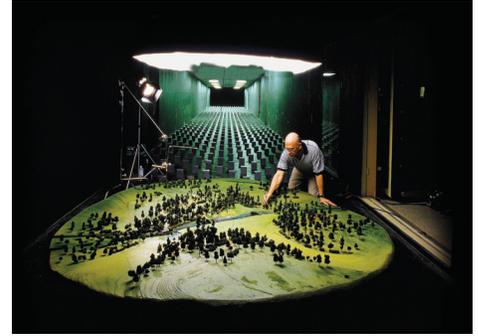


Boundary Layer Wind Tunnel Laboratory

at Western University

Architects, planners and engineers are very interested in how buildings and other structures respond to wind forces, and need to understand these forces to design and build safe structures. Engineers at Western University are world leaders in the field of wind engineering research, and their work has been providing this essential information to the construction industry for more than 45 years.



For more than 45 years, the Boundary Layer Wind Tunnel Laboratory has been at the forefront of wind testing to improve the construction of structures around the world.

What is the Boundary Layer Wind Tunnel Laboratory?

- A cutting-edge facility for wind tunnel testing and analysis methods that provides planners with solutions to complex wind engineering problems at the project design stage
- Its researchers have contributed significantly to the understanding of wind engineering and have carried out innovative design studies on major structures around the world
- They have examined the effects of wind on tall buildings, long-span bridges and other structures, such as convention centres
- They also work on solving such environmental problems as wind-driven rain and predictions of the effects of severe wind storms, such as hurricanes
- Other special projects include: snow engineering, wind climate studies and analysis of pedestrian-level winds

How do they do it?

- Engineers build scale models of buildings and examine them in one of two wind tunnels to see how they respond when subjected to wind
- The first tunnel, built in 1965, can test wind speeds up to 55 miles per hour; the second tunnel – built in 1984 – can test wind speeds up to 100 miles per hour
- By analyzing wind tunnel data to reveal the dynamics and properties of structural loads, researchers can help predict how buildings will behave and respond under varying wind conditions
- This information is combined with information about the climate in which the structure will be constructed to give architects critical insight that allows them to design structures that can best withstand local wind conditions
- The boundary layer wind tunnels are so named because the layer of wind closest to Earth's atmosphere (approximately the first 1,000 metres) is known as the boundary layer

Notable Achievements

- In 1965, the facility became the world's first boundary layer wind tunnel for testing man-made structures
- Named for the laboratory's founder, the *Alan Davenport Wind Loading Chain* has been recognized by the *International Wind Engineering Society* as the basis for the modern practice of wind engineering around the world
- Davenport was a world expert on wind, and was the principal consultant on wind loads for the Caribbean Uniform Building Code in the early to mid-1980s, and was involved in studies of wind climate and extreme hurricane winds in Central and South America
- The laboratory's members have been directly involved in all aspects of wind research and used their expertise to work with architects, engineers and developers on more than 1,000 industrial projects around the world
- From the outset, the laboratory has received recognition for its research, and its engineers have developed many of the universally used wind engineering standard methods
- Some major projects include the **World Trade Center** in New York City, the **Willis (formerly Sears) Tower** in Chicago, the **Confederation Bridge** in Prince Edward Island and the **CN Tower** in Toronto, as well as most structures at **Canary Wharf** in London, England



Western
Research

For more information, please visit: www.blwtl.uwo.ca