



# Long Span Roofs

## Services:

Building Acoustics

Wind and Snow Loading

Environmental Noise

Air Quality Studies

Structural Wind Loading

Wind Tunnel Testing

Cladding Pressures

Long Span Roofs

Control of Mechanical Vibrations

Computational Fluid Dynamics

Microclimate Engineering

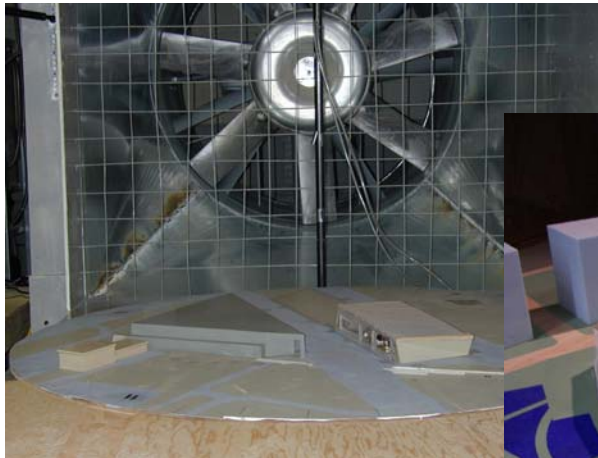
Design of Mass Dampers

Telephone:  
(613) 836-0934

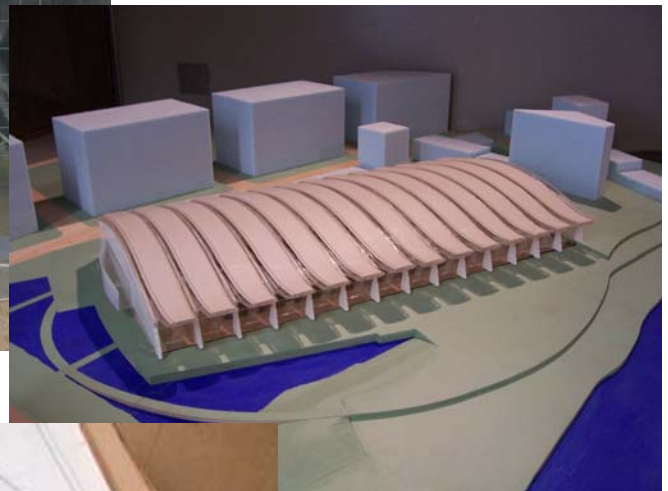
Facsimile:  
(613) 836-8183

Long span roofs are as susceptible to the dynamic action of wind as other slender structures. In order to assess the correct response, aeroelastic models are useful to represent the dynamic behaviour of the roof under wind loading. These models become essential when the structure is influenced by its own motion, which represents a form of aeroelastic instability.

In the same way as for other structures, buildings with long-span roofs are tested in a wind tunnel for critical wind directions among their surroundings. Aircraft hangars, which often include long span roofs, have the added complication of generating significant internal dynamic pressures when the hangar doors are open. Wind tunnel testing can account for these, and all other complications, with the same testing procedure.



Model Used For Roof Snow Accumulation Study



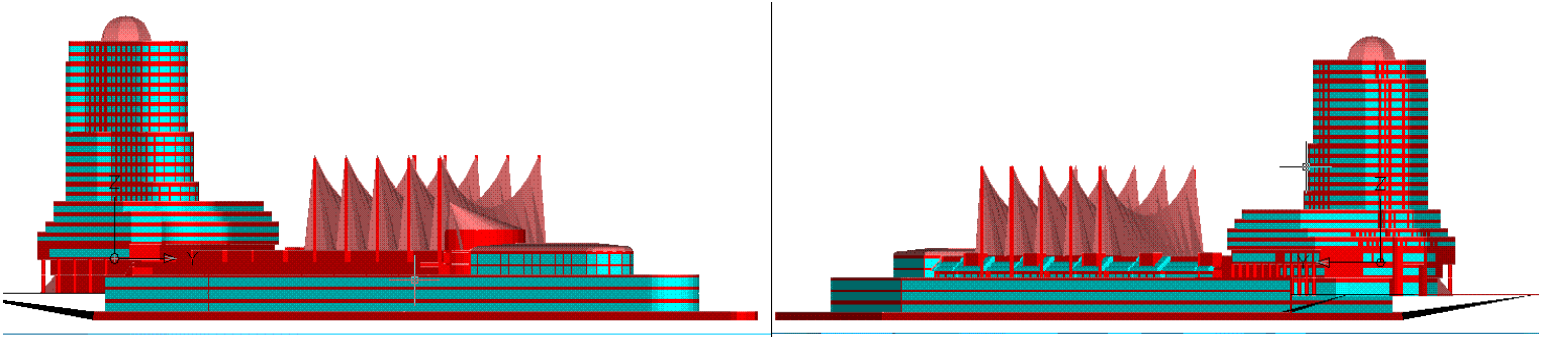
Preliminary Architectural Model of Aircraft Hangar



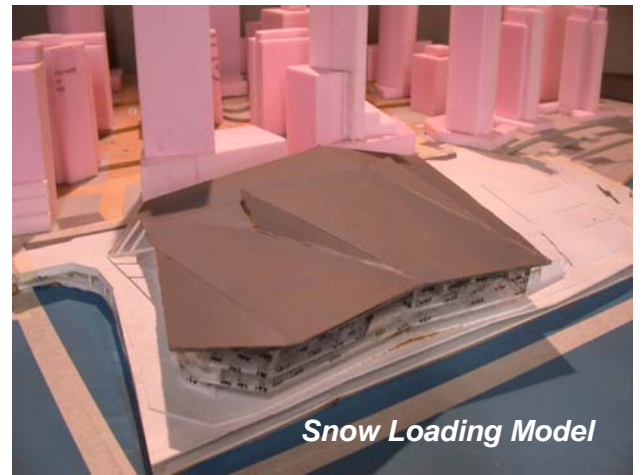
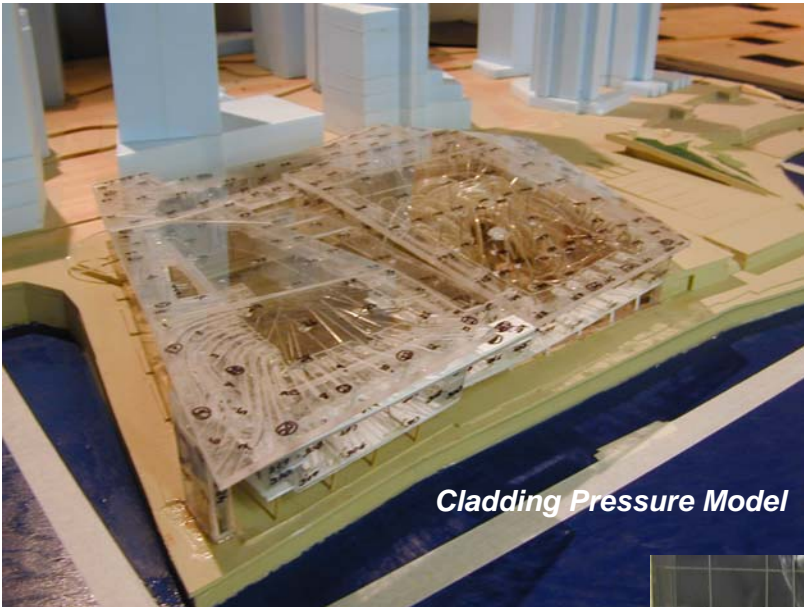
Strain Gauges Are Used to Obtain Peak Wind Loads On The Simulated Roof Members



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## VANCOUVER CONVENTION CENTRE EXPANSION PROJECT



*GmE has been retained to perform wind tunnel studies on the Vancouver Convention Centre Expansion, including cladding pressures, roof snow loading, pedestrian wind assessment, and dynamic evaluation of the long span roof.*

