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## PRELIMINARY ENVIRONMENTAL NOISE REPORT

PROPOSED RESIDENTIAL DEVELOPMENT  
1303 LAKESHORE ROAD EAST  
CITY OF MISSISSAUGA  
REGION OF PEEL



Prepared for  
1303 Lakeshore Rd E Limited Partnership

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## SUMMARY

The proposed residential development is located at 1303 Lakeshore Road East, in the City of Mississauga. It is subject to road traffic noise from Lakeshore Road East and Dixie Road and rail traffic noise from the GO Lakeshore West Line and the CN Oakville Subdivision, both contained within the existing rail corridor located to the north of the subject site. The proposed site is located outside the NEP/NEF 25 composite noise contour lines for Toronto Pearson International Airport and outside the airport operating area. Potential noise associated with commercial and industrial facilities in the area has also been evaluated.

The proposed development is comprised of one (1) residential condominium building with three (3) levels of underground parking.

The environmental noise guidelines for transportation and stationary sources of the City of Mississauga, the Region of Peel and 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).

The sound levels for various locations in the residential development were determined using the road traffic data obtained from the City of Mississauga and the Region of Peel and the rail traffic data obtained from GO Transit/Metrolinx and CN. Sound levels due to the adjacent roads and rail were determined using ORNAMENT and STEAM, respectively, the noise prediction models of the MOE.

It was found that with appropriate mitigative measures the residential units in the proposed condominium building are predicted to meet the noise guidelines. All residential units require mandatory central air conditioning due to the road and rail traffic.

Based on the preliminary analysis, window and exterior door construction achieving better than standard construction practices is needed for all proposed residential units; upgraded exterior wall construction is also required for the north, east and west facades. Prior to issuance of building permits, the acoustical requirements should be reviewed by an acoustical consultant to ensure compliance with the applicable acoustical guidelines. Prior to occupancy, the residential units should be inspected by an acoustical consultant to ensure the required mitigation measures have been incorporated.

As the predicted unmitigated daytime sound level at the proposed common outdoor amenity areas is less than 60 dBA, acoustic barriers are not proposed for the subject site. This accounts for a 1.5 m high railing along the roof edge of the elevated outdoor amenity area, as shown on the elevation drawings.

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

Due to their proximity to the existing commercial/industrial developments, all proposed residential units should be provided with a proximity warning clause notifying the purchasers/tenants that the activities and/or equipment associated with the commercial/industrial facilities may at times be audible. See Table 3 and Notes to Table 3.

The existing industries are required to have valid Certificate of Approvals (C of A's) or Environmental Compliance Approvals (ECA's) to show that the appropriate sound level limits are met at the existing residential receptors, having worse or similar exposure and distance separation to the commercial/industrial facilities. Compliance at the existing residences will ensure that the applicable MOE sound level limits due to the stationary noise sources are met at the proposed residential development; therefore, no additional mitigation measures are required for compliance at the proposed building.

The mechanical drawings and detailed information regarding the mechanical equipment associated with the proposed development, including but not limited to rooftop HVAC units and garage exhaust fans were not available at the time of preparation of this noise report. Once detailed information becomes available, noise analyses should be prepared to ensure that the applicable noise guidelines are met.

## 1.0 INTRODUCTION

Jade Acoustics Inc. was retained by 1303 Lakeshore Rd E Limited Partnership to prepare a revised Preliminary Environmental Noise Report to investigate the potential impact of noise on the proposed development to the satisfaction of the City of Mississauga and the Region of Peel.

A Preliminary Environmental Noise Report dated October 13, 2021, revised September 8, 2022, was prepared by Jade Acoustics Inc. in support of the development application. This revised report has been prepared to address updated site and architectural plans.

The proposed site is identified as:

1303 Lakeshore Road East  
City of Mississauga  
Regional Municipality of Peel

The proposed residential development is located at the northeast corner of Lakeshore Road East and Fergus Avenue. It is bound by Lakeshore Road East to the south, Fergus Avenue to the west, and existing residential developments to the north and east.

The analysis was based on the following:

- Site plan, architectural plans and elevations prepared by Chamberlain Architect Services Limited, last dated February 8, 2023, received February 22, 2023;
- Landscape plan prepared by Landscape Planning Ltd., last dated February 13, 2023, received February 22, 2023;
- Road traffic information provided by the City of Mississauga, and the Region of Peel;
- Rail traffic information provided by GO Transit/Metrolinx and CN; and
- Site visit conducted by Jade Acoustics Inc. staff on July 14, 2021.

A Key Plan is attached as Figure 1.

The proposed development is comprised of one (1) condominium residential building with associated common outdoor amenity areas and three (3) levels of underground parking. Figure 2 shows the proposed development.

## **2.0 NOISE SOURCES**

### **2.1 Transportation Sources**

The noise sources to be investigated for potential impact on the proposed development are road traffic on Lakeshore Road East and Dixie Road and rail traffic on both the GO Lakeshore West Line and the CN Oakville Subdivision situated within the existing rail corridor located approximately 225 m north of the proposed development. Due to the separation distance, ground-borne vibration generated by train passbys is insignificant at the proposed site; therefore, railway vibration is not considered further in this report.

The site is not impacted by aircraft traffic.

#### **2.1.1 Road Traffic**

Fergus Avenue and St. James Avenue are local roads expected to carry low traffic volumes and, as such, are acoustically insignificant relative to Lakeshore Road East, Dixie Road, and the CN/Metrolinx rail noise sources; therefore, these roads are not considered further in the report.

The ultimate road traffic data for Lakeshore Road East and Dixie Road used in the analysis were provided by the City of Mississauga and the Region of Peel, respectively. Through investigations for other nearby recent projects, it was determined that the road traffic information from the region for Dixie Road used in the previous analysis remains valid. The road traffic information for Lakeshore Road East has been updated by the City of Mississauga and updated accordingly in this revised report. Road traffic is summarized in Table 1. Correspondence regarding the road traffic information is included as Appendix A.

#### **2.1.2 Rail Traffic**

The rail traffic data for the two principal main lines (GO Lakeshore West Line and CN Oakville Subdivision) located within the existing rail corridor was provided by GO Transit/Metrolinx on July 20, 2021 and CN on August 24, 2021. The rail traffic information was confirmed to be valid in July 2022 by both Metrolinx and CN, through work by Jade Acoustics Inc. on other nearby developments.

As the information provided by GO Transit/Metrolinx is applicable for a 10-year horizon, no escalation factor was used in the analysis. The data reflects the future scenario for the GO Lakeshore West Line.

As required by CN, an escalation factor of 2.5% per annum was used for the Oakville Subdivision. The time period for the analysis was taken to be ten (10) years from the report date; therefore, the train volume was escalated to the year 2033. CN has indicated that anti-whistling bylaws are in effect at all three at-grade crossing in the area; therefore, no whistle noise was included in the analysis. All rail tracks within the rail corridor are constructed of welded rail. This has been accounted for in the analysis.

Rail traffic is summarized in Table 1. Correspondence regarding the rail traffic information is included as Appendix A.

## 2.2 Stationary Sources

There are many existing commercial and industrial uses located in a southerly direction and a westerly direction from the proposed development, south of Lakeshore Road East. The commercial and industrial buildings are listed in Table A below and shown on Figure 1.

**TABLE A  
COMMERCIAL AND INDUSTRIAL USES**

ID Number	Facility	Address	Operations	D-6 Classification
1	Small Arms Inspection Building	1352 Lakeshore Road East	Arts and Cultural Programs	Class I
2	Region of Peel / G.E. Booth (Lakeview) WWTP	1300 Lakeshore Road East	Waste Water Treatment Plant	Class III
3	McKenna Logistics	1260 Lakeshore Road East	Logistics, Warehousing and Distribution	Class II
4	Canadian Food for Children	1258 Lakeshore Road East	Warehouse	Class II
5	Blue Bird	1230 Lakeshore Road East	Self Storage	Class II
6	Citube Ltd.	1200 Lakeshore Road East	Custom Metal Fabrication Plant	Class II
7	Plaster Form Inc. / Armstrong	1180 Lakeshore Road East	Manufacturer of Commercial and Residential Ceiling	Class II
8	Allegion	1076 Lakeshore Road East	Residential and Commercial Locks, Door Closer and Exit Devices, Steel Doors and Frames	Class II



All commercial and industrial developments listed in Table A above are situated such that there are existing and/or zoning approved proposed noise sensitive uses at nearer or similar distance, with more significant exposure to the noise sources. As the stationary noise sources must achieve compliance with the applicable sound level limits at these other noise sensitive receptor locations, it is expected that the sound levels will also be met at the subject site. No contact with the above noted facilities was made in preparation of this report.

Section 4.2 provides details of the noise assessment of the non-residential uses listed in Table A.

There are additional existing commercial establishments along St. Mary's Avenue, between the subject site and the rail corridor. There are intervening noise sensitive receivers at nearer proximity at which the applicable sound level limits are required to be met. As such, the sound level limits are also expected to be met at the subject site. The commercial uses located on St. Mary's Avenue have not been considered further in this report.

A car dealership building, which is no longer in use, is located at the northwest corner of Lakeshore Road East and Dixie Road, at 1345 Lakeshore Road East. This commercial site is proposed to be re-developed for a mixed-use development that includes a high-rise residential building with ground level retail spaces. As the existing commercial operation has ceased to exist, it is not considered further in the report. Based on information from the City of Mississauga website, at the time of writing, this proposed development has been approved for re-zoning.

The Long Branch GO Station facility and the Willowbrook Rail Yard and Maintenance facility are located approximately 980 m and 3,500 m, respectively, from the proposed development. Due to the separation distances and partial screening by the intervening developments, these two facilities are acoustically insignificant at the subject site. Therefore, the Long Branch GO Station facility and the Willowbrook Rail Yard and Maintenance facility are not considered further in the report.

## **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 City of Mississauga Official Plan (Section 6.10, Noise, pages dated March 13, 2017, August 2, 2017, April 8, 2019 and April 8, 2021) and the General Guidelines for the Preparation of Acoustical Reports in the Region of Peel (dated November 2012, updated August 2020) were also used in preparation of this report.

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

### **3.1 Transportation Sources**

#### **3.1.1 Indoors**

##### **Road and Rail Traffic**

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/exterior door 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/exterior door is greater than 65 dBA, means must be provided so that windows and/or exterior doors 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/exterior door and/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/exterior door, 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 municipal regulations and 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 due to the road traffic.

The MOE indoor noise criteria for rail traffic are 5 dB more stringent when compared with the indoor noise criteria for road traffic to account for special character of railway noise. Therefore, for rail traffic, indoor noise criteria are 35 dBA (Leq8hour) for the bedrooms during nighttime hours, 40 dBA (Leq8hour) for living/dining rooms during nighttime hours and 40 dBA (Leq16hour) for the living/dining rooms and bedrooms during daytime hours. These criteria are used to determine the architectural requirements due to the rail traffic.

In addition, the MOE requires that exterior walls be constructed of brick veneer or masonry equivalent construction from the foundation to the rafters for the first wall of dwellings when the predicted Leq24 hour sound level exceeds 60 dBA and when the first row of dwellings is located within 100 m from the rail tracks.

According to the MOE guidelines, whistle noise typically generated by locomotives/trains approaching level crossings is to be used for an assessment of the building component requirements but not for assessments of the sound barrier and ventilation requirements.

### **Railway Guidelines**

GO Transit/Metrolinx and CN have guidelines which apply to residential developments adjacent to their rights-of-way. In general, the railway guidelines follow the MOE guidelines for indoor and outdoor sound level limits.

In addition, the railways require that for a principal main line:

- a minimum setback of 30 m from the right-of-way be maintained. The minimum setback requirements can be reduced by introducing a crash wall;
- a safety berm (minimum height 2.5 m)/sound barrier (minimum total height 5.5 m above top-of-rail) be constructed along the CN right-of-way;
- brick veneer or acoustically equivalent masonry exterior wall construction for the first row of dwellings regardless of predicted Leq24 hour sound level;

- ground vibration transmission be assessed through site tests. If an excess exists, all residential units within 75 m of the nearest track should be protected; and
- all residential units within 300 m of the right-of-way have a warning clause placed in offers of purchase and sale, in lease agreements and in the development agreement, making future residents aware of the existence of the railway.

Due a separation distance of approximately 225 m, the only applicable requirement for the subject development is for the CN and GO/Metrolinx warning clauses.

The CN/Metrolinx guidelines are consistent with the RAC/FCM “Guidelines for New Developments in Proximity to Railway Operations” dated May 2013, which were also consulted in preparation of this report.

### **3.1.2 Outdoors**

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.”

For the outdoor amenity areas, a design goal of 55 dBA for the daytime period between 7:00 a.m. to 11:00 p.m. is used for road and rail 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 equal to or less than 60 dBA (Leq16hour, daytime), a warning clause is required and mitigation should be considered. Where the unmitigated sound levels exceed 60 dBA, mitigation measures and a warning clause are required.

For both indoor and outdoor conditions, where the acoustic criteria are exceeded, warning clauses must be placed in offers of purchase and sale 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, Conservation and Parks (MOE) for stationary sources included in the NPC-300 document titled “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning” are to be used for commercial and industrial facilities.

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<sub>LM</sub>,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 Official Plan**

Based on Section 6.10.3, titled “Road Noise” included in Chapter 6 of the City of Mississauga Official Plan, a noise study is required to be prepared for the residential land use located within 50 m of arterial roads. Based on Section 6.10.4, titled “Rail Noise, Safety and Vibration” a noise study is required to be prepared for residential land uses located within 300 m of principal main rail lines. The study is to determine the appropriate acoustic design to the satisfaction of the City.

The City of Mississauga has indoor sound level criteria for road and rail traffic which consist of the indoor sound level limits from Table C-2 and the supplementary indoor sound level limits from Table C-9 both included in the MOE NPC-300 noise guidelines.

### **3.4 City of Mississauga Noise Control By-law and Nuisance Type Noise By-law**

The City of Mississauga has two by-laws to prohibit or regulate unusual noises likely to disturb the inhabitants of the City; Noise Control By-law Number 0360-1979 (as amended) and Nuisance Type Noise By-law Number 0785-1980 (as amended). The by-laws do not provide specific sound level limits, but rather provides qualitative information with respect to sources and prohibitions by time and place.

### **3.5 Region of Peel Guidelines**

The Region of Peel document titled “General Guidelines for the Preparation of Acoustical Report in the Region of Peel” dated November 2012 (updated August 2020), outlines requirements for the assessment of proposed residential developments in the Region of Peel.

## 4.0 NOISE IMPACT ASSESSMENT

### 4.1 Transportation Sources

For road and rail traffic noise, the sound levels in terms of Leq, the energy equivalent continuous sound levels for both day (Leq16) and night (Leq8) were determined using the MOE Traffic Noise Prediction Models, ORNAMENT for road traffic and STEAM for rail traffic.

The analysis was based on the site plan and architectural elevations, as well as the landscape plan mentioned in Section 1.0. The topography between the source and the receiver and screening effect due to the proposed and existing buildings, where applicable, have been considered. The location of the receiver above grade has been taken based on the planned building height shown on the elevation drawings.

The highest sound levels due to the road traffic are predicted at the south façade of the proposed condominium building; the highest sound levels due to rail traffic are predicted at the north façade.

The unmitigated sound levels at the upper residential level at the north façade are predicted to be up to 71 dBA during the daytime hours (7:00 a.m. and 11:00 p.m.) and 67 dBA during the nighttime hours (11:00 p.m. and 7:00 a.m.).

The unmitigated sound levels at the upper residential level at the south façade are predicted to be up to 71 dBA during the daytime hours (7:00 a.m. and 11:00 p.m.) and 64 dBA during the nighttime hours (11:00 p.m. and 7:00 a.m.).

The unmitigated sound level during the daytime at the at-grade outdoor amenity area is predicted to be 58 dBA.

The unmitigated daytime sound level at the fifth floor rooftop outdoor amenity area located at the south end of the building is predicted to be 59 dBA, accounting for a 1.5 m high railing along the roof edge, as shown on the architectural elevations.

The unmitigated daytime sound level at the ninth floor private terraces located at the north end of the building is predicted to be up to 71 dBA.

All other balconies and private terraces will be less than 4.0 m deep and do not require assessment relative to noise.

Table 2 provides a summary of the predicted sound levels outdoors due to road and rail traffic at specific locations without mitigative measures. Appendix C gives sample calculations.

Where the sound level limits are predicted to exceed the noise guidelines, mitigative measures and warning clauses are required to address road and rail traffic.

## **4.2 Stationary Sources**

The potential noise impact of stationary sources on the proposed development was reviewed based on observations during the site visit conducted by Jade Acoustics Inc. personnel.

As noted in Section 2.2 and listed in Table A, there are existing and/or approved proposed noise sensitive receptor locations nearer to or at similar distances to the commercial/industrial facilities, having more significant exposure to the associated noise sources.

Due to the acoustically significant separation distances to some facilities and expected high ambient sound levels set by road and rail traffic, noise impacts on the proposed development are not anticipated. In addition, many of these facilities are required to have valid Certificate of Approval (C of A) or Environmental Compliance Approval (ECA) permits issued by the MOE to confirm that their operations are in compliance with legal requirements. This means that they are required to meet the applicable MOE NPC-300 noise guidelines at any existing noise sensitive receptors. As a result, it is expected that the applicable sound level limits will also be met at the subject development.

Located immediately to the north, east, and west (across Fergus Avenue) are existing residential developments. No significant noise sources were observed at the time of the site visit by Jade Acoustics Inc. staff that would affect the feasibility of the subject development. The potential noise impact of the adjacent existing residential uses on the subject development will be investigated as part of the detailed noise report.

As noted, there is a development application listed on the City of Mississauga website for 1345 Lakeshore Road East, to the east of the subject development. The proposed development at 1345 Lakeshore Road East will not affect the feasibility of the development at the subject site. Further, there is a need for sound level limit compliance at the proposed buildings themselves, as well as at existing residential uses in nearer proximity than the subject site. The development at 1345 Lakeshore Road East will be investigated in further detail at the time of the detailed noise report.

As stated above, many of the existing non-residential uses are required to be in compliance with the MOE noise requirements at the closer receptors. Therefore, the applicable guideline noise limits are expected to be met at the proposed development as well. A detailed noise assessment of the commercial/industrial facilities is not needed and, as such, has not been completed.



## 5.0 IMPACT OF THE DEVELOPMENT ON THE ENVIRONMENT

Detailed plans and design information for the subject development are not available at this stage of the project. Once all plans and designs have been advanced, the analysis of the subject site can be revisited.

In general, the main sources of noise of potentially adverse impact on sensitive land uses due to the development include, but may not be limited to, loading areas and mechanical/electrical equipment (potentially including air conditioning equipment, an emergency generator, transformers, garage exhaust fans, etc.).

Noise from garbage pick-up and moving operations are of short duration and generally do not warrant special mitigative measures. As an administrative control measure, garbage collection and moving operations would need to be limited to the daytime hours between 7:00 a.m. and 7:00 p.m.

Mechanical equipment should comply with the requirements of the Ontario Ministry of the Environment, Conservation and Parks Publication NPC-300. These criteria require that the noise from a stationary source not exceed the applicable sound level limits, in any one hour period.

There are existing sensitive land-uses located immediately north, east, and west (on the west side of Fergus Avenue) of the proposed condominium building.

The noise from the mechanical equipment proposed for this development should be addressed when information becomes available. With appropriate mitigation, it is feasible to meet the applicable sound level limits at the existing noise sensitive receptors.

## 6.0 IMPACT OF THE DEVELOPMENT ON ITSELF

When evaluating the potential effect of the development on itself, consideration must be given to the control of air-borne and structure-borne noise generated within the building itself. The areas to be investigated are the common boundaries both vertically and horizontally, between suites; between suites and recreational spaces; and between suites and mechanical areas.

The performance of a boundary with respect to air-borne noise is measured in terms of Sound Transmission Class (STC). This is an approximation of the amount of sound reduction provided by the boundary. The Ontario Building Code (OBC) requires a minimum acoustic performance rating between residential dwelling units and between dwelling units and areas within which noise may be generated. This includes construction between residential units and elevator shafts and garbage chutes.

Noise from garbage pick-up is of short duration and generally does not warrant special mitigation measures.

The mechanical and electrical systems (such as, but not limited to, garage exhaust fans, emergency generator and roof mounted air conditioning equipment) must be designed to comply with the applicable sound level limits at the exterior face of the proposed building where windows and exterior doors will be located, as well as at any outdoor amenity space.

Consideration should be given to the noise impact at the residential suites in the vicinity of potentially noisy areas (e.g., garbage room, loading bays, mechanical rooms, indoor amenity spaces). Special sound isolation construction may be required to adequately mitigate the potential noise impact. The incorporation of secondary sound isolation ceilings, floating floors, or cavity walls are some examples. With a sound isolation ceiling, structural clearance may have to be increased to maintain ceiling height.

When addressing structure-borne noise, impact sounds are evaluated using the Impact Insulation Class (IIC) rating system. This system is configured in the same format as the STC rating system to allow for easier comparison when evaluating the acoustical performance of a partition. The National Building Code and the Ontario Building Code do not specify a minimum IIC rating for impact sound isolation. To ensure that impact sounds are not a problem, consideration should be given to the performance of the floor/ceiling systems, particularly when unlike spaces are stacked vertically, during the design process.

All of these items should be evaluated prior to issuance of building permits. An assessment of these items is not part of the scope of this report.

Also, the noise from the mechanical and electrical equipment proposed for this development should be addressed when information becomes available. With appropriate mitigation, it is feasible to meet the applicable sound level limits at the proposed noise sensitive receptors within the subject site.

## **7.0 NOISE MITIGATION REQUIREMENTS**

The noise mitigation requirements for both the indoor and outdoor locations are detailed below. Table 3 provides a summary of the noise mitigation requirements for the proposed condominium building.

### **7.1 Transportation Sources**

#### **7.1.1 Indoors**

As required, indoor sound level criteria for road and rail traffic can be achieved in all cases by using appropriate architectural elements for exterior walls, windows, exterior doors, and roof construction. The indoor limit for road traffic noise is 40 dBA for the bedrooms during nighttime hours, 45 dBA for the living/dining rooms during nighttime hours and 45 dBA for the living/dining rooms and bedrooms during daytime hours. The MOE indoor sound level limits for rail traffic are 5 dBA lower when compared with the indoor sound level limits for road traffic. These criteria have been used in this analysis. The characteristic spectrum for road and rail traffic have been accounted for in the determination of the architectural components.

In order to determine the overall window, exterior door and exterior wall requirements, both the road traffic and rail traffic have been included in the analysis. The requirements for each source were assessed separately and then combined to determine the overall requirements.

Sample architectural component selection calculations are shown in Appendix D.

As no suite layout plans are available at this time, it has been assumed that the worst case would involve a top residential floor corner bedroom. Both exterior walls of the corner bedroom were assumed to be 20% of the associated floor area. The windows/exterior doors were assumed to be installed in both walls and have the surface area equal to 60% of the associated floor area each.

Based on the preliminary analysis, windows and exterior doors need to be up to STC 43 and exterior walls need to be up to STC 45 for locations with direct exposure to the rail corridor along the north façade. For locations along the south facade, with reduced exposure to the rail line, the STC requirements for exterior walls is up to STC 38 and for windows/exterior doors is up to STC 34. Along the east and west facades, the predicted STC requirements are up to STC 40 for windows and exterior doors and up to STC 42 for exterior walls.

An STC rating of 43 (and STC 34) for windows and exterior doors and an STC rating of 45 (and STC 42) for exterior walls exceed the minimum structural and safety requirements of standard construction. An STC 38 rating for exterior walls complies with construction practices which meet the minimum requirements of safety and structural considerations.

As STC 43 windows and patio doors represent a significant upgrade above standard construction practices, increasing the exterior wall performance should be considered in order to reduce the glazing requirements. This will need to be investigated in further detail through the design process, in advance of issuance of building permits.

The acoustical performance of windows and exterior doors as a whole depends on glass configuration/thickness, air space, material used for frames and construction details including seals. Therefore, the acoustical performance of the glass configuration alone expressed as a sound transmission class (STC) rating, generally available in the literature, does not address the STC rating of the whole window and exterior door. Some glass configurations with different frame materials and/or construction details often produce different STC ratings. Therefore, it is recommended that prior to installation, STC test results of window and exterior door configurations from an accredited laboratory be provided to ensure that the selected windows and exterior doors meet the required STC ratings.

Since condominium unit plans are not yet available, the final architectural choices cannot be made. Once plans become available, the noise control requirements should be re-evaluated to determine the final requirements.

Based on the exposure to the road and rail noise, central air conditioning and warning clauses are required for all proposed residential units.

See Table 3 and Figure 2 for a summary of minimum noise mitigation measures.

Warning clauses will also be required to be placed in offers of purchase and sale, lease agreements and included in agreements that are registered on title, including condominium disclosure statements and declarations for all relevant residential units to make future occupants aware of the potential noise situation. See Table 3 for details.

### **7.1.2 Outdoors**

The outdoor amenity area is required to be exposed to sound levels of less than or equal to 55 dBA during the day. A 5 dB increase is considered acceptable in certain situations. Typically, if the sound level is above 55 dBA, some form of mitigation and a warning clause is required.

As noted in Section 4.1 the unmitigated daytime sound levels at the proposed amenity areas are predicted to exceed 55 dBA, but be less than 60 dBA. As the predicted unmitigated sound levels are within the 5 dB tolerance above 55 dBA, generally acceptable per the MOE guidelines, physical mitigation measures are not proposed.

For the ninth-floor private terraces at the north side of the building, the unmitigated sound level is in excess of 60 dBA during daytime hours. Based on the preliminary analysis, a roof

edge sound barrier 3.0 m in height would be needed to reduce the predicted daytime sound level to 60 dBA. In order to reduce the predicted daytime sound level to 55 dBA, a 5.0 m high sound barrier would be needed. These sound barrier heights introduce other potential issues with structural and wind consideration and are undesirable to the proponent. As the common outdoor amenity areas provide an acoustically protected space for the building occupants, no sound barriers are proposed to address the private terraces.

As the City of Mississauga generally requires reporting of the barrier height requirements to reduce the predicted sound level to 55 dBA or less, the preceding and following information has been included herein.

In order to reduce the predicted daytime sound level to 55 dBA at the fifth floor elevated outdoor amenity area, a 2.5 m high acoustic barrier would be needed.

For the at-grade OLA, with an unmitigated predicted daytime sound level of 58 dBA, a 1.5 m high barrier would be required to reduce the predicted sound level to less than 55 dBA. A sample calculation of the barrier requirements is included in Appendix E.

Generally, if a sound barrier is to be used, the sound barrier may be a fence, made of any one or a combination of various materials. The sound barrier should be of continuous construction, with no gaps and should have a minimum surface density of 20 kg/m<sup>2</sup> or more. Appropriate treatment of the sound barrier at all discontinuities and points of termination would be required to ensure that the sound barrier is effective.

## **7.2 Stationary Sources**

Based on Section 4.2, the existing commercial and industrial facilities are expected to meet the applicable MOE noise guidelines at the proposed development. Therefore, mitigation measures to address the stationary sources of noise are not required to be implemented by the proponent of the subject site.

Due to their proximity to the existing commercial and industrial facilities, all proposed residential units should be provided with a proximity warning clause notifying the purchases/tenants that the activities and/or equipment associated with the commercial and industrial facilities may at time be audible. See Table 3 and Notes to Table 3.

## 8.0 RECOMMENDATIONS


1. The requirements as stipulated in Table 3 should be incorporated into the proposed development.
2. Prior to final development application approval, a detailed environmental noise report should be prepared once the final plans become available to ensure that the appropriate criteria are achieved. The report should include detailed reviews of the sound barrier, architectural component and central air conditioning requirements to address both the road traffic and the rail traffic.
3. Prior to the issuance of building permits, the condominium building plans should be reviewed by an acoustical consultant to ensure compliance with the applicable guidelines.
4. Prior to final occupancy, the condominium building including the residential units should be inspected by an acoustical consultant to ensure the required mitigative measures have been incorporated.


## 9.0 CONCLUSIONS

Based on the acoustical analysis, with the incorporation of the appropriate acoustical abatement measures, the sound levels are expected to be within the applicable noise guidelines. In accordance with the City of Mississauga, Region of Peel, Ontario Ministry of Environment, Conservation and Parks, CN and GO Transit/Metrolinx implementation guidelines where mitigation is required, future occupants will be advised through the use of warning clauses.

Respectfully submitted,

JADE ACOUSTICS INC.

Per:   
Michael Bechbache, P.Eng.



Per:   
Chris B. Kellar, P.Eng.



MB/CK/jg  
L:\Reports\21-041 Mar 3-23 1303 Lakeshore Road East (PENR).doc

## 10.0 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. "STEAM – Sound From Trains Environmental Analysis Method", Ontario Ministry of the Environment, July 1990.
4. "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.
5. "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", November, 2012 (updated August 2020).
6. "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).
7. "Impulse Vibration in Residential Buildings", Ontario Ministry of the Environment, Publication NPC-207 (Draft), November, 1983.
8. City of Mississauga Noise Control By-law Number 0360-1979, Amended by 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), January 28, 1980.
9. City of Mississauga Nuisance Type Noise By-Law Number 0785-1980 (amended by By-laws 0226-1982 and 0062-1992), October 15, 1980.
10. City of Mississauga Official Plan-Part 2, Section 6 "Value the Environment", April 8, 2021.



**TABLE 1**  
**PROPOSED RESIDENTIAL DEVELOPMENT**  
**1303 LAKESHORE ROAD EAST**  
**CITY OF MISSISSAUGA**  
**REGION OF PEEL**

**SUMMARY OF TRAFFIC DATA**

**A. ROAD TRAFFIC**

ROAD	LAKESHORE ROAD EAST	DIXIE ROAD
AADT*	50,500 (ultimate)	16,700 (ultimate)
No. of Lanes	4	2
Speed (km/hr)	50	50
Trucks (%)	5	5.9**(7.88***)
Medium/Heavy Split (%)	55/45	89.3/10.7**(90.7/9.3***)
Gradient (%)	Up to 2	Up to 2
Day/Night Split (%)	90/10	92/8
Ultimate R.O.W. (m)	44.5	20

\* AADT: Annual Average Daily Traffic.

\*\* Daytime

\*\*\* Nighttime

**TABLE 1 - Continued**  
**PROPOSED RESIDENTIAL DEVELOPMENT**  
**1303 LAKESHORE ROAD EAST**  
**CITY OF MISSISSAUGA**  
**REGION OF PEEL**

**SUMMARY OF TRAFFIC DATA**

**B. RAIL TRAFFIC – GO LAKESHORE WEST LINE**

<b>GO Trains</b>				
<b>GO Transit/Metrolinx</b>	<b>Day (7:00 a.m. to 11:00 p.m.)</b>		<b>Night (11:00 p.m. to 7:00 a.m.)</b>	
No. of Trains*	60 (diesel)/ 101 (electric)	11 (diesel)/ 42 (electric)	8 (diesel)/ 21 (electric)	4 (diesel)/ 8 (electric)
No. of Locomotive	1	2	1	2
No. of Cars	12	12	12	12
Maximum Speed (km/h)	153**	153**	153**	153**

\* Data provided by GO Transit/Metrolinx applicable within at least a 10-year time horizon. These volumes have not been escalated in the analysis. As advised by GO Transit/Metrolinx, the noise analysis was based on all trains having diesel locomotives.

\*\* A speed of 150 km/h used in the analysis as this is the maximum speed input in the Stamson noise model and the design speed of the rail line as noted by Metrolinx.

**TABLE 1 - Continued**  
**PROPOSED RESIDENTIAL DEVELOPMENT**  
**1303 LAKESHORE ROAD EAST**  
**CITY OF MISSISSAUGA**  
**REGION OF PEEL**

**SUMMARY OF TRAFFIC DATA**

**C. RAIL TRAFFIC – CN OAKVILLE SUBDIVISION**

CN	Rail Traffic Volumes	
	Day (7:00 a.m. to 11:00 p.m.)	Night (11:00 p.m. to 7:00 a.m.)
<b>Way Freight Trains</b>		
No. of Trains*	2	5
No. of Locomotive	4	4
No. of Cars	25	25
Maximum Speed (km/h)	105	105
<b>Passenger Trains</b>		
No. of Trains*	14	1
No. of Locomotive	2	2
No. of Cars	10	10
Maximum Speed (km/h)	161**	161**

\* Data provided by CN applicable to Year 2021. These volumes have been escalated by 2.5% per annum for 12 years in the analysis (ten years from the report date).

\*\* A speed of 150 km/h used in the analysis as this is the maximum speed input in the Stamson noise model and the design speed of the rail line as noted by Metrolinx.

**TABLE 2**  
**PROPOSED RESIDENTIAL DEVELOPMENT**  
**1303 LAKESHORE ROAD EAST**  
**CITY OF MISSISSAUGA**  
**REGION OF PEEL**

**SUMMARY OF PREDICTED SOUND LEVELS**  
**OUTDOORS DUE TO ROAD AND RAIL TRAFFIC**

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.)	
			Separate	Combined	Separate	Combined
South Wall	Lakeshore Road East	17.3	71	--	64	--
North Wall	Dixie Road	165.0	52	71	45	67
	Rail Corridor	260.0	71		67	
East Wall (North End)	Lakeshore Road East	78.8	62	69	55	65
	Dixie Road	165.0	55		48	
	Rail Corridor	260.0	68		64	
At-Grade OLA	Lakeshore Road East	44.3	58	--	--	--
Fifth Floor Rooftop OLA	Lakeshore Road East	20.8	59**	--	--	--
Ninth Floor Private Terrace	Rail Corridor	257.0	71	71	--	--
	Dixie Road	165.0	52		--	

\* Top residential floor. Outdoor amenity area receptor location taken 1.5 m above grade or rooftop surface, as applicable.

\*\* Accounting for a 1.5 m high railing along the roof edge. See Section 4.1 for details.

**TABLE 3**  
**PROPOSED RESIDENTIAL DEVELOPMENT**  
**1303 LAKESHORE ROAD EAST**  
**CITY OF MISSISSAUGA**  
**REGION OF PEEL**

**SUMMARY OF MINIMUM NOISE MITIGATION MEASURES**

Condominium Building	Air Conditioning <sup>(1)</sup>	Exterior Wall <sup>(2)</sup>	Windows <sup>(3)</sup>	Exterior Doors <sup>(3)</sup>	Warning Clause <sup>(4)</sup>
All residential units	Mandatory	Up to STC 45	Up to STC 43	Up to STC 43	A, B, C, D, E

See Notes to Table 3 on following pages.

### NOTES TO TABLE 3

1. Means must be provided to allow windows to remain closed for noise control purposes. The air conditioning system should be designed to meet the MOE NPC-300 noise guideline limits.
2. STC - Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on preliminary calculations using the standard assumptions. See Section 7.1.1 for details.
3. STC - Sound Transmission Class Rating (Reference ASTM-E413). Values shown are based on preliminary calculations using the standard assumptions. See Section 7.1.1 for details. A sliding glass walkout door and exterior doors having glass components should be considered as a window and be included in the percentage of glazing.
4. Suggested warning clauses to be included in the development agreement and to be included in offers of purchase and sale or lease agreements on designated residential 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 and rail 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 residential unit is fitted with a central air conditioning system in order to permit closing of windows for noise control."
  - C. "Purchasers/tenants are advised that the residential unit is in proximity to the existing commercial and industrial facilities whose activities and/or equipment may at times be audible."

D. “Purchasers/tenants are advised that CN or its assigns or successors in interest has or have a right-of-way and facilities within 300 m from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuation measures in the design of the development and individual dwelling(s). CN will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid facility and right-of-way.”

E. “Purchasers/tenants are advised that GO Transit/Metrolinx or its assigns or successors in interest has or have a right-of-way and facilities within 300 m from the land the subject hereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuation measures in the design of the development and individual dwelling(s). GO Transit/Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid facility and right-of-way.”





N.T.S.

**Proposed Residential Development  
1303 Lakeshore Road East  
City of Mississauga**

**Date: March 2023**

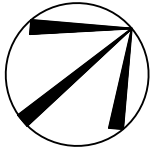
**File: 21-041**

**KEY PLAN**

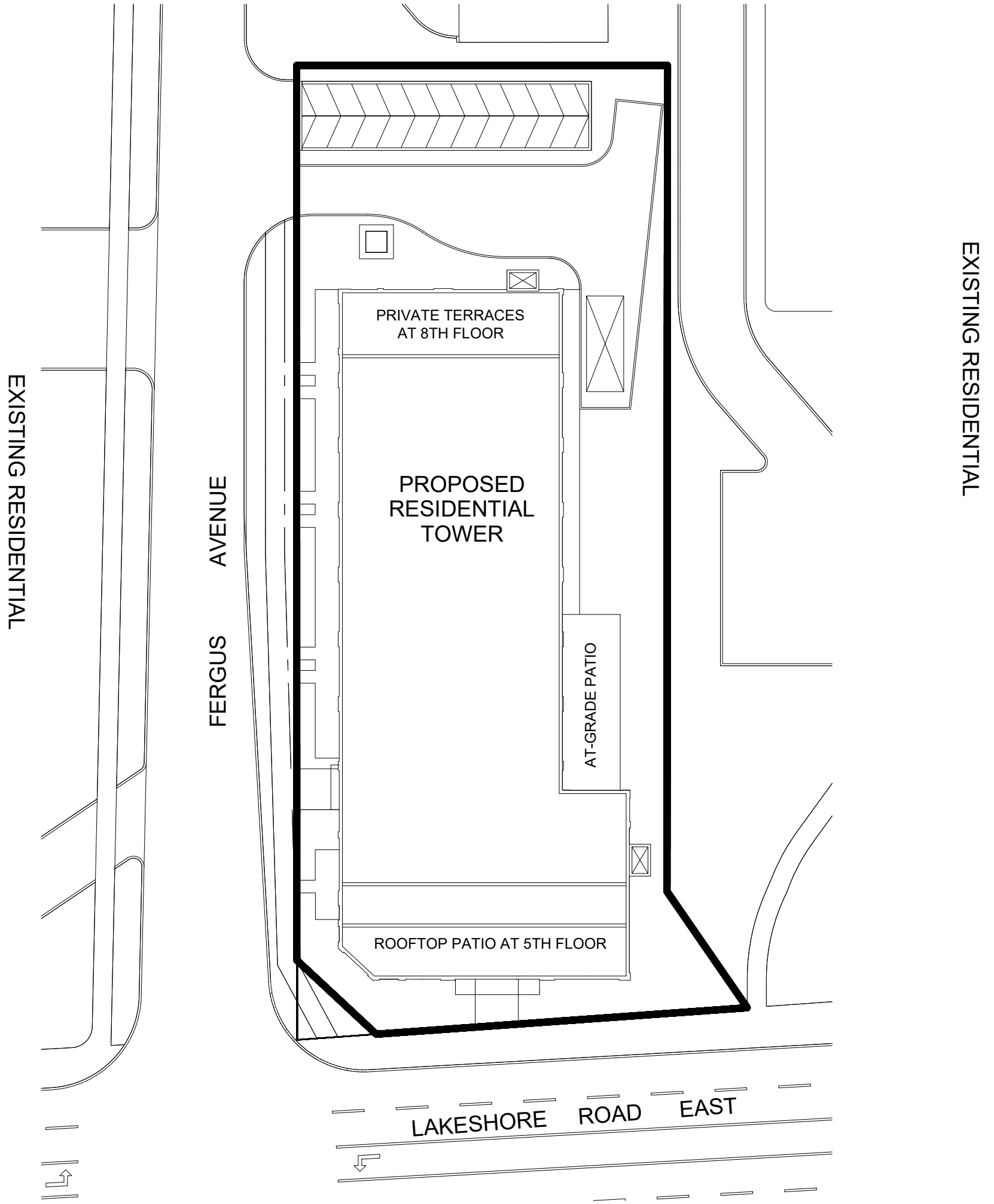
**FIGURE 1**







EXISTING RESIDENTIAL



EXISTING RESIDENTIAL

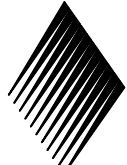
FERGUS AVENUE

EXISTING RESIDENTIAL

LAKESHORE ROAD EAST

EXISTING INDUSTRIAL

N.T.S.

Proposed Residential Development 1303 Lakeshore Road East City of Mississauga	
Date: March 2023	Our File: 21-041
 <b>JADE</b> <small>ACOUSTICS</small>	PLAN OF DEVELOPMENT  FIGURE 2

## APPENDIX A

### CORRESPONDENCE REGARDING ROAD AND RAIL TRAFFIC DATA

Date: 26-Jul-22

# NOISE REPORT FOR PROPOSED DEVELOPMENT

## REQUESTED BY:

Name: Davor Sikic

Company: Jade Acoustics

Location: Lakeshore Rd. West of Dixie Road  
Lakeshore Rd. East of Dixie Road

## PREPARED BY:

Name: Loudel Uy

Tel#: (905) 615- 3200



ID# 556

## ON SITE TRAFFIC DATA

Specific	Street Names			
	Lakeshore Rd W of Dixie	Lakeshore Rd E of Dixie		
<b>AADT:</b>	50500	42300		
<b># of Lanes:</b>	4	4		
<b>% Trucks:</b>	5%	5%		
<b>Medium/Heavy Trucks Ratio:</b>	55/45	55/45		
<b>Day/Night Split:</b>	90/10	90/10		
<b>Posted Speed Limit:</b>	50 km/h	50 km/h		
<b>Gradient Of Road:</b>	<2%	<2%		
<b>Ultimate R.O.W:</b>	30 m	30 m		

Comments: Ultimate Traffic Data only (2041)

Date: July 8, 2021  
 From: Mike Bechbache, Jade Acoustics Inc.  
 Re: Traffic Data Request – Dixie Road (1.27 KM North of Lakeshore Road)

Mike,  
 As per your request, we are providing the following 2019 traffic data:

	Existing	Ultimate
24 Hour Traffic Volume	16,678	16,678
# of Lanes	2	2
Day/Night Split	92/8	92/8
Day Trucks (% of Total Volume)	5.27% Medium 0.63% Heavy	5.27% Medium 0.63% Heavy
Night Trucks (% of Total Volume)	7.15% Medium 0.73% Heavy	7.15% Medium 0.73% Heavy
Right-of-Way Width	20 meters	
Posted Speed Limit	50 km/h	

Please note:

1. The current volume is not the Annual Average Daily Traffic, but the averaged raw volumes over three data collection days. If you need the Annual Average Traffic Volume, please visit the Peel Open Data website below:  
<http://opendata.peelregion.ca/data-categories/transportation/traffic-count-stations.aspx>
2. The ultimate volume is the planned volume during a level of service 'D' where a 2 second vehicle headway and a volume to capacity ratio of 0.9 is assumed. Traffic signals and hourly variations in traffic are also incorporated into the ultimate volume.

If you require further assistance, please contact me at (905) 791-7800 ext. 4810.

Regards,

Tiggy Chen  
 Transportation Analyst, Transportation System Planning  
 Transportation Division, Public Works Services, Region of Peel  
 10 Peel Centre Drive, Suite B, 4<sup>th</sup> Floor  
 Brampton, ON L6T 4B9  
 W: (905) 791-7800 x4810 C: (647) 918-2827  
 E: [tiggy.chen@peelregion.ca](mailto:tiggy.chen@peelregion.ca)

Date: 2021/08/23

Project Number: Oakville-10.18 –Dixie Rd Mississauga ON

Hello Mike Bechbach:

**Re: Train Traffic Data – CN Oakville Subdivision Lakeshore Rd  
E/Dixie Rd, Mississauga ON**

The following is provided in response to Michael's 2021/07/09 request for information regarding rail traffic in the vicinity of Dixie Rd, Mississauga ON at approximately Mile 10.18 on CN's Oakville Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

**\*Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	65	4
Way Freight	2	25	65	4
Passenger	14	10	100	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	65	4
Way Freight	5	25	65	4
Passenger	1	10	100	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN's Oakville Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are three (3) at-grade crossing Mile 10.59 Haig Blvd Xing, Mile 10.85 Ogden Ave. Xing and Mile 11.03 Alexandra Ave. Xing in the immediate vicinity of the study area. Anti-whistling bylaws are in effect at all three crossings. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The triple mainline track is considered to be continuously welded rail throughout the study area.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at [Proximity@cn.ca](mailto:Proximity@cn.ca) should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

A handwritten signature in blue ink, consisting of several overlapping, sweeping strokes that form a stylized representation of the name Michael Vallins P. Eng.

Michael Vallins P.Eng  
Manager, Public Works - Eastern Canada  
[permits.gld@cn.ca](mailto:permits.gld@cn.ca)

## Michael Bechbache

---

**From:** Rail Data Requests <RailDataRequests@metrolinx.com>  
**Sent:** Tuesday, July 20, 2021 12:06 PM  
**To:** Michael Bechbache  
**Cc:** Chris Kellar  
**Subject:** RE: Request for Rail Traffic Information (JAI Job #21-041)-near the intersection of Dixie Rd and Lakeshore Rd E, Mississauga

Hi Michael

Further to your request dated July 7, 2021, the subject lands (ear the intersection of Dixie Rd and Lakeshore Rd E, Mississauga) are located in proximity to 300 metres of the Metrolinx Oakville Subdivision (which carries Lakeshore West GO rail service).

It's anticipated that GO rail service on this Subdivision will be comprised of diesel and electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 255 trains. The planned detailed trip breakdown is listed below:

	1 Diesel Locomotive	2 Diesel Locomotives	1 Electric Locomotive	2 Electric Locomotives		1 Diesel Locomotive	2 Diesel Locomotives	1 Electric Locomotive	2 Electric Locomotives
Day (0700-2300)	60	11	101	42	Night (2300-0700)	8	4	21	8

The current track design speed near the subject lands is 95 mph (153 km/h).

There are *anti-whistling by-laws* in affect at Alexandra Ave, Ogden Ave and Haig Blvd at-grade crossings.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase.

Options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams are currently completing the bids that will close in 2021. GO Expansion construction will get underway in 2022.

However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

Given the above considerations, it would be prudent at this time, for the purposes of acoustical analyses for development in proximity to Metrolinx corridors, to assume that the acoustical characteristics of electrified and diesel trains are equivalent. In light of the aforementioned information, acoustical models should employ diesel train parameters as the basis for analyses. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the future once the proponent team is selected.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

It should be noted that this information only pertains to Metrolinx rail service. It would be prudent to contact other rail operators in the area directly for rail traffic information pertaining to non-Metrolinx rail service.

I trust this information is useful. Should you have any questions or concerns, please do not hesitate to contact me.

Regards,

## 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**

<b>Time Period</b>	<b>Leq (16) (dBA)</b>
16 hr., 07:00 - 23:00	55

**TABLE C-2**

**Indoor Sound Level Limits**

**Road and Rail**

<b>Type of Space</b>	<b>Time Period</b>	<b>Leq (dBA)</b>	
		<b>Road</b>	<b>Rail</b>
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 (Leq, 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 (Leq, dBA)  
Plane of Window of Noise Sensitive Spaces**

<b>Time of Day</b>	<b>Class 1 Area</b>	<b>Class 2 Area</b>	<b>Class 3 Area</b>	<b>Class 4 Area</b>
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 (LLM, dBAI)  
Outdoor Points of Reception**

<b>Time of Day</b>	<b>Actual Number of Impulses in Period of One-Hour</b>	<b>Class 1 Area</b>	<b>Class 2 Area</b>	<b>Class 3 Area</b>	<b>Class 4 Area</b>
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 (LLM, dBAI)  
Plane of Window - Noise Sensitive Spaces (Day/Night)**

<b>Actual Number of Impulses in Period of One-Hour</b>	<b>Class 1 Area (07:00-23:00)/ (23:00-07:00)</b>	<b>Class 2 Area (07:00-23:00)/ (23:00-07:00)</b>	<b>Class 3 Area (07:00-19:00)/ (19:00-07:00)</b>	<b>Class 4 Area (07:00-23:00)/ (23:00-07:00)</b>
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	Leq (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.

## ENVIRONMENTAL NOISE CRITERIA

### REGION OF PEEL

Reference: "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", November, 2012 (updated August 2020).

#### ROAD TRAFFIC NOISE

TYPE OF SPACE	TIME PERIOD	SOUND LEVEL LIMIT Leq*
Outdoor living area	7 am – 11 pm	Leq (16 hr.) = 55 dBA
Outside bedroom window	11 pm – 7 am	Leq (8 hr.) = 50 dBA
Indoor (bedrooms, hospitals)	11 pm – 7 am	Leq (8 hr.) = 40 dBA
Indoor (living rooms, hotels, private offices, reading rooms)	7 am – 11 pm	Leq (16 hr.) = 45 dBA
Indoor (general offices, shops)	7 am – 11 pm	Leq (16 hr.) = 50 dBA

\* Leq, measured in A-weighted decibels (dBA), is the value of the constant sound level which would result in exposure to the same total sound level as would the specified time varying sound, if the constant sound level persisted over an equal time interval.

## CITY OF MISSISSAUGA

Reference: City of Mississauga Official Plan – Chapter 6, “Value the Environment”,  
City of Mississauga, April 8, 2021.

<b>Outdoor and Indoor Sound Level Limits – Road and Rail</b>			
<b>Type of Space</b>	<b>Time Period</b>	<b>Equivalent Sound Level <i>Leq</i>* (Time Period) (dBA)**</b>	
		<b>Road</b>	<b>Rail</b>
Outdoor Living Areas (OLA)	0700 – 23:00, 16 hours	55	55
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	0700 – 23:00, 16 hours	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycares)	23:00 – 7:00, 8 hours	45	40
Sleeping quarters	0700 – 23:00, 16 hours	45	40
	23:00 – 7:00, 8 hours	40	35
Sleeping quarters of hotels/motels	23:00 – 7:00, 8 hours	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	23:00 – 7:00, 8 hours	40	35
General offices, reception areas, retail stores, etc.	0700 – 23:00, 16 hours	50	45
Nursing/retirement homes, theatres, places of religious assembly, libraries	0700 – 23:00, 16 hours	45	40
Individual or semi-private offices, conferences rooms, reading rooms, etc.	0700 – 23:00, 16 hours	45	40
<p>* <i>Leq</i> – The A-weighted sound level of a steady sound carrying the same total energy in the specified time period as the observed fluctuating sound.</p> <p>** <b>dBA</b> –The A-weighted sound pressure level. Noise measured in decibels weighted to express loudness as perceived by human hearing.</p>			

Note: Outdoor and Indoor Sound Level Limits – Road and Rail (adapted from Environmental Noise Guideline, Publication NPC-300)

## CN/GO TRANSIT/METROLINX

### RAILWAY NOISE AND VIBRATION GUIDELINES

Mitigation measures are required to achieve the following standards for noise for residential uses.

		Leq (dBA)	
		Day (16 hr.)	Night (8 hr.)
Noise	Sleeping Quarters	35	35
	Living Room	40	40
	Outdoor	55	N/A

#### Vibration

Groundborne vibration transmission to be estimated through site testing and evaluation to determine if dwellings within 75 m of the Railway right-of-way will be impacted by overall vertical vibration velocities in excess of 0.14 mm/sec. RMS between 4 Hz and 200 Hz. The monitoring system should be capable of measuring frequencies between 4 Hz and 200 Hz,  $\pm 3$  dB with an RMS averaging time constant of 1 second. If in excess, isolation measures will be required to ensure living areas do not exceed 0.14 mm/sec. RMS on and above the first floor of the dwellings within 75 m of the nearest track.



## APPENDIX C

### SAMPLE CALCULATION OF PREDICTED SOUND LEVELS DUE TO ROAD AND RAIL TRAFFIC

**APPENDIX C-1  
SAMPLE CALCULATION OF SOUND LEVEL**

FILE: 21-041  
 NAME: 1303 Lakeshore Road East  
 REFERENCE DRAWINGS: Site Plan  
 LOCATION: North Wall, Top Residential Floor, daytime

---

Noise Source:	Dixie Road	Rail Corridor (Locomotive)	Rail Corridor (Wheel)
Time Period:	16 hr. (day)	16 hr. (day)	16 hr (day)
Segment Angle:	-90 to 0	-90 to 90	-90 to 90
Distance (m):	165	260	260

---

**CALCULATION SOUND LEVEL \***

Reference Leq (dBA)*:	65.37	82.97	74.16
Distance Correction (dBA):	-10.41	-12.39	-12.39
Finite Element Correction (dBA):	-3.01	0.00	0.00
Allowance for Future Growth (dBA):	incl.	incl.	incl.

---

LeqDay (dBA):	51.94	70.58	61.78
Combined LeqDay (dBA):		71.16	

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

**Filename: northd.te                      Time Period: Day 16 hours**  
**Description: North Facade Building Requirement - Daytime**

Rail data, segment # 1: CN (day)

Train Type	! Trains	! Speed ! (km/h)	!# loc !/Train!	!# Cars! /Train!	! Eng ! type	!Cont !weld
* 1. WAY FREIGHT	! 2.7	! 105.0	! 4.0	! 25.0	!Diesel!	! Yes
* 2. PASSENGER CN	! 18.8	! 150.0	! 2.0	! 10.0	!Diesel!	! Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train No	! Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1.	WAY FREIGHT	! 2.0	! 2.50	! 12.00
2.	PASSENGER CN	! 14.0	! 2.50	! 12.00

Data for Segment # 1: CN (day)

-----  
 Angle1    Angle2                      : -90.00 deg    90.00 deg  
 Wood depth                      :            0            (No woods.)  
 No of house rows                :            0  
 Surface                            :            1            (Absorptive ground surface)  
 Receiver source distance        : 260.00 m  
 Receiver height                 : 35.00 m  
 Topography                        :            1            (Flat/gentle slope; no barrier)  
 No Whistle  
 Reference angle                  :            0.00

Rail data, segment # 2: METROLINX (day)

Train Type	! Trains	! Speed ! (km/h)	!# loc !/Train!	!# Cars! /Train!	! Eng ! type	!Cont !weld
* 1. 1 LOCO	! 161.0	! 150.0	! 2.0	! 12.0	!Diesel!	! Yes
* 2. 2 LOCO	! 53.0	! 150.0	! 2.0	! 12.0	!Diesel!	! Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train No	! Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1.	1 LOCO	! 161.0	! 2.50	! 0.00
2.	2 LOCO	! 53.0	! 2.50	! 0.00

Data for Segment # 2: METROLINX (day)

```

-----
Angle1 Angle2      : -90.00 deg   90.00 deg
Wood depth          :      0      (No woods.)
No of house rows   :      0
Surface            :      1      (Absorptive ground surface)
Receiver source distance : 260.00 m
Receiver height    :   35.00 m
Topography         :      1      (Flat/gentle slope; no barrier)
No Whistle
Reference angle    :      0.00
  
```

Results segment # 1: CN (day)

```

-----
LOCOMOTIVE (0.00 + 60.19 + 0.00) = 60.19 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90     90     0.00  72.58 -12.39  0.00  0.00  0.00  0.00  60.19
-----
  
```

```

-----
WHEEL (0.00 + 50.96 + 0.00) = 50.96 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90     90     0.00  63.34 -12.39  0.00  0.00  0.00  0.00  50.96
-----
  
```

Segment Leq : 60.68 dBA

Results segment # 2: METROLINX (day)

```

-----
LOCOMOTIVE (0.00 + 70.16 + 0.00) = 70.16 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90     90     0.00  82.55 -12.39  0.00  0.00  0.00  0.00  70.16
-----
  
```

```

-----
WHEEL (0.00 + 61.40 + 0.00) = 61.40 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90     90     0.00  73.79 -12.39  0.00  0.00  0.00  0.00  61.40
-----
  
```

Segment Leq : 70.70 dBA

Total Leq All Segments: 71.11 dBA

Road data, segment # 1: DIXIE (day)

```

-----
Car traffic volume   : 14458 veh/TimePeriod *
Medium truck volume  :   810 veh/TimePeriod *
Heavy truck volume   :    97 veh/TimePeriod *
Posted speed limit   :   50 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): 16700
Percentage of Annual Growth      : 0.00
Number of Years of Growth        : 0.00
Medium Truck % of Total Volume   : 5.27
Heavy Truck % of Total Volume    : 0.63
Day (16 hrs) % of Total Volume   : 92.00
  
```

Data for Segment # 1: DIXIE (day)

-----  
Angle1 Angle2 : -90.00 deg 0.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 165.00 m  
Receiver height : 35.00 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: DIXIE (day)

-----  
Source height = 0.89 m

ROAD (0.00 + 51.94 + 0.00) = 51.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	65.37	0.00	-10.41	-3.01	0.00	0.00	0.00	51.94

-----

Segment Leq : 51.94 dBA

Total Leq All Segments: 51.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 71.16

**APPENDIX C-2  
SAMPLE CALCULATION OF SOUND LEVEL**

FILE: 21-041  
 NAME: 1303 Lakeshore Road East  
 REFERENCE DRAWINGS: Site Plan  
 LOCATION: North Wall, Top Residential Floor, nighttime

---

Noise Source:	Dixie Road	Rail Corridor (Locomotive)	Rail Corridor (Wheel)
Time Period:	8 hr. (night)	8 hr. (night)	8 hr. (night)
Segment Angle:	-90 to 0	-90 to 90	-90 to 90
Distance (m):	165	260	260

---

**CALCULATION SOUND LEVEL \***

Reference Leq (dBA)*:	58.41	79.30	70.49
Distance Correction (dBA):	-10.41	-12.39	-12.39
Finite Element Correction (dBA):	-3.01	0.00	0.00
Allowance for Future Growth (dBA):	incl.	incl.	incl.

---

LeqNight (dBA):	44.99	66.91	58.10
Combined LeqNight (dBA):		67.47	

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

**Filename: northn.te                    Time Period: Night 8 hours**  
**Description: North Facade Building Requirement - Nighttime**

Rail data, segment # 1: CN (night)

Train Type	! Trains !	! Speed ! (km/h)	!# loc ! /Train!	!# Cars ! /Train!	! Eng ! type	!Cont !weld
* 1. WAY FREIGHT	! 6.7 !	! 105.0 !	! 4.0 !	! 25.0 !	!Diesel!	! Yes
* 2. PASSENGER CN!	! 1.3 !	! 150.0 !	! 2.0 !	! 10.0 !	!Diesel!	! Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1. WAY FREIGHT	! 5.0 !	! 2.50 !	! 12.00 !
2. PASSENGER CN	! 1.0 !	! 2.50 !	! 12.00 !

Data for Segment # 1: CN (night)

-----  
 Angle1 Angle2 : -90.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 260.00 m  
 Receiver height : 35.00 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 No Whistle  
 Reference angle : 0.00

Rail data, segment # 2: METROLINX (night)

Train Type	! Trains !	! Speed ! (km/h)	!# loc ! /Train!	!# Cars ! /Train!	! Eng ! type	!Cont !weld
* 1. 1 LOCO	! 29.0 !	! 150.0 !	! 2.0 !	! 12.0 !	!Diesel!	! Yes
* 2. 2 LOCO	! 12.0 !	! 150.0 !	! 2.0 !	! 12.0 !	!Diesel!	! Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1. 1 LOCO	! 29.0 !	! 2.50 !	! 0.00 !
2. 2 LOCO	! 12.0 !	! 2.50 !	! 0.00 !

Data for Segment # 2: METROLINX (night)

-----  
 Angle1 Angle2 : -90.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 0  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 260.00 m  
 Receiver height : 35.00 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 No Whistle  
 Reference angle : 0.00

Results segment # 1: CN (night)

```
-----
LOCOMOTIVE (0.00 + 59.70 + 0.00) = 59.70 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90      90    0.00  72.08 -12.39  0.00  0.00  0.00  0.00  59.70
-----
```

```
-----
WHEEL (0.00 + 50.67 + 0.00) = 50.67 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90      90    0.00  63.06 -12.39  0.00  0.00  0.00  0.00  50.67
-----
```

Segment Leq : 60.21 dBA

Results segment # 2: METROLINX (night)

```
-----
LOCOMOTIVE (0.00 + 66.00 + 0.00) = 66.00 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90      90    0.00  78.39 -12.39  0.00  0.00  0.00  0.00  66.00
-----
```

```
-----
WHEEL (0.00 + 57.24 + 0.00) = 57.24 dBA
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90      90    0.00  69.62 -12.39  0.00  0.00  0.00  0.00  57.24
-----
```

Segment Leq : 66.54 dBA

Total Leq All Segments: 67.45 dBA

Road data, segment # 1: DIXIE (night)

```
-----
Car traffic volume      :      1231 veh/TimePeriod *
Medium truck volume    :       96  veh/TimePeriod *
Heavy truck volume     :       10  veh/TimePeriod *
Posted speed limit     :       50 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): 16700
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 7.15
Heavy Truck % of Total Volume     : 0.73
Day (16 hrs) % of Total Volume    : 92.00
```

Data for Segment # 1: DIXIE (night)

```
-----
Angle1 Angle2          : -90.00 deg  0.00 deg
Wood depth              : 0          (No woods.)
No of house rows       : 0
Surface                : 1          (Absorptive ground surface)
Receiver source distance : 165.00 m
Receiver height         : 35.00 m
Topography              : 1          (Flat/gentle slope; no barrier)
Reference angle        : 0.00
```



Results segment # 1: DIXIE (night)

-----

Source height = 0.93 m

ROAD (0.00 + 44.99 + 0.00) = 44.99 dBA

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

-90	0	0.00	58.41	0.00	-10.41	-3.01	0.00	0.00	0.00	44.99
-----	---	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 44.99 dBA

Total Leq All Segments: 44.99 dBA

TOTAL Leq FROM ALL SOURCES (NIGHT): 67.47

**APPENDIX C-3  
SAMPLE CALCULATION OF SOUND LEVEL**

FILE: 21-041  
NAME: 1303 Lakeshore Road East  
REFERENCE DRAWINGS: Landscape Plan  
LOCATION: Fifth Floor Rooftop Outdoor Amenity Area

---

Noise Source:	Lakeshore Road East
Time Period:	16 hr. (day)
Segment Angle:	-90 to 90
Distance (m):	20.8

---

**CALCULATION SOUND LEVEL \***

Reference Leq (dBA)*:	71.57
Distance Correction (dBA):	-1.68
Finite Element Correction (dBA):	-0.52
Barrier Adjustment (dBA):	-10.57
Allowance for Future Growth (dBA):	incl.

---

LeqDay (dBA):	58.80
---------------	-------

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

**Filename:** ola5.te                    **Time Period:** Day/Night 16/8 hours  
**Description:** 5th Floor Common OLA - Unmitigated

Road data, segment # 1: LAKESHORE (day)

```
-----
Car traffic volume   : 43178 veh/TimePeriod *
Medium truck volume : 1250 veh/TimePeriod *
Heavy truck volume  : 1023 veh/TimePeriod *
Posted speed limit  : 50 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): 50500
Percentage of Annual Growth         : 0.00
Number of Years of Growth           : 0.00
Medium Truck % of Total Volume      : 2.75
Heavy Truck % of Total Volume       : 2.25
Day (16 hrs) % of Total Volume      : 90.00
```

Data for Segment # 1: LAKESHORE (day)

```
-----
Angle1  Angle2      : -90.00 deg   90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 20.75 m
Receiver height  : 1.50 m
Topography      : 4 (Elevated; with barrier)
Barrier angle1  : -90.00 deg   Angle2 : 90.00 deg
Barrier height  : 1.50 m
Elevation       : 12.80 m
Barrier receiver distance : 2.25 m
Source elevation : 0.00 m
Receiver elevation : 12.80 m
Barrier elevation : 12.80 m
Reference angle  : 0.00
```

Results segment # 1: LAKESHORE (day)

Source height = 1.22 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.22 ! 1.50 ! 0.08 ! 12.88
```

```
ROAD (0.00 + 58.80 + 0.00) = 58.80 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
-90 90 0.19 71.57 0.00 -1.68 -0.52 0.00 0.00 -10.57 58.80
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
```

Segment Leq : 58.80 dBA

Total Leq All Segments: 58.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.80

## APPENDIX D

### SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION

**APPENDIX D-1**  
**SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION\***

FILE: 21-041

NAME: 1303 Lakeshore Road East

REFERENCE DRAWINGS: Site plan

LOCATION: Top Residential Floor, North Façade Corner Bedroom, Nighttime

		<b>ROAD</b>
Room:	Corner Bedroom	
Exterior Wall area as a percentage of Floor Area:	North:	20%
	East:	20%
Window/Exterior Door area as a percentage of Floor Area:	North:	60%
	East:	60%
Number of components:	4	
Outdoor Nighttime Leq:	North: 45 (+3 for reflection) =	48 dBA
	East: 56 (+3 for reflection) =	59 dBA
Indoor Nighttime Leq:	40	
Angle Correction:	0	
Noise Reduction (dBA):	North: 8	
	East: 19	
Noise Spectrum:	Road	
Absorption:	Medium	

**APPROPRIATE ELEMENTS**

		<b>STC Rating</b>
Exterior Wall	North	STC 15
	East	STC 26
Window/Exterior Door	North	STC 15
	East	STC 26

\* Based upon "Controlling Sound Transmission into Buildings", Building Practice Note 56 by National Research Council of Canada, September, 1985.

**APPENDIX D-2**  
**SAMPLE CALCULATION OF ARCHITECTURAL COMPONENT SELECTION\***

FILE: 21-041

NAME: 1303 Lakeshore Road East

REFERENCE DRAWINGS: Site plan

LOCATION: Top Residential Floor, North Façade Corner Bedroom, Nighttime

---

**RAIL**

Room: Corner Bedroom

Exterior Wall area as a percentage of Floor Area:	North:	20%
	East:	20%

Window/Exterior Door area as a percentage of Floor Area:	North:	60%
	East:	60%

Number of components: 4

Outdoor Nighttime Leq:	North:	67 (+3 for reflection) = 70 dBA
	East:	64 (+3 for reflection) = 67 dBA

Indoor Nighttime Leq: 35

Angle Correction: 0

Noise Reduction (dBA):	North:	35
	East:	32

Noise Spectrum: Diesel Locomotive

Absorption: Medium

---

**APPROPRIATE ELEMENTS**

**STC Rating**

Exterior Wall	North	STC 45
	East	STC 42

Window/Exterior Door	North	STC 43
	East	STC 40

\* Based upon "Controlling Sound Transmission into Buildings", Building Practice Note 56 by National Research Council of Canada, September, 1985.

## APPENDIX D-3

### SUMMARY OF COMBINED STC RATING REQUIREMENTS

#### 1303 LAKESHORE ROAD EAST

#### TOP RESIDENTIAL FLOOR CORNER BEDROOM (NORTHEAST CORNER)

COMBINED	REQUIRED STC BASED ON ROAD TRAFFIC ONLY	REQUIRED STC BASED ON RAIL TRAFFIC ONLY	COMBINED REQUIRED STC RATING*
North Wall	15	45	45
East Wall	26	42	42
North Window/ Exterior Door	15	43	43
East Window/ Exterior Door	26	40	40

- \* An STC 45 rating for the exterior wall and an STC 43 rating for the window/exterior door exceed construction which comply with the minimum structural and safety requirements of standard construction.

## APPENDIX E

### SAMPLE CALCULATION OF SOUND BARRIER ANALYSIS



**Filename:** ola5.te                    **Time Period:** Day/Night 16/8 hours  
**Description:** 5th Floor Common OLA - Mitigated

Road data, segment # 1: LAKESHORE (day)

```
-----
Car traffic volume   : 43178 veh/TimePeriod *
Medium truck volume : 1250 veh/TimePeriod *
Heavy truck volume  : 1023 veh/TimePeriod *
Posted speed limit  : 50 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): 50500
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 2.75
Heavy Truck % of Total Volume     : 2.25
Day (16 hrs) % of Total Volume    : 90.00
```

Data for Segment # 1: LAKESHORE (day)

```
-----
Angle1  Angle2      : -90.00 deg  90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0
Surface         : 1 (Absorptive ground surface)
Receiver source distance : 20.75 m
Receiver height  : 1.50 m
Topography      : 4 (Elevated; with barrier)
Barrier angle1  : -90.00 deg  Angle2 : 90.00 deg
Barrier height  : 1.50 m
Elevation      : 12.80 m
Barrier receiver distance : 2.25 m
Source elevation : 0.00 m
Receiver elevation : 12.80 m
Barrier elevation : 12.80 m
Reference angle : 0.00
```

Results segment # 1: LAKESHORE (day)

Source height = 1.22 m

Barrier height for grazing incidence

```
-----
Source      ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.22 ! 1.50 ! 0.08 ! 12.88
```

```
ROAD (0.00 + 58.80 + 0.00) = 58.80 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
-90 90 0.19 71.57 0.00 -1.68 -0.52 0.00 0.00 -10.57 58.80
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
```

Segment Leq : 58.80 dBA

Total Leq All Segments: 58.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.80

Barrier table for segment # 1: LAKESHORE (day)

Barrier Height	Elev of Barr Top!	Road dBA	Tot Leq dBA
1.50	14.30	58.80	58.80
1.60	14.40	58.39	58.39
1.70	14.50	58.01	58.01
1.80	14.60	57.64	57.64
1.90	14.70	57.28	57.28
2.00	14.80	56.94	56.94
2.10	14.90	56.62	56.62
2.20	15.00	56.30	56.30
2.30	15.10	56.01	56.01
2.40	15.20	55.72	55.72
2.50	15.30	55.44	55.44
2.60	15.40	55.18	55.18
2.70	15.50	54.92	54.92
2.80	15.60	54.68	54.68
2.90	15.70	54.44	54.44
3.00	15.80	54.33	54.33
3.10	15.90	54.15	54.15
3.20	16.00	53.99	53.99
3.30	16.10	53.84	53.84
3.40	16.20	53.71	53.71