The Tower at PNC Plaza, Pittsburgh, Pennsylvania

Wind Engineering Study

Image Credit: Gensler

Client	*Structural Engineer*	*Architect*
Gensler	Buro Happold	Gensler
Height	*Year Tested*	*Model Scale*
545 feet	2011-12	1:400

The Project

The Tower at PNC Plaza development in Pittsburgh, Pennsylvania consists of a 32-storey office tower. The tower rises to an overall height of 545' and occupies a footprint of about 180' by 195'. The upper 85' of the tower consists of an elaborate angled open top which houses the solar chimney and is capped off with a large skylight.

The site is across from One PNC Plaza and will be the fourth PNC tower to be constructed in the Golden Triangle neighbourhood of Pittsburgh. The tower will seek LEED Platinum certification and is mostly clad in a double wall system.

The Wind Tunnel Studies

The wind engineering studies for The Tower at PNC Plaza included a study of the wind-induced structural loads and responses, local cladding pressure loads and pedestrian level winds speeds.

The study of overall structural loads and responses was determined using the force balance technique.

A study of wind-induced cladding pressures was carried out for 450 measurement locations distributed over the tower. Wind loads were provided for both the inner and outer walls of the double wall system. Time histories of the surface pressure measurements were provided to the mechanical engineering team to be integrated into their CFD model to assess the operation of the solar chimney.

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