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Feasibility Study of Construction of Building Using Rapid Wall Panel

Kadam S.P.
P.G. Student Civil Construction management,
SPPU Dr,D.Y.Patil SOET Charoli,Pune.
e-mail :kadamsagar014@gmail.com

Darade M. M.
Prof, Civil-Construction management
SPPU Dr,D.Y.Patil SOET Charoli,Pune
e-mail: milind.darade@dypic.in

***Abstract*—**Rapid wall is a prefabricated ,low cost,revolutionary product.Rapid wall is manufractured by automatic process by using glass fibre reinforced water resistant heat resistant. Rapid wall is prepared byusing industrial waste product like phosphorous. It is suitale for building. Commertial ,high rise residential building.It can be used for earthquake prone areas. Rapid wall exhibits ductiele quanties when it is being used as load bearing construction. It resists earthquake loads for both vertical and horizontal loads. Since they are light weight, when they collapse they cause less harm to human life. They can be cut into required dimensions for length and height. Required window and door cuts outs can be make with ease . Rapid wall is termit resistant.Rapid wall panels are 100%recyclale .

Keywords-*: Rapidwall, Heat resistance, Eco-friendly*

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I. INTRODUCTION

Post independence situation posed several challenges due to widening gap in demand and supply of building materials which were crucial inputs to the national development program and projects. A strong construction sector was imperative to cope up with the desired level of economic growth and the resulting demand for building materials. Perhaps this marked the beginning of intensive search

and rapid strides for enlarging the range and production of building materials far beyond that existed in 1947 at the time of independence.[1]

The construction industry everywhere faces problems and challenges. However, in developing countries like India, these difficulties and challenges are present alongside a general situation of socio-economic stress, chronic resource shortages, institutional weaknesses and a general inability to deal with the key issues. There is also evidence that the problems have become greater in extent andseverity in recent years. One of the charges leveled at the construction industry, as at the beginning of the 21st century, is that it has a poor record on innovation, when compared with manufacturing industries such as aerospace or electronics. These factors combined with uncertainty and risk about the future of housing market, about homebuyer acceptance, about local building code official approval, about long-term durability, about impacts on supply chain, about impacts on the construction process- all contribute to this lack of acceptance. This dissertation explores one innovative, but underutilized building technology, structural insulated panels, and its impact on the residential construction process.

The growth in industrial and agricultural activities continued to throwaway huge quantities of wastes and byproducts such as fly ash from power generation by burning pulverized coal, blast furnace and other slag from iron steel, non ferrous metal smelters, alumina red mud, slate and marble wastes etc. These coupled with calcareous and sulphitic wastes from chemical industries - sugar, paper acetylene, tannery, phosphatic fertilizers,' soda ash etc. amount today to nearly 250 million tons annually.[2]

Lime sludge, phosphogypsum, red mud and mine tailings are the next category of the wastes after fly ash (70/75 million tons per year) and blast furnace slag (10 million tons per year), available in substantial quantities on which a good level of research work has already been undertaken, though commercialization of these technologies has yet to happen.[7][8]

About twelve fertilizer plants in the country produce nearly 4 to 5 million tons of Phosphogypsum as a by-product. While some quantities are utilized for production of ammonium sulphate and few other uses, there are accumulated stocks of more than 10 million metric tons of Phosphogypsum at various plant sites. Major producers are Coromandel Fertilisers (Andhra Pradesh), Fertilisers & Chemicals, Travancore (Kerala), Gujarat State Fertilizer Co. (Gujarat), Hindustan Lever Ltd. (West Bengal), Southern Petrochemical Industries Corporation (Tamil Nadu) & Paradeep Phosphates Ltd. (Orissa). Disposal of Phosphogypsum is not only a serious techno-economic problem but creates environmental pollution and requires large land area for dumping. So by using Gypsum as a building material problem of dumping waste can be solved in eco friendly manner.[1][8]

II. METHODOLOGY

The methodology will be adopted such as collecting the data from literature reviews, case studies, questionnaires, interviews and site visits. The methodology also includes following point.

- By using the internet net, books and interaction with respective builders/developers.
- By understanding the technique of construction of building using rapid wall of specific plinth area by visiting completed or ongoing site and comparing it with conventional building.

III. OBJECTIVES

- To understand the technology of Rapid Wall construction thoroughly.
- To study the feasibility of using rapid wall w.r.t. Environmental aspect and impact
  a. Thermal insulation.
  b. Fire resistance.
  c. Water proofness.
- Using rapid wall panel and conventional building material.
- To study the benefits to builders/developers.

- To make the economical comparison between construction of building using rapid wall panel and conventional method.
- Time analysis and effect on total construction duration.
- All above mention points will have been studied on a live case study.

IV. RESULT AND DISCUSSION:

The results mentioned in the table below are for the room size 15*20=300sqft
1200Rs*300=360000

TABLE I. COMPARISION BETWEEN RAPID WALL CONSTRUCTION AND CONVENTIONAL BUILDING.

Content	Conventional Construction	Rapid wall construction
Duration of Construction	120 days	70 days
Total Cost	Rs.360000	Rs.220000
Accuracy	Less	More
Transportation	Less	More
Environmental aspects	Natural resources is used.	Byproduct Phosphogyusum is being used.

V. CONCLUSION

Rapidwall construction is more economical. It creates a positive effective on environment. The constructin can be done within a single day for an area of 350 square meter

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