



**aci Acoustical Consultants Inc.**  
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## **Corporate Profile**

### **Our Mission**

**aci** provides superior consulting services in the fields of acoustics, noise control and vibration for industrial, institutional and individual customers. Through the diverse experience and expertise of its professional members, **aci** provides a comprehensive spectrum of engineering services. **aci** conducts business in a manner that fulfills its commitment to the customer and is beneficial for its members

### **About us**

**aci** Acoustical Consultants Inc. (formed in 1997) is a consortium of Engineers and technologists who work in the fields of acoustics and vibrations. The members are from diverse backgrounds, and deal with a wide variety of issues related to noise and vibration control. **aci** provides consulting services in the following fields (among others):

### **Environmental Noise Monitoring/Modeling**

Monitoring, modeling, and assessment of noise from sources such as traffic, aircraft, construction, oil and gas processing facilities, compressor and pumping stations, mining, manufacturing, and outdoor musical performances. Use of local noise bylaws, and regulations; such as the ERCB Directive 038 on Noise Control, and Edmonton Urban Traffic Noise Policy C506. Presentation of findings to Board and Judicial hearings, and preparation and implementation of noise mitigation measures.

### **Architectural Acoustics**

Measurement and assessment of interior noise levels and reverberant conditions for such spaces as music halls, classrooms, churches, offices, libraries, gymnasiums, swimming pools, and restaurants. Review and analysis of acoustic and vibration impact of building mechanical systems. Measurement and assessment of sound transmission and acoustic isolation between suites in offices, apartments, and condominiums. Review of architectural drawings and construction techniques to achieve desired acoustical performance.

### **Vibration**

Measurement and assessment of vibration conditions for structures, machines, worker related activities. Particular attention paid to structural damage criteria, vibration concerns of specialized laboratory equipment, and human response to vibration. Use of specialized equipment to obtain multi-channel vibration data for modal assessment.

### **Modeling**

Environmental Noise Modeling covering a wide range of sound sources, geographical and environmental conditions. Use of room acoustic modeling to determine reverberation times, room modes, and assistance in design of sound system design.

### **Education**

One of **aci**'s Principal Partners is a University Professor with over 30 years of teaching experience and another is a sessional instructor at the University of Alberta. **aci** has, and can offer, courses covering a wide variety of topics of acoustics and vibrations such as basic acoustics, industrial environmental noise, traffic noise, building mechanical system noise, architectural acoustics, and vibration assessment and control.

## Principal Partners



**M. Gary Faulkner, Ph.D., P.Eng.** is a professor in the Department of Mechanical Engineering at the University of Alberta. For over 30 years, Dr. Faulkner has also acted as a consultant to numerous industrial, legal and government groups. This work includes:

- Expert opinion concerning motor vehicle accident reconstruction
- Failure analysis in mechanical systems
- Noise and vibration impact assessment, and design for noise and vibration control
- Appearance as expert in criminal and civil actions as well as before Boards, Councils and Public Meetings
- Development and delivery of specialized short courses in noise and vibration assessment and control.

**Education:** Ph.D. 1969 University of California, Berkeley, USA  
M.Sc. 1966 University of Alberta, Alberta, Canada  
B.Sc. 1963 University of Alberta, Alberta, Canada (with distinction)



**Corjan Buma, M.Sc., P.Eng.** is a private consultant specializing in room acoustics, building acoustics and noise control, and environmental noise measurement and assessment. Since completing his M.Sc. work in 1986 at the Mechanical Engineering Acoustics and Noise Unit (MEANU), he has conducted experiments in finite element predictions of duct generated noise, designed and tested expansion chamber and duct silencers, performed numerous room acoustics analyses, and conducted a variety of engineering studies of environmental noise. He is also a musician, specializing in organ, piano and choir.

**Education:** M.Sc. 1986 University of Alberta  
- Multiple-Source Excitation of Acoustic Resonances of Small-Room Enclosures.  
B.Sc. 1983 Mechanical Engineering, University of Alberta



**Steven Bilawchuk, M.Sc., P.Eng.** is a private consultant specializing in environmental noise and vibration measurement and assessment. His M.Sc. work at the University of Alberta was in the field of Finite Element Modeling of Acoustical Silencers. In addition, he teaches a senior Mechanical Engineering course on Acoustics and Noise Control at the University of Alberta. His involvement with aci has provided experience in various fields of noise and vibration measurements, assessment, and design. He is also an enthusiast of systems for home and mobile audio reproduction.

**Education:** M.Sc. 2002 Mechanical Engineering, University of Alberta, Canada  
- Finite Element Modeling of Acoustical Silencers  
B.Sc. 2000 Mechanical Engineering, University of Alberta, Canada  
- Co-Op Program, Degree with Distinction



**Patrick Froment, B.Sc., B.Ed.** is a private consultant with aci. He studied at the University of Salford in Salford, England. His final year project was based on the simulation of the sound of rainfall on a skylight. This research was based on the ability to allow non-specialists to understand the acoustic consequences of implementing such a structure into architectural design. He also has a degree from the University of Alberta in Education. He specialized in French and as such studied in the French faculty, Faculté Saint-Jean. He has a continuing interest and in home theatre and car audio systems.

**Education:** B.Sc. 2007 Acoustics, University of Salford, England  
- Final Year Project on the Simulation of Rainfall on a Skylight Structure  
- Courses of Acoustics, Vibrations, Signal Processing, Modeling  
B.Ed. 2003 Education, University of Alberta, Canada  
- Faculté Saint-Jean, French Major, Phys. Ed Minor