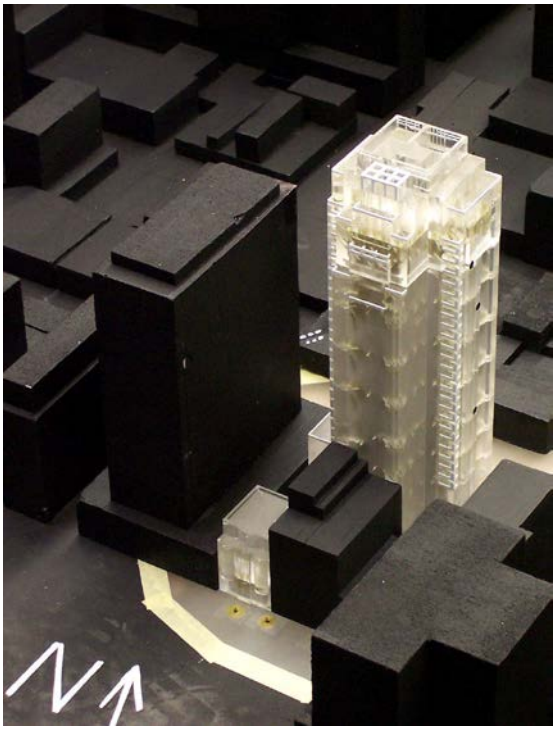
10 Rittenhouse Square, Philadelphia, PA, USA

Wind Engineering Study



Client	Structural Engineer	Architect
Liberty Property Trust	Thornton-Tomasetti Engineers	Robert A.M. Stern Architects
Height	**Year Tested**	**Model Scale**
400 feet	2005	1:400

The Project

The project consists of a residential tower rising approximately 400 feet above street level and a low-rise structure (Rittenhouse Club) with a maximum height of about 70 feet extending south from the west side of the tower.

The tower features a series of balconies and terraces facing south and overlooking the adjacent Rittenhouse Square parkland. Atop the roof of the 10 Rittenhouse tower lie a series of architectural pergolas which were also modelled for the cladding pressure study.

The Wind Tunnel Studies

The wind engineering studies on 10 Rittenhouse Square included a study of the overall structural loads on the building, the local external and differential pressure loads and the wind speeds in and around pedestrian areas.

The Wind Tunnel Studies (continued)

The study of overall structural loads and responses made use of the force balance technique.

Information on local cladding pressures was determined for the project. Measurements were taken at 715 locations distributed over the tower and low-rise structure. The effects of the building's operable sash were also studied to determine the impact on the building internal pressures in the event that the windows were left open during a storm.

The study of pedestrian level wind speeds investigated wind speeds at 25 locations around the project site. Ground level was instrumented with 17 locations and another 8 locations were installed in select balconies on the south face of the tower.

The Boundary Layer Wind Tunnel Laboratory

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