Plastered Bamboo Project

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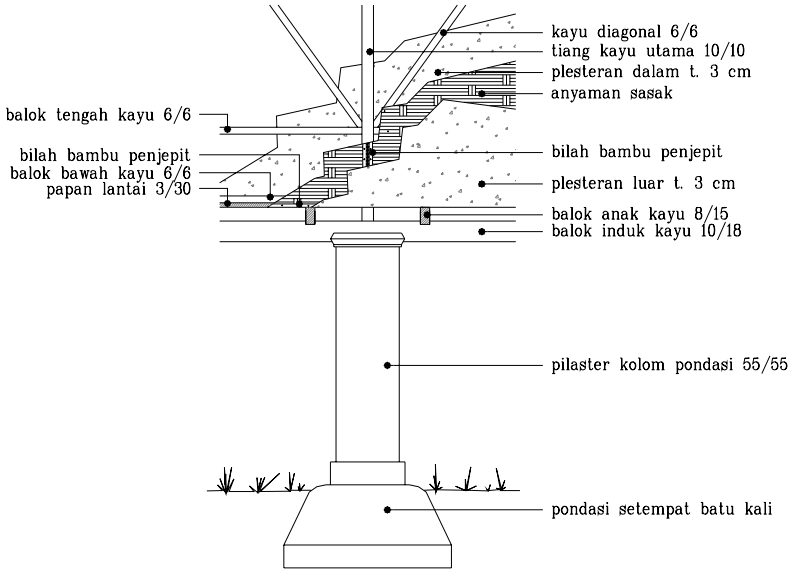
Why bamboo? Bamboo is a renewable resource, locally available in almost all Indonesian's regions, earthquake resistant and low-cost. Treated bamboo is an excellent and durable alternative to any timber and tropical hardwoods. Over the past several decades in Java (and in general in Indonesia), much traditional knowledge on how to build with bamboo has been lost, as desire for "modern" looking cement structures has infiltrated rural communities world-wide. Bamboo however, is still a much used material and in high demand for handcrafts and furniture.

Why plastered bamboo construction? Plastered bamboo construction is the development of bamboo construction to replace brick in common image of 'permanent house'. Like most houses, in plastered bamboo house the bamboo was hidden beneath plaster, and indeed, it looked like it was made of brick. This was the solution to increase the value of bamboo house since bamboo house was defined as poor timber and temporary building material in rural community. They preferred to use brick although they have to destroy their farm as brick mining instead of using their nearby bamboo.

The development of plastered bamboo construction was also to provide a better concept of housing in emergency cases. With the prefabricated bamboo panel that could be made and stored long before disaster occurred, the quick response building can be built in a day after disaster to provide emergency shelter to the victims and can be plastered gradually on their own to become their permanent home.

Study on Colonial Plastered Bamboo Construction in Jatiroto (1998-1999)

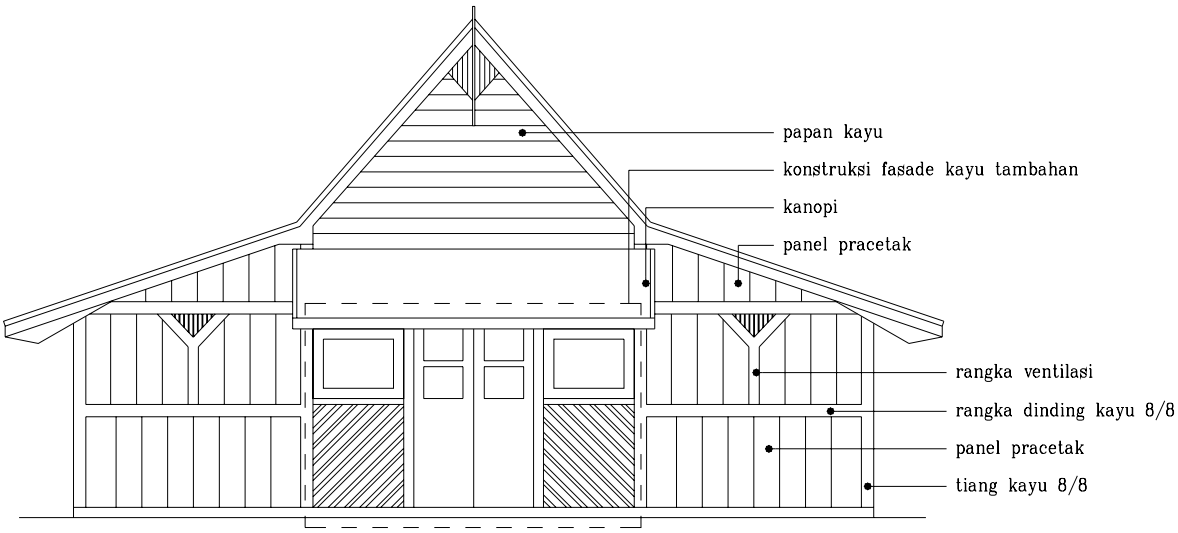
These houses were built in early twentieth century to accommodate Dutchmen employee in sugar factory in Jatiroto, East Java. They have been in service for almost a century.



They used wooden skeleton and bamboo woven mat in the outer skin before plastered. The wooden frame could be seen from the interior, but the exterior had an image of brick wall construction.

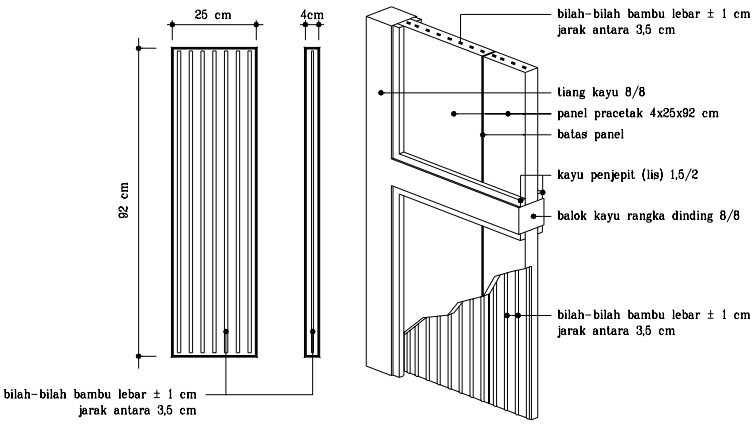
A few damaging house gave us solid proof of the bamboo mat as inner part of the wall. The skeleton could only be seen from the interior. They used mortar plaster by mixing sand with lime.

Study on Colonial Bamboo-Reinforcement Precast Construction in Gempol, West Java (1998-1999)



Front elevation of Gempol House. Precast concrete with bamboo reinforcement dominated the façade. Built in 1923, these 101 houses used to accommodate local colonial government employee in Bandung, West Java.

The walls made of precast panel have wooden skeleton. The lines between panels can not be seen clearly because covered by annually lime coat. This original house was the only left.



The detail of bamboo splits reinforcement in precast panels (left).

The detail of panel construction to the wooden frame (right).

Plastered Bamboo House Prototype in Pasir Impun, Bandung (1999)

Step 1: Bamboo workshop to produce prefabricated bamboo panel including wall and window frames.


Step 2: Land preparation and tie beam construction on site, in the same time with bamboo workshop.


Step 3: Erecting the prefabricated bamboo panel and constructing roof


Step 4: Plastering bamboo house to become ’permanent house’


Plastered Bamboo House as an Alternative of Earthquake Resistant House in Sukabumi, Indonesia (2000)

Erecting the prefabricated bamboo panel

Self-help and low-cost housing using plastered bamboo construction

The Prototype of Plastered Bamboo Wall in EBF, Bali, Indonesia (2005)

Bamboo panel prefabrication

Plastering the bamboo wall

Fisherfolk Community Center in Nagalawan, North Sumatra, Indonesia (2005)

Plastering process

Plastered bamboo house as Community Center

Community Center in Jatinangor, West Java, Indonesia (2005)

Bamboo panel prefabrication

Roof frame prefabrication

Bamboo panel erection

Plastering process and roof construction

Exterior view

Interior view