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COMPARATIVE STUDY OF LOW COST HOUSING TECHNOLOGY AND CONVENTIONAL HOUSING TECHNOLOGY

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ABSTRACT

Low cost housing construction technologies aim to cut down construction cost by using alternatives to conventional methods and Input. "It is effective budgeting and technique which help in reducing cost of construction through use locally available material along with improve skills and technology without sacrificing the strength, performance and life of structure." Low cost housing merely satisfies the most bottom and fundamental human needs for shelter and neglects other needs that people aspire home including psychological, social, and aesthetic needs and ultimately, need for self-actualization. The cost effectiveness of using low cost housing technologies in comparison with the traditional construction methods. It was found that about 26.11% and 22.68% of the construction cost, including material and labour cost, can be saved by using the low cost housing technologies in comparison with traditional construction methods for walling and roofing respectively.

Keywords: cost construction technique, inexpensive construction

I. INTRODUCTION

India is the developing country having only 20% population of higher income group. The reduction in cost is achieved through effective utilization of locally available material and techniques. The material and techniques should be durable, economical, accepted by users and not requiring costly maintained. Economy is also achieved by postponing finishing and implementing low cost housing technology in phases. High efficiency of workers, minimizes waste in design. Studies assessing the conditions of low cost housings have mostly focused on satisfaction levels and subjective perception of quality particularly with regard to the dwelling units or the larger neighborhood characteristics. However, residents usually react upon their immediate environment to achieve satisfaction and make the surrounding area as their home and apply good management practices can also be achieved, or all people is one of the challenges faced by developing countries. Housing is a basic sock Adequate shelter for all people is one of the challenges faced by developing countries. India is currently facing shortage of about 17.6 million houses. Decent low cost housing is one of the key factors in the fight against poverty and social exclusion.

II. LITERATURE REVIEW

Henderson K. A^{etal}This paper will focus on the low-cost housing areas in which is high density and with scarce spaces as the existing facilities did not appear to attract youth's intention and even for their uses. As a result, reviewing the youth facility requirements can enhance youth's quality of life.

Abdul, R. M.Current sustainable building, design and construction practices in Malaysia are primarily aimed at minimizing environmental and resource impacts and improving the safety, health, and productivity of a building's final occupants.

Watson C. G.^{etal}Current sustainable building, design and construction practices in Malaysia are primarily aimed at minimizing environmental and resource impacts and improving the safety, health, and productivity of a building's final occupants.

III. METHOD OF STUDY

(A) Conventional construction technology:

This is the most common type of housing. The entire home is constructed on the building site and offers the most flexibility for house designing.

Construction techniques for conventional housing

The even disturbed samples were analyzed in the laboratory for water content, Atterberg limits, grain size distribution and compaction test.

(a) Foundation: Due to this type of foundation construction cost get increased. It is very difficult to construct & also time consuming.

Types-:

- Masonry foundations,
- Concrete foundations,
- Wood foundations,
- Pile foundations.

(b) Walling :Wall is the partition provided to different rooms. In load bearing structure it act as a column. There is some types of wall used in conventional housing-

Types:

- Load bearing wall,
- Masonry Wall,
- Pre cast concrete wall

(c) Roofing: It is the shelter provided for house to protect from direct sunlight, rain, etc.

Types:

- Mangalore Tiles
- Iron Sheet Concrete Slab
- Reinforced Cement Concrete Slab

(d) Flooring: It is a finishing provided over each floor oh different type for good appearance .

Types:

- ceramic tiles
- polished concrete flooring
- Plainpolished concrete flooring

(d) Plastering:It is a layer provided on inner and outer face of the wall. In conventional housing it is must be provided.

Types :

- cement plaster
- POP
- Decorative concrete

(e) Doors and windows:It is a opening provided to move in different rooms. Doors and windows frames increased construction cost.

Types:

- wooden doors
- precast concrete doors

(B) Low cost housing construction technology

This is the most common type of housing. The entire home is constructed on the building site and offers the most flexibility for house designing.

Construction Techniques For Low Cost housing technology:

The traditional construction methods are used in the case study. The detail procedures of each step used for the case study are as follow:

(a) Foundation: Arch foundation is used in which walls are supported on the brick or stone masonry. For the construction of the foundation, the use of available materials such as brick or concrete blocks can be made to resist lateral forces buttresses at the corner. Normally the foundation cost comes to about 10 to 15% of the total building and usually foundation depth of 3 to 4 ft. is adopted for single or double store building and also the concrete bed of 6" (15 Cms.) is used for the foundation which could be avoided. It is recommended to adopt a foundation depth of 2 ft. (0.6m) for normal soil like gravely soil, red soils etc., and use the uncoursed rubble masonry with the bond stones and good packing. Similarly the foundation width is rationalized to 2 ft.(0.6m). To avoid cracks formation in foundation the masonry shall be thoroughly packed with cement mortar of 1:8 boulders and bond stones at regular intervals.

Types:

- Arch Foundation
- Inverted-arch Foundation

(b) Walling: Rat trap bond technology can be used . It is an alternative brick bonding system for English and Flemish Bond. The reduced number of joints can reduce mortar consumption. No plastering of the outside face is required and the wall usually is quite aesthetically pleasing and air gaps created within the wall help making the house thermally comfortable. In summer, the temperature inside the house is usually at least 5 degrees lower than the outside ambient temperature and vice versa in winter.

Wall thickness of 6 to 9" is recommended for adoption in the construction of walls all-round the building and 4 1/2" for inside walls. It is suggested to use burnt bricks which are immersed in water for 24 hours and then shall be used for the walls.

Types

- Rat – trap bond wall
- Solid Concrete block walling
- Soil cement blocks technology
- Hollow Concrete block walling
- Straw panel

(c) Roofing: A filler slab roofing system is used which based on the principle that for roofs which are simply supported, the upper part of the slab is subjected to compressive forces and the lower part of the slab experience tensile forces. Concrete is very good in withstanding compressive forces and steel bears the load due to tensile forces. Thus the low tensile region of the slab does not need any concrete except for holding steel reinforcements together.

Types:

- colored cement tile for roofing
- filler slab
- thatch
- built up roof
- composite asphalt shingles
- engineered rubber or plastic

(d) Flooring: Flooring is generally made of terracotta tiles or color oxides. Bedding is made out of broken brick bats. Various patterns and designs are used, depending on shape, size of tiles, span of flooring, and client's personal preference.

Types:

- Lime flooring
- Mud flooring
- Laminate flooring
- Vinyl flooring
- Pros and cons of cork flooring
- Engineered wood flooring

(d) Plastering: If one can use solid concrete block or hollow concrete block then there is no any type of plaster is required. The concrete block is act as a plaster on the wall.

Types :

- Non erodible mud plaster

(e) Doors and windows: As door and window frames are responsible for almost half the cost of timber used, avoiding frames can considerably reduce timber cost. Door planks are screwed together with strap iron hinges to form doors, and this can be carried by 'holdfast' carried into the wall. The simplest and cost effective door can be made of vertical planks held together with horizontal or diagonal battens. A simplest frameless window consists of a vertical plank of about 9" wide set into two holes, one at the top and one at the bottom. This forms a simple pivotal window. Wide span windows can be partially framed and fixed to walls or can have rows of pivotal planks.

Types:

- Ferro cement door shutters
- rubber/poplar wood flush door shutters
- fibrous gypsum plaster board
- finger jointing and shaping technology

(f) Lintels: The traditional R.C.C. lintels which are costly can be replaced by brick arches for small spans and save construction cost up to 30 to 40% over the conventional method of construction. By adopting arches of different shapes a good architectural pleasing appearance can be given to the external wall surfaces of the brick masonry.

(g)Finishing Work: The cost of finishing items like sanitary, electricity, painting etc., varies depending upon the type and quality of products used in the building and its cost reduction is left to the individual choice and liking.

Paint: Paint is use for Decoration for interior and exterior wall. Due to the paints wall maintenance get reduced. Painting can be avoided by using natural colors in the plastering material.

Advantages Of Low Cost Housing

- High speed of construction
- Less built-up area for the same carpet area.
- Reduction in use of cement, sand, steel and water.
- Lower cost of structure: saving in materials, no plastering
- Lower building weight contributing to saving in foundation

CONCLUSION

There is a strict need at present in India for building cheap and affordable houses.It is the key to nations development, to provide proper shelter to its citizens.The growing population in urban areas have led to a strict shortage in land, congested traffic and housing shortfall.This has also led to the hike in prices which makes it

impossible for common people to have their own houses. Thus there is an immediate need of construction of cheap houses in large scale..

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