#00981848 Fluid Foundation

A system of undulating planes for human occupancy is Fluid Foundation. The Santa Monica Pier is a space that separates people from the land and brings them to uncharted territory which is the Pacific Ocean and this extension of the pier exemplifies this experience. Water has always been known as a barrier to humanity because of its lack of solidity. It creates an experience like no other to have your back to the land and face the ocean, but the walls are still there. Humanity still separates itself from this voided space. Fluid Foundation breaks those walls; it brings the ocean to the ground plane and creates spaces of interaction, and spaces to build upon. A foundation on the ocean.

Knowing that the site was on water, the habitat and the purity of the surrounding water was a major concern. The area near the breakwater is considered a reef which is full of unique habitats, all which have different needs regarding water purity and nutrients. For human consumption, a cycle through a reverse osmosis system cleanses the water to a drinkable level but to bring that water back to the ocean would not provide the proper nutrients to rejuvenate the habitats in the reef. The process that Fluid Foundation takes to restore water for habitats is the natural processes of coral purification. This natural filtration method is brought to this artificial system by the Biorock technique, which is to pulse DC energy through metal, to accelerate coral growth on the anchoring system of the fluid foundation system.

The undulating plane that makes Fluid Foundation is a system of buoys linked together like a chain. Some points of the surface are fit with a motion powered high pressure pump, the Searazer technology. These pumps are systematically place on the outward facing side of the site so the pumps obtain the maximum level of motion for more water and speed. The pumps are all connected underwater through a series of tubes connecting to one point, the docking station. The docking station seems like a common dock: wood planks, concrete pillars, iron fences; but the dock is fit with twelve reverse osmosis machine below to cleanse the water that is being pumped inside. In between these two systems, a bascule bridge connects or dis connects the two systems. The bridges physically and symbolically connects the two realms of water, the one side which feared water and levitated itself above it, and the other that encourages that strength of the ocean. This bridge lifts at night, when boats must pass, and when waves get too powerful and becomes a hazard to visitors to the site.

This foundation gives an experience to the ideals of renewable energy. Most techniques are so nonresponsive: windmills, solar panels, heliostats; they are objects utilized for full efficiency with no human value to them. This Fluid Foundation breaks these theories. Bringing renewable energy not only an aesthetic value but creating an experience coupled with the idea.

As the surface of the site constantly undulates with the waves and pumps water to land, the surface shows a façade of the conceptuality of renewable energy with a sea of sails. Constantly swaying and radiating light, these sails harness energy from the sky and by the strength of the wind, which is also being amplified by the movement of the ocean. These sails consist of three layers, a layer of Heliotek Organic Thin-Filmed PV Panels on both sides and one OLED panel in the center, which would light up at night and reflect the colors of the Santa Monica Ferris Wheel. To hold these layers up, there will be axes made of recycled polypropylene shells and filled with a polypropylene honeycomb core. Polypropylene is a durable, strong, flexible material that can be made from recycled materials. These technologies create a strategy to capture what nature has given humanity in such a natural environment.

Fluid Foundation is a system of technologies working in sync with nature meanwhile providing to the people back on land. Beneficial to sea live and human, this is a foundation on society and a step forward in the evolution of renewable design.

Technology Description:

Heliotek Organic Thin-Filmed PV Panels- A Photovoltaic Panel made with organic materials with a 7% efficiency rate. The PV Panels also has a transparency rate of 40%. (Heliotek, <http://www.heliatek.com/en/heliafilm/technical-data>)

Searazer- A high powered pump powered by air pressure. The air pressure is made from a casing being lifted and lowered by the waves over and over again. (Searazer, <http://www.ecotricity.co.uk/our-green-energy/our-green-electricity/and-the-sea/seamills>)

BioRock- A system applied to underwater structures that pulses DC energy through which increases the accretion rate of the metal. This accretion is called Biorock which increases coral growth by 200%. (Biorock Benefits, by Thomas J. Goreau)

Energy Output:

E=A\*r\*H\*PR

A= Area of surface generation= 41,747m2

r= 7%

H= 6kW/day= 2,282.75

A\*r\*PR= 6,670,857.5 kW/hour= 6670.8575MW/hour

PR= Shading=.6

Dirt & Dust= .02

Wiring Loses= .03

AC/DC Converter= .1

Temperature= .5

PR= .65-100= .35

E= 41,747\* .07\*2,282.75\*.35= 2,334,391kW/hour

2,334,391 kW/hour= 2334.391 MW/hour

Water Output:

1 Searazer Pumps = 84,000GPD

84,000GPD x 18 Searazer Pumps= 1,644,600GPD

Reverse Osmosis Station:

35% brine water pumped to onshore cleaning sites such as the S.M.U.R.R.F. Facility

65% potable water pumped onshore

11 Reverse Osmosis Stations = 1,060,000 GPD potable water

450,000 GPD brine water