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LOW COST BUILDING MATERIAL

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ABSTRACT

Now a days the various waste products from big industries has been converted into useful building materials which can be used during post earthquake housing construction, solving the problem of disposal on the one hand and providing better construction material at low cost on the other hand. Housing is the basic need of human being. But this is out of means of low income householder who constitute majority of the population in the country. Some agriculture wastes (as rice husk) have also be converted into building materials, which are very much useful during reconstruction phase as low cost building materials. The purpose of this paper is to highlight alternative low cost building materials for possible use in low cost housing having advantages on areas such as India where concrete or steel housing is expensive. A few low cost materials are developed and discussed in this report. The materials need for real construction of house is specified.

Keyword: Housing, construction, building material.

I. INTRODUCTION

One can say that low cost housing will be the construction using low cost material and only for the less income group, but it is not so. Construction of low cost housing by using the low cost building materials increases the access to buildings by low income group peoples. Low cost housing can be achieved by use of efficient planning and project management, low cost materials, economical construction technologies and use of alternate construction method available. Some alternative building can be made out of natural materials, while other can help to lower energy cost of the occupant once built. People have begun to realize the folly of the wholly thing and are speaking ways and means of building house of reasonably good quality and capable of fulfilling their real needs.

1.1 Basic Requirement

There are following basic requirement in designing house.

1. Strength and stability
2. Comfort and convenience
3. Protection
4. Resistance to moisture penetration
5. Thermal insulation
6. Durability
7. Safety against fire

. Availability of natural fiber in India and it application in building materials.

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Item	source	Application in building material
Rice husk	rice mills	As fuel, for manufacturing Building material and products.
Groundnut shell	Groundnut oil mills	Manufacture of building panels, Building blocks, roofing sheets.
Jute fibre	Jute industry	For making door shutter, chip Boards.

The properties of building material in consideration

Sr No.	properties	Bamboo	Concrete blocks	Ferro cement	Fly ash Bricks
1	Structural	work better with moisture in shear force.	can be given strength as per Required.	Light weight, Flexibility, Lightness.	Reduce pollution, Save energy, low Water penetrates.
2	Thermal	Excellent	Excellent	Excellent	Excellent
3	Temperature and water Resistance	moderate	Excellent	Excellent	Excellent

1.2 Material used

The various building materials available can be divided into two types and they are:-

1. Traditional materials

These materials serve the basic need of the majority of the population. These have very useful properties. These are made structurally and functionally acceptable.

2. Conventional materials

The conventional materials are those, which have been obtained by using the modern technologies and can be mentioned as fruit of research and adopted to indigenous requirements.

Bamboo mat board

Raw material source	Bamboo grass, species.
Material for production	Polymeric resin, bamboo.
Applications	Door/window frames, false ceiling.

Bamboo corrugated roofing sheet

Raw material source	Bamboo grass, species
Material for production	Coating for uv protection and to improve impermeability to water.
Applications	Aluminum sheets and fiber reinforced Plastic sheets.

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Bamboo rice husk composite

Raw material source	Rice mills, bamboo plants
Materials for production	Bamboo mat, nut shell liquid phenol Resin.
applications	Insulation , industrial and domestic Floorings.

II. ADVANTAGES

1. They require minimum maintenance.
2. They have degree of permeability and resistance to cracking.
3. An easy manufacturing process requiring only semi skilled labour.
4. A major cutting in cost expenses in cost expenses compared to rcc.
5. Less use of cement and steel for any given section compared with rcc with a corresponding reduction in self weight.
6. They are economical compared to components built with steel, concrete, or brick walls

III. CONCLUSION

A study of the construction methods used by various agencies in the disaster affected areas point to the growing use of local resources and talents in present day relief and reconstruction measures. In case of rural areas, the houses can be constructed by using traditional and locally available raw materials of bamboo, cane, reeds, rattans, willow, timber and leaves of some particular trees, and has been design to suit the traditional living habits of local people and maintains their socio cultural heritage. Further there has been a growing feeling amongst the rural people that the old bamboo- thatch leaf houses may be constructed with newer materials of RCC, precast components etc., using better engineering information and thereby, achieving more durability as well as extra living comfort in the process. Under this growing innovative concept, concrete blocks, cement, wooden frames, and tiles that are locally made are most useful and thereby encouraging many small scale enterprises in the process.

By using modern geotechnical technology which can improve the strength and durability of much of the existing low cost material should be encouraged.

REFERENCES

1 Adams, O.A; “perceived relative importance of training in contractor development in Nigeria”, the organization and management of construction: shaping theory and practice, volume two, managing the construction project and managing risk; London; E&FN Spon; PP 640-649, 1996.

2. Affordable housing for urban poor prepared by national resource centre SPA, New Delhi supported bministry of housing and urban poverty alleviation government of India.

IJARSE
ISSN (O) 2319 - 8354
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3 Commonwealth science council (CSC) (1987) local raw materials and technology for housing construction: report of the ARSO, CSC, UNCHS workshop on formulation of standard and specification for local building materials, Nairobi, march 16 – 24, 1987.

4. Faster production of stone blocks and concrete blocks, CBRI –annual report, 1999 – 2000.

5. Garg R.K., 'sustainable human settlements and cost effective housing technologies.' BMTPC.

6. Garg R.K., Garg N.K. & Batra Y.K, (2004), sanitation and waste water disposal system as in rural areas, journal of Indian building congress, vol.11, No.2, 2004; seminar on "Up gradation of housing & amenities in rural areas", Bhubaneswar, December, 22nd – 23rd 2004.BMTPC