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Title: **The Emirates Towers**

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Subjects: Architectural/Design
Building Case Study

Keywords: Design Process
Office
Planning

Publication Date: 2001

Original Publication: CTBUH 2001 6th World Congress, Melbourne

Paper Type:

1. Book chapter/Part chapter
2. Journal paper
3. **Conference proceeding**
4. Unpublished conference paper
5. Magazine article
6. Unpublished

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PLANNING AND ARCHITECTURE

The Emirates Towers

Hazel W. S. Wong

THE COMPETITION

Initiated in the mid 1990's as an invited international design competition by His Highness Sheikh Mohammed bin Rashid Al Maktoum, Crown Prince of Dubai and United Arab Emirates Defence Minister, the intention of the Emirates Towers project was to create a landmark development, comprising twin office towers to frame and to be at least twice the height of the 149-metre Dubai World Trade Centre, the latter being an existing focal point in the City built by his late father Sheikh Rashid bin Saeed Al Maktoum over twenty years ago. My proposed winning competition design (Fig. 1) realized this objective through the creation of twin slender towers, carefully located to pay homage to an existing landmark, and flanked at each tower base by low curvilinear buildings, in forms reminiscent of massive, shifting sand dunes, housing parking and service elements.

Despite subsequent market analysis that necessitated the conversion of the shorter of the two office towers into a hotel and the incorporation of a 2-storey retail component at the base, the overall design was sensitively and faithfully retained throughout the development.

Site Context

The site for the project, approximately 500 metres \times 350 metres and 169,000 square metres in area is located along a major thoroughfare in the new bustling commercial and residential centre of the city. The design concentrates the buildings away from the highway in a central portion of the site. This way the project is distinctly set apart from the standard commercial development and the twin towers are positioned so as to create meaningful visual compositions from every viewpoint. The site has been organized around five primary structures – the office tower, the hotel tower, retail podium and associated parking buildings. A primary ring road conveniently accesses all components on the site. A series of terraced urban plazas are introduced at the tower bases with landscape elements including an 80 metre wide waterfall, lakes, fountains and causeway.

Beyond the immediate periphery of the building complex, the formal landscaped environment progresses into a natural park-like setting with gentle contours and lush vegetation buffering the roadways around the site perimeter completing the development which represents a major destination point and offers a sense of an oasis amidst an urban concrete environment.



Figure 1 Winning Competition Design.

The Concept

Both towers feature equilateral triangular cross sections evocative of the Islamic cultural vocabulary, representing the three heavenly bodies – earth, sun and moon. The circular drum at the base and the cylindrical feature at the top of each

tower echo the concept of the circle as the ‘timeless whole’. Conceived as pure sculptural forms, the buildings present a dynamic silhouette against the rapidly changing Dubai skyline. As in the poetic movements of a pas-de-deux, the slender triangular towers clad in aluminium panels with copper and silver reflective glass capture the changing light of the desert sun and show off their dramatic integrated illumination at nightfall (Fig. 2).



Figure 2 Pas-de-deux.*

Although the similarities of the two towers enhance their interrelationship and reinforce the expression of the tall building, subtle differences in the cladding and detail design highlight and reflect their differences in building type and programme.

At the base, intersecting planes of curvilinear and vertical elements frame grand stairs leading to the podium levels. The solidity of the Brazilian ‘Kinawa’

granite walls and the lightness of the stainless steel and glass entrances into the retail boulevard are juxtaposed to create a mediating scale between the towers and the streetscape (Fig. 3). Dune-shaped low-rise parking structures echo the desert landscape of the region.



Figure 3 Podium.*

The Office Tower

The Office Tower, rising above 350 metres (1148ft.), is ranked amongst the top ten tallest buildings in the world. The 52-storey tower has a total gross floor area of 68,500 square metres with a typical floor plate of 1334 square metres, a size, which reflects current market demands. An entrance ramp leads to a grand porte cochere and a voluminous sky-lit entrance lobby. The Entrance Lobby provides access to all office floors by means of 16 passenger elevators travelling up to 7 metres per second.

Interiors have been designed to provide thoroughly flexible and low maintenance office accommodation, which can adapt to changing occupant needs and to new business technology with ease. The floor-to-floor height of 4.5m allows the use of access flooring and a deep ceiling void to house state of the art I.T. equipment and building services. A highly efficient floor plate, devoid of any interior columns, provides close to 9 metres office depth at the narrowest points between core and building perimeter. Cherry wood wall panels, stone floors and decorative lighting in the typical elevator lobbies all contribute to a distinctive corporate office environment (Fig. 4).

The Hotel Tower

The 5-star, 400-room business Hotel Tower features a 31-storey glazed atrium overlooking the Arabian Gulf. The 52-storey structure, rising 305 metres, has a total gross floor area of 50,360 square metres. A total of 8 passenger elevators, including 4 panoramic, serve the 339 deluxe guest rooms and suites, 52 club executive rooms and 9 presidential suites. Guest rooms and suites line the tower sides facing away from the highway. The feature atrium with dramatic views of the Gulf through its glass façade acts not only as a sound buffer, but provides visual transparency and becomes the hotel's window to the city (Fig. 5).

The lower levels are dedicated to Conference and meeting facilities, business centre and hotel executive offices. Distributed through the hotel are 10 food and beverage outlets catering to the needs of the guests including an 800-seat ballroom, restaurants serving various international cuisine and penthouse wine bar and fine dining.

Back-of-house and other support services are located in the podium levels immediately below the Hotel Tower.

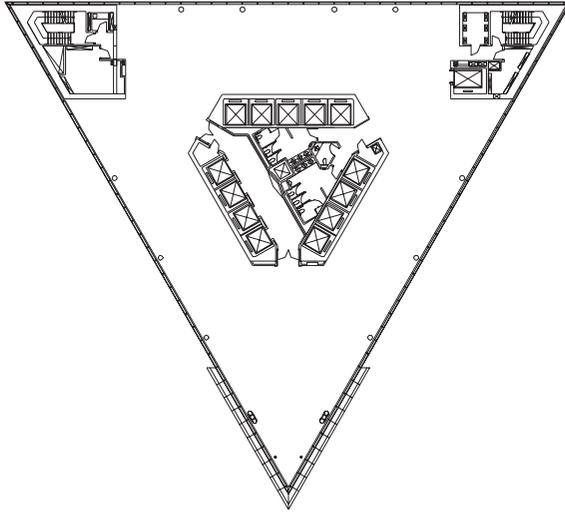


Figure 4 Typical Office Plan.

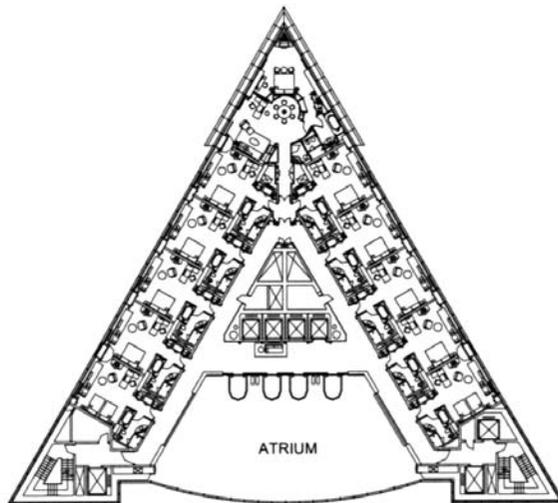


Figure 5 Typical Hotel Plan.

A 2-storey retail boulevard and a full level of parking connect the two towers at the base. Through the pyramidal and linear skylights, visitors are constantly aware of the tower structures above. Complimenting the corporate offices and elegant hotel, the boulevard takes on a lighter, fun-provocative and colourful palette of materials and finishes including ceramic tile flooring, copper wire mesh ceilings and timber wall panels (Fig. 6).



Figure 6 Retail Boulevard.

Parking Structures

Over 2000 car parking spaces and ancillary building services are provided in the two curvilinear buildings and in the lowest level of the podium. The stepped structures, reminiscent of massive shifting sand dunes, are clad in profiled pre-cast concrete panels and covered with greenery cascading off its perimeter planters (Fig. 7).



Figure 7 Parking Structure.

Structural Systems

Each tower is set on a 1.5 metre thick raft slab atop 100 friction piles of up to 47 metres deep and 1.5 metres in diameter. The structural system for both towers is only similar at the base and peak. In the Office Tower, steel transfers at level 9 distribute the loads from perimeter concrete filled steel tubular columns set 9 metres apart to three triangular legs. Three additional transfer floors and a tuned mass damper at the peak provide for stability under all load conditions. A steel and concrete hybrid solution achieves column-free office space and speed of erection. The Hotel Tower adopts an all-concrete solution for better acoustic performance and stiffness. Two visible prefabricated steel trusses support the 31-storey atrium glass wall and contribute to the structural integrity of the tower. Both tower peaks and the 44-metre tall spires containing three tuned mass dampers each are supported on a complex latticework of steel sections.

An additional 2000 piles of various diameters and depths support the concrete-framed multi-levelled podium and parking structures.

The Completion

Construction for the project was carried out from 1997 to 2000, and was delivered on March 2001 on time and on budget. Completed on the eve of the new Millennium, the Towers present a strong metaphor of sleek, modern technology reaching upwards and outwards into the future, yet firmly rooted in the cultural and environmental origins of its past (Fig. 8). Regarded as a major architectural accomplishment in the region, the Emirates Towers clearly confirms Dubai as one of the leading urban centres of the world.



Figure 8 The Emirates Towers.*

The Project Team

Client

His Highness General Sheikh Mohammed Bin Rashid Al Maktoum

Team

Lead Consultant	Hyder Consulting
Design Architect	Hazel W.S. Wong
Architect	NORR Group
Structural Engineers	Hyder Consulting
M & E Engineers	DSSR/TMP
Interior Design (Hotel)	Design Division
Project Managers	Turner International
Contractor (Office)	Nasa Multiplex
Contractor (Hotel)	BESIX – Ssang Yong

* Photographs courtesy of Turner Steiner International

