LOW-TECH MEETS HIGH-TECH

Soil is the most basic and humble construction material. There cannot be anything more sustainable than using what is right under our feet. Earth will ideally be sourced from the very site and then converted to compressed, stabilized earth blocks. From this, a set of catenary vaults will be created by our team. This is a very old technique in vernacular architectural traditions across the world. Attached to roughly half of the south facing surfaces of the doubly curving vaults will be a flexible film of advance photovoltaic-cells. This is a coming together of two very different kind of material cultures.

CONSTRUCTION TECHNIQUE

Thin Film of Organic Photovoltaic Cells over south facade
Compressed Stabilised Earth Blocks
Earth Block Construction

ZONING

FOOD CULTIVATION AREA
RECREATIONAL SPACES
FIRE BALANCING
BONFIRE AREA
EXHIBITION WORKSHOP

Longitudinal Section

Piezoelectric Bridge

The piezoelectric wooden bridge generates electricity when people walk over it. The wood is accounted to produce one twentieth of the piezoelectric power to quartz. The bridge harvests energy when people walk, jump or dance on it.

Organic Photovoltaic cells

OPV (also known as OEC for organic solar cell) uses organic polymers to absorb sunlight and transport electrical charges. These are rolled onto the southern side of the structure. Attached to roughly half of the south facing surfaces of the doubly curving vaults will be a flexible film of advanced photovoltaic-cells. This is therefore a coming together of two very different kind of material cultures / languages. We estimate that the 15,366 Sqf of South, South-East and South-West facing vaulted surface can accommodate roughly 188 kWp solar panel system. This will produce approximately 50,755,130 Watt-hours of electricity every year.

Architectural Precedents

Vaults and construction techniques of architects like Gaudi, Derrida. Antoni Gaudi were studied to understand the limits of such structures. These architects are known for blending their designs in nature with a contemporary twist. The vernacular edible construction techniques of Nevada are reflected in the design.

188 kWp solar panel system
320,755 kilo-Watt hours of electricity every hour
Monetary saving: 35000 USD