

Design Program

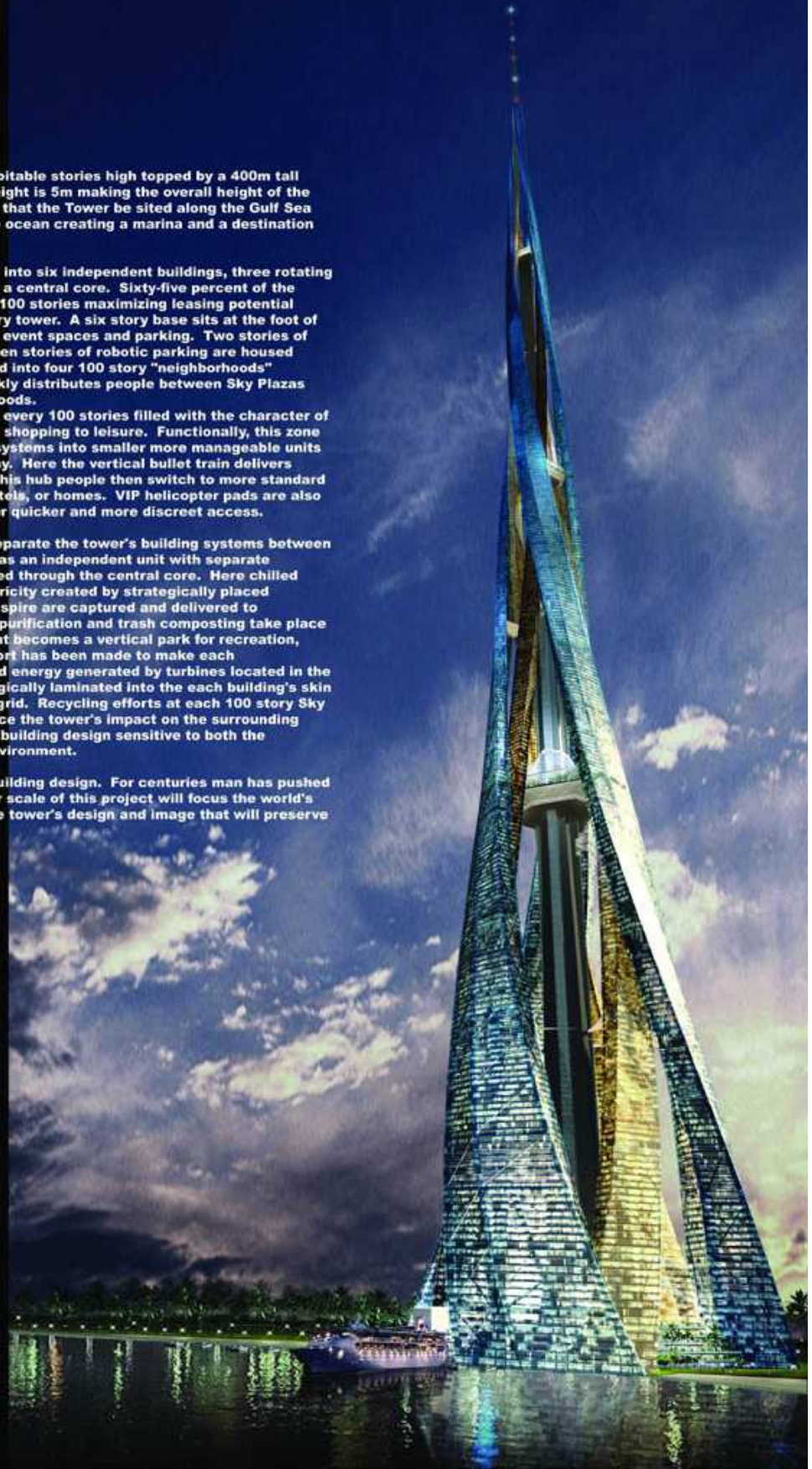
Our design for the Dubai City Tower is 400 habitable stories high topped by a 400m tall energy producing spire. Each floor to floor height is 5m making the overall height of the building 2400m (1.5 miles). We are proposing that the Tower be sited along the Gulf Sea where part of the building could push into the ocean creating a marina and a destination for cruise ships and tourism.

The overall mass of the tower is broken down into six independent buildings, three rotating clockwise and three counter-clockwise about a central core. Sixty-five percent of the total building floor area is located in the first 100 stories maximizing leasing potential while easing the strain of servicing a 400 story tower. A six story base sits at the foot of the tower housing a convention center, retail, event spaces and parking. Two stories of VIP self Parking exists above ground and fifteen stories of robotic parking are housed below ground. The overall tower is organized into four 100 story "neighborhoods" connected via a vertical bullet train that quickly distributes people between Sky Plazas that separate the different vertical neighborhoods.

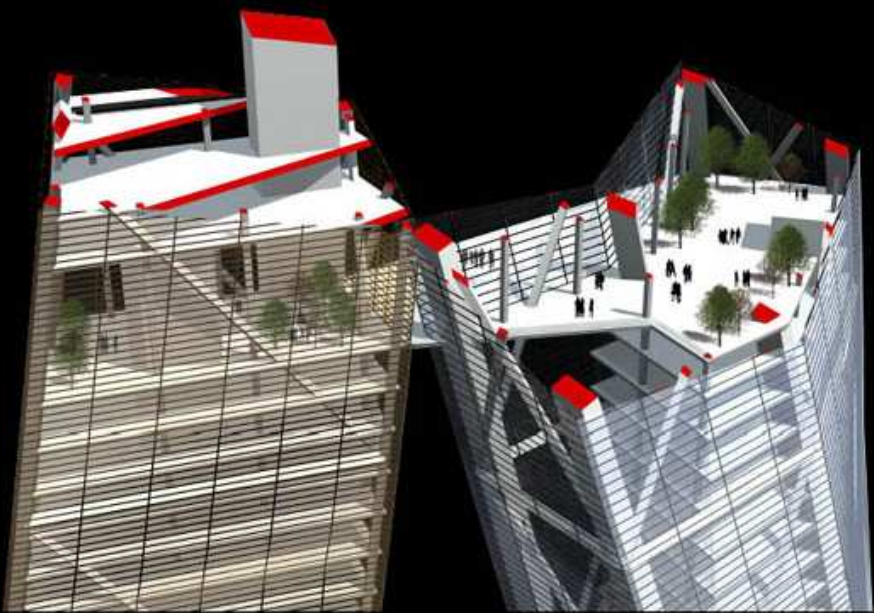
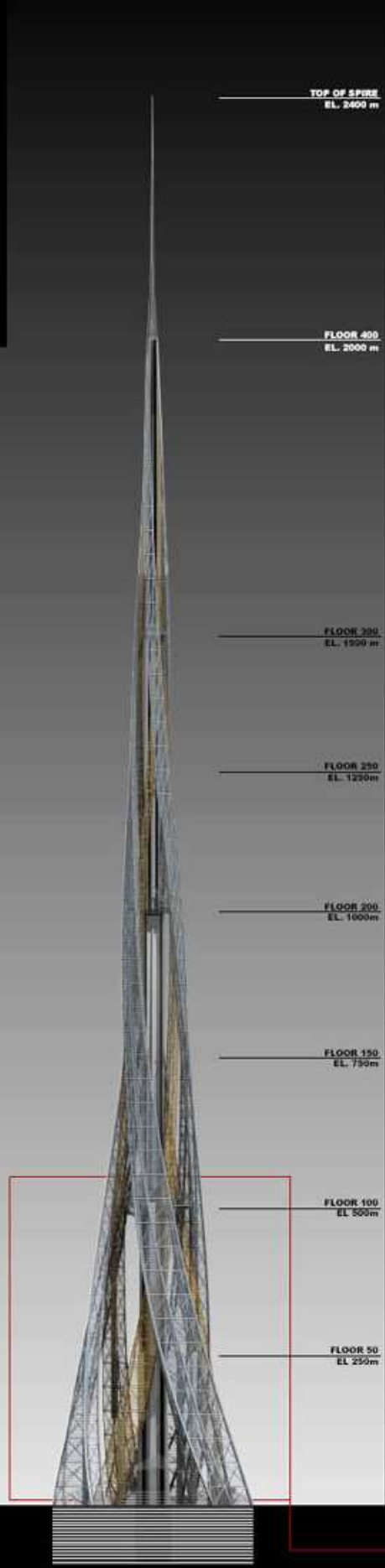
The Sky Plaza becomes a new town center at every 100 stories filled with the character of a city offering a diversity of experiences from shopping to leisure. Functionally, this zone acts to separate building and transportation systems into smaller more manageable units more typical to the design constraints of today. Here the vertical bullet train delivers passengers/tenants every 10 minutes. From this hub people then switch to more standard elevators to be distributed to their offices, hotels, or homes. VIP helicopter pads are also located at each of the plaza levels allowing for quicker and more discreet access.

The lower levels of each sky plaza serve to separate the tower's building systems between neighborhoods. Each 100 story block serves as an independent unit with separate plumbing, electric and waste systems all linked through the central core. Here chilled water created by thermal exchange and electricity created by strategically placed photovoltaic cells and turbines located in the spire are captured and delivered to occupants of the building. In addition, water purification and trash composting take place within this zone in a biosphere like garden that becomes a vertical park for recreation, oxygen creation, and natural relief. Every effort has been made to make each neighborhood as self reliant as possible. Wind energy generated by turbines located in the spire combined with photovoltaic cells strategically laminated into the each building's skin offset the tower's draw from the local power grid. Recycling efforts at each 100 story Sky Plaza and integrated desalination plants reduce the tower's impact on the surrounding infrastructure ushering in a new era of smart building design sensitive to both the building's occupants and the Tower's local environment.

The Dubai City Tower pushes every edge of building design. For centuries man has pushed construction towards the heavens. The sheer scale of this project will focus the world's eye towards the city of Dubai but it will be the tower's design and image that will preserve Dubai City Tower's grandeur into the future.

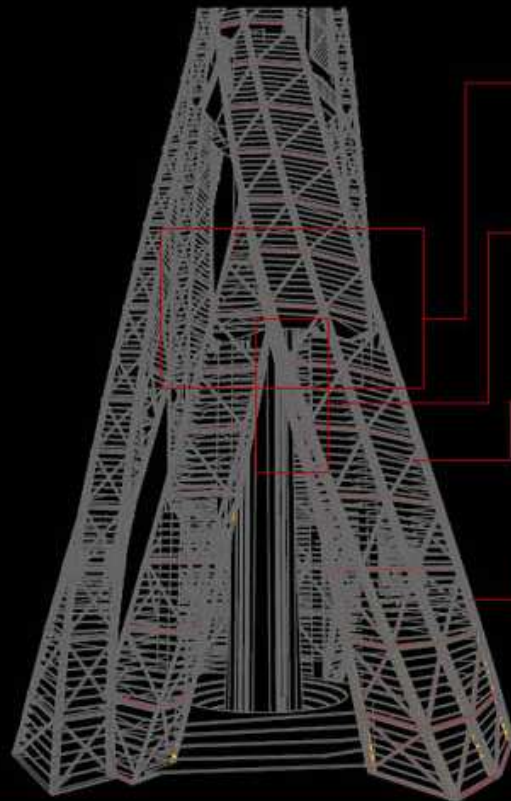


STRUCTURE



All buildings must be designed for some combination of gravity (self weight and occupancy loads), the moving earth (seismic events), and the moving air (wind storms). For a building reaching 1.5 miles the lateral forces from the wind exceed both the occupancy loads imposed on the floors and the lateral loads from earthquakes. To resist the forces and deflections imposed by the wind, shapes such as that of the Eiffel Tower tend to be the most efficient. This shape is both effective in resisting the forces from the wind and, as well, in distributing the forces imposed by the building on the underlying earth. The Dubai City Tower maximizes the Eiffel Tower shape while breaking up the overall mass into six separate buildings and a central vertical core. Three of the buildings rotate clockwise while the other three rotate counter-clockwise. The individual buildings intersect and are tied back to the central core every 100 stories creating a stable structural web. Internally each individual building is supported by corner super columns and cross bracing angled to resist wind forces. On the lower floors where the distances are too great to span between the walls of the external structure, a secondary line of internal columns braces the floor slabs. Structure within a building of this size is perhaps the most important component to a successful project. Formally the Dubai City Tower celebrates its structural ingenuity allowing the building to soar seemingly effortlessly 1.5 miles into the sky.

STRUCTURAL WEB



BUILDING CONNECTION POINT
 BALANCE HORIZONTAL FORCES OF TWISTING STRUCTURE

MULTI-STORY ATRIUM
 DECREASE THE WEIGHT ON THE STRUCTURE WHILE PROVIDING NATURAL RELIEF TO THE BUILDING'S INHABITANTS

CROSS BRACING
 RESIST WIND AND BUILDING ROTATION

CORNER SUPER-COLUMNS
 DISPERSE LOADS THROUGH SUBSTRUCTURE TO THE GROUND

VERTICAL CITY



SKY PLAZA 100



The Sky Plaza is the town center within the vertical city. The tower is broken down into four 100 story neighborhoods that are linked through the central core and Bullet train. Suspended between the rotating outer buildings each sky plaza serves to tie the tower together structurally, functionally, and more importantly socially. The plaza is the main meeting space for businessmen or residents. Large tree lined green spaces offer a park atmosphere in the sky while shops and entertainment complexes provide everything from leisure to necessary goods and services. The lower floors of the plaza act to service the above 100 stories. The vertical core feeds water and electricity upward while waste is transported downward.

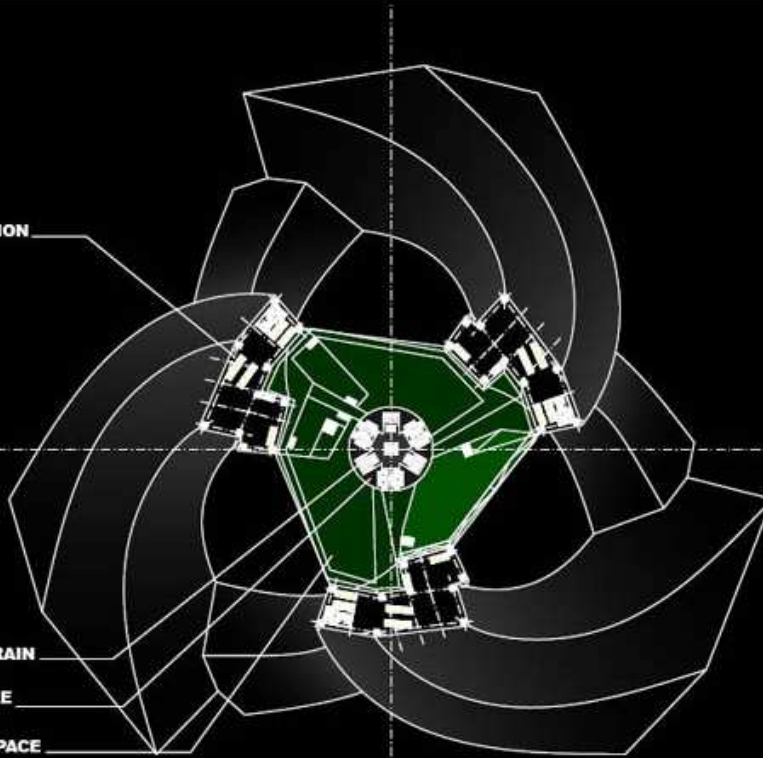
The experience of the Sky Plaza is like that of a town square bustling with activity and social interaction. These intermediate zones tie the idea of a vertical city together both metaphorically and functionally.

INTERNAL CIRCULATION

VERTICAL BULLET TRAIN

TOWER SERVICE CORE

SKY PLAZA GREEN SPACE

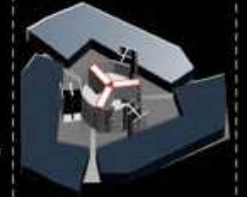
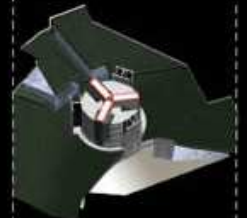
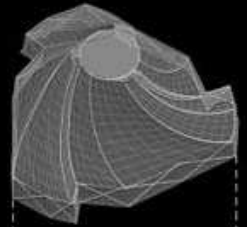


0590 : TENSILE CABLE
 □ □ □ GLASS ENCLOSURE

0515 : EXIT PATHS
 □ □ □ PERIMETER □ □ □ □ □ □ □ □
 □ □ □ CIRCULATION □ □ □ □ □ □ □ □
 □ □ □ PATHS

0500 : ARRIVAL
 □ □ □ PUBLIC PARK
 □ □ □ EVENT SPACE

0485 : TOWER SERVICES □ □ □ □
 □ □ □ AND UTILITIES



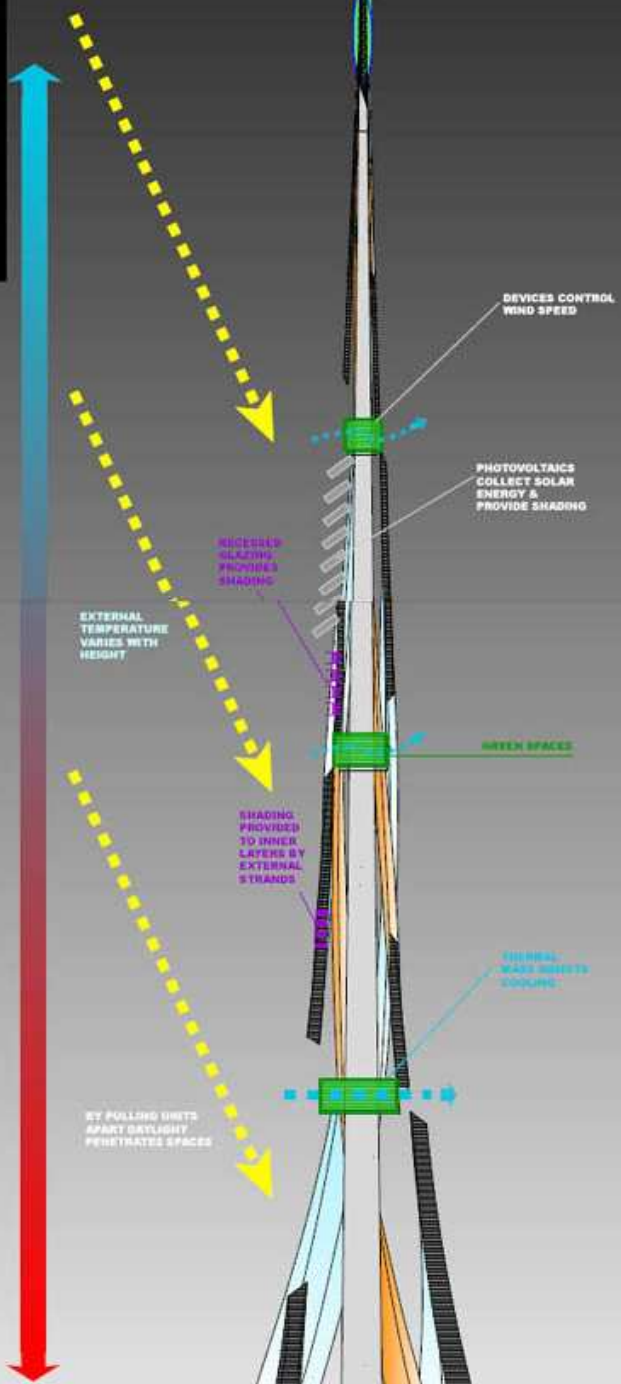
VERTICAL CITY



ENVIRONMENTAL SYSTEMS



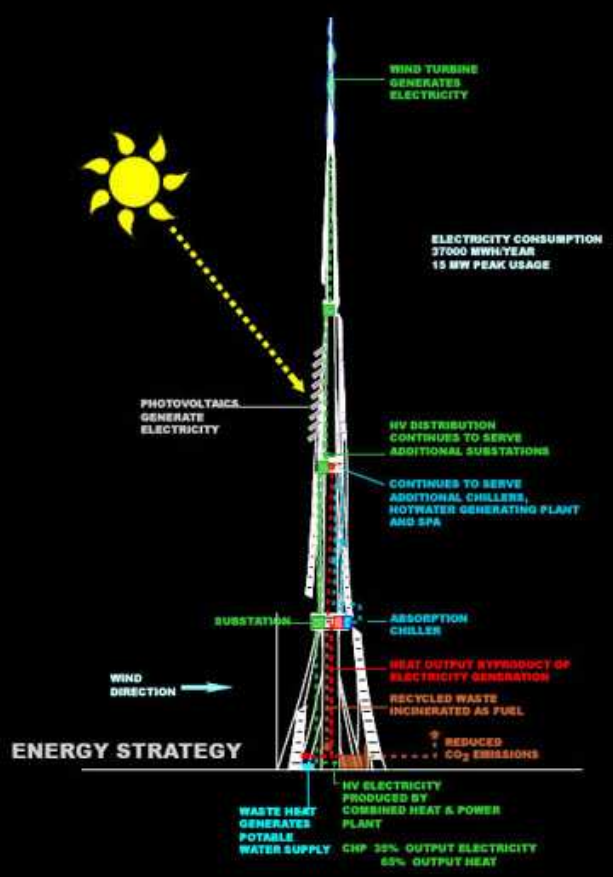
WIND GENERATED POWER



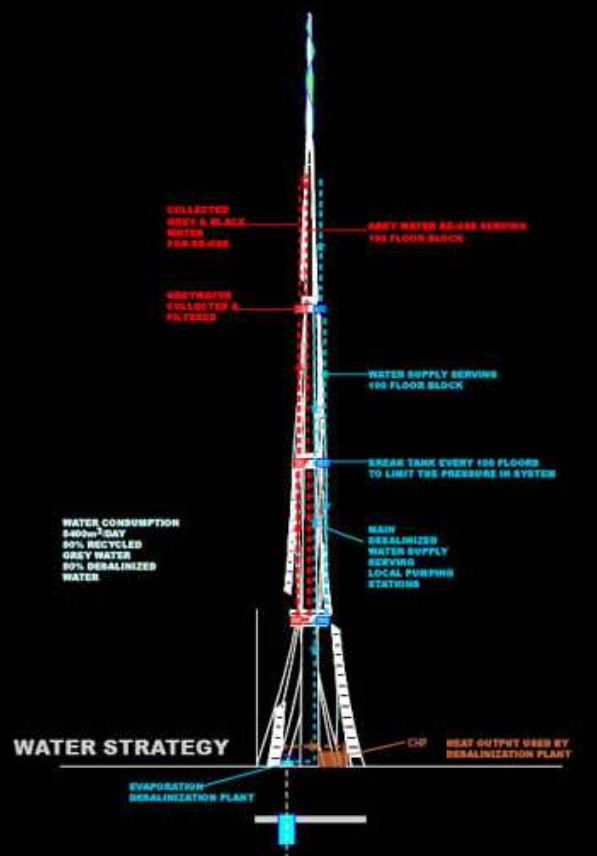
CLIMATE RESPONSE



ENERGY STRATEGY



WATER STRATEGY



VERTICAL CITY



SITE PLAN

PARKING GARAGE AND SERVICE ACCESS

MARINA

VERTICAL BULLET TRAIN

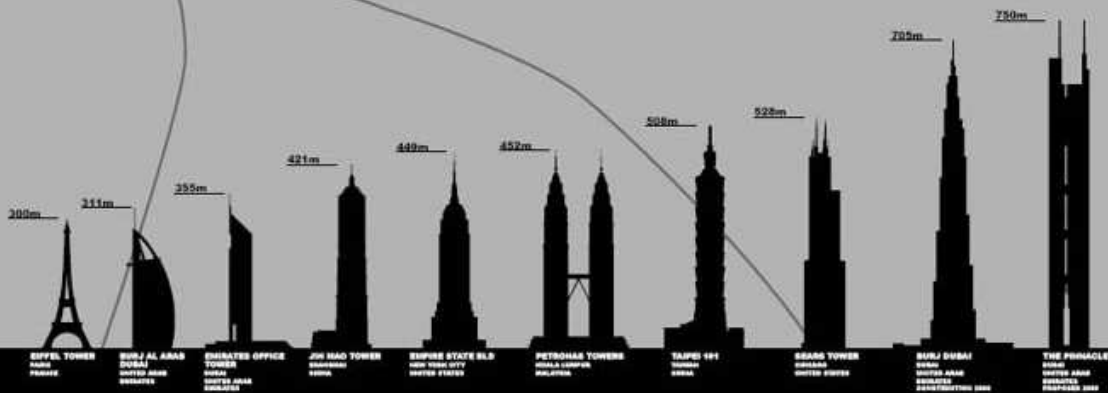
MARINA AND BUILDING SERVICES ACCESS

CONFERENCE CENTER ENTRANCE AND VIP DROP-OFF



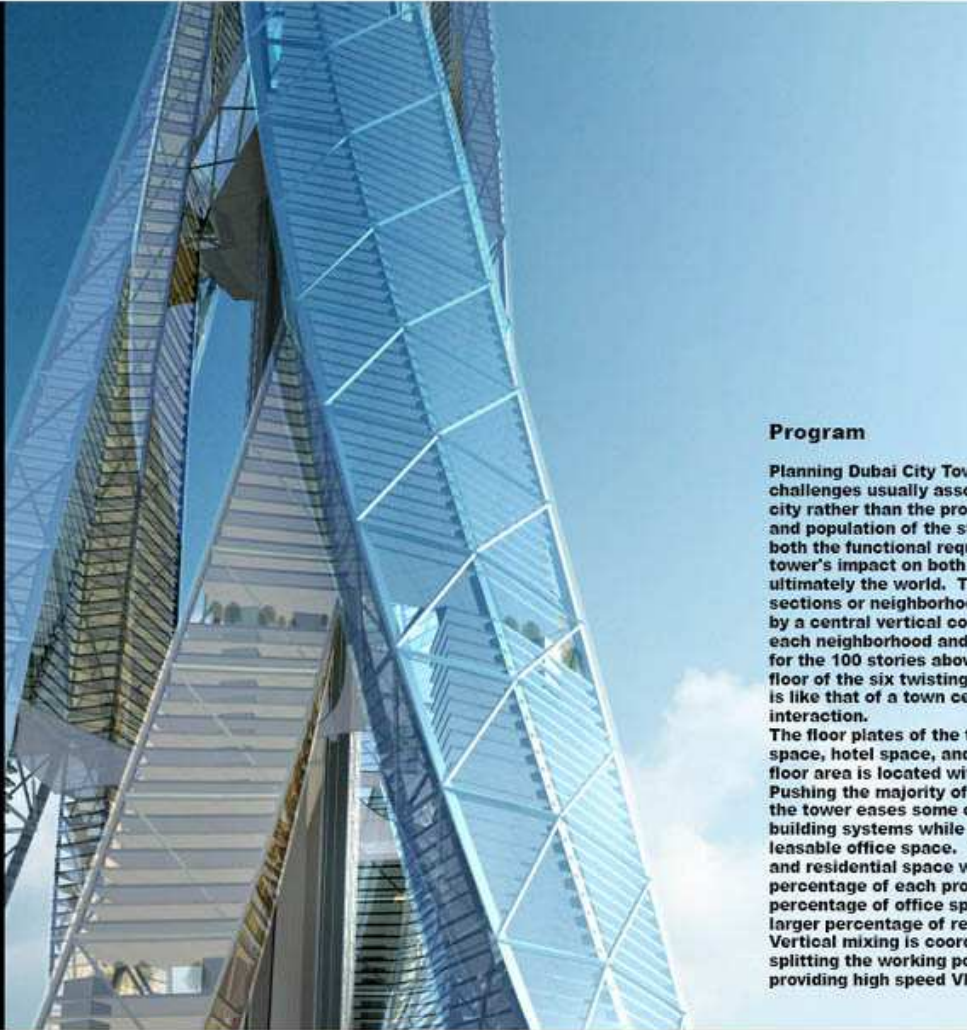
2400m

Dubai City Tower is situated on the coast straddling the land and the sea. The project's siting links the tower with both Dubai and the world. The base of the tower rises six stories above ground and descends fifteen stories below ground occupying a circular foot print of one million square feet. The tower's base houses a convention center, retail, event spaces and VIP self parking. The fifteen stories below ground house self and robotic parking to handle the load of the 6 towers that rise 1.5 miles above. The size and proportion of the base fits within the legs of the tower relating more to the ground level pedestrian. Rather than create a large street wall, the edges of the base pull back at each level drawing the eye upward into the void created by the rotating buildings of the tower. Where the rotating building strands relate to the image of the tower at a distance, the base and physical connection to the sea grounds the project in the city of Dubai.



VERTICAL CITY

INTRODUCTION



Program

Planning Dubai City Tower creates opportunities and challenges usually associated with the master planning of a city rather than the programming of a tower. The sheer scale and population of the structure forces the design to look at both the functional requirements of the interior as well as the tower's impact on both the immediate surrounding and ultimately the world. The Tower is divided into four 100 story sections or neighborhoods linked via circulation and services by a central vertical core. Sky Plazas mark the ground floor of each neighborhood and act as green space and leisure areas for the 100 stories above. Shops and markets fill the ground floor of the six twisting buildings rising above. The experience is like that of a town center bustling with activity and social interaction.

The floor plates of the tower are filled with a mix of office space, hotel space, and residential units. 65% of the Tower's floor area is located within the first 100 floors of the tower. Pushing the majority of the tower's bulk to the lower portion of the tower eases some of the burden on the transportation and building systems while maximizing the amount of prime leasable office space. Vertically there is a mix of office, hotel and residential space within each neighborhood. The percentage of each program changes vertically with a larger percentage of office space located closer to the ground and a larger percentage of residential located higher in the sky. Vertical mixing is coordinated with the internal elevator layout splitting the working populations from the residents and providing high speed VIP express service to designated areas.



VERTICAL CITY

