Research Paper

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Cost Effective Techniques Uses In Modern Construction Projects

Engineering

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ABSTRACT

Housing stress inadequacy is mainly felt by the weaker and low income sections of the society, particularly with the continuous rise in construction costs. The analysis of town gives the result of 40%-45% of slum population. In future it will grow tremendously. So proper planning of slum should be done by means of rehabilitation. Initially design of house plans for income groups and economically weaker section is prepared. Cost effective techniques are selected and compared with other conventional techniques. The estimation is prepared for the conventional type and the cost effective technique for the Low income group (LIG), and then the planning module is taken into selected norms.

1.1 INTRODUCTION

Housing inadequacy is largely felt among the low – income group people. This is increasing with the continuous rise of cost of construction at all levels. This necessities the use of appropriate and cost effective technologies in house construction. The cost of construction increased by 50% over nominal inflation due to hike in cost of basic building material and labor in a span of 20 years. Nowadays many cost control techniques are being introduced in project works to optimize the project cost. With the advancement of technologies, it becomes necessary to have a critical examination of various technique and construction materials, at periodical interval, so as to discard ineffective construction practice and materials and adopt newer effective techniques and materials.

1.1.1 Problem faced

Due to tremendous increase in population throughout India, there is a big demand for buildings to accommodate all people. Increase of slums and low – income groups take place in the main cities and town. There is increase in cost of construction materials and labors due to many reasons like money inflation, increase of energy cost, company competitions, political influences, immigration etc.,. The building norms were not followed properly so that encroachment takes place everywhere. The awareness of new techniques based on cost effective methods is not reaching to the public.

1.2 Objectives

To propose cost effective technique is more suitable for low – income groups and compare the costs with conventional techniques.

The main objective is to suggest that the cost effective techniques is more suitable for low – income groups. The implementation of cost effective technique for low – income group projects will be more profitable.

1.3 Scope

While not losing the strength or beauty of a building, the construction cost can be minimized. As the mobilization of funds for housing schemes are getting more difficult, it very essential to adopt the cost effective construction techniques both by individuals as well as the governments. One of the essential requirements for human existence is a house. A breakthrough for application of sustainable and cost effective technology for better housing in rural and urban area is an urgent need. Due to tremendous increase in population throughout India, it is necessary to provide housing. To grow into a national model in enabling the rural poor to address their housing need in such a way that the production of alternate cost effectiveness eco – friendliness materials generate live hood options for them to participate in the process of planning and implementation of their houses and contribute their savings / labors for realizing their dream of roof over their heads.

2. Literature review

2.1 General

As construction of houses requires heavy investments of capital, there is a great need to reduce building cost. It is also necessary to make optimum use of building materials that are scare and costly and to ensure quality in construction is completed in as short a time as possible and the houses are ready for early occupation. In some developing counties of Asia, Africa, and Latin America concreted are being made to achieve cost reduction in housing.

2.2 Planning norms of social infrastructure in India

Planning is a continuous process and the planning system should be such that it ensures this continuity. During the early periods, planning was piecemeal and such approach continued to be the practice for about four decades. After independence, city planning experienced tremendous changes in its approach due to need of resettlement, colonies were added in existing cities and many new towns with industrial base were developed. Town and Country planning Laws were enacted by various states; master plan of 879 towns prepared, and plans of some 318 urban.

2.3 Residential and planning using optimization models

Ahmd. Y.Al-Zoabi (2001) applies the use of optimization models in dwelling layout system design. The systems nature of the residential land-planning problem has been discussed. Several unit design models are suggested and a cost optimization model has been developed using Focus search and Monte Cairo simulation techniques for solution of the obtained non-1linear programming problem. A second model for the optimal design has also been developed. Based on this model, the optimum design is obtained by means of using Focus Search model. All in all, the research presents a methodology for residential land planning for low-income groups.

Radhakrishan Rao outlines Traditional building technology with its undue stress on costly and energy intensive materials like steel and cement is clearly beyond the reach of a large section of the Indian population. This has led to the mushrooming of shantytowns in the centers of India. And the ambitious plans of successive Indian governments to provide a decent roof over their heads for all citizens have remained a pipe dream.

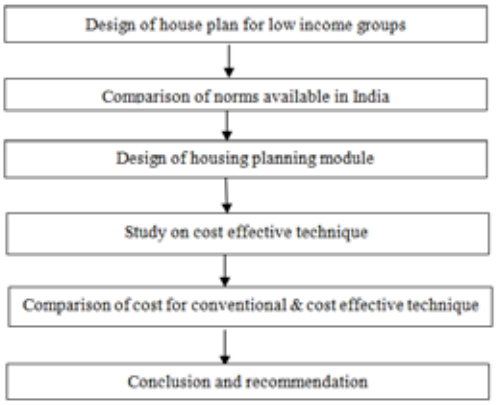
3. Methodology

3.1 Desk Study

The desk study induced reference of articles from magazines like construction journals and periodicals and through online services.

3.2 Data collection

This deals with collection of statistical data on Thanjavur town from Engineers.



The Complete study about a town regarding its household, population, income group etc have to be done. The inference of the town analysis is compared with the standards adopted by government bodies. Thanjavur has been taken as case study in this thesis. Considering that rehabilitating the low income group is necessary. So various types of house plans for low income group has been designed. Study and comparison have to be done for various building norms of India and one among them can be adopted for designing the module. A hectare land as a module will be planned with these designed dwelling unit for rehabilitating the how income group. Studying of cost effective construction technique and the cost comparison of conventional and cost effective method will be analyzed. Household survey and case studies should be done with respect to cost effective technique.

4. Planning process

Residential land planning is due physical development for residential use. If depends on physical planning, architectural design, engineering design and cost. For low widths households, cost is the main factor that should be considered in planning income households, cost is the main factor that should be considered in planning process. Since the low income groups substitute about 40% of total number of population in third world countries, they deserve more attention in terms of planning of their residential areas, taking into account their needs and acceptable services as well as their affordability, planning and housing experience in developed is now rich and reveal drifts in some of their basic orientation in operational approaches. These appear to the worthy of judicious use by us as these are seemingly appropriate to our context.

PRESENT ILLS IN THE QUALITY OF HOUSING

Apart from the acute mismatch between high demand and short supply; the little housing that it provided lacks many qualitative aspects which are essential for a desirable living environment. There was been a marked determination in the quality of the physical, social and cultural environment in today's housing projects. These ills are briefly discussed below.

5. COST EFFECTIVE TECHNOLOGY

5.1 Appropriate Housing Technology

With the widening gap between demand and production of housing due to high rate of increase in population and production of fewer houses on account on increasing cost of construction, it has become an urgent matter to build cost effective housing at a fast rate on omass scale.

5.2 Improvement in Tradition Technology

Problem low cost housing – lack of effort in evolving & adopting appropriate technology. As a result of research, new materials, construction technique and methods have been evolved to overcome the shortcoming of traditional building technology.

5.2.1 Need for Cost Effective Technology:

With all our claims of our country being a sleeping giant just waking up and with all out hopes to shortly transform ourselves from a developing country to the developed country. Food, clothing and housing are the three priority sections. With large investment requires, housing has now become the biggest challenge for our planner

5.2.2 Various cost effective materials and techniques

- Soil stabilized block
- Rubble filler block
- Hollow cement block
- Building Techniques
- Filler slab
- Waffle shell system
- L-plan roofing
- Brick panel roofing
- Rat trap bond
- Corbelling
- Arches & jails

PROJECT ANALYSIS

Advantages felt by occupants (cost effective method)

- Minimum wastage of bricks using rat trap construction.
- Reduce heat transmission due to vapors barrier, so it allows the building in cool condition.
- Saving in cement, steel, aggregate, brick etc.
- Reduces plastering and painting charges.
- Good aesthetic appearance.
- Reduced timbre construction
- Reduce water seepage in wall due to provision of plastering near the joints of brick
- It gives grand interior look. (Conciseness with interior designing)
- Form work cost in reduced

Disadvantage felt by occupants (cost effective method)

- Termites Problem.
- Fading of brick color
- Exposed wiring work
- Nails cannot be placed in walls
- Wastage of mortar during construction of rat trap bond
- Labor charge for cleaning the bricks may increased after construction

Remedial Measures to overcome disadvantages

- To overcome termite's problem and fading of bricks, the brick Cornish can be applied; it may increase 2% of total cost of construction
- The wastage of mortar and cleaning the bricks can be minimized by providing skilled labor in construction.
- If the location of the mails is predetermined the mode of construction is slightly charged so that the nail cab is placed in the wall.

CONCLUSION

A cost comparison between conventional and cost effective building material and techniques would very clearly indicate that cost effective building materials and techniques would very clearly indicate that cost effective building technology results in considerable saving in cost. On comparison between the conventional type of house and cost effective type of houses. It was found that the cost effective house is 30% lesser than conventional type houses. We can reduce the cost by introducing the other alternative material mild steel, aluminum etc. and modify existing cost effective method finally new modified cost effective methods are arrived.