

HexaBarnacle

Like a barnacle colony, HexaBarnacle relies on the intertidal flows of the Santa Monica Bay environment to thrive and generate renewable energy. A barnacle's shell is constructed of six calcite plates and is exposed to direct air and sunlight protecting the life inside. The arthropod species acts as bio filters that cleanse water systems and improve water quality. The grounded sculpture is fabricated to act as a system that filters seawater, harvests solar energy, and in turn creates habitat for existing marine life.

Water filtration treatment is vital in Santa Monica Bay due to adjacent environmental impact from pollution of the Tapia Sewage Plant leak that formerly contaminated the Malibu Creek habitat and oceanic waters after storm water runoff emptied residue into the bay. HexaBarnacle serves to create opportunity for water filtration through the use of fabricated marshlands integrated inside each cell. The sculpture simultaneously takes advantage of the surface walls to harvest solar energy through the use of transparent photovoltaic film in effort to produce renewable energy and promote a sustainable environment to the public through an outdoor classroom setting where the public can engage and witness planted ecologies. Public use to the first portion of the living sculpture will be accessible through a bridge that connects from the pier.

HexaBarnacle is influenced by the study of barnacle cluster formations and the form of the shell itself. Integrating the sculpture to sustain habitats is a metaphor to the life inside a barnacle. The sculpture allows for people to experience the overlapping levels of structure through ramps and stairways that also act as seat walls to view and observe. Transparent photovoltaic film will allow for see through viewing of the habitats all the while acting as surfaces that harvest solar energy. Color play of the film will be experienced by the public in a space where the sculpture is oversized and serves ecological scale rather than human all the while carrying people through the space in an interactive setting.

Antedating HexaBarnacle to a setting of 10 years later leads to a fabricated ecological sculpture that provides habitat to marine life through an established nursery among the marshlands which is beneficial for the food web ecosystem and recreational fishing. HexaBarnacle becomes an extension of the Santa Monica Pier where the public can engage with marine ecology and experience a setting that generates renewable energy for the pier.

Materials

Hexabarnacle is composed of porous concrete, stainless steel, tempered glass, and photovoltaic film. The dimensions of Hexabarnacle consists of 360 meters in length and 16 meters wide for the connecting bridge. The entire structure has a length of 660 meters long with varying widths of 40 meters for the smaller hexagonal shapes to 108 meters to the largest.

Environmental Impact

Creates opportunity for water filtration through the use of fabricated marshlands integrated inside each cell which also increases the fauna's diversity surrounding the bay. Sculpture simultaneously takes advantage of all surfaces to harvest solar energy through the use of transparent photovoltaic film. This Photovoltaic system will provide an average of 112 MW per year. Hexabarnacle brings opportunity for education through outdoor classroom settings where the public can engage and witness planted ecologies.