

Environmental Noise Feasibility Study

22-28 Ann Street & 78 Park Street East

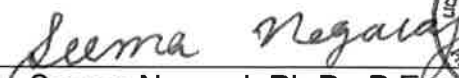
Proposed Residential Development City of Mississauga

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VALCOUSTICS

Canada Ltd.

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Environmental Noise Feasibility Study

22-28 Ann Street & 78 Park Street East

Proposed Residential Development

City of Mississauga

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) has been retained to prepare an Environmental Noise Feasibility Study in support of the Rezoning submission to the City of Mississauga. The proposed development consists of a 22-storey residential building with a mechanical penthouse. Live-work units will be located on the ground floor. Common indoor amenity space will be located on the ground floor and 14th floor. Common outdoor amenity space will be located on the 14th floor. Several of the units will be also be provided with private balconies and terraces. The development will have four levels of underground parking.

The transportation noise sources with potential to impact the proposed development are road traffic on Ann Street, Queen Street East, Park Street and Hurontario Street, as well as rail traffic on the Canadian National Railway (CN) Oakville Subdivision. There are no stationary noise sources in the vicinity that are expected to have a significant impact at the subject site.

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

To meet the applicable transportation noise source guideline limits:

- All residential suites in the development require mandatory air conditioning for noise control purposes;
- Upgraded exterior wall construction meeting Sound Transmission Class (STC) 54 (e.g. brick veneer) and upgraded exterior windows with STC ratings as high as 42 could be required to meet the indoor noise criteria. Methods to reduce the window STC requirements are discussed within.
- Sound barriers are not required for noise control purposes at the common outdoor amenity area.

Final requirements should be checked when detailed building plans are available. This is usually done as a condition for obtaining a building permit.

1.0 INTRODUCTION

VCL was retained to prepare an Environmental Noise Feasibility Study support of the Rezoning application to the City of Mississauga. The potential sound levels and the mitigation measures required for the proposed development to comply with the MECP noise guideline requirements are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The development is located south of the CN Oakville Subdivision rail line, west of Hurontario Street, in the City of Mississauga. The site is bounded by:

- An existing residential dwelling, with Queen Street East and the CN Oakville Subdivision beyond, to the north;
- Ann Street, with the existing Port Credit GO Station surface parking lot beyond, to the east;
- An existing parking structure with retail uses on the ground floor and a high-rise residential building to the west; and
- Park Street East, with existing high-rise residential development beyond, to the south.

A Key Plan is included as Figure 1. The study is based on the architectural drawing set prepared by IBI Group Architects, received April 24, 2019. The Site Plan from the drawing set is shown as Figure 2.

1.2 THE PROPOSED DEVELOPMENT

The proposed development consists of a 22-storey residential tower with a mechanical penthouse above. Live-work units will be located on the ground floor. Common indoor amenity space will be located on the ground floor and 14th floor. Common outdoor amenity space will be located on the 14th floor. Several of the units will be also be provided with private balconies and terraces. The development will have four levels of underground parking.

2.0 NOISE SOURCES

2.1 TRANSPORTATION NOISE SOURCES

The transportation noise sources with potential to impact the proposed development are road traffic on Ann Street, Queen Street East, Park Street and Hurontario Street, as well as rail traffic on the CN Oakville Subdivision. Due to distance separation and partial screening by existing intervening development, road traffic from Lakeshore Road East is not expected to have a significant impact at the subject site. Traffic volumes on the other surrounding roadways are anticipated to be minor and no significant noise impact is expected. Thus, these roadways have not been considered further in this assessment.

The site lies beyond the NEF/NEP 25 contour for Lester B. Pearson International Airport (LBPIA). Aircraft noise has therefore not been considered further in this assessment.

2.1.1 Road Traffic

Ultimate road traffic data for Hurontario Street, Park Street East and Ann Street/Queen Street East was obtained from the City of Mississauga.

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

2.1.2 Rail Traffic Data

The CN Oakville Subdivision is located approximately 60 m to the north of the site. Rail traffic on the CN Oakville Subdivision consists of freight, way freight, passenger (VIA) and GO commuter trains.

2.1.2.1 CN

Rail traffic data applicable to the year 2019 was directly obtained from CN. The rail traffic volumes were escalated to the year 2029 using a growth rate of 2.5%, compounded annually. This growth rate is recommended by MECP and rail authorities in preparing environmental noise studies.

2.1.2.2 GO Transit/Metrolinx

Future (minimum 10-year horizon) GO train forecasts in the vicinity of the site were directly obtained from Metrolinx.

Since the beginning of 2016, Metrolinx has made significant revisions to its forecasts. The most significant changes from the noise perspective are:

- Service is being intensified along all Metrolinx corridors as part of its Regional Express Rail service.
- It is anticipated that GO services on the CN Oakville Subdivision will be comprised by a mix of diesel and electric trains within (at least) a 10-year time horizon.

Metrolinx has not yet made final decisions regarding the electric train technology to be used. In the interim, for the purposes of environmental noise studies, Metrolinx is recommending that the noise level and spectrum of a diesel train be used to model the impact from the electric trains.

The rail traffic data is summarized in Table 1B. Correspondence related to the rail traffic data is shown in Appendix A.

2.2 PORT CREDIT GO STATION

The Port Credit GO Station is located to the north of the subject site, on the north side of Queen Street East. Trains that stop at the station will decelerate, briefly idle, and then accelerate as they depart. Some trains will also pass by the station without stopping.

This assessment models all rail activity as full-speed pass-bys. Based on other projects completed by VCL, it is expected that the modelling of trains at full speed is more conservative than modelling the accelerations and decelerations (i.e. produces higher sound levels). Thus, the mitigation requirements based on this modelling method will be sufficient to meet the indoor rail traffic noise criteria.

2.3 HURONTARIO LRT

A future Light Rail Transit (LRT) line is planned along Hurontario Street. The south terminus of the line will be located to the east of the subject site, at the east side of the GO station parking lot. A “Noise and Vibration Impact Assessment Report” dated June 4, 2014 was prepared for the LRT by J.E. Coulter Associated Limited. The results of the study indicate that the addition of the LRT would result in no noticeable change in sound levels along most of the corridor, including in the vicinity of the subject site. Thus, the LRT has not been included in the assessment as an additional noise source.

2.4 STATIONARY SOURCES

An existing parking garage with ground floor retail uses is located to the west of the subject site. The main noise sources associated with the garage are anticipated to be HVAC units and exhaust fans. Due to the presence of existing residential dwellings on the subject site, it is expected that noise from the parking garage will meet the noise guideline limits. During a site visit by VCL staff on April 30, 2019, it was confirmed that no noise from the parking garage or retail units was audible at the subject site.

Existing and future high-rise residential development are located to the south and west of the site. The main noise sources associated with these developments are the rooftop HVAC equipment. Due to distance separation and the high ambient sound level due to road and rail traffic in the vicinity, noise from these units is not expected to have a significant impact at the subject site. Thus, these sources have not been considered further in this assessment.

3.0 ENVIRONMENTAL NOISE GUIDELINES

3.1 MECP PUBLICATION NPC-300

The applicable noise guidelines for new residential development are those in MECP Publication NPC-300, “Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning”. These noise guidelines are discussed briefly below and summarized in Appendix B.

3.1.1 Transportation Noise Sources

3.1.1.1 Architectural Elements

In the daytime, the indoor criterion for road noise is $L_{eq\ Day}$ of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road noise is $L_{eq\ Night}$ of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms. The indoor criteria for rail noise are 5 dBA more stringent than those for the road; that is 40 dBA for living/dining rooms, dens and bedrooms during the daytime and nighttime periods except for bedrooms where the nighttime indoor criterion is 35 dBA.

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

3.1.1.2 Ventilation

In accordance with the MECP noise guideline for road/rail traffic sources, if the daytime sound energy level, $L_{eq\ Day}$, at the exterior face of a noise sensitive window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding air conditioning at a later date. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when greater than 50 dBA).

3.1.1.3 Outdoors

For OLA's, the guideline is 55 dBA $L_{eq\ Day}$ (0700 to 2300 hours), with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, providing warning clauses are registered on title. Note that for road traffic sources, a balcony is not considered an OLA, unless it is:

- the only OLA for the occupant;
- at least 4 m in depth; and
- unenclosed.

3.2 REGION OF PEEL

The Region of Peel noise guidelines are essentially the same as the MECP noise guidelines except that the nighttime sound level for triggering the air conditioning requirement is one dBA more stringent (i.e., less than) the sound levels specified by the MECP – i.e., mandatory air conditioning for nighttime sound levels of 60 dBA or greater, and the provision for adding air conditioning for levels between 51 to 59 dBA inclusive.

3.3 FEDERATION OF CANADIAN MUNICIPALITY AND RAILWAY ASSOCIATION OF CANADA

CN and Metrolinx have adopted the noise guidelines indicated by the Federation of Canadian Municipalities and the Railway Association of Canada (FCM/RAC).

The standard mitigation requirements of the FCM/RAC suggest a dwelling setback of 30 m for a residential development adjacent to a principal main line, if in combination with a safety berm at least 2.5 m above the property line grade. A 5.5 m high sound barrier is also suggested (e.g., 3.0 m high acoustic fence atop a 2.5 m high safety berm). Since the GO station is located between the subject site and the rail line, this requirement is not expected to apply.

Warning clauses specific to the railway for all dwellings within 300 m of the right-of-way are recommended.

Aside from “standard” requirements regarding the setback of dwellings and safety berm/sound barrier configuration, the sound level design objectives of FCM/RAC are similar to those of the MECP.

4.0 NOISE IMPACT ASSESSMENT

4.1 METHOD

Using the road and rail traffic data in Table 1A and 1B, the sound energy levels, in terms of $L_{eq\ Day}$ and $L_{eq\ Night}$, were determined using STAMSON V5.04 – ORNAMENT/STEAM, the computerized road and rail traffic noise prediction model of the MECP.

The daytime and nighttime sound levels at the building facades were assessed at the 22nd and 13th floors, at heights of 73.1 m and 42.1 m, respectively. The daytime OLA sound level at the 14th floor common outdoor amenity terrace was assessed at a height of 1.5 m above the terrace floor, in the centre of the amenity area.

Inherent screening of the building due to its orientation to the noise sources was taken into account. Screening from the existing high-rise buildings to the west of the site was included in the assessment.

At the building facades, the highest daytime/nighttime sound levels of 75 dBA/72 dBA are predicted to occur on the north facade, in the direction of the rail line. At the 14th floor common amenity terrace, the unmitigated daytime sound level is predicted to be 60 dBA.

Table 2 summarizes the predicted unmitigated sound levels.

A sample sound level calculation is included in Appendix C.

5.0 NOISE ABATEMENT REQUIREMENTS

The noise control measures can generally be classified into two categories which are interrelated, but which can be treated separately for the most part:

- (a) Architectural elements to achieve acceptable indoor noise guidelines for transportation sources; and
- (b) Design features to protect the OLAs.

Noise abatement requirements are summarized in Table 3 and Figure 2.

5.1 INDOORS

5.1.1 Architectural Elements

The indoor noise level guidelines can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural requirements for the residential units, living room wall and window areas were each assumed to be 50% of the associated floor area, on each facade of a corner room exposed directly or at an angle to the road/rail traffic noise sources. It is understood that the design intent is bedrooms will only have a single facade exposed to the noise sources. Bedroom wall and window areas were each assumed to be 50% of the associated floor area.

Based on the predicted sound levels and the assumptions above, the towers and podium require exterior wall construction meeting STC 54 and exterior windows with ratings up to STC 42.

Note that the STC requirements are highest on the north facade, where there is full exposure to the rail line. The STC requirements would be lower on facades that are partially or fully screened from the rail line.

5.1.1.1 Methods to Reduce STC Requirements

The layout of the spaces on the north facade with full exposure to the rail line will require additional consideration during design. The window STC requirements could be reduced through proper space design. Consideration should be given to:

- Minimizing the size of the windows or ensuring that the exterior window area is small relative to floor area of the associated space.
- Designing the spaces so that the rooms at the corners of the buildings have windows on only one facade.

- Ensuring living rooms, instead of bedrooms, are located at the corner of the buildings, in keeping with the design intent.
- Having non-noise sensitive space, such as walk in closets or washrooms at the corners of the building.
- Improving the exterior wall construction to provide greater than STC 54 (to reduce window STC requirements further).

5.1.1.2 General Notes

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

The final sound isolation requirements should be reviewed when architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the required sound isolation performance. This is typically required by the City at the time of building permit application.

5.1.2 Ventilation Requirements

Based on the predicted sound levels, all residential suites in the development require mandatory air conditioning to allow windows to remain closed for noise control purposes.

5.2 OUTDOORS

The daytime OLA sound levels at 14th floor common outdoor amenity area is predicted to be 60 dBA. This is within the maximum permitted under the MECP guidelines, provided that warning clauses are registered on title. Thus, sound barriers are not considered mandatory.

All balconies in the development are less than 4 m in depth. Thus, these areas would not be defined as OLA's under the MECP noise guideline and sound barriers would not be required.

Some of the private terraces on the 2nd, 7th and 9th floors may be greater than 4 m in depth. However, these will not be the only outdoor areas accessible to the occupants, as every occupant will have access to the 14th floor common outdoor OLA. Thus, the private terraces would not be defined as OLA's under the noise guideline definitions and would not require sound barriers.

5.3 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing noise sources. Where the guideline sound level limits are exceeded, appropriate warning clauses should be registered on title or included in the development agreement that is registered on title. The warning clauses should also be included in agreements of Offers of Purchase and Sale and lease/rental agreements to make future occupants aware of the potential noise situation.

Table 3 and the notes to Table 3 summarize the warning clauses for the site.

6.0 EFFECT OF THE BUILDING ON THE SURROUNDING ENVIRONMENT

6.1 MECHANICAL EQUIPMENT

The main source of noise associated with this development, with the potential for significant impact on surrounding buildings, is the mechanical equipment.

Mechanical equipment interfacing to the outdoors must comply with the MECP noise guideline limits in NPC-300. By proper engineering design, all requirements can be met, and no significant noise impact would be created for surrounding uses. Appropriate choice of location, equipment type, and noise control features should be considered during detailed design for such items as rooftop equipment and air intakes and exhausts, including underground parking garage ventilation systems. Any parking garage air shafts located immediately adjacent to residential uses may need special noise control treatment such as choice of fan type, acoustically lining the shaft, providing silencers or adding carbon monoxide (CO) sensors to the fans. (With CO sensors, the fans operate less frequently. The lesser operation reduces the possibility of noise impact.)

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

7.0 CONCLUSIONS

With the incorporation of the recommended noise mitigation measures, the MECP noise guidelines can be met and a suitable acoustical environment provided for the occupants.

The approvals and administrative procedures are available to ensure that the noise requirements are implemented.

8.0 REFERENCES

1. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.
2. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.
3. "Environmental Noise Guideline – Stationary and Transportation Sources, Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, October 2013.

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TABLE 1: ROAD TRAFFIC DATA

Roadway	Ultimate AADT ⁽¹⁾	% Trucks		Speed Limit (km/h)	Day/Night Split (%)
		Medium	Heavy		
Hurontario Street ⁽²⁾	21 300	3.85	3.15	50	90/10
Park Street East ⁽²⁾	4 000	1.1	0.9	50	90/10
Ann Street/Queen Street East ⁽²⁾	4 000	1.1	0.9	50	90/10

Notes:

- (1) AADT – Annual Average Daily Traffic.
(2) Ultimate traffic data obtained from the City of Mississauga.

TABLE 2: RAIL TRAFFIC DATA

Period	Train Type	# of Trains	# of Cars / Train	# of Locomotives / Train	Maximum Speed (km/h)
Daytime (0700 to 2300)	Freight ⁽¹⁾	1 (1.3)	140	4	97
	Way Freight ⁽¹⁾	1 (1.3)	25	4	97
	Passenger ⁽¹⁾	12 (15.4)	10	2	153
	GO Commuter ⁽²⁾	192	12	1	137
Nighttime (2300 to 0700)	Freight ⁽¹⁾	0 (0)	140	4	97
	Way Freight ⁽¹⁾	4 (5.1)	25	4	97
	Passenger ⁽¹⁾	0 (0)	10	2	153
	GO Commuter ⁽²⁾	46	12	1	137

Notes:

- (1) Obtained from CN for the year 2019. Data shown in brackets was projected to the year 2029 with a 2.5% growth rate, compounded annually. The data provided showed the maximum number of trains and locomotives.
(2) 10-year forecast obtained from Metrolinx.

TABLE 3: PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS⁽¹⁾

Location ⁽²⁾	Source	Distance ⁽³⁾	Leq Day (dBA)	Leq Night (dBA)
22 nd Floor Northeast Corner (North Facade)	Queen Street East	30	53	47
	Ann Street	15	54	47
	Hurontario Street	125	56	49
	CN Oakville Subdivision	64	75	72
	TOTAL	-	75	72
22 nd Floor Northeast Corner (East Facade)	Ann Street	15	57	51
	Hurontario Street	125	59	53
	Park Street East	85	47	41
	CN Oakville Subdivision	64	72	69
	TOTAL	-	72	69
22 nd Floor Southeast Corner (East Facade)	Ann Street	15	58	51
	Hurontario Street	120	59	53
	Park Street East	48	50	43
	CN Oakville Subdivision	101	70	67
	TOTAL	-	70	67
22 nd Floor Southeast Corner (South Facade)	Ann Street	15	55	49
	Hurontario Street	120	57	50
	Park Street East	48	53	46
	TOTAL	-	60	53
22 nd Floor Northwest Corner (West Facade)	Queen Street East	31	52	45
	Park Street East	83	47	41
	CN Oakville Subdivision	66	72	68
	TOTAL	-	72	68
22 nd Floor Southwest Corner (West Facade)	Queen Street East	70	52	40
	Park Street East	45	50	44
	SN Oakville Subdivision	104	68	65
	TOTAL	-	68	65
13 th Floor Southeast Corner (East Facade)	Ann Street	15	58	52
	Hurontario Street	115	59	53
	Park Street East	19	54	47
	CN Oakville Subdivision	130	69	65
	TOTAL	-	70	66
13 th Floor Southwest Corner (West Facade)	Queen Street East	96	45	38
	Park Street East	19	54	47
	CN Oakville Subdivision	130	66	63
	TOTAL	-	67	63
Level 14 Common Outdoor Amenity Terrace (OLA)	Queen Street East	92	29	-
	Ann Street	23	37	-
	Hurontario Street	125	51	-
	Park Street East	32	36	-
	CN Oakville Subdivision	117	60	-
	TOTAL	-	60	-

Notes:

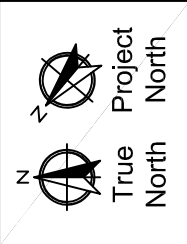
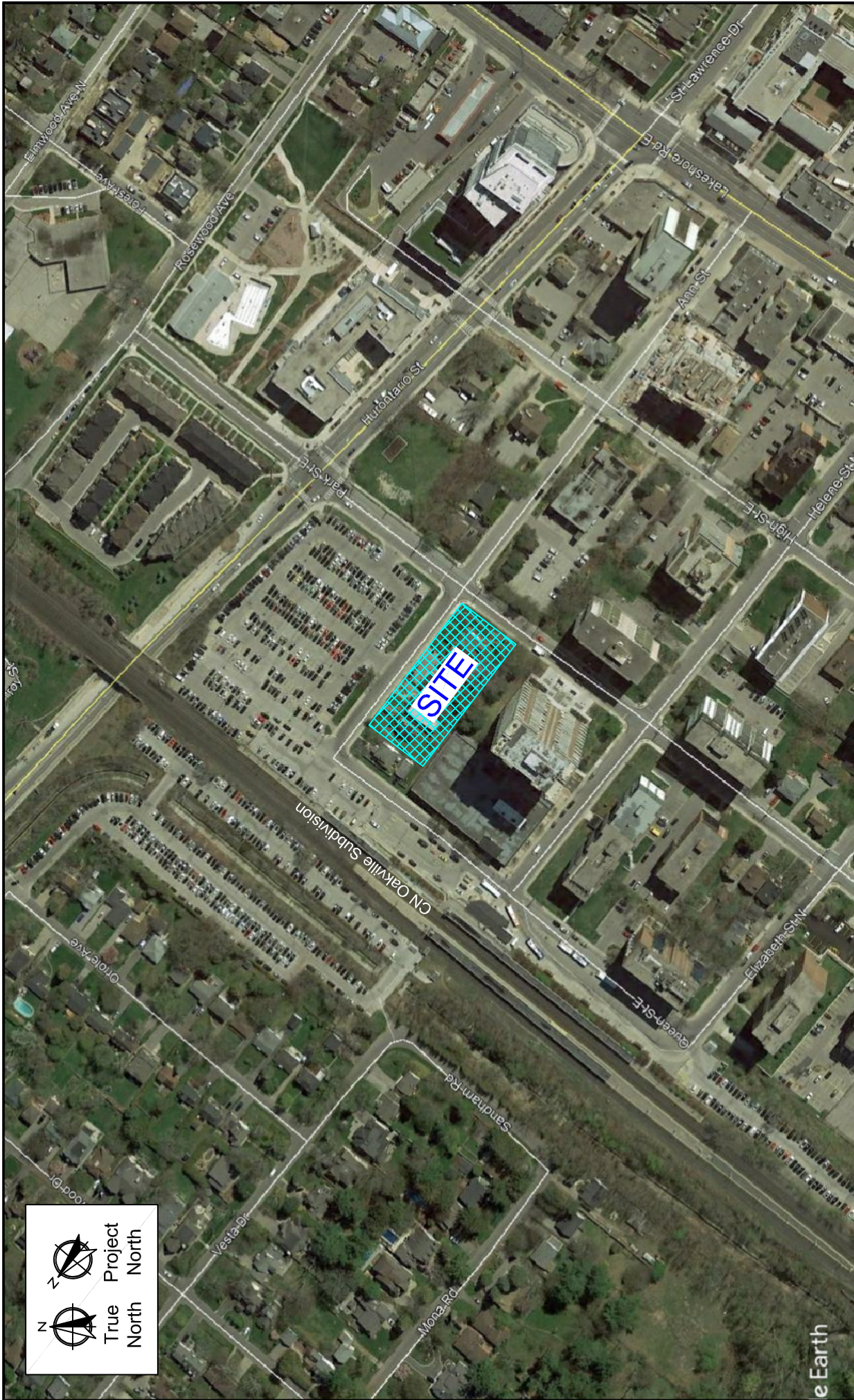
- (1) At the building facades, daytime and nighttime sound levels were calculated at a 22nd-storey height of 73.1 m above grade and a 13th storey height of 42.1 m above grade. At the OLA, the daytime sound level was calculated at a height of 1.5 m above the terrace floor slab, at the centre of the amenity area.
- (2) See Figure 2 for the locations of the calculations.
- (3) Distances measured from the centreline of the roadway/rail line to the receptor.

TABLE 4: MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning ⁽¹⁾	Exterior Wall ⁽²⁾	Window STC Rating ^(3,6)	Sound Barrier ⁽⁴⁾	Warning Clause ⁽⁵⁾
All dwellings units	Mandatory	STC 54	Up to STC 42	None	A + B + C

Notes:

- (1) Where methods must be provided to allow windows to remain closed for noise control purposes, a commonly used technique is that of air conditioning.
- (2) STC - Sound Transmission Class Rating (Reference ASTM-E413). Analyses were based upon the assumption that living room wall areas are 50% of the associated floor area, on both facades of a corner room exposed directly or at an angle to the noise sources. It is understood that the design intent is bedrooms will only have a single facade exposed to the noise sources. Bedroom wall areas were assumed to be 50% of the associated floor area. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (3) Analyses were based upon the assumption that living room window areas are 50% of the associated floor area, on both facades of a corner room exposed directly or at an angle to the noise sources. It is understood that the design intent is bedrooms will only have a single facade exposed to the noise sources. Bedroom window areas were assumed to be 50% of the associated floor area. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (4) Sound barriers must be of solid construction with no gaps, cracks or holes and must have a minimum surface density of 20 kg/m². A variety of materials are available including wood, masonry, composites, plastics, earth berms, or a combination of materials.
- (5) The warning clauses should be included in agreements that are registered on title and be included in Offers of Purchase and Sale, lease/rental agreements and condominium declarations for designated lots/units:
 - A. "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within building units, sound levels due to increasing road traffic may on occasion interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
 - B. "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
 - C. "Purchasers/tenants are advised that due to the proximity of the Port Credit GO Station, noise from this facility may at times be audible."
 - D. "Canadian National Railways or their affiliated railway companies has or have a railway right-of-way within 300 m from this dwelling unit. There may be alterations to or expansions of the railway facilities of such right-of-way in the future, including the possibility that Canadian National Railways or their affiliated railway companies as aforesaid, or their assigns or successors may expand their business operations. Such expansion may affect the living and business environment of the residents, tenants and their visitors, employees, customers and patients in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating features in the design of the development. Canadian National Railways, their affiliated railway companies and their successors and assigns will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."
- (6) All exterior doors shall be fully weather-stripped.

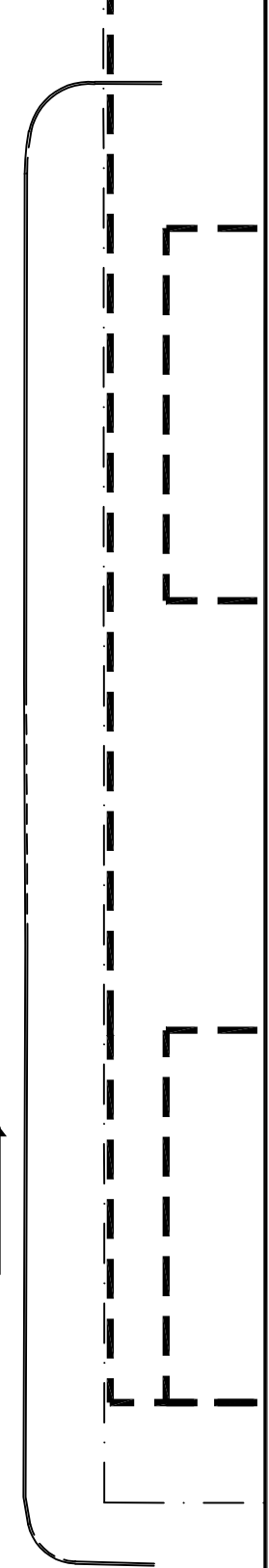
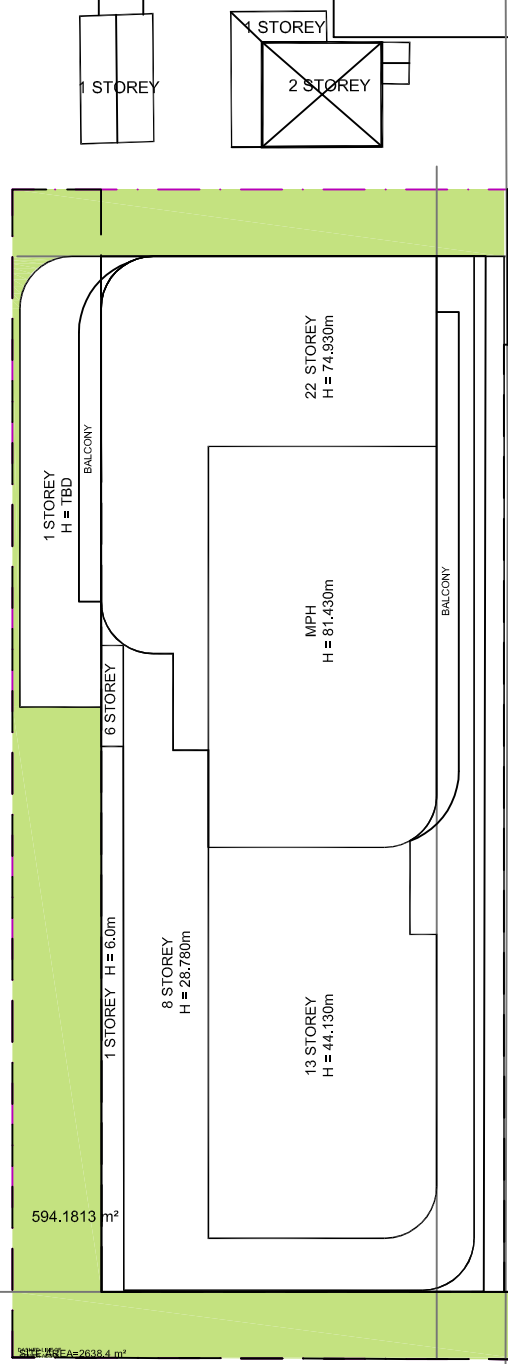
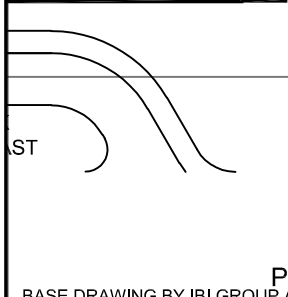
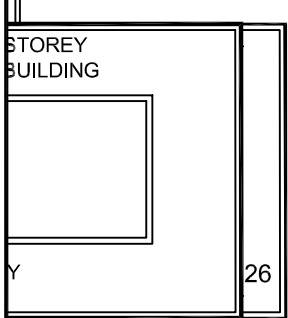
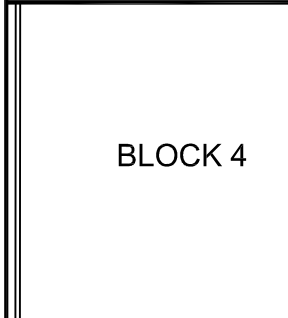
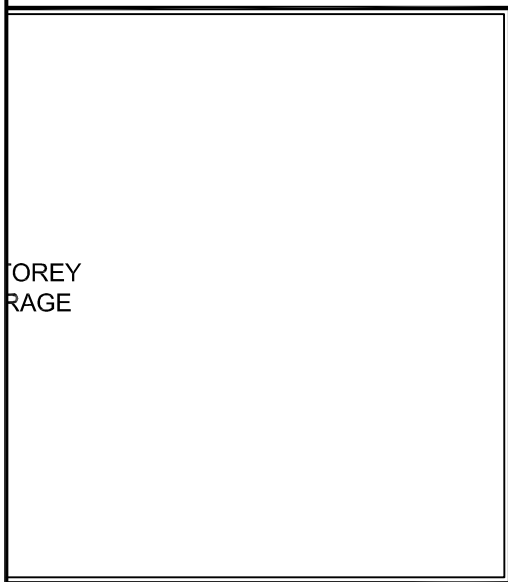


	<p>Title</p> <p>Key Plan</p>	<p>Project No.</p> <p>119-0095</p>	<p>Date</p> <p>May 1, 2019</p>
	<p>Project Name</p> <p>22-28 Ann Street, Mississauga</p>	<p>Scale</p> <p>N.T.S.</p>	<p>Figure</p> <p>1</p>
<p>VALECOUSTICS Canada Ltd.</p> <p>30 Wertheim Court, Unit 25 Richmond Hill, Ontario Canada L4B 1B9 solutions@valcoustics.com Phone: (905) 764-5223 Fax: (905) 764-6813</p>		<p>No.</p>	<p>Revision/Issue</p>
			<p>Date</p>



QUEEN STREET EAST

Air conditioning is mandatory for all dwelling units



78 PARK STREET EAST

PARK STREET EAST

BASE DRAWING BY IBI GROUP ARCHITECTS



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

Title
Site Plan

Project Name
**22-28 Ann Street,
 Mississauga**

Project No.
 119-0095

Scale
 N.T.S.

Date
 May 1, 2019

Figure
2

No.	Revision/Issue	Date

APPENDIX A

ROAD AND RAIL TRAFFIC DATA

Date: 11-Mar-19

REQUESTED BY:

Name: Seema Nagaraj

Company: Valcoustics

PREPARED BY:

Name: Bertuen Mickle

Tel#: (905) 615-3200

Location:

-Huronario Street (North of Lakeshore Rd)
-Lakeshore Rd (West of Hurontario St)
-Park St (West of Hurontario st) -Ann St (North of Park St)

ID#:

410



NOISE REPORT FOR PROPOSED DEVELOPMENT

ON SITE TRAFFIC DATA

	Street Names			
Specific	Hurontario St	Lakeshore Rd	Park St	Ann St
AADT:	21,300	36,300	4,000	4,000
# of Lanes:	4 Lanes	4 Lanes	2 Lanes	2 Lanes
% Trucks:	7%	5%	2%	2%
Medium/Heavy Trucks Ratio:	55/45	55/45	55/45	55/45
Day/Night Traffic Split:	90/10	90/10	90/10	90/10
Posted Speed Limit:	50 km/h	50 km/h	50 km/h	50 km/h
Gradient of Road:	<2%	<2%	<2%	<2%
Ultimate R O W:	30m	26m	20m	20m

Comments:

Ultimate Traffic Data Only

-There's a proposed LRT line along Hurontario Street.

-Please contact Farhad Shala @ (905) 615 3200 ext. 3377 or farhad.shala@mississauga.ca

Seema Nagaraj

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: Wednesday, April 03, 2019 9:02 AM
To: Seema Nagaraj
Subject: RE: Rail data confirmation request (VCL File: 119-0095)

Good Morning Seema,

Further to your request dated March 7, 2019, the subject site (in the vicinity of Hurontario Street and Park Street, Mississauga) is located within 300 metres of Metrolinx's Port Credit GO Station and Oakville Subdivision, which carries Lakeshore West GO train service. We note that we do not maintain information pertaining to the idling and stationary noise activities at stations – that would be up to the consultant to collect that information for a typical weekday period.

It's anticipated that GO service on this subdivision will be comprised of a mix of both diesel and electric trains within (at least) a 10-year time horizon. The combined preliminary midterm weekday train volume forecast at this location, including both revenue and equipment trips is in the order of 238 trains – (54 diesel: 45 day, 9 night; 184 electric: 147 day, 37 night). Trains will be comprised of a single locomotive and up to 12 passenger cars.

The current maximum design speed on this corridor is 85 mph (137 km/h).

An anti-whistle by-law is in effect at the Stavebank Road at-grade crossing.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO and UP Express rail network and we are currently working towards the next phase. Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. We can, however, provide the following interim information which may be helpful;

1. At lower speeds, train noise is dominated by the powertrain. At higher speeds, train noise is dominated by the wheel-track interaction. Hence, at higher speeds, the noise level and spectrum of electric trains is expected to be very similar, if not identical, to those of equivalent diesel trains.
2. Along with electrification, Metrolinx will intensify service levels along all of its corridors to deliver the promised GO Expansion service. Everything else being equal, this will likely result in an overall increase in train noise emissions.

Given the above considerations, it would be prudent, for the purposes of acoustical analyses, 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.

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 VIA operates trains in this area and it would be prudent to contact them directly for rail traffic information.

I trust this information is useful. Should you have any questions, please feel free to contact me.

Best Regards,

IVAN CHEUNG, M.Sc, B.URPI

Intern | Third Party Projects Review

Pre-Construction Services | Capital Projects Group

Metrolinx

20 Bay Street, Suite 600 | Toronto | Ontario | M5J 2W3

T: 416-202-5920

From: Seema Nagaraj [<mailto:seema@valcoustics.com>]
Sent: March-07-19 4:29 PM
To: Rail Data Requests
Subject: Rail data confirmation request (VCL File: 119-0095)

Hello,

We are currently preparing an environmental noise report for a proposed development in the vicinity of Hurontario St and Park St in Mississauga (see attached image for specific location). We are received rail forecasts for another project in the vicinity in 2017 (see below). Can you please confirm if the forecasts are still valid?

Thank you,

Seema Nagaraj, Ph.D., P.Eng.
Acoustical Engineer



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 243
Fax: 905-764-6813
solutions@valcoustics.com

Date: 2019/03/18

Project Number: OAK – 12.68 – Hurontario St/ Park St

Dear Seema:

**Re: Train Traffic Data – CN Oakville Subdivision near Hurontario St/
Park St in Mississauga, ON**

The following is provided in response to Seema's 2018/04/17 request for information regarding rail traffic in the vicinity of Hurontario St/ Park St in Mississauga at approximately Mile 12.68 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	1	140	60	4
Way Freight	1	25	60	4
Passenger	12	10	95	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	60	4
Way Freight	4	25	60	4
Passenger	0	10	95	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 is two (2) at-grade crossing in the immediate vicinity of the study area at Mile 12.02 Revus Ave, and Mile 13.11 Stanebanic Rd. Anti-whistling bylaws are not in effect at these 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 double 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 should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,



Michael Vallins P.Eng
Manager of Public Works
public_works_gld@cn.ca

APPENDIX B

NOISE GUIDELINES

APPENDIX B
ENVIRONMENTAL NOISE GUIDELINES
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE (MECP)

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

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

.../cont'd

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

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

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

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

APPENDIX C

SAMPLE STAMSON CALCULATION

STAMSON 5.04 NORMAL REPORT Date: 08-05-2019 17:09:20
MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: ne_ef_22.te Time Period: Day/Night 16/8 hours

Description: 22nd Floor - Northeast Corner - East Facade

Rail data, segment # 1: CN Oakville (day/night)

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1. Freight	1.3/0.0	97.0	4.0	140.0	Diesel	Yes
* 2. Way Freight	1.3/5.1	97.0	4.0	25.0	Diesel	Yes
* 3. Passenger	15.4/0.0	153.0	2.0	10.0	Diesel	Yes
* 4. GO Commuter	192.0/46.0	137.0	1.0	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. Freight	1.0/0.0	2.50	10.00
2. Way Freight	1.0/4.0	2.50	10.00
3. Passenger	12.0/0.0	2.50	10.00
4. GO Commuter	192.0/46.0	2.50	0.00

Data for Segment # 1: CN Oakville (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 64.00 / 64.00 m
Receiver height : 73.10 / 73.10 m
Topography : 1 (Flat/gentle slope; no barrier)
No Whistle
Reference angle : 0.00

Results segment # 1: CN Oakville (day)

LOCOMOTIVE (0.00 + 70.91 + 0.00) = 70.91 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	80.22	-6.30	-3.01	0.00	0.00	0.00	70.91

WHEEL (0.00 + 63.64 + 0.00) = 63.64 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	72.95	-6.30	-3.01	0.00	0.00	0.00	63.64

Segment Leq : 71.66 dBA

Total Leq All Segments: 71.66 dBA

Results segment # 1: CN Oakville (night)

LOCOMOTIVE (0.00 + 67.83 + 0.00) = 67.83 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	77.14	-6.30	-3.01	0.00	0.00	0.00	67.83

WHEEL (0.00 + 60.46 + 0.00) = 60.46 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	69.77	-6.30	-3.01	0.00	0.00	0.00	60.46

Segment Leq : 68.56 dBA

Total Leq All Segments: 68.56 dBA

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

Car traffic volume : 3528/392 veh/TimePeriod *
Medium truck volume : 40/4 veh/TimePeriod *
Heavy truck volume : 32/4 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 4000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.10
Heavy Truck % of Total Volume : 0.90
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Ann St (day/night)

Angle1 Angle2 : -70.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height : 73.10 / 73.10 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 17828/1981 veh/TimePeriod *
Medium truck volume : 738/82 veh/TimePeriod *
Heavy truck volume : 604/67 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 21300
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 3.85
Heavy Truck % of Total Volume : 3.15
Day (16 hrs) % of Total Volume : 90.00

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.00 / 125.00 m
Receiver height : 73.10 / 73.10 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: Park St (day/night)

Car traffic volume : 3528/392 veh/TimePeriod *
Medium truck volume : 40/4 veh/TimePeriod *
Heavy truck volume : 32/4 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 4000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.10
Heavy Truck % of Total Volume : 0.90
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: Park St (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 85.00 / 85.00 m
Receiver height : 73.10 / 73.10 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Ann St (day)

Source height = 0.97 m

ROAD (0.00 + 57.41 + 0.00) = 57.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.00	57.93	0.00	0.00	-0.51	0.00	0.00	0.00	57.41

Segment Leq : 57.41 dBA

Results segment # 2: Hurontario (day)

Source height = 1.33 m

ROAD (0.00 + 59.08 + 0.00) = 59.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.29	0.00	-9.21	0.00	0.00	0.00	0.00	59.08

Segment Leq : 59.08 dBA

Results segment # 3: Park St (day)

Source height = 0.97 m

ROAD (0.00 + 47.38 + 0.00) = 47.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	57.93	0.00	-7.53	-3.01	0.00	0.00	0.00	47.38

Segment Leq : 47.38 dBA

Total Leq All Segments: 61.51 dBA

Results segment # 1: Ann St (night)

Source height = 1.00 m

ROAD (0.00 + 51.02 + 0.00) = 51.02 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.00	51.53	0.00	0.00	-0.51	0.00	0.00	0.00	51.02

Segment Leq : 51.02 dBA

Results segment # 2: Hurontario (night)

Source height = 1.33 m

ROAD (0.00 + 52.54 + 0.00) = 52.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	61.75	0.00	-9.21	0.00	0.00	0.00	0.00	52.54

Segment Leq : 52.54 dBA

Results segment # 3: Park St (night)

Source height = 1.00 m

ROAD (0.00 + 40.98 + 0.00) = 40.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	51.53	0.00	-7.53	-3.01	0.00	0.00	0.00	40.98

Segment Leq : 40.98 dBA

Total Leq All Segments: 55.03 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 72.06
(NIGHT): 68.75