



Forensic Engineering

Services:

Building Acoustics

Wind and Snow Loading

Environmental Noise

Air Quality Studies

Environmental Assessments

Wind Tunnel Testing

Structural Vibrations

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Low-level ground vibrations, above the average perception limit, often cause adverse reactions to building occupants. Higher magnitude vibrations, typically in the order of 50 to 100 times the perception threshold, represent the initial stages of cosmetic damages to buildings.

Some common sources of ground vibrations include:

- ◆ Earthquakes;
- ◆ Quarry blasting;
- ◆ Construction blasting;
- ◆ Construction vehicles, buses and trains;
- ◆ Heavy industrial operations (i.e. forging, metal stamping).



Heavy roadway vehicles, trains and quarries are sources of ground vibrations



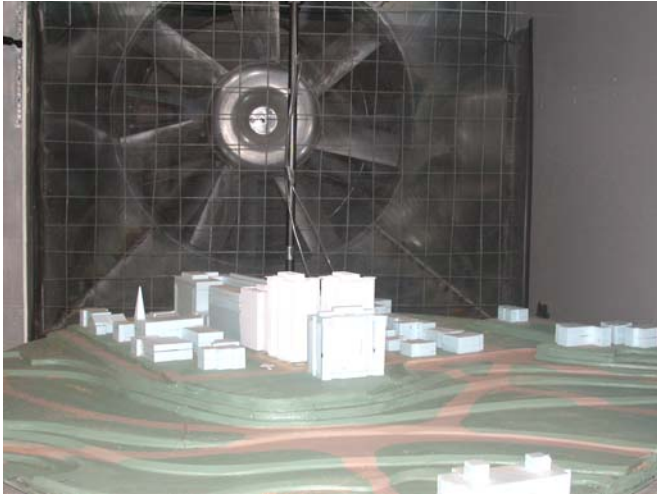
Ground vibrations arising from construction and quarry blasting are controlled by guidelines prepared by the Ministry of the Environment and enforced by municipal by-laws.





Forensic Engineering

dfa brings extensive experience in microclimate engineering to its investigative assignments. Our practical skills, derived from design experience on major buildings and structures, are applied to failure investigations, supported, as required by full-scale measurements and laboratory testing. *dfa* has its own wind tunnel facility, which is used to replicate full-scale wind and snow conditions on physical models.



Reduced scale physical models can be used to study wind forces on buildings, wind effects on pedestrians, as well as snow loading on roofs.



Above: Snow accumulation on roofs and ground level can be assessed from wind tunnel model testing.



Left: Wind forces on slender structures such as exposed free-standing stacks are often tested using wind tunnel techniques.