

Cost-effective housing technology for rehabilitation of tsunami affected areas

This housing construction is the result of a technology that has been evolved in the mind of Architect Laurie Baker, which has been tested & proven during the past 40 years in India, was tested in Rural Sri Lanka during the past year. As the lessons learnt proved positive adoption of the technology to our conditions, we have trained a Team of Masons on the job, both on theoretical & practical aspects.



The process of training was further enhanced & improved to suit our conditions through jointly sharing and incorporating views from the organizations such as National Engineering Development & Research (NERD) Center and Center for Housing Planning & Building (CHPB).

The technology features.....

Brick wall with 'rat-trap bond'

- Strength is equal to standard 9" brick wall, but consumes 20% less bricks.
- The air medium that is created by the bond helps maintaining a good thermal comfort inside the building.
- As the construction is appealing to the eye from both internally & externally, plastering is not necessary.
- **100 square feet of this wall will cost only rs. 6454/- as against the traditional 9" wall that costs rs. 8759/-.**
- The overall saving on cost of this wall compared to the traditional 9" wall is about 26%.



The roofing technology - 'filler slab' methodology

- Consumes less concrete & steel due to the reduced weight of the slab by the introduction of a less-heavy, low-cost filler material such as rejected calicut tiles, clay pots, broken pieces of cement blocks & brick bats.
- This has enhanced the thermal comfort inside the building due to heat resistant qualities of the filler materials.



- An ideal mechanism for the congested low-income communities where land is scarce, but building a standard up-stair house is not a financially viable option.
- The roof can serve many other purposes by provision of space for livelihood tasks such as drying of incense sticks, crackers, lay fish and fishing nets which needs space can be done on this roof.
- It completely cuts off the use of timber for roofing, contributing to solve one of the major environmental issues - cutting trees.
- Reduction on the use of concrete too saves cement & metal about 40%.
- The soffit of this slab gives an attractive look and therefore, a ceiling is not needed.
- **If it is 4" thick, 100 square feet of this slab will cost only rs.13003/- as against the traditional slab that costs rs.16958/- .**
- The saving on cost of this slab compared to the traditional slab is about 23%.

Both these methods can be easily taught to a fairly-skilled mason through an on-the-job training.

A square foot of this construction costs rs.510/. A house with one bedroom, living room, kitchen & toilet with an extent of 350 square feet can be built with rs.175,000.00.

This technology has about **30% overall-saving** on cost of a building of traditional 9" construction. The structure has proven its strength to go up to three floors with the support of brick columns.

Provision of upper floor space by using 'filler slab' addresses the issue of land-scarcity while not demanding much space on ground. A 500 square feet house can be easily built on a 4 perch plot as shown in some of the plans proposed by us. Hence, in these designs, we have maximized the use of the plots, leaving various possibilities for extension of the houses at a later stage, which has been shown indotted lines.

In designing, we have thought of two basic categories of residents;

One is for people who lived on the reservation lands along the coast on temporary sheds etc. whose families are generally extended & large and, who will prefer many small rooms. For such families we have come up with options of many small spaces rather than providing few larger spaces.

The other category is the people who lived on comparatively interior lands in permanent houses, who are used to live in spacious rooms and, therefore the options with larger but few living spaces were designed.

For the purpose of maintaining consistency with the national level housing program, the cost of the options provided for both these categories cover an area of about 350 square feet with a uniformed cost of about rs.175,000.00 or 500 square feet with a uniformed cost of about rs.255,000.00.

However, we strongly believe that these designs can be considered only as a guide and decision-making on the type of house needed by occupants should be a consultative process prior to construction.

What ITDG can offer.....

As for assuring the credibility of the cost-effective technologies;

Development of a 'forum of all the trained practitioners' through networking,

Provision of post-construction supervisory services & advices,

Training the skilled teams and,

Linking up the trained teams for construction requirements through the forum are some the services that ITDG can offer.

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