

# JADE ACOUSTICS INC.

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## Abstract

Jade Acoustics Inc. is an acoustical engineering firm providing consulting services to both the private and public sectors. The work includes the control of noise and vibration in the development of land, as well as in the design of buildings and industrial facilities. This includes the impact of a variety of sources such as road traffic, railways, aircraft, industry and mechanical equipment on both residential and institutional uses. Both original work and peer review of work prepared by others are conducted. The company was founded in 1989. Our office is located in Vaughan (Concord), Ontario.

**Keywords:** noise control, vibration, acoustics, environmental, assessment, peer review

## Resume

Jade Acoustics Inc. est une firme d'ingénierie acoustique offrant des services de consultation à la fois aux secteurs public et privé. Les travaux comprennent le contrôle du bruit et des vibrations dans le développement des terres, ainsi que dans la conception des bâtiments et des installations industrielles. Cela inclut l'impact d'une variété de sources telles que le trafic routier, ferroviaire, aérien, l'industrie ainsi que l'impact des équipements mécaniques autant sur les utilisations résidentielles qu'institutionnelles. La compagnie réalise ses propres travaux originaux ainsi que mène des revues des travaux préparés par ses pairs. La société a été fondée en 1989. Notre bureau est situé à Vaughan (Concord), Ontario.

**Mots-clés:** lutte contre le bruit, les vibrations, l'acoustique, l'environnement, l'évaluation, l'examen par les pairs

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## 1.0 Introduction/Expertise

Jade Acoustics offers consulting engineering services in the following areas:

- Environmental Noise Assessment and Control
- Vibration Assessment and Control
- Environmental Compliance Approvals
- Industrial Noise Control
- Internal Building Acoustics
- Design and Troubleshooting
- Expert witness testimony

Examples of the types of project we have completed are outlined below.

## 2.0 Railway Projects

Jade Acoustics has conducted noise and vibration studies for developments proposed adjacent to railway lines and rail yards as well as prepared the noise and vibration reports as part of the Federal approvals required by the railway companies for new facilities and upgrades to facilities. In addition, we have investigated noise and vibration complaints

arising from rail operations in response to orders issued by the Canadian Transportation Agency (CTA) throughout Canada.

Our work involves on-site sound and vibration measurements, prediction of sound levels using various computer based modelling software, formulation of mitigation measures, preparation of the noise/vibration reports for submission to the approval authorities, participation at Public Meetings, expert testimony at the Ontario Municipal Board (OMB), and presentations at the CTA.

An in depth understanding of rail operations is required in the design of rail facilities as well as for the review of proposed sensitive receptors adjacent to existing rail facilities. As the noise/vibration guidelines vary in different jurisdictions, Jade Acoustics has used the various analysis techniques and guidelines to properly design new developments as well as new rail infrastructure.

## 3.0 New Sensitive Land-Uses

In Ontario, the Ministry of the Environment and Climate Change (MOECC) has developed specific guidelines to address the sensitive land uses adjacent to road, rail, airports, commercial facilities and industrial operations. Most

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municipalities in Ontario have adopted the MOECC guidelines, with some adapting the MOECC guidelines to the specific needs of the municipality. Jade Acoustics prepares environmental noise and vibration reports to satisfy conditions of approval for new residential/sensitive land uses.

This requires obtaining data related to the sources either through information provided by others or on-site measurements, prediction of the sound levels, formulation of the mitigation measures needed to meet the applicable criteria and preparation of the report. Once the report has been approved and the development is proceeding we are required to review the architectural drawings, grading plans and landscape plans to ensure that the required mitigation is incorporated into the design. After the construction is completed inspections of the installed mitigation is undertaken and the final clearance letter is prepared. An understanding of the planning process as it applies to acoustical assessments is mandatory to ensure the appropriate reports are prepared.

As part of the planning process, land-use proposals must follow a specified approach that includes Public Meetings and presentations at Council. Jade Acoustics has presented at numerous public meetings and Council sessions. This involves formal and informal presentations and responding to questions raised by the public and members of Council.

When adjacent land owners or the municipality do not approve of the project, the proposed development may be contested at the Ontario Municipal Board. When this occurs, Jade Acoustics provides expert testimony related to the acoustic assessment and the feasibility of the proposed mitigation.

#### **4.0 New Commercial/Industrial Uses**

The MOECC and most municipalities require that a noise and/or vibration report be prepared when a new commercial or industrial use is proposed adjacent to sensitive land-uses. In many cases an Environmental Compliance Approval (ECA) is required for specific sources.

The evaluation of these types of sources is undertaken through on-site measurements, predictions or a combination of these approaches. Understanding the sources, the assessment methods, the prediction methods and the possible mitigation options is important to comprehensively evaluating the acoustical impact of commercial and industrial sources to ensure compliance with the applicable guidelines.

#### **5.0 Internal Building Acoustics**

In multi-tenant buildings the separation between spaces needs to be designed to ensure compliance with specific codes and publications. This involves the review and design of mitigation between residential suites, mechanical systems and residential suites, commercial spaces and residential suites and amenity areas and residential suites. This work is

conducted for the proponent of the building to satisfy the requirements of the Ontario Building Code as well as the requirements of Tarion Bulletin 19R and to provide a good acoustical environment for the owners/tenants of the residential suites. The potential issues are addressed at the beginning of the project through the review of the architectural, mechanical and electrical plans. Input is given to the design team regarding the wall and floor/ceiling construction, mechanical equipment vibration isolation, mechanical equipment noise mitigation and special construction techniques that may be required before the final design is complete and the construction goes to tender. Prior to construction, shop drawings are reviewed to ensure that the proper equipment and mitigation are specified. During the construction process, on-site inspections are undertaken and sound/vibration tests are conducted to ensure compliance.

The objective is to comply with the necessary approval regime, provide a good acoustic environment and reduce the incidence of complaints.

#### **6.0 Peer Review**

Peer review work is conducted when the approval authority does not have the expertise on staff to review noise and vibration reports, land-owners adjacent to a proposed project want the noise and vibration report prepared on behalf of the proponent reviewed or when a proponent would like a second opinion on the noise/vibration work conducted by the acoustical consultant they retained to prepare the noise and vibration report as required for their application.

Any peer review work undertaken by Jade Acoustics Inc. is conducted in a professional, thorough manner while maintaining respect for the professionals that prepared the noise and vibration reports.

#### **7.0 Other**

Jade Acoustics is an active member of the Canadian Acoustical Association. In addition, we maintain membership in various professional organizations.

Jade Acoustics has participated in the review of MOECC guidelines; federal guidelines, including Health Canada and has given courses and instruction in acoustics to private entities, provincial and municipal agencies and colleges and universities.

In order to conduct the best work for our clients, while maintaining the public interest, it is important to understand the science of acoustics, the regulatory framework, the implications of our work and to maintain a working relationship with professionals in many disciplines, including the acoustics field.