Emirates Project, Dubai, U.A.E.

Wind Engineering Study

Lead Architect	*Architect*	*Design Architect*
Hyder Consulting (Australia)	NORR Group Consultants Int'l	Hazel W.S. Wong
Height	*Year Tested*	*Model Scale*
Office Tower 350.1m (1148.6 ft) Hotel tower 304.6m (999.3 ft)	1996	1:400

The Project

The triangular twin towers of the Emirates Project are a unique landmark located on Sheikh Zayed Rd., Dubai, United Arab Emirates.

Both towers sit on three concrete legs at the corners that rise 53.5m from the raft slab, and a glazed central lift shaft.

The towers sit atop an extensive low rise structure and landscaped pedestrian precincts.

A major feature of the hotel is a huge 31-storey atrium which starts at level 11 and faces west across the Gulf.

The spires, reaching 43.7m above the top of both the hotel and the office tower, are rectangular in plan (cross-section), making them aerodynamically sensitive.

The Wind Tunnel Studies

Information on structural loads and building motions for both towers was determined using a force balance modelling technique.

Aeroelastic testing of the two spires provided information on wind loads and deflections and was used in the design of damper systems for the spires.

Information on cladding pressures was determined for both towers and the extensive low rise. Measurements were taken at over 700 locations.

Structural loads on the support trusses for the hotel tower atrium glazing including unbalanced load cases were determined from detailed simultaneous pressure measurements.

A special analysis of the wind climate for Dubai revealed a distinct diurnal pattern. Building motions were examined for winds occurring during several statistically "typical" days.

Pedestrian level wind speeds were determined at 34 locations on the low rise and around the site.

The Boundary Layer Wind Tunnel Laboratory

Western

The Boundary Layer Wind Tunnel Laboratory
The University of Western Ontario
Faculty of Engineering, London, Ontario
Canada, N6A 5B9 Tel: (519) 661-3338 Fax: (519) 661-3339
Internet: www.blwtl.uwo.ca E-mail: info@blwtl.uwo.ca

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