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SLR Project No.: 241.30122.00000

RE: ENVIRONMENTAL VIBRATION REVIEW - 1120 COOKE BLVD, BURLINGTON

INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR) was retained by Adi Development Group to assess potential Environmental Vibration impacts on the proposed residential development to be located at 1120 Cooke Boulevard in Burlington, ON.

The proposed development is located at the northeast corner of Waterdown Road and Masonry Court. The development will include three towers. Towers A and C will be 36-storeys while Tower B will be 26-storeys. The northeast corner of the site includes outdoor amenity space. Immediately surrounding the site are empty lands/ construction sites in all directions except to the east, which is comprised of low-rise residential developments. The CN/Metrolinx rail corridor is located approximately 175 m north of the site, and King Paving is located approximately 300 m west of the site.

This letter was prepared to address the City of Burlington Vibration Study requirement for the proposed development.

VIBRATION SOURCE REVIEW

Figure 1 shows a Context Plan for the development. The following is a summary of our review of the vibration sources surrounding the site:

- The CN Oakville Subdivision rail line is located approximately 175 metres north of the development property line.
- Waterdown Road is immediately west of the site.
- King Paving (Ready -Mix Plant) is located approximately 300 metres west of the development. The main operations of facility are construction related activities, asphalt production, granular recycling, and trucking.

Note that there are private residences situated between the development site and King Paving. It is reasonable to assume that vibration levels at these residences currently comply with regulatory threshold limits, and therefore by default are compliant at the project site due to the greater setback distance.

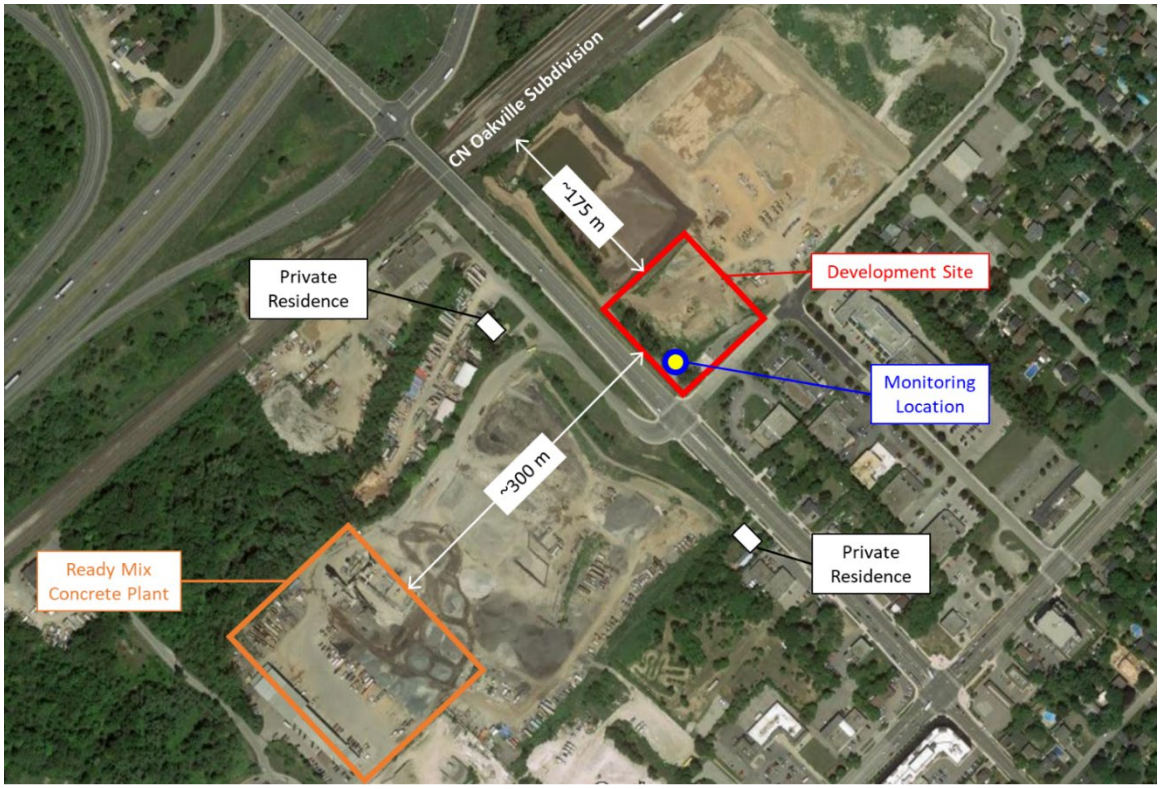


Figure 1: Site Context Plan Showing Distance to Nearest Major Sources of Vibration.

APPLICABLE CRITERIA

Vibration threshold limits applicable to land compatibility assessments in Ontario are summarized in MECP NPC-207 and the various railway rail transit guidelines noted below in Table 1. Note that CN Rail, GO Transit, and the Railway Association of Canada only require assessment of vibration for developments within a 75-metre setback from the railway Right-Of-Way (ROW). As the planned development is setback approximately 175 metres from the ROW, a detailed assessment is not required. These limits are considered in comparison with monitoring data collected at the site.

Table 1: Vibration Threshold Limits Applicable to this Assessment.

Regulatory Body / Reference Document	Vibration Threshold Limit
Railway Association of Canada *Guidelines for New Development in Proximity to Railway Operations*	0.14 mm/s RMS velocity
MECP Noise Pollution Control document 207 (NPC 207) *Impulsive Vibrations in Residential Buildings*	0.3 mm/s Peak Particle Velocity
CN/CP/Metrolinx Principal Main Line Requirements	0.14 mm/s RMS velocity

There are no threshold limits applicable to roadway vibrations in Ontario. However, the RAC and CN/CP/Metrolinx limits would generally be applicable to roadway traffic vibrations, which are also transient sources. The 0.14 mm/s RMS velocity limit is also consistent with published thresholds from the International Organization for Standardization (ISO), for residential occupancies during the nighttime period.

REVIEW OF VIBRATION IMPACTS

EXISTING SITE VIBRATION LEVELS

Vibration monitoring was completed at the site to quantify existing ground vibration levels at the planned footprint of the development. One monitor was installed at the location shown in Figure 1, and recorded background vibration levels continuously for four days. The monitor logged the peak particle velocity (PPV) in each 1-minute period for the duration of the monitoring.

During the monitoring period the concrete plant was not in operation, and the rail corridor and Waterdown Road were both in normal operation (traffic flowing). The data shown in the figure are the recorded PPV values. The RMS levels shown on the secondary y-axis were computed based on a crest factor of 1.7 applied to the PPV values on the primary y-axis. Note that the peak factor can vary between 1.7 – 3 for transient vibration events associated with road and rail traffic. The criteria relevant to the assessment are shown in red.

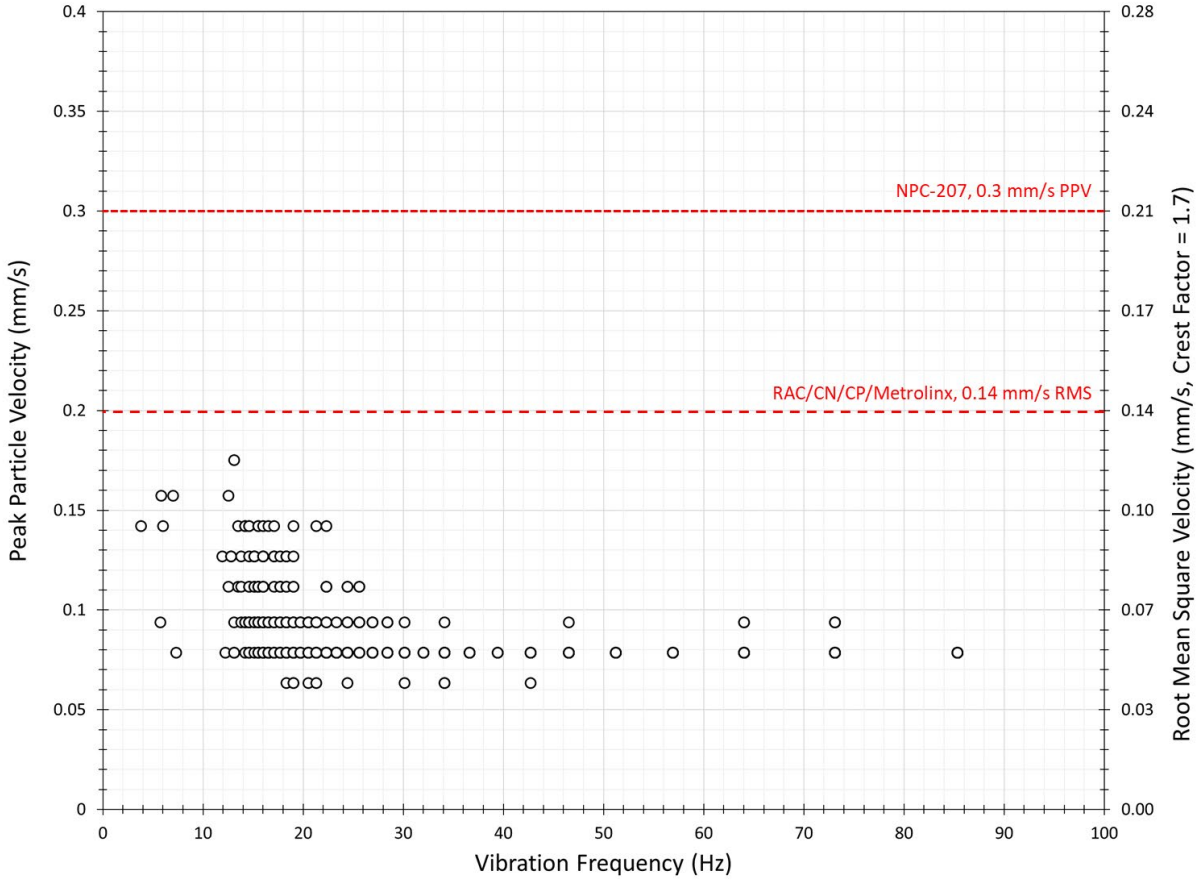


Figure 2: Ambient Vibration Levels Recorded at the Site (04/12/21 - 04/16/21).

As indicated in Figure 2, existing vibration levels at the site (inclusive of typical traffic on perimeter roads and the Oakville Subdivision), are below the guideline limits.

OAKVILLE SUBDIVISION

The CN Oakville Subdivision rail line is located approximately 175 m north of the development property line.

A vibration study is required by CN and Metrolinx if the development is located within 75 m of the right-of-way. As the development is located at a distance of approximately 175 m from the railway right-of-way, a detailed assessment of vibration levels is not required.

INDUSTRIAL FACILITIES

Based on a review of the adjacent Employment lands, the only identified industrial facility of concern is King Paving, located 300 m west of the site. Based on our experience at other sites, ground vibrations due to operation of equipment used at the facility will not have an impact on the development.

By way of example, vibration levels from typical heavy construction equipment and crushers are listed in Table 2 for comparison with the monitoring data. The values listed in Table 2 were computed using the model and source data published by the Federal Transit Administration in the US, which serves as a basis for transportation and construction vibration impact assessments in North America. Data from our own measurement of a car crusher are also included in the table.

Table 2: Typical Ground Vibration Levels from Various Sources.

Vibration Source	PPV (mm/s) at Setback Distance		
	1 m	150 m	300 m
Pile Driver (impact)	344	0.19	0.07
Pile Driver (sonic)	91	0.05	0.02
Vibratory roller	112	0.06	0.02
Hoe Ram	48	0.03	0.01
Loaded trucks	41	0.02	0.01
Small bulldozer	37	0.02	0.01
Car Crusher	297	0.16	0.06

By comparison, the typical vibration levels for heavy construction equipment, trucks, and a car crusher at a distance of 300 metres are well below the NPC-207 threshold limits, and are much lower than the ambient levels due to traffic at the site (Figure 2). Therefore, vibration impacts are not expected at the development site during normal operations at King Paving.

SUMMARY

Based on a review of the above documents and study area, rail, industrial, and roadway vibrations are not a concern for the development given the large separation distances and low levels of vibration measured during site monitoring. We do not anticipate environmental vibrations from these sources to impact the development, and vibration mitigation measures will not be required. Additionally, a detailed vibration study is not required to address threshold limits published by CN Rail, CP Rail, and Metrolinx.

Should you have any questions or concerns, please do not hesitate to contact me at your earliest convenience.

Yours sincerely,
SLR Consulting (Canada) Ltd.



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