城市综合体

HOPSCA

高迪国际 HI-DESIGN 编
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Architect
Zerafa Architecture Studio

AMBIENT TOWER

The designers have taken a lyrical point of reference and constructed a narrative to tell the story of this tower's origin. A familiar image found perhaps in a romantic view of the desert is of a solitary figure on the horizon cloaked in a translucent cloth billowing in the desert wind (Fig.01). This wind-shaped undulating form whose image is made kinetic in light, suggests an architectural expression that responds to the complex environmental conditions of the site as well as the less tangible emotion and spirit of the city. Our tower is conceived as a free-form sculptural surface billowing in the park landscape, an instrument of light in the city skyline.

The proposed tower is formed by manipulating a uniform flat surface into a free formed u-shaped profile around a central core to create a protective shell to claim and then protect an interior space or "espace calme", from specific environmental factors, both solar and wind that impact the site (Fig.02). The resulting abstracted airfoil shape opens up to the northwest and establishes a direct spatial dialogue with the park landscape and city skyline. The smooth shell is then modeled to create an undulating "wind-formed" surface with dramatically contoured billowing edges.

Ultimately, the tower silhouette is one that is continually being redefined by the changing lighting conditions and shading effect of the sun's movement across the site. This constant state of re-making gives the tower a kinetic image in the skyline that is both organic and expressive of a technologically spirited architecture in support of the Park's theme. At night, the tower is dramatically transformed with a façade integrated internal LED lighting grid to create the effect of a luminous surface billowing in the night sky. This tower of "Ambient Light" is a provocative new symbol for Dubai.

Joint Venture Architect
Gregory T Waugh, AIA

Design Team
Jason Zerafa, Joaquin Boldrini, Pablo Zamorano, Luis E. Carmona, Katherine Moya

Structural Consultant
Gilsanz Murray Steficek LLP.

Structural Design Team
Ramon Gilsanz, Jessica Mandrick

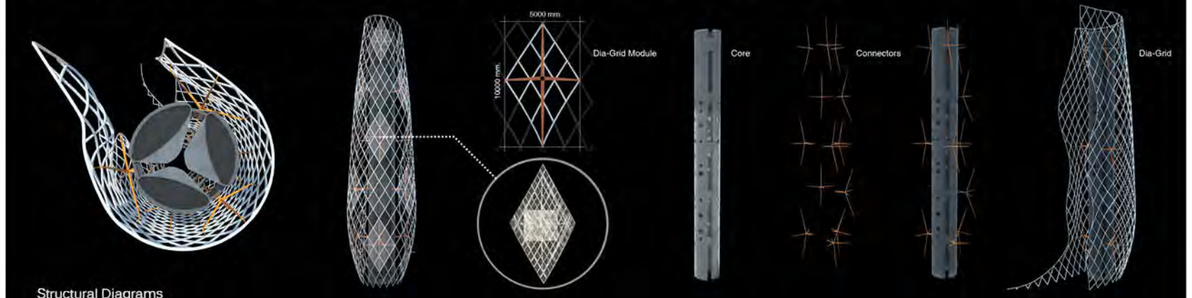
Mechanical Consultant
Consentini

Mechanical Design Team
Mike Maybaum, David Leo.

Area
7238 m²

STRUCTURE

The dramatic undulating geometry of the proposed shell is supported on an internal structural steel dia-grid with a uniform diagonal inscribed in a 5m x 5m square.
The typical 450-500mm diameter dia-grid tubular member traces the façade geometry and is connected back to a concrete 3-part circular core with a series of tubular steel 4-point spider connectors radiating out from the center of the u-shaped plan. The primary connectors are located at 30m vertical intervals with an alternating plan offset of 120 degrees. The length of the twin connector extension varies according to the displacement in the façade geometry. Additional lateral restraint is provided at slab edges within the upper and lower volumes.
The proposed dia-grid shell is an efficient structural solution for the undulating surface geometry in the proposed design. This solution also allows for an uniform module on the exterior and creates a 170m tall interior void free of columns and traditional horizontal beam connections. The desired effect is to see the undulating shell as a freestanding object in space from within the void and from the exterior.
The concrete tower core is formed by the extrusion of three distinct oval shapes inscribed in a circular plan centered within the u-shaped plan. The three individual vertical elements, containing the two tower elevators, two fire-stair towers and mechanical shaft space are connected at 30m vertical intervals with a perimeter ring beam. The perimeter core walls are perforated with an alternating pattern of circular apertures to provide intermittent views out into the internal void from the elevators and stair towers.

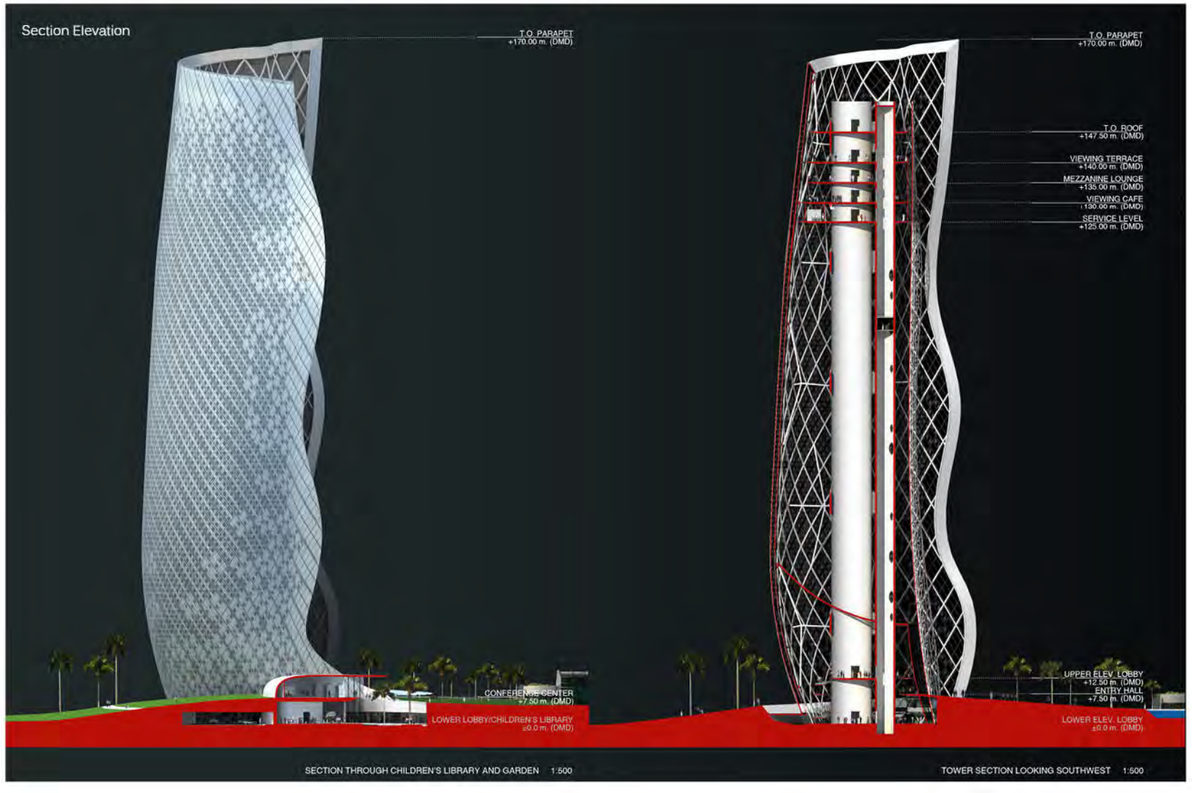


Structural Diagrams

Concept Diagram

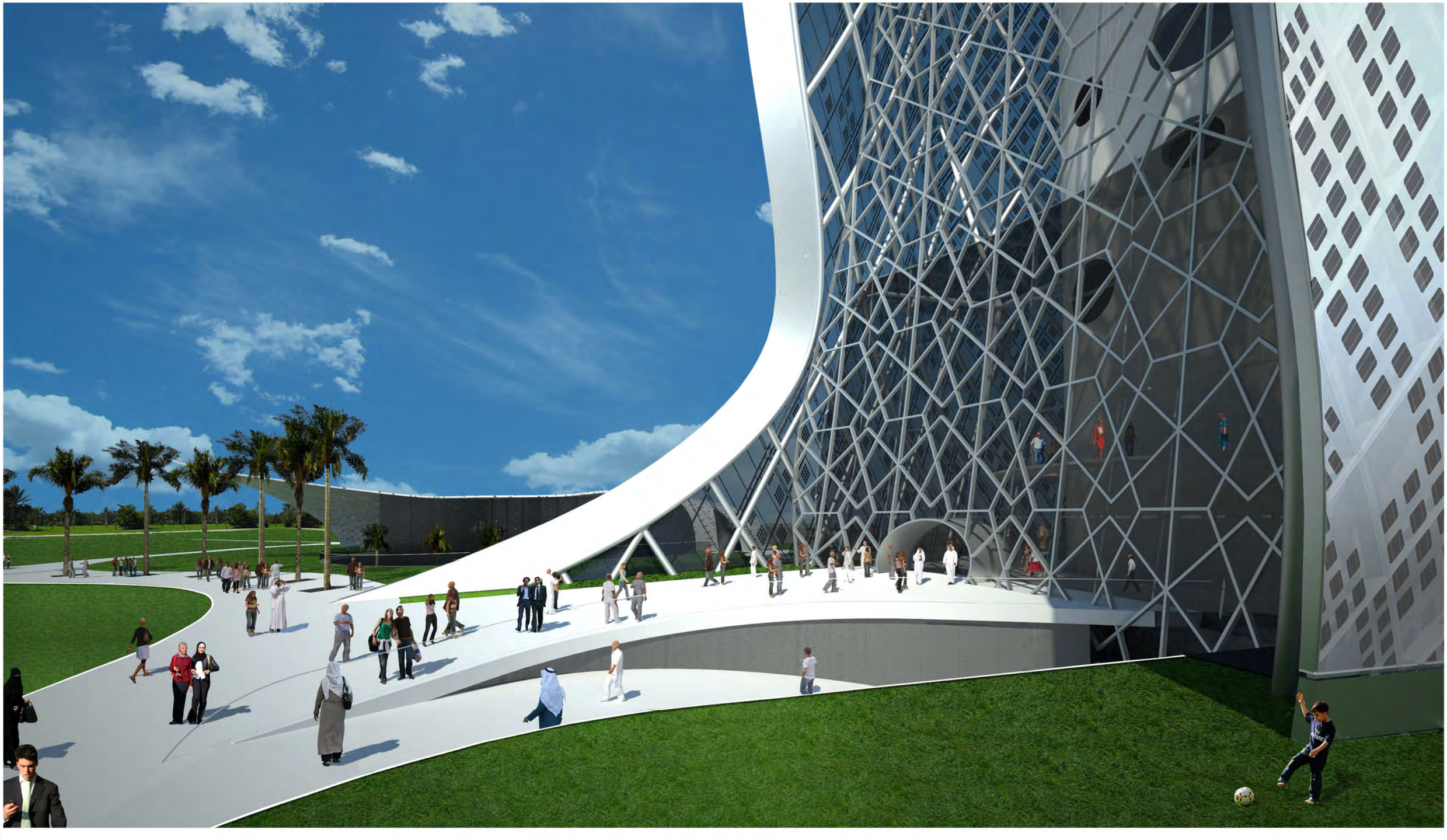
Exterior

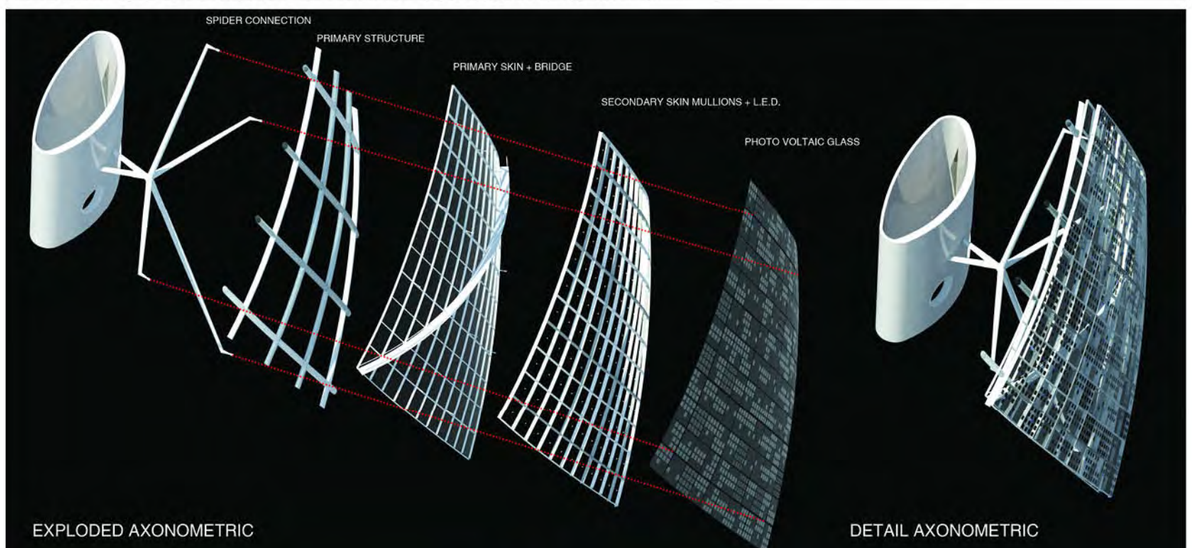
Section Elevation



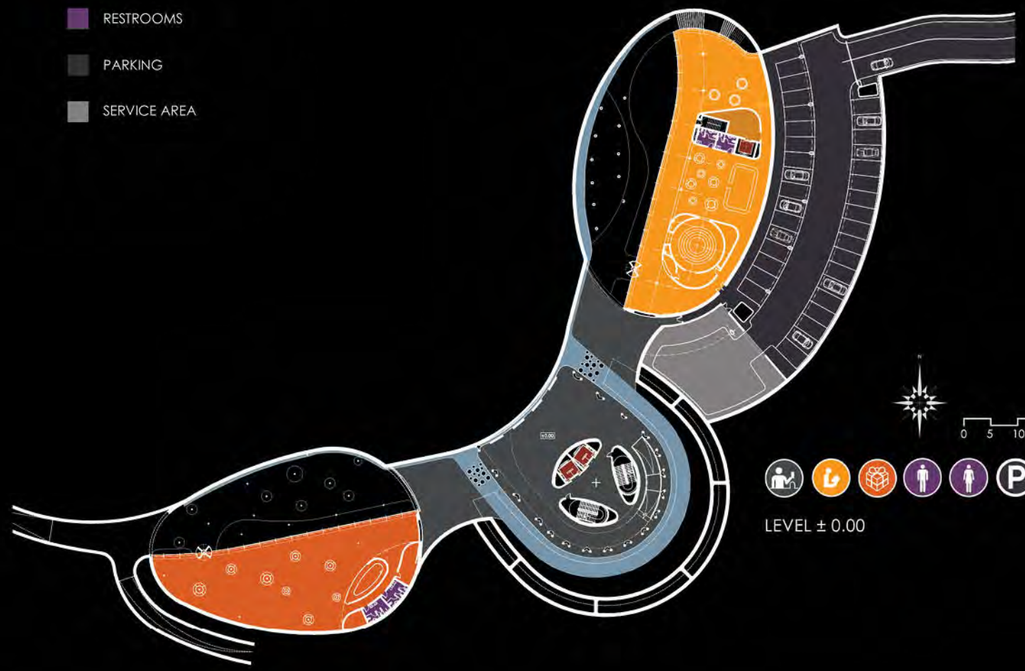
SECTION THROUGH CHILDREN'S LIBRARY AND GARDEN 1:500

TOWER SECTION LOOKING SOUTHWEST 1:500



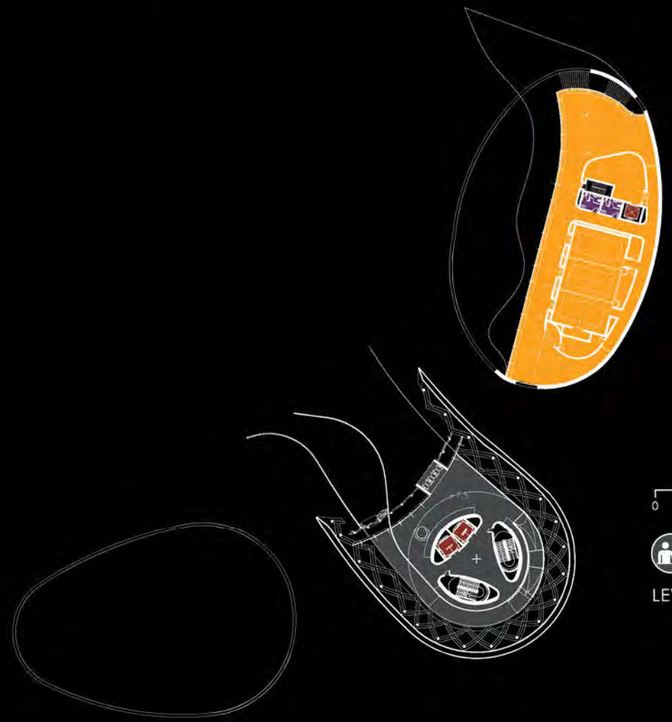

SPIDER CONNECTION
PRIMARY STRUCTURE
PRIMARY SKIN + BRIDGE
SECONDARY SKIN MULLIONS + L.E.D.
PHOTO VOLTAIC GLASS
EXPLODED AXONOMETRIC
DETAIL AXONOMETRIC

- LOWER LOBBY- TICKETING AREA
- CHILDRENS' LIBRARY
- VISITORS' CENTER
- RESTROOMS
- PARKING
- SERVICE AREA



0 5 10 20

LEVEL ± 0.00



0 5 10 20

LEVEL + 7.50

0 5 10 20

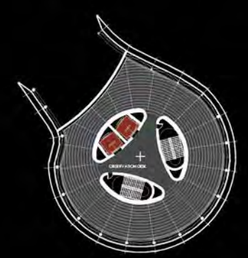
LEVEL + 125.00

0 5 10 20

LEVEL + 130.00

0 5 10 20

LEVEL + 135.00



0 5 10 20

LEVEL + 140.00

Architects
Jason Zerafa, Joaquin Boldrini

PIRAEUS TOWER

Firm
Zerafa Architecture Studio

Location
Athens, Greece

Associate Architect
Gregory T Waugh AIA

Area
32, 224 m²

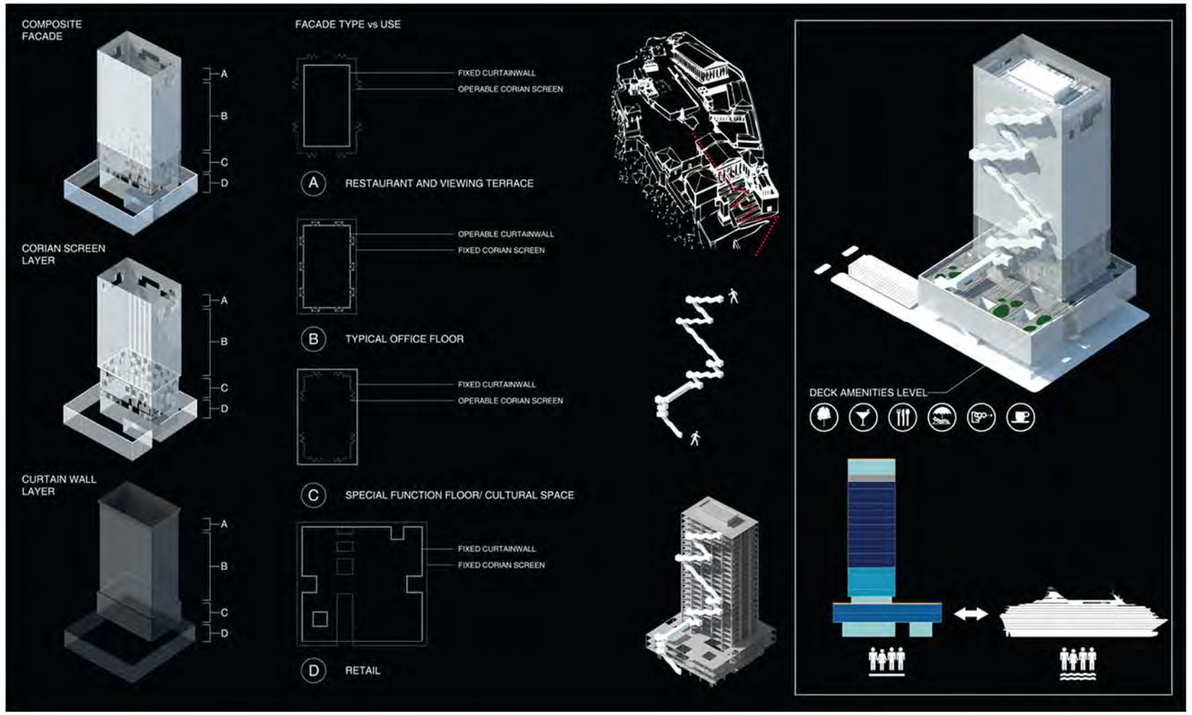
Piraeus Tower is composed of 2 major components, those which remain static over time and those affected by an hourly schedule, land vs sea, floating visitor vs the physical city. In fact, these out of scale vistors are in a way the true residents of the city, they are the focus of the city's energy and economic and cultural life. In this way, perhaps piraeus tower represents the urban rule, not the exception. This idea is significant both in relation to the scale of the tower, but also the mixed-use program housed within. The stacked program represented within the port's floating residents is derivative of the mixed-use tower, housing offices, cultural facilities, leisure amenities, restaurants, retail and services.

Our proposed facade design is derived primarily from the manipulation of a single surface. The application of a fixed exterior screen, or veil for the office floors, set outboard of the curtainwall, provides the most effective shading for the typical workspace and permits the use of a relatively transparent and operable interior layer. As the the program transitions to less restrictive use within the cultural program floors, the screenwall moves to the interior in the form of operable bi-fold panels. The curtainwall then moves to the exterior to provide a transparent venue for viewing the cultural activities within and affect an active dialogue with the city.

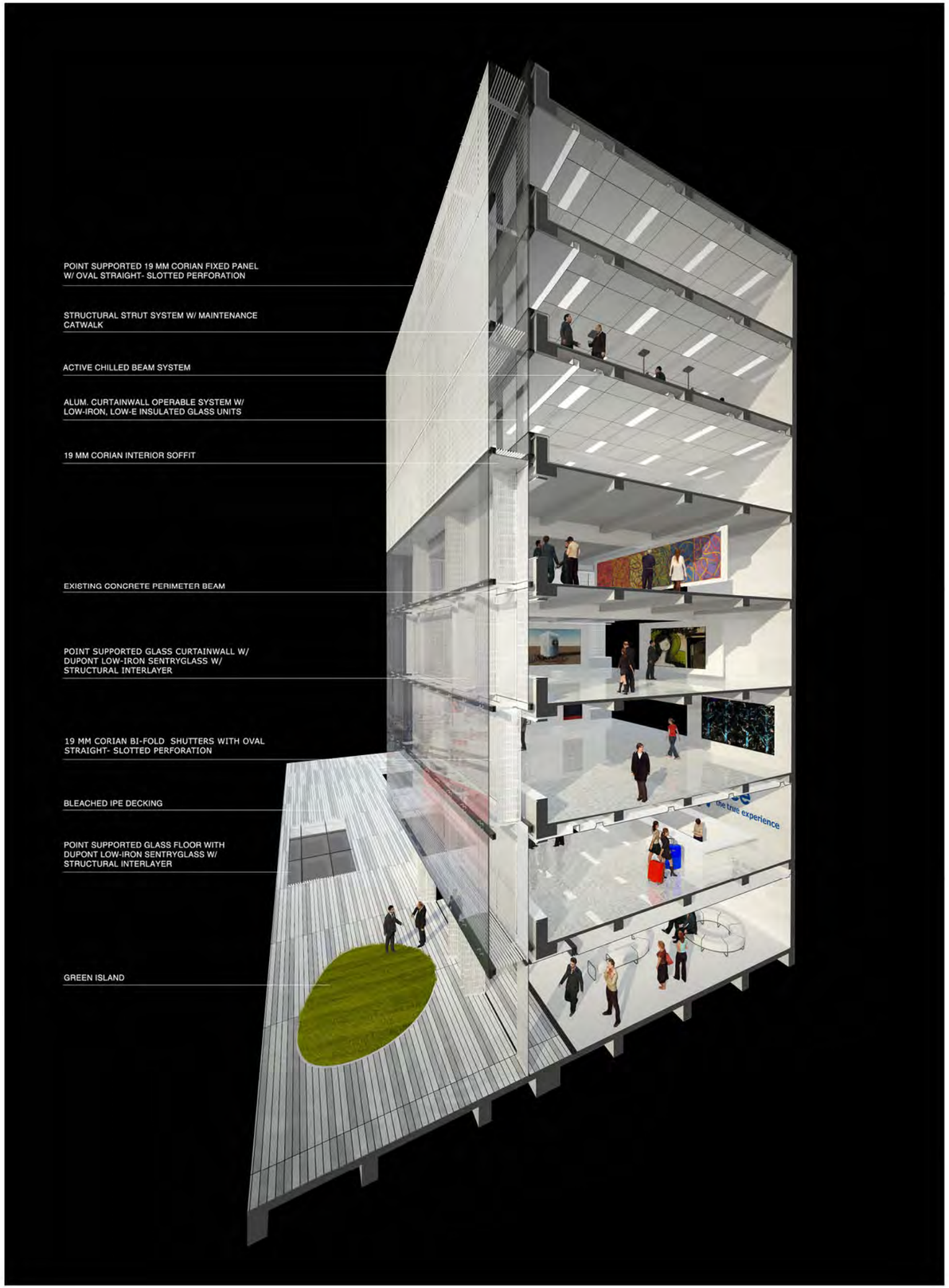
The required addition of an exterior stair, not in the form of a traditional switch-back stair, but conceieved more as a ships-ladder, that dynamically zig-zags across the facade, makes a clear reference to the sea; however, the introduction of this highly sculptural element, clipped on to the building's western facade is deeply routed in the contextual history of the area. The meandering historical pathway up the western slope of the acropolis directly to the east of the tower is the subtext for reading the rythmic movements in the facade.

Elevation West

Elevation South


COMPOSITE FACADE
A
B
C
D
CORIAN SCREEN LAYER
A
B
C
D
CURTAIN WALL LAYER
A
B
C
D
FACADE TYPE vs USE
FIXED CURTAINWALL
OPERABLE CORIAN SCREEN
A RESTAURANT AND VIEWING TERRACE
OPERABLE CURTAINWALL
FIXED CORIAN SCREEN
B TYPICAL OFFICE FLOOR
FIXED CURTAINWALL
OPERABLE CORIAN SCREEN
C SPECIAL FUNCTION FLOOR/ CULTURAL SPACE
FIXED CURTAINWALL
FIXED CORIAN SCREEN
D RETAIL
DECK AMENITIES LEVEL

86.53 m. TOP OF PARAPET
+80.01 m. ROOF LEVEL - VIEWING DECK
+76.84 m. 22ND LEVEL - RESTAURANT
+73.58 m. 21ST LEVEL - RESTAURANT
+70.32 m. 20TH LEVEL - MECHANICAL
+67.06 m. 19TH LEVEL - OFFICE
+63.80 m. 18TH LEVEL - OFFICE
+60.54 m. 17TH LEVEL - OFFICE
+57.28 m. 16TH LEVEL - OFFICE
+54.02 m. 15TH LEVEL - OFFICE
+50.76 m. 14TH LEVEL - OFFICE
+47.50 m. 13TH LEVEL - OFFICE
+44.24 m. 12TH LEVEL - OFFICE
+40.98 m. 11TH LEVEL - OFFICE
+37.72 m. 10TH LEVEL - OFFICE
+34.36 m. 9TH LEVEL - OFFICE
+31.20 m. 8TH LEVEL - OFFICE
+27.94 m. 7TH LEVEL - MULTIFUNCTION
+24.68 m. 6TH LEVEL - MULTIFUNCTION
+21.42 m. 5TH LEVEL - MULTIFUNCTION
+18.16 m. 4TH LEVEL - MULTIFUNCTION
+14.70 m. 3RD LEVEL - AMENITY DECK
+10.60 m. 2ND LEVEL - RETAIL
+6.50 m. 1ST LEVEL - RETAIL
±0.00 m. GROUND LEVEL - RETAIL / LOBBY
-3.00 m. 1ST BASEMENT LEVEL - PARKING
-7.30 m. 2ND BASEMENT LEVEL - MECHANICAL
-12.40 m. 3RD BASEMENT LEVEL - STORAGE


POINT SUPPORTED 19 MM CORIAN FIXED PANEL
W/ OVAL STRAIGHT- SLOTTED PERFORATION
STRUCTURAL STRUT SYSTEM W/ MAINTENANCE
CATWALK
ACTIVE CHILLED BEAM SYSTEM
ALUM. CURTAINWALL OPERABLE SYSTEM W/
LOW-IRON, LOW-E INSULATED GLASS UNITS
19 MM CORIAN INTERIOR SOFFIT
EXISTING CONCRETE PERIMETER BEAM
POINT SUPPORTED GLASS CURTAINWALL W/
DUPONT LOW-IRON SENTRYGLASS W/
STRUCTURAL INTERLAYER
19 MM CORIAN BI-FOLD SHUTTERS WITH OVAL
STRAIGHT- SLOTTED PERFORATION
BLEACHED IPE DECKING
POINT SUPPORTED GLASS FLOOR WITH
DUPONT LOW-IRON SENTRYGLASS W/
STRUCTURAL INTERLAYER
GREEN ISLAND