SECONDARY SCHOOL IN ROONG VILLAGE, CAMBODIA
2012-2014

PROGRAM AND APPROACH

Architetti Senza Frontiere was involved by Missione Possibile ONLUS in building a new secondary school in Roong (50 km South of Phnom Penh), a village located in an agricultural area characterized by strong industrial transformations.

The building we designed measures 62.80 m x 10.20 m and it is conceived as a linear block with six classrooms distributed by a large hallway/porch. The toilet location defines the boundary of future extension area that will host educational workshops and will divide the open space into two different courtyards.

Design attention has been focused on the elements that define different spaces: classrooms, hallway and backyard. Classrooms are the place of teaching, while corridor represents a place of meeting and sociality. For this reason the project enhances the hallway beyond its specific function: it is also a porch that measures more than 3 meters wide and 5 meters high at the hipped roof. Two open-air rooms interrupt the classrooms sequence in order to enrich the quality of connective space.

During the rainy season as in the hottest months the hallway is the place to meet and play. We reduced the separation between classroom and hallway by the use of bamboo panels that allow a perfect cross-ventilation.

The hallway as a collective space to meet and play together.
The porch was designed with a mesh made of bamboo strips nailed on a polyurethane sheet that separates bamboo strips from the ground. The blocks, laid with cement mortar, had a vertical stiffening system with one iron bracket connection between bamboo beam and RC top beam. From a thermal comfort point of view, some simple strategies were set: first, the building has one large pitched roof North-oriented in order to decrease the angle of incidence of sun radiant and keep classrooms cool, even in the hottest days of the year. The porch is oriented N-O/S-E and the hallway/porch is ventilated to function as an outdoor climate.

The blocks, sun-dried (30 x 15 cm, 10 cm height) and bamboo beams so that they could be easily replicables by unskilled workforce. We wanted to experiment the use of local materials, like soil and bamboo by using them with contemporary forms and industrial and constructive procedures. We designed the soil blocks vertical stiffening system, making the bamboo beams so that they could be easily replicables by unskilled workforce. Experimentation in walls: making the bamboo mesh, reinforcement, fixing system, making the bamboo beams so that they could be easily replicables by unskilled workforce.

Experimentation in foundation: making the bamboo mesh, reinforcement, fixing system, making the bamboo beams so that they could be easily replicables by unskilled workforce. Experimentation in structure: load bearing bamboo structure. Bamboo beams - concrete beam - connection.

1. Clay plaster added with cement and colour pigments, wall made by soil blocks 30x15 cm, 10 cm height
2. Concrete screed
3. Clay plaster added with cement and colour pigments to increase pouring rain wetting effect
4. Wooden door with bamboo transom
5. Fibro-cement cover roof thickness 1.2 cm, fixing system, making the bamboo beams so that they could be easily replicables by unskilled workforce
6. Iron bracket connection between bamboo beam and RC top beam
7. Reinforced concrete top beam
8. Eaves and water recovery system to an underground water tank
9. Load bearing bamboo structure
10. Pebbles and stones to curb water drainage
11. Ground water absorption system

MATERIALS AND CONSTRUCTION

International Prize for Sustainable Architecture

11th competition 2015