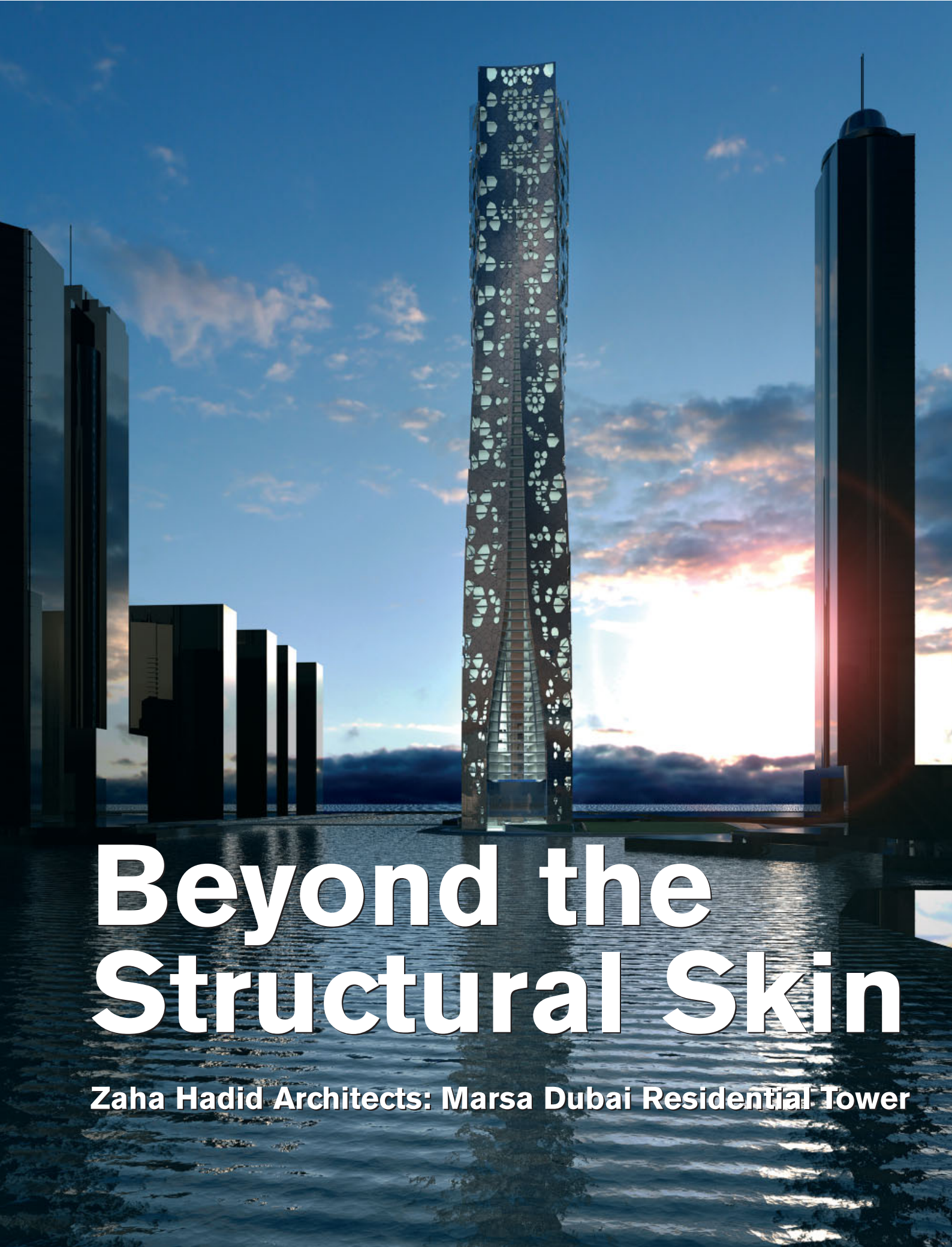


An architectural rendering of the Marsa Dubai Residential Tower, a tall, slender skyscraper with a distinctive perforated facade. The tower is set against a dramatic sunset sky with vibrant orange and pink clouds. The building is reflected in the calm water in the foreground. To the left, a series of smaller, rectangular buildings are visible, and to the right, another tall, dark tower stands. The overall scene is a high-quality digital illustration.

Beyond the Structural Skin

Zaha Hadid Architects: Marsa Dubai Residential Tower

Continuity of surface and structure when combined with a formal response to existing site-features deliver a potent elegance. Ali Rahim and Hina Jamelle describe how Zaha Hadid Architects in their Marsa Dubai Residential Tower were able to adapt the internal organisation to site constraints and the building's immediate environment. This renders a sophisticated aesthetic, which neither impacts external conditions nor compromises the interior spaces.

Zaha Hadid Architects' Marsa Dubai Residential Tower integrates structure and skin with a gradient of porosities that intensify as one ascends, creating differing atmospheres throughout the height of the project. This unifying continuity of structure and skin may at first seem to be the principle feature that lends this project elegance. But on closer examination it becomes apparent that elegance is ultimately made possible by the building's masterful use of technique to mediate a broader range of architectural and contextual complexities. In the tower, the structural and enclosure systems are interrelated to organisational, spatial and site issues to generate a legible formal strategy and set of aesthetic qualities that can ultimately be appreciated by the viewer as elegant.

Key to the project is an inventive structural system that is specifically integrated with the surface. The system consists of two vertical concrete tubes, one of which resides within the other. The interior tube contains circulation and core building services, while the outer tube forms the exterior skin of the



Zaha Hadid Architects, Marsa Dubai Residential Tower, Dubai, United Arab Emirates, 2005

Above: The tower is one of two buildings on each side of the creek and the bridge crossing to the Jumeirah Beach Marina from the mainland that can be perceived as holding 'sentinel' positions in relation to the general masterplan and the growing number of buildings around the marina.

Opposite: From its prominent corner position at the eastern end of the marina, residents of the proposed tower will enjoy unparalleled diagonal views both outwards (northeast) to the gulf and inwards (southwest) towards the marina.

project, extending through the structure's height. The exterior skin is punctured with openings covering up to 40 per cent of its surface arranged to form a gradation from a few small openings at the tower's base to more frequent, larger openings at the top. As one moves upwards, there are also an increased number of geometrically faceted windows whose design draws from traditional Islamic motifs. The balance of openings to opaque surface is crucial for the project to maintain its elegance: if the skin is compromised, so is the structure and, as a result, so is the overall elegance of the building.

The exterior skin is supple in that it incorporates all of the organisational and spatial relations of the building. The interior floor plates split in a scissor-like action and seesaw up the height of the structure. A variety of spatial conditions are thus created to accommodate the building's diverse programmes, which include underground and above-ground parking, a swimming pool, health club and multi-use hall, one- to three-bedroom apartments, and four-bedroom and penthouse suites. Functionally, the seesawing form creates a greater perimeter area that allows an increased amount of daylight to penetrate into the circulation core while still providing for control over the solar intensity admitted to the occupied spaces. Excellent daylighting levels are thus achieved throughout, reducing reliance on artificial lighting.

Closely related to this diversity of interior spatial programmes is a series of exterior transformations that allow the building to respond to its site constraints. Situated within a densely populated enclave in Dubai, the building twists to enjoy diagonal views of the Persian Gulf to the northeast and the marina to the southwest. Generated from a closed square plan, the tower is open at ground level on the south side to allow for public pedestrian access from the marina, while on the north side the inverse applies and the building splits open at its top to provide penthouse residents with spectacular views of the gulf.

External climactic conditions are mediated by variations within the building skin. The incorporation of a graded range of openings, adjusted to the orientation of each facade, minimises the heat load within the building. On elevations most directly exposed to solar intensity, the glazing is recessed to maximise solar shading, while on other, less exposed elevations, it is positioned closer to the outside edge of the facade. Beyond providing environmental control, this adjustment of glazing position within the depth of the facade visually accentuates the building's changing shape and form. Tectonic inflection at this scale enhances its overall visual interest and at the same time contains variations within the range of a unifying appearance.

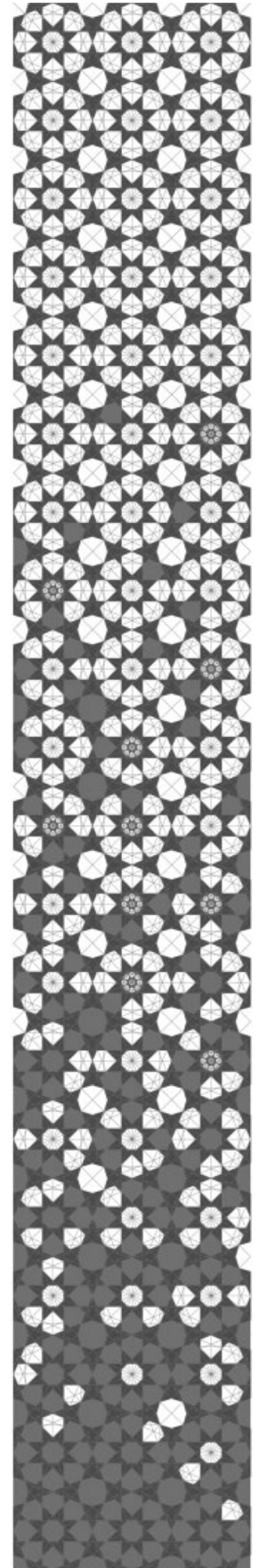
The Marsa Dubai Residential Tower houses an exuberant diversity of atmospheres and programmatic conditions within an overall form that integrates organisational, spatial, structural, surface and contextual conditions. The expertise in technique here allows for the seemingly effortless containment and incorporation of multiple architecture complexities, resulting in a form whose every surface exudes elegance.

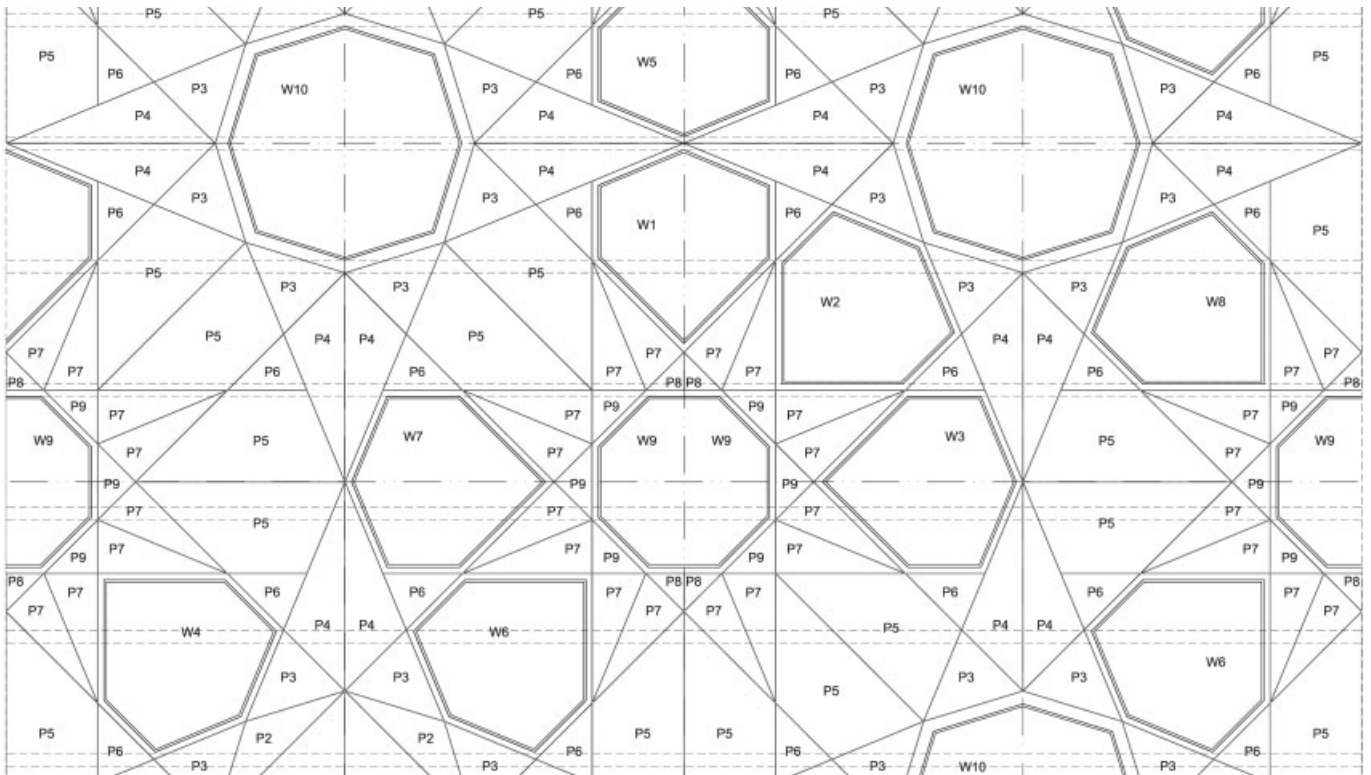
Project information provided by Zaha Hadid Architects



Left: Fenestration variation.

Right: The outer structural tube that is the facade can be punctuated by up to 40 per cent provided there is a gradation in the number and type of openings from few and small at the base to more and larger at the top. Thus the upwards gradation of the window pattern – designs that are drawn from studies of a traditional decorative faceted Islamic geometry.





Top: The treatment of each facade is tailored to the particular elevation by varying the position of the glazing within the overall facade depth. Bottom: Programmatically, four floors of parking are situated above the mezzanine floor levels, with three levels of parking underground. Commercial and civic programming is planned for the fifth and sixth floors, including shops, a swimming pool, health spa, gym, multi-use hall and kitchens. Above this public area, the remaining height of the tower is divided into two zones. In the lower half are 30 floors of one-, two- and three-bedroom apartments and duplexes arranged around a central service core. Δ

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