



SCULPTED HIGH-RISE: THE AL HAMRA TOWER

Mark SARKISIAN PE SE

Director

Skidmore, Owings & Merrill LLP
San Francisco, CA, USA
mark.sarkisian@som.com

Mark Sarkisian received his Bachelors Degree in Civil Engineering from the University of Connecticut and his Masters Degree in Structural Engineering from Lehigh University. He joined SOM in 1985.

Neville MATHIAS PE SE

Associate Director

Skidmore, Owings & Merrill LLP
San Francisco, CA, USA
neville.mathias@som.com

Neville Mathias, received his Bachelors Degree in Civil Engineering from Madras University, India and Masters Degrees in Structural Engineering and Architecture from the University of California, Berkeley. He joined SOM in 1985.

Aaron MAZEIKA PE

Associate

Skidmore, Owings & Merrill LLP
Chicago, IL, USA
aaron.mazeika@som.com

Aaron Mazeika received his Bachelors and Masters Degrees in Engineering from the University of Cambridge. He joined SOM in 2000.



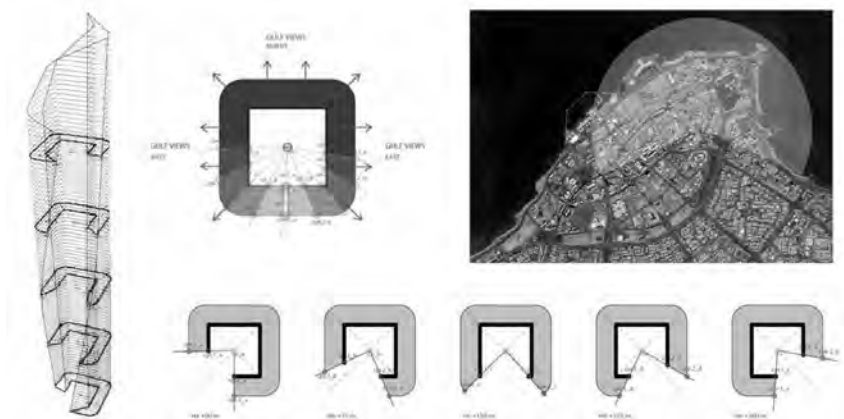
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Extended Abstract

At 412m tall on completion, the Al Hamra Tower is set to be amongst the tallest buildings in the world. Setting it apart from other super high-rise buildings is its unique sculpted form. An example of architectural expression through structural form on a grand scale, the structural system and exterior form developed together in a process of symbiotic evolution. The building geometry is generated by a spiraling slice subtracted from a simple prismatic volume. The two resultant surfaces are hyperbolic paraboloid reinforced-concrete walls, which extend the full height of the tower and participate in the lateral and gravity force resisting systems.

The design of the Al Hamra Tower required consideration of challenging engineering issues complicated by both the height and form of the structure. The spiraling hyperbolic paraboloid 'flared walls' required for gravity load support of the cantilevered wing of the building apply a torsional gravity load to the building core that necessitates consideration of both the long-term vertical and torsional deformations of the building structure.

The architectural design of the Al Hamra Tower is a carefully considered response to site specific environmental and urban conditions. Located on a space-constrained site at a prominent intersection in the center of Kuwait City, the Al Hamra Tower is part of a mixed-use complex consisting of a commercial office tower, a retail/entertainment podium and an associated parking structure. At the commencement of Skidmore, Owings & Merrill LLP's (SOM) involvement in the design of the tower, the podium and parking structures were already designed and under construction. The remaining site available for the tower defined both the plan limits and alignment of the superstructure. Located immediately north of the retail podium and east of a major road, a tower geometry which opened up to the retail entrance at the southwest quadrant of the tower site was desirable. However, with the primary gulf views valued by future office tenants to the north, west and east, a form which focused the office spaces in those directions was preferred. To accommodate these seemingly conflicting interests, a spiraling geometry was developed by subtracting a quadrant of a typical filleted square floor plan and incrementally rotating the subtracted portion at each higher level. The surface generated by the cut slab edges is articulated as a stone-clad continuous ribbon which connects the hyperbolic paraboloid shear walls extending from the southwest and southeast corners of the central core (termed the 'flared' walls) and the roof of the tower. This expression of the flared wall and the exposure of the south wall of the central core allowed for extensive glass use on the north, west and east sides of the tower, while providing a measure of environmental protection from the desert sun by presenting a nearly solid stone façade to the south.



Presently under construction in Kuwait City, the Al Hamra Tower will be an impressive addition to the skyline of this fast-growing city. As part of a mixed-use development combining world-class office space, a high-end retail mall, and an entertainment center, the Al Hamra Mixed-Use Complex is set to become a major destination for the city.