Noise and Vibration Study

A Noise and Vibration Study determines the projected sound and vibration exposures for a proposed development both from and to adjacent uses, for stationary and transportation related noise sources, and any mitigation measures needed.

Required by Legislation

The Ontario Planning Act.

Who should prepare this study?

A Noise and Vibration Study must be completed by a registered professional engineer qualified in acoustical engineering and experienced in the preparation of noise and vibration studies.

Why do we need this study?

A Noise and Vibration Study is required to assess the compatibility and/or potential impacts from a proposed development. It should also ensure that industry is able to operate and maintain compliance with regulatory approvals.

How should this study be prepared?

A Noise and Vibration Study should at a minimum contain:

Introduction

- Address of the subject property
- General site location of the subject property
- Project Name (if applicable)
- Applicant and owner's contact information
- Author name, title, qualifications, company name and appropriate stamp
- Brief description of the proposed development
- Overview of the study area
- Purpose of the study
- Location and context map

Proposal Description and Context

- A description of the proposal, development stats (such as number of units, site area) type of development proposed, height, parking areas, access points, location of amenity areas, specified receptor location(s), proposed phasing
- A description of the existing on-site conditions as well as surrounding areas, roads, natural areas, buildings, parking areas
- Concept Plan for the development including building location, parking, access, amenity areas, grading, natural features and any natural hazards, proposed streets

How should this plan be prepared? (continued)

Investigation/Evaluation

- Identification of the noise source(s)

Noise Impact Study

- Description of the sound level guidelines/standards applied (methodology and approaches)
- Identification of both Transportation and Stationary noise source(s), all the assumptions related to the stationary noise sources should be clearly documented in the report
- Data collection (e.g. ultimate AADT, truck percentage, reference sound power data, noise measurement, etc.)
- Receptor selection process
- Noise impact assessment (including low frequency noise impacts)
- Unmitigated and mitigated noise level forecasts (e.g. tables showing ultimate road traffic and predicted unmitigated sound energy exposures outdoors)
- The report must be stamped, dated, and signed by a Professional Engineer.

Vibration Impact Study (if applicable)

- Methodology and approaches
- Identification of of the vibration sources
- Description of the vibration measurement procedure and criteria, as well as the equipment used for the vibration measurement
- Receptor selection process
- Measured/predicted vibration level
- The report must be stamped, dated, and signed by a Professional Engineer.

Impacts and Mitigation Measures

- Indoors: architectural requirements, ventilation requirements
- Outdoors: at source requirements, sound barriers (i.e. description and site plan with noise mitigation)
- Warning clauses
- Vibration mitigation requirement

Recommendations

- Summary and conclusions of the supporting studies and how they support the development and any special considerations or conditions that should be imposed
- Any recommendations, or conditions that should form part of a decision on the matter

How should this letter/report be prepared? (continued)

Drawings and Supporting Information

- Base Noise Level Calculations (Noise Source Data)
- STC calculations
- Ministry of Environment Noise Guidelines
- Sample Sound Exposure Calculation (depending on the needs of the Municipality)
- Field data for vibration measurement data

What else should we know?

The scope of the study should be discussed with the community planner and or other staff or agencies as part of the pre-consultation process.

A noise and vibration study (or environmental noise analysis) should be based on the applicable guidelines established by the Association of Professional Engineers of Ontario, the Ministry of the Environment, Conservation and Parks, CNR, Go Transit (Metrolinx), York Region, Municipal Engineering Design Standards and Municipal By-laws.

Input assumptions to a noise model relating to future traffic flows should be based upon a review of the long-term forecasts contained in any municipal-wide or area-specific transportation studies.

Additional Terms

To be identified by the local municipality where proposed development is located.

Study Submission Instructions

To be identified by the local municipality where proposed development is located.

What other resources are there?

Environmental Protection Act, R.S.O. 1990, c. E.19
O. Reg. 419/05: Air Pollution - Local Air Quality under Environmental Protection Act, R.S.O. 1990, c. E.19
Ontario Professional Planners Institute (OPPI) – Hire an RPP
Professional Engineers of Ontario – Why employ a professional engineer?
Environmental Noise Guideline - Stationary and Transportation Sources - Approval and Planning (NPC-300)
FCM Guidelines for New development in proximity to Railway Operations (May 2013)
Ontario Environmental Land Use Planning Guides

About these Terms of Reference

These Terms of Reference were developed as a joint effort with participation by representatives from all York Region municipalities and the Region. The Terms of Reference are in widespread use across the Region, with local requirements added as prescribed by each municipality at the pre-consultation stage.

The need and scope for this study will be decided by a municipality during initial pre-consultation process with input from partner agencies. This pre-consultation process may include:

- Determination if this study is applicable
- Confirmation of criteria within these Terms of Reference that are appropriate for your development project
- Identification of specific technical components that need to be addressed
- Identification of detailed standards to be met

Notes:
If the proposed development is revised, the study/report shall reflect the revisions by an updated report or letter from the author indicating the changes and whether or not the recommendations and conclusions are the same (Note: this is subject to the extent of the revisions).

A peer review may be required. The cost of the peer review will be borne by the applicant.

If the submitted study is incomplete, is authored by an unqualified individual or does not contain adequate analysis, the applications will be considered incomplete and returned to the applicant.