Coping with Climate Change events in the Sundarbans, West Bengal, India.

Shelter Meeting 11b
" Natural Disaster Preparedness"
1-2 November 2011. La Pastorale, Geneva.

Sujoy Chaudhury
Programme Manager
GOAL in India
www.goal.ie

Sundarbans

The Sundarbans is the largest single block of tidal halophytic mangrove forest in the world. The forest lies at the mouth of the Ganges and is spread across areas of Bangladesh and West Bengal, India, forming the seaward fringe of the delta. The forest covers 10,000 sq. km of which about 4,000 are in India. It became inscripted as a Ramsar site in 1992 and a UNESCO world heritage site in 1997.

It is estimated that about 4.2 million people live in the Indian Sundarbans

Sundarbans…….

- **Recurring natural disasters, inaccessibility and remoteness, complete lack of infrastructure and access to limited resources make these populations some of the very poorest in the world. Unsustainable practices, increase in population and increase in the intensity and frequency of natural events have stressed the coping capacities of the people particularly the poorest of the poor. The loss of homestead and agricultural lands has compelled large number of families to migrate as environmental refugees. As more and more land continues to be claimed by rising sea waters, newer families find themselves joining the growing ranks of refugees.**

GOAL's Shelter interventions in the Sundarbans

- **Following a tidal surge in 2007 , GOAL piloted an intervention to build disaster resistant houses for the poorest of the poor.**

Intervention logic

- Houses in the Sunderbans mostly of rammed earth and wattle and daub .
- Low plinths
- Heavy roofs placed on load bearing walls.
- Thermally comfortable
- Integrated design combining living spaces, storage and livestock .

Typology of failure

Typology of failure…….

Typology of failure……

Typology of failure…….

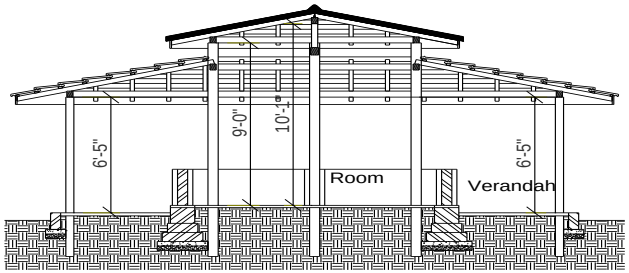
Typology of failure…….

Typology of failure…….

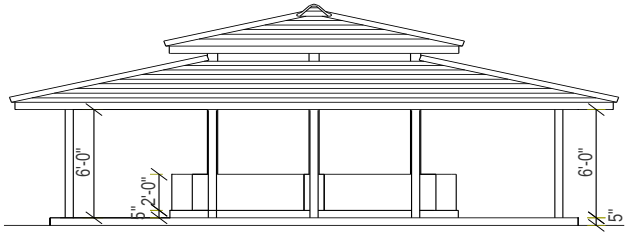
Construction logic

- Use of Vernacular architecture- integrated spaces for living , storage and livestock.
- Use of Low Carbon Materials
- Use of local construction materials and skills.
- Use of raised plinth.
- Use of a standalone reinforced core around which dwelling is developed.
- Core protected upto sill level with brick masonry.
- Roofing at two levels- one for the core and second level for the built up area around the core
- Roof understructure anchored to core but roofing material light and not tied down.

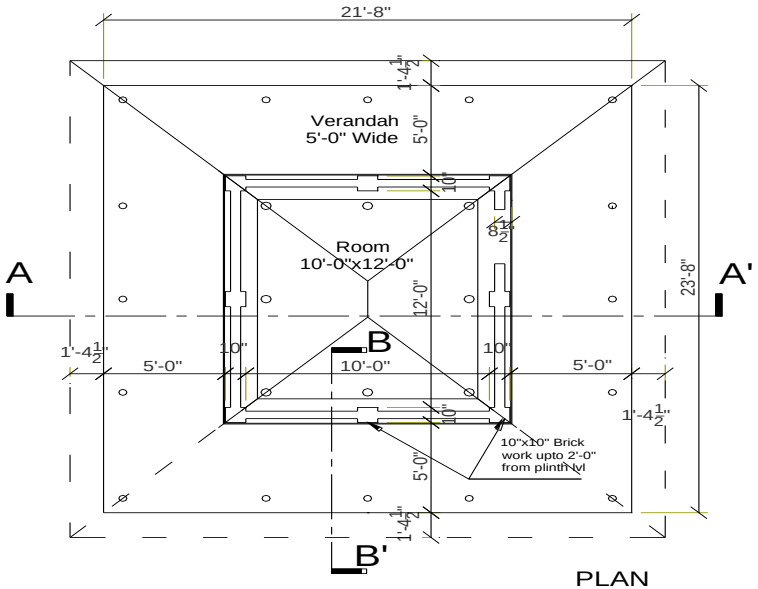
Construction Designs



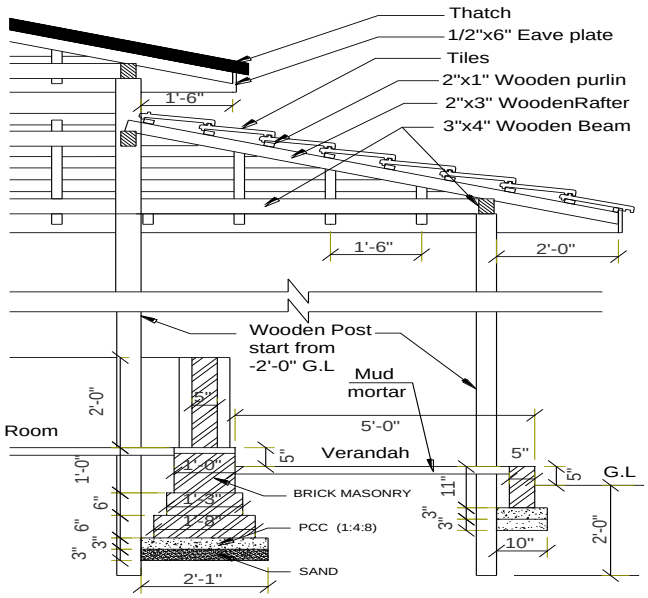
SECTION-AA'



ELEVATION



PLAN



DETAIL-BB'

Finished constructions

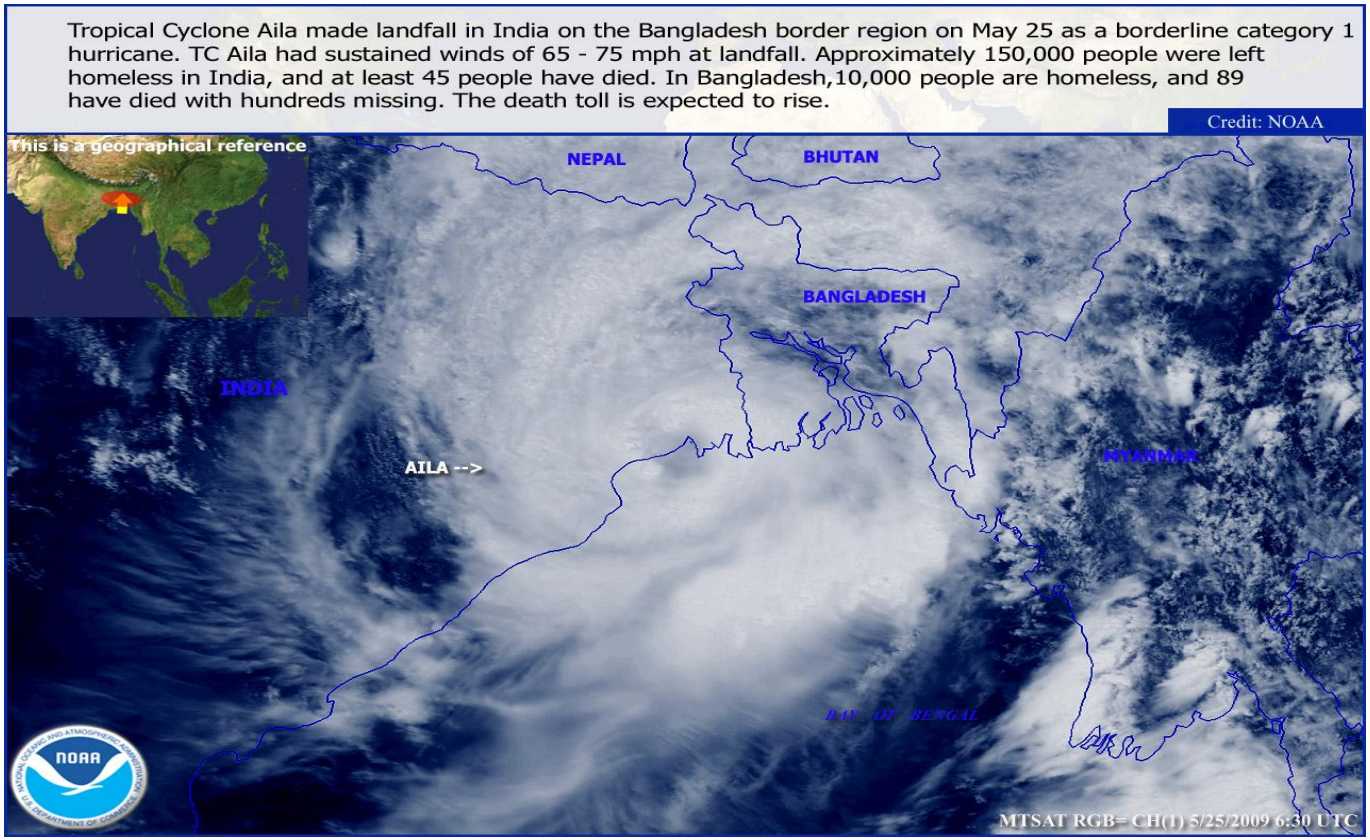
Finished constructions….

Finished Constructions…

Finished Constructions..

Results:

- All 265 houses constructed in 2007 withstood the Cyclone “Aila” in 2009.



Cyclone Aila and the tidal surges

Cyclone Aila and the tidal surges….

Learning.....

- Model fit for replication.
- However for the poorest of the poor, replacing roofing materials immediately after a disaster is difficult and need external support.

THANK YOU