Natural building Exhibition at GRIHA Summit, 2023

Located at the Plaza of **India Habitat Center (IHC)**, New Delhi, India.

The project will be executed in the collaborative efforts of **Studio Shunya** and **Baans Infra**.

Studio Shunya is a **sustainable architecture, builder, and research studio** with expertise in creating **zero-energy buildings** not just in the builtform but also in the functions, in materials and textures.
The aim is to provide ecological and socially sustainable designs by using "local" resources like natural materials such as mud, stone, wood, lime, straw, cow dung, labour and techniques specific to the site and the region depending on the location and their surroundings. The idea is to always give back to the earth, whatever we borrow while constructing and to create a selfsustaining aesthetically attractive experiential spaces. Our earnest and dedicated attention to individual project translates into an intimate relationship between that space and the user who experiences it.

Baans Infra is a leading **sustainable design** and **construction company**, dedicated in constructing eco-friendly structures that combine beauty and functionality expertise in Bamboo works. With a clear Mission of creating exceptional buildings while minimizing their impact on the environment; Baans Infra has committed to sustainability drives in every aspect of their work, from inception to completion. Founded in 2015 by a passionate team of architects, designers, and visionary core members, it has emerged as a prominent player in the green building industry. They firmly believe that sustainable design is not merely a passing trend, but a crucial response to the urgent environmental challenges confronting the planet.

The proposed design will comprise of a parametric Bamboo roof structure with an enclosure of mud walls.

The materials used are

- Mud walls
- Two walls exposed with mud finish.
- Lime plaster finish as base coat and final coat
- Bamboo for roof structure,

Why Mud ?

- It is a perfect material for a **Circular Design**, needing little or no energy from source to sink, from sourcing in the raw stage (in and around your site), to using it as building materials and then demolishing (will go back to the earth), creating a zero-energy building.
- It provides **Thermal Insulation** when built in right wall thickness creating a temperature difference of 10-15 degrees Celsius between indoor and outdoor environment. This reduces the load of HVACs inside the house and creating an ambient comfortable indoor environment for the users.
- It is a **Breathable Material**, which means it allows air movement from indoor to outdoor or vice-versa which helps in controlling the humidity level.
- It makes perfect sense to make mud buildings in a country like India where labour is abundant and people have basic capacity to build with simple materials.

- It has **Zero VOC** i.e. Volatile organic compound, maintaining good indoor air quality unlike other construction materials.

- Creates a sense of belonging to nature and culture.

- As it's a material which is **Handcrafted** , it can easily be moulded in any shape and form creating functional yet aesthetical buildings.

- The material is Economical and Abundantly Available mostly everywhere.
  With proper roofing system and finishes it can withstand most climate conditions even heavy rainfalls and extreme heat. Highly Durable.

- It can be integrated with conventional building materials like cement and steel

Why Lime ?

- Lime plaster is a **BREATHABLEMATERIAL**',
  meaning air can pass through it, unlike denser cement, or polymer-based renders and plasters. This means that when moisture forms it can escape — so no damp issues to worry about. One of the biggest causes of dampness in old properties is the use of modern, impermeable materials.

- It is **an eco-friendly** option.
  As well as requiring less energy to produce than many other types of modern plaster, lime also has the ability to absorb carbondioxide from the atmosphere. Because it absorbs carbon, it can eventually become carbon neutral.

- It is very **Long-lasting**.
  Because it is made of such tiny particles, lime plaster is able to penetrate deep into even tiny gaps forming a tight bond. Moreover, lime plaster becomes stronger over time as calcite crystals form. It can stay for more than 100 years. Most of our old forts have lime plaster finish.

- **Varied Finishes**
  Lime plaster can have so many finishes, marble-like shine and softness, rough finish, dirty patchy finish, waterproof finish (tadelakt) etc.

- **Improves indoor air quality**
  They have less VOCs (Volatile organic compounds) which helps in improvising indoor air quality.

Why Bamboo?

- **Structural Strength**
  Despite its lightweight appearance, bamboo possesses incredible tensile strength, making it a viable alternative to traditional building materials.

- **Foundation Systems**
  Bamboo can be utilized in the construction of foundation systems such as pile foundations. Bamboo piles are known for their strength and resilience, making them an ideal choice for low-rise buildings in areas prone to earthquakes or unstable soil conditions

- **Roofing and Flooring**
  Bamboo is widely used for roofing and flooring purposes due to its durability and aesthetic appeal. It can be processed into bamboo shingles or tiles for roofing, providing an eco-friendly alternative to traditional roofing materials.

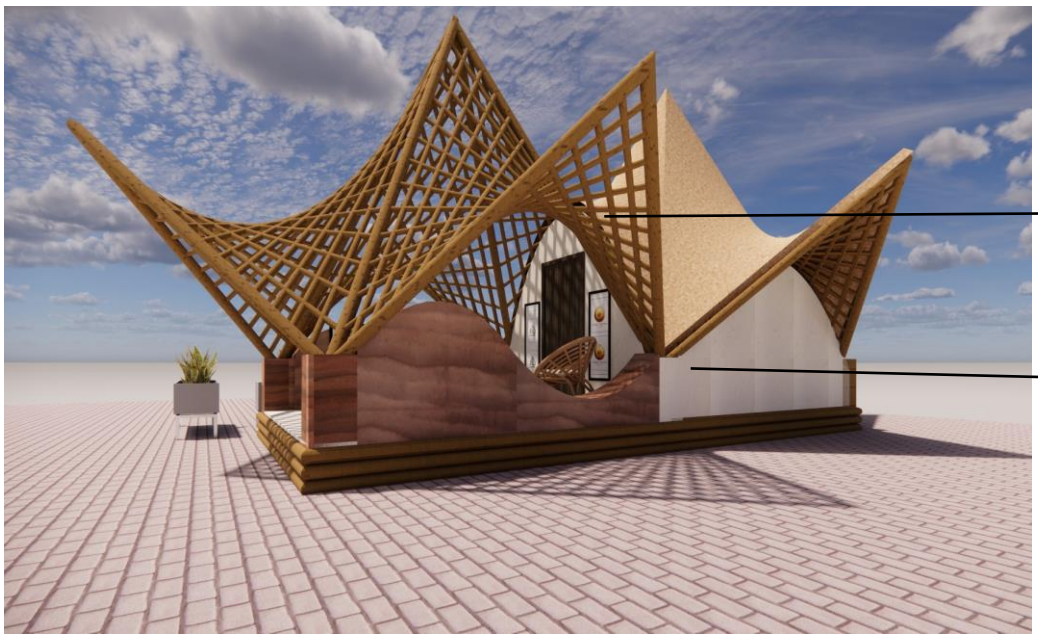
- **Wall Systems**
  Bamboo-based wall systems have gained popularity due to their thermal insulation properties and sound absorption capabilities. Bamboo walls provide natural ventilation and can contribute to energy efficiency in buildings.

- **Architectural Design Elements**
  Its flexibility allows for creative and innovative designs, enabling architects to explore curved or organic shapes in their projects.

- **Environmental Sustainability**
  One of the most significant advantages of bamboo in construction is its eco-friendly nature.
- It is a renewable resource, growing rapidly and requiring minimal water and chemical inputs.

Furniture is designed using sustainable materials like **Bamboo, Cane** and **Rammed earth**. Low carbon materials are an important part of reducing emissions created by the built environment. These furniture made up of natural materials being **eco-friendly** in identity also have a distinctive **aesthetic appeal.**

Our concept:



Thank you!