

THE ACOUSTICS TEAM OF LVM, A DIVISION OF ENGLOBE CORP.

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1. Introduction

Founded in Quebec in 1961, LVM, a Division of EnGlobe Corp., employs more than 1,600 people in 50 cities across the country. A leader in soil, materials and environmental engineering, the LVM team has developed an expertise in the acoustics and vibrations field.

Based in both Montreal and Quebec City, LVM's Acoustics Team has all the necessary experience and expertise to guide and assist its clientele by proposing innovative and economically feasible solutions, be it for noise control or improvement of acoustical quality.

2. Expertise

Our experts constantly strive to reduce the costs of implementing mitigation measures or modifying infrastructures when required. They can help with the preparation of noise-related regulations or be called on to lend their expertise in legal matters.

With this solid experience, LVM's dedicated team also offers an extensive range of integrated services including:

- Transportation noise control (road/highway, railway and airport)
- Acoustic and vibration surveys
- Modelling of indoor and outdoor sound propagation
- Architectural acoustic analysis
- Acoustic quality in residential and institutional settings
- Environmental noise management
- Industrial noise control
- Worker health
- Control and monitoring of construction site/works noise
- Mechanical noise control
- Optimization of public address (PA) and emergency call systems, etc.
- Legal expertise
- Assessment of noise pollution in terms of applicable regulations or criteria
- Urban acoustics (integration of acoustics in urban planning).

3. Architectural and Building Acoustics

3.1 Architectural Acoustics

Architectural acoustics deals with the comfort and quality of spaces. This is especially a concern in musical production and recording spaces. Using specialized commercial software dedicated to this purpose, it is possible to obtain a 3D model of spaces in order to optimize acoustical treatments aimed at achieving optimal listening conditions. Proof of the LVM team's skills in this area can be found in a number of recently completed projects, such as the new Montreal Planetarium, the Théâtre Banque Nationale in Chicoutimi, and several radio and recording studios.

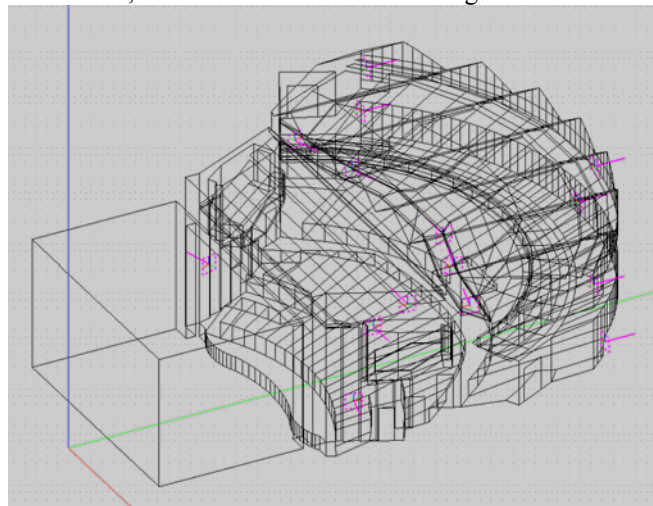


Figure 1: 3D Modelling (Ease™) of the Théâtre Banque National.

3.2 Building Acoustics

Building acoustics generally refers to residential, institutional or commercial type buildings. This branch of acoustics involves several elements, like mechanical and human activity noise control, soundproofing between spaces, environmental noise control (building in a noisy external environment), and intelligibility or confidentiality, and includes certain architectural acoustic aspects (classroom, auditorium, etc.) as well as PA systems (emergency call or communication systems). Our clientele are usually architects, developers, real estate managers, provincial and federal governments, etc.

4. Transportation Noise

4.1 Highway and Road Noise

These days, the population is increasingly concerned with the repercussions of road and highway traffic on the environment. In this context, the Quebec Ministry of Transportation (MTQ) adopted a highway and road noise policy in 1998, which clarified the Ministry's position on road/highway noise. The policy essentially favours two approaches to mitigating noise impact: a corrective approach to rectify the main noise pollution problems, and an integrated planning approach, which consists of taking the necessary measures to prevent noise pollution problems caused by road/highway traffic. The corrective approach aims to mitigate a problematic situation involving road noise in concert with the municipalities, by implementing corrective measures in zones where the external noise level is equal to or greater than 65 dBA (Leq_{24h}). The costs of such mitigation measures will be shared equally by the affected municipalities. In the case of the integrated planning approach, the MTQ calls for a noise level of 55 dBA (Leq_{24h}), which is generally recognized as an acceptable level for sensitive zones. When the noise impact from increased capacity of newly constructed or reconstructed roads/highways is deemed significant enough, the MTQ will ensure that noise mitigation measures are put in place in order to bring down projected sound levels to 55 dBA or as close to that level as possible.

LVM's Acoustics Team is a leader in terms of their extensive expertise related to road and highway noise impact assessment and control. They have worked on numerous projects for the MTQ throughout the province, and have been involved in such major ones as the new Turcot Interchange, the A19 extension, Notre-Dame Street in Montreal, and various others. Our expertise also extends to consulting, where we advise our clients with regard to property development, location of buildings and acoustical insulation of the building envelope for properties located along main traffic arteries.

4.2 Railway Noise

In urban settings predominantly, the cohabitation between railroad activities (train tracks, yard, etc.) and residential neighbourhoods is often a major issue for municipalities, developers and railroad operations stakeholders. One thinks particularly of new housing developments near commuter train stations (transit-oriented development, or TOD) or along railway lines. For the past number of years, LVM's Acoustics Team has developed the right expertise for assessing the noise impact of such activities and advising their clients about the potential risks and possible mitigation measures.

4.3 Airport Noise

Airport noise is generally a source of complaints from residents living along the airport periphery. LVM's Acoustics Team has worked on projects and developed innovative methods for assessing the impacts related to airport noise.

5. Environmental Noise Management

According to Quebec's Environmental Quality Act (L.R.Q., chapter Q-2), a sound can be considered a type of contaminant. Usually considered a nuisance, noise is a major concern and has a direct impact on citizens' quality of life and, sometimes, their health. LVM's Acoustics Team has the skills to carry out predictive studies and compliance measures so as to minimize the noise impact within that environment. Noise management programs and noise monitoring during construction works can also be undertaken. These studies are chiefly of interest to industries, wind farm developers, businesses, institutions, contractors working for the MTQ, etc.

6. Industrial Noise Control

Worker health is a key issue in industry. LVM has carried out several dosimetry measurement campaigns in order to assess the exposure of workers to noise, and the team can produce noise maps of noisy sectors. The Acoustics Team has all the necessary equipment to carry out noise surveys and modelling of noisy spaces, to enable them to propose effective corrective measures designed to reduce the ambient noise level within an industry, thereby reducing workers' exposure to such noise.

7. Urban Acoustics

LVM's Acoustics Team has worked on numerous projects in collaboration with urban planners and municipalities, in order to integrate the acoustic element during urban sector redevelopment, development of specific construction standards near noisy sectors, and creation of public spaces, among other things.

8. Vibration Analysis

LVM has the necessary seismographs and accelerometers to carry out various vibration measurements (i.e., assessment of vibration levels near railroad tracks, on construction sites, on vessels, etc.).

9. Conclusion

LVM's highly qualified Acoustics Team has made a name in the industry thanks to their ability to offer a wide variety of acoustic and vibration studies as well as informed guidance during all steps of the client consultation process.