

# NATURE INTERPRETATION CENTRE AT PALAVA MUMBAI

## PROJECT BRIEF

Based on the aesthetics, elegance and Eco-friendly concept of the project, Nature Interpretation center project has been awarded to Architects Studio Shift, New Delhi for architectural design led by Ar. Sanjay Prakash. The building is located in Palava City of Lodha group at Mumbai. The proposed building consist of Ground floor with library on the mezzanine floor. Building has arch shaped irregular geometry in vertical & horizontal directions and also consists of viewing deck with staircase, Corridors, water tank, Circular Staircase with steel column and precast steps. The material used for these structures are Bamboo, Structural Steel, RCC and Rammed earth. The built-up area of the building is 8855 Sq. Ft.

The construction is being done with keeping in mind the strength, economy, durability and Eco-friendliness of the materials which are being used.

The plinth Beam is provided at different levels due to the use of bamboo (in building) and steel (in corridor) columns pockets in RCC pedestal.



## Structural Geometrics

The curve shape and irregularity of the structure made it much complex to analyze and design. The modeling and design of the structure was done in the Staad-Pro software and properties of the bamboo and rammed earth required for analysis were manually calculated and used in Staad. The shape of the pedestals are of different types

due to the number of bamboo as a unit (Straight and in clined). The building is designed as RCC-Bamboo-Steel hybrid structure. The superstructure is designed using Bamboo and rammed earth to give it a unique identity, whereas RCC is used in the substructure. A Bamboo column consists of three or more number of culms bundled as an integrated unit. It is analyzed as a hollow tubular structure (not perfectly straight). Roof of the structure was considered as a non-structural member but load of the roof sheeting was considered during the analysis and design. The columns are cast in various shapes, i.e., in rectangular, square, circular and irregular shape.

Foundation of this structure includes isolated, combined and strip footing as well. A mezzanine is designed as a balance cantilever with columns in one grid only. A spiral stair case on single column also enhances the grace of the structure. The various key points of design and construction in this project boosts the aesthetic and sharp view of the structure as well as the productivity of design.

Rammed earth wall is like a full masonry construction in which earth-walls form the primary gravity load bearing elements of the building transferring load b/w roof and floor to the foundation and designed as per international standards.

## Challenges

Construction using bamboo is a challenging task. It require very high precision and also Curvature in the bamboo is hard to maintain. Bamboo to bamboo connections are also challenging. Construction of rammed earth is equally challenging. Rammed earth construction require careful execution

with no compromise in the quality. The execution of the difficult task requires firm tactics in work strategy. The contractor will perform its role with expected strength. Completing the site work in time without effecting the site surrounding is very difficult, as various



agencies are involved in construction.

## Salient features

- Irregular , unsymmetrical and arch shape of building
- Earthquake Zone-3, with Response Reduction Factor 4 and Damping ratio 5% is used.
- Viewing Deck with staircase and Corridor
- Bamboo as a design & construction material
- Rammed earth walls
- Mezzanine area with balanced cantilever housing library.
- Spiral stair case on single column

## Fast facts

Project Name: Nature Interpretation Centre at Palava city  
 Client: Lodha Dwellers Pvt. Ltd., Mumbai  
 Architect: Shift (Studio for Habitat futures), New Delhi  
 Structural Consultant: Skeleton Consultants Pvt. Ltd., Noida  
 Current status: In Progress  
 Working Team: Er. Mueez Khan, Er. Shubhankar Petal, Mr. Deviprasad, under the guidance of Er.(Dr) Abhay Gupta

Website: [www.skeleton.in](http://www.skeleton.in)