Philippines Typhoon Relief Phase III

Cement Bamboo Frame Technology (CBFT)

All Hands and Hearts

Why Cement Bamboo Frame Technology?

The importance of sustainability in Construction

- Sustainable that provide livelihood to farmers
- Strong root network enables soil stabilization and water table rise
- Only 3-5 years growth for structural grade bamboo
- **60% less carbon footprint for each construction compared to the conventional systems**
- More comfortable indoor climate in the buildings, resulting to less energy use during occupation
- Earthquake and typhoon resistant. As strong as steel

Source: Base Bahay Presentation

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Local partnership

Base | HILTI The Foundation. Initiated by

WE BUILD
BEYOND TODAY

SERVICES DONATED BY THE LOCAL PARTNER

- Review of the preliminary **design**
- Final design and development of the complete **set of plans**. Including:
  - 3 months lead time to produce documentation
  - **Structural calculations**
  - Architectural and engineer signature
  - Request of the **building permit**
- Elaboration of the construction **bill of quantities** including:
  - Materials
  - **Labour hours and cost**
- Support for the site preparation.
- **Bamboo construction training**
  - TESDA Accredited
  - Community and AHAH staff
- **Person supervising the construction** for the entire construction work

Source: Base Bahay

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Construction systems - Base Bahay design

Materials	
Roof	CGI, Wood purlins & Bamboo rafters
Walls	Cement bamboo frames (CBFT)
Doors and windows	Wood frames
Footings	Concrete footing and concrete slab

Source: [Base Bahay]

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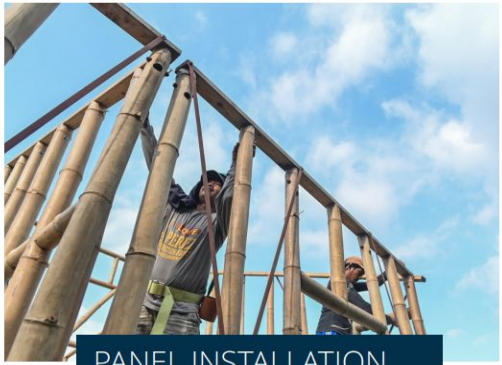
Construction process

EXCAVATION

FOUNDATION

CONCRETE SLAB

PANEL FABRICATION



PANEL INSTALLATION

ROOF STRUCTURE

Source: Base Bahay Presentation

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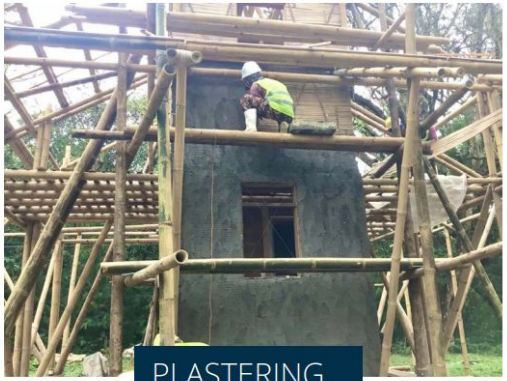
Construction process

FLATTENED BAMBOO INSTALLATION



PLASTERING

CHILDREN'S VILLAGE FINISH

INTERIOR FINISH WITHOUT PLASTER

INTERIOR WITH PLASTER

Source: Base Bahay Presentation

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School building 2 classroom 3D model

FLOOR PLAN

AREA TABULATION

SPACE	LENGTH	WIDTH	AREA
CLASSROOM 1	9.08	7.15	64.89
CLASSROOM 2	9.08	7.15	64.89
TOILET 1	2.68	2.05	5.48
TOILET 2	2.60	2.05	5.33
STORAGE	1.88	2.05	3.84
CORRIDOR	20.04	2.00	40.07
TOTAL AREA			184.50

Source: Base Bahay

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School building 2 classroom Sketch

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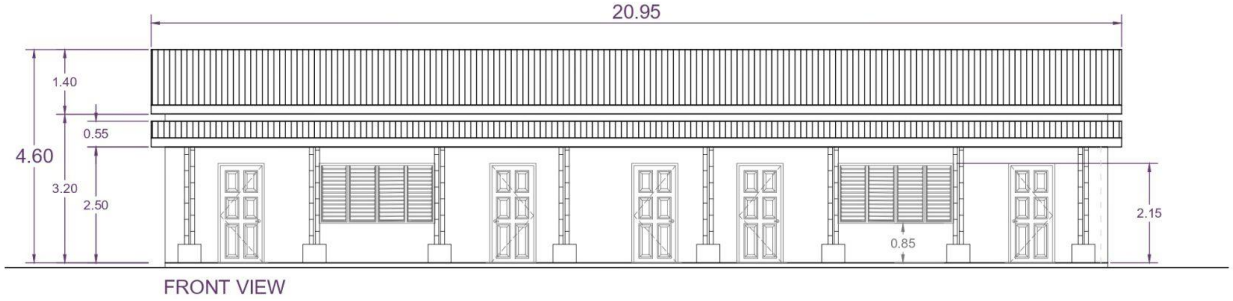
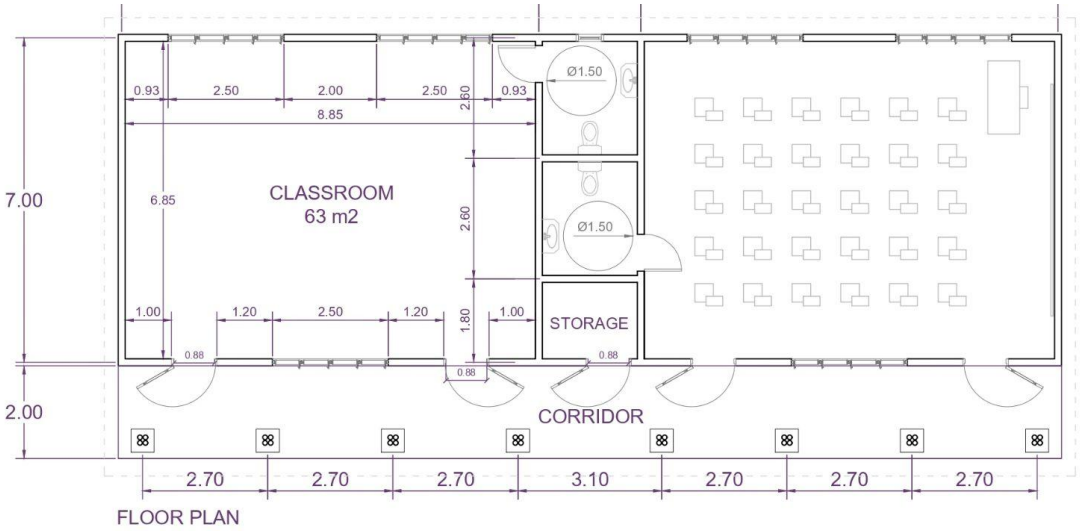
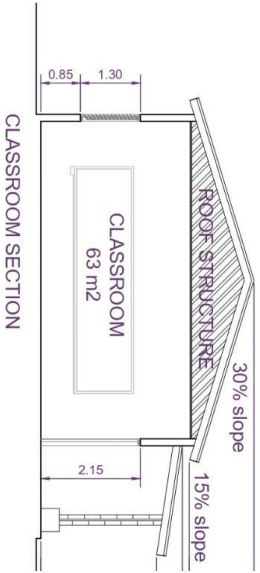
School Building: 2 classroom plan







Cement Bamboo Frame Technology

Saint Francis Elementary School

Cement Bamboo Frame Technology

Potential Partners

Base Bahay

- BASE is a foundation that provides alternative building technologies to enable a network of partners to build quality socialized homes. Homes that are Comfortable, Affordable, Disaster Resilient, Ecologically Friendly, and with Social Impact.
- BASE develops technologies using locally grown and renewable materials to create housing envelops and designs suited to the needs of local communities.we focus on affordable housing solutions geared toward social development and impact.

Kawayan Collective

- Their mission is to elevate bamboo as a sustainable, durable, beautiful building material and our vision is better homes for all Filipinos.They organize the collection and treatment of bamboo poles for construction grade quality that rivals cement block and steel and imported building materials.
- Kayawan opened April 1, 2019 with a team has over 20 years experience treating and crafting bamboo.

Hilti Foundation

- The Hilti Foundation is a philanthropic non-profit organization based in Liechtenstein.
- The Foundation is a joint venture of the Hilti Family and the Hilti Group.
- The Foundation has pursued sustainable goals, focusing its efforts on the following thematic areas: Music for Social Change, Affordable Housing & Technology, Economic Empowerment, Emergency Relief and Maritime Archaeology: Franck Goddio

Other potential partners

Cemex Philippines Foundation
Gawad Kalinga
Habitat for Humanity