!000001!	92.9	92.9	92.9	67.9	67.9	67.9	PWL-Pt	TP		0	0	0							0		(none)	8	8	8	10	2.4
Truck Route E			!000001!	92.3	92.3	92.3	67.3	67.3	67.3	PWL-Pt	TP		0	0	0							0		(none)	7	7	7	10	2.4
Truck Route F			!000001!	91.9	91.9	91.9	65.9	65.9	65.9	PWL-Pt	TP		0	0	0							0		(none)	5	5	5	10	2.4
Truck Route G			!000001!	90.6	90.6	90.6	64.9	64.9	64.9	PWL-Pt	TP		0	0	0							0		(none)	4	4	4	10	2.4

Area sources

Name	Sel.	M.	ID	Result. PWL			Result. PWL''			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			KO	Freq.	Direct.	Moving Pt. Src				Src. Ht.
				Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number				
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m^2)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(m)	
Building C Loading Impulses		–	!000102!	108	108	108	74.6	74.6	74.6	Lw	IMP111-(10*LOG10(2))		0	0	0							0		(none)				2.4	
Building B Loading Impulses		–	!000102!	108	108	108	75.2	75.2	75.2	Lw	IMP111-(10*LOG10(2))		0	0	0							0		(none)				2.4	
Building A Loading Impulses		–	!000102!	111	111	111	78.8	78.8	78.8	Lw	IMP111		0	0	0							0		(none)				2.4	
Truck Idling B			!000002!	108	108	108	79.4	79.4	79.4	Lw	IDLE+10*LOG10(20)		0	0	0				20	20	20	0		(none)				2.4	
Truck Idling C			!000002!	108.2	108.2	108.2	79	79	79	Lw	IDLE+10*LOG10(21)		0	0	0				20	20	20	0		(none)				2.4	
Truck Idling A			!000002!	107.8	107.8	107.8	79.7	79.7	79.7	Lw	IDLE+10*LOG10(19)		0	0	0				20	20	20	0		(none)				2.4	

Barriers

Name	Sel.	M.	ID	Absorption		Z-Ext.	Cantilever		Height			
				left	right		horz.	vert.	Begin		End	
						(m)	(m)	(m)	(m)		(m)	
Building B/C Barrier		–	!0301!	0.21	0.21				3.6	r		
Building A Barrier		–	!0301!	0.21	0.21				3.5	r		

Receivers - Continuous Unmitigated

Name	Sel.	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
				Day	Night	Evening	Day	Night	Evening	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			!01!	41.7	38.7	40.5	50	45	50				4.5	r	17603506.6	4833080.51	206.15
R2			!01!	44.7	43.6	44.2	50	45	50				4.5	r	17603190.3	4833283.11	206.34
R3			!01!	45.3	44.4	44.9	50	45	50				4.5	r	17603212.6	4833245.88	206.64
R4			!01!	41.6	38.6	40.4	50	45	50				4.5	r	17603481.3	4833092.76	205.88
R5 - Future Place of Worship			!01!	48.5	47.8	48.1	50	0	50				10	r	17603312.5	4833226.55	210.26
R6			!01!	44.2	43.6	43.9	50	45	50				4.5	r	17603082.8	4833338.14	206.17
R7			!01!	45.7	44.1	45	50	45	50				10	r	17603887.9	4833873.79	212.66

Receivers - Impulsive Unmitigated

Name	Sel.	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
				Day	Night	Evening	Day	Night	Evening	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			!01!	34.2	34.2	34.2	50	45	50				4.5	r	17603506.6	4833080.51	206.15
R2			!01!	46.5	46.5	46.5	50	45	50				4.5	r	17603190.3	4833283.11	206.34
R3			!01!	47.1	47.1	47.1	50	45	50				4.5	r	17603212.6	4833245.88	206.64
R4			!01!	34.4	34.4	34.4	50	45	50				4.5	r	17603481.3	4833092.76	205.88
R5 - Future Place of Worship			!01!	46.8	46.8	46.8	50	0	50				10	r	17603312.5	4833226.55	210.26
R6			!01!	47.2	47.2	47.2	50	45	50				4.5	r	17603082.8	4833338.14	206.17
R7			!01!	41.9	41.9	41.9	50	45	50				10	r	17603887.9	4833873.79	212.66

Receivers - Continuous Mitigated

Name	Sel.	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
				Day	Night	Evening	Day	Night	Evening	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			!01!	41.7	38.7	40.5	50	45	50				4.5	r	17603506.6	4833080.51	206.15
R2			!01!	42.9	41.3	42.2	50	45	50				4.5	r	17603190.3	4833283.11	206.34
R3			!01!	43.2	41.7	42.5	50	45	50				4.5	r	17603212.6	4833245.88	206.64
R4			!01!	41.6	38.6	40.4	50	45	50				4.5	r	17603481.3	4833092.76	205.88
R5 - Future Place of Worship			!01!	48.5	47.8	48.1	50	0	50				10	r	17603312.5	4833226.55	210.26
R6			!01!	41.3	40	40.7	50	45	50				4.5	r	17603082.8	4833338.14	206.17
R7			!01!	45.7	44.1	45	50	45	50				10	r	17603887.9	4833873.79	212.66

Receivers - Impulsive Mitigated

Name	Sel.	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
				Day	Night	Evening	Day	Night	Evening	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
R1			!01!	34.2	34.2	34.2	50	45	50				4.5	r	17603506.6	4833080.51	206.15
R2			!01!	41.4	41.4	41.4	50	45	50				4.5	r	17603190.3	4833283.11	206.34
R3			!01!	44.3	44.3	44.3	50	45	50				4.5	r	17603212.6	4833245.88	206.64
R4			!01!	34.4	34.4	34.4	50	45	50				4.5	r	17603481.3	4833092.76	205.88
R5 - Future Place of Worship			!01!	46.9	46.9	46.9	50	0	50				10	r	17603312.5	4833226.55	210.26
R6			!01!	44.3	44.3	44.3	50	45	50				4.5	r	17603082.8	4833338.14	206.17
R7			!01!	41.9	41.9	41.9	50	45	50				10	r	17603887.9	4833873.79	212.66