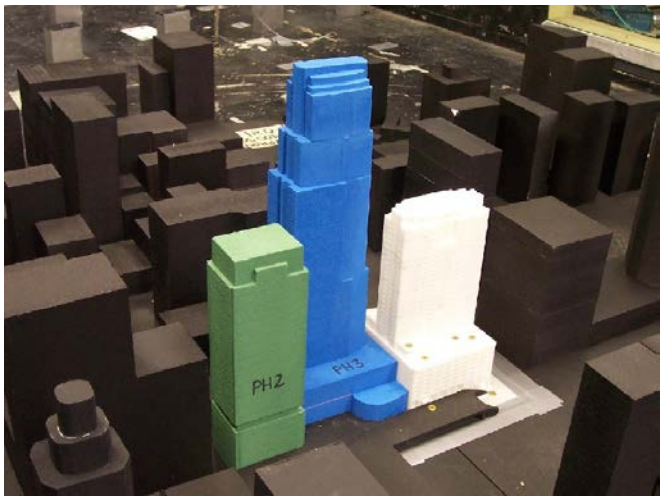
Cityfront Plaza Phase 1: Fairbanks – Chicago, Illinois

Wind Tunnel Study



Lead Consultant: Thornton Tomasetti Group, Engineers
Date Tested: June 2005

Architect: De Stefano & Partners

Height	*Length*	*Width*
413 ft	200 ft	200 ft (base) 85 ft (tower)

The Project

The City Front Plaza development in Chicago, Illinois, USA consists of 3 phases. The first phase is a residential tower called Fairbanks and is located on the west side of Columbus Drive between Illinois Street and Grand Avenue.

The tower is constructed on top of an existing nine storey parking garage that has been in use for a number of years. Renovations to the existing parking garage allow for residential occupancy on the south side and accommodate the parking requirements of the new addition.

The existing parking garage is square in shape and the tower extends from the end of the existing structure for 22 residential floors. The tower is a somewhat elliptical shape with the majority of dwellings opening onto the north and south elevations. On the top of the existing portion of the structure that is not used for the base of the tower are private gardens for residents as well as amenity shelters housing features such as spas, fitness rooms and yoga studios.

The Wind Tunnel Studies

• Structural loads were determined using the pressure integration approach. This provided predictions of base bending moments, effective loads distributed over the height of the tower, and accelerations at the top occupied floor.

• A pressure test provided predictions of peak local pressures for use in designing the curtain wall. There were roughly 350 pressure measurement points used on the tower and the base.

• Pedestrian level winds were measured at 18 locations, including selected terrace levels on the ninth and tenth floors of the structure.

The Boundary Layer Wind Tunnel Laboratory

Western

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