



Research Article

COMPARATIVE STUDY OF TRADITIONAL WALL AND PRECAST PLATES WALL CONSTRUCTION FOR LOW COST HOUSE FOR VILLAGERS

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ABSTRACT

A low cost housing is a different concept which deals with the effective costing and following techniques, which helps in reducing the cost of construction through the use of available material besides with and technique improved skills without losing the power, performance and life of the structure.

There are three factors which affects the cost of housing i.e. time, material used and techniques. For achieving the low cost house, perfect technique is required. In this paper the use of perfect technique and comparison between different costs is discuss for reduction in cost. Two models of building was prepared and costing for construction is compared. As per estimation it is found that precast construction is economical as compared to traditional methods for small building

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INTRODUCTION

Low cost housing means replace the material which are naturally available and having less emission of carbon and having low cost. In low cost housing we focused on three factors they are as follows:

1. Safety
2. Economy
3. Environment

Being one of the largest countries in the world and possessing one of the largest populations in the world. India still has lots of areas where it is lagging behind in comparison with the top most economies in the world.

Why we use precast?

Precast concrete technique the so called unconventional method. In India Space can facilitated both speed and quality of construction and exploits, the advantages that large scale projects offers in terms of volume turn over and repetitions. This paper aim at demonstrating how the precast technology can be efficiently and effectively use on various Indian projects under execution.

As we know, now a days there is day by day increase of population so, the land is limited and demands for their shelter and various needs is increasing.

Objectives of Study

House is one of the need and low cost house gives the houses to people at reasonable rate. Therefore, the main aim of the study is:

1. To study different types of construction materials and techniques used to reduce the cost of house.
2. To compare the cost by adopting different techniques for large scale project.

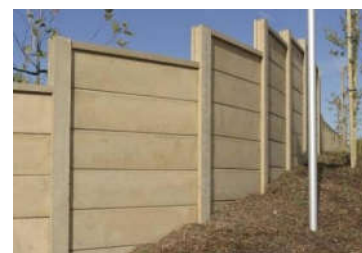


Fig 1 Precast plates

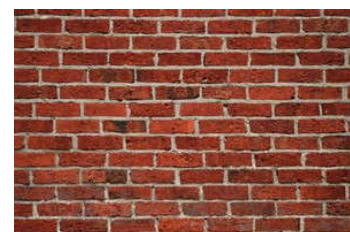


Fig 2 Brickwork

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Case Study

Fig.no.3 & 4, shows the plan and elevation of traditional house having dimension 3X4M. The foundation of this building is of

U.C.R. having width 0.45M and depth 0.6M. The total height of the building 4.45M. For wall construction, red bricks are used and roofing of R.C.C. slab.

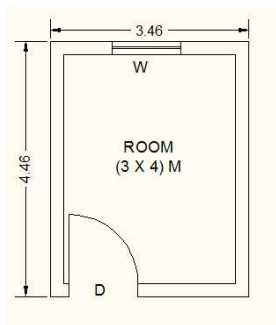


Fig 3 Plan

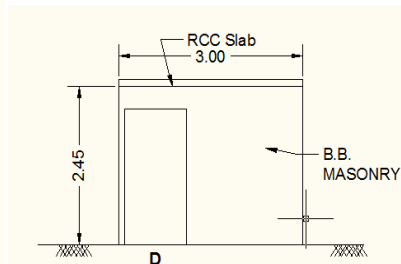


Fig 4 Elevation

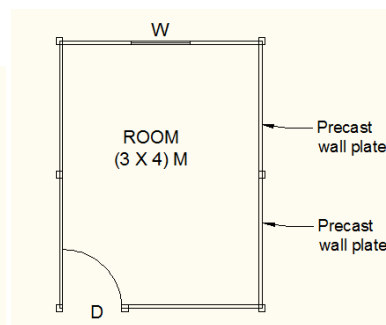


Fig 5 Plan

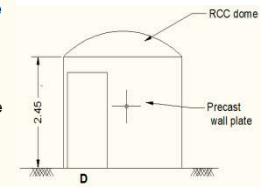


Fig 6 Elevation

Fig., No.5 & 6 shows plan and elevation of low cost housing having dimension 3X4M. The foundation of this building is U.C.R. having width 0.45M. and depth 0.6M.

In this building wall was replaced by precast wall plates and R.C.C. slab are replaced by R.C.C.DOME. Table 1, shows the comparison between cost of traditional house and precast house.

From above study, we conclude that,

1. There is cost reduction due to adoption of different precast techniques.
2. Precast gives strength to the structure and cost is less than traditional house.

Table 1

COST OF TREDITIONAL HOUSE			COST OF PRECAST HOUSE		
SR.	ITEM NAME	AMOUNT	ITEM NAME	AMOUNT	
	EXCAVATION FOR FOUNDATION		EXCAVATION FOR FOUNDATION (Murum)	830.8	
1	(Murum)	830.8	P.C.C. (1:2:4) Room flooring	9218.88	
2	P.C.C. (1:2:4) Room flooring	9218.88	UNCOURSE RUBBLE MASONARY	7236	
3	UNCOURSE RUBBLE MASONARY	7236	DAMP PROOF COURSE	3625.56	
4	DAMP PROOF COURSE	3625.56	WALL (PRECAST PLATES)	10080	
5	WALL B.B.M. (1:6)	35531.872	RCC DOME	7695.73	
6	SLAB M200 GRADE	9120.5	REINFORCEMENT		
7	REINFORCEMENT		1% OF RCC QUANTITY	9795.552	
8	1% OF RCC QUANTITY	11616.52	DOOR (WOODEN)	5859	
9	DOOR (WOODEN)	5859	WINDOW (WOODEN)	2673	
10	WINDOW (WOODEN)	2673	PLASTER EXTERNAL	NOT REQ	
11	PLASTER EXTERNAL	10006.2	PLASTER INTERNAL	NOT REQ	
12	PLASTER INTERNAL	5251.2	PAINING EXTERNAL	1177.2	
13	PAINING EXTERNAL	1177.2	PAINING INTERNAL	984.6	
	PAINING INTERNAL	984.6	TOTAL AMOUNT (RS)	59176.32	
	TOTAL AMOUNT (RS)	103131.33	CONSTRUCTION AREA	3834.75	Rs./Sqmtr
	CONSTRUCTION AREA	6683.1		356.72	Rs./sqft
		621.7			
	Saving in cost		=43955/-		
	% saving		=42.6204%		

For Estimate preparation for this two building, rates are taken from Amravati PWD region C.S.R.

Since wall panels of precast construction is factory made, in precast wall paneled building plastering is not required. In place of normal slab, dome is constructed with less thickness. As per estimate it is found that cost of precast construction is 3834 Rs/ Sqmtr and that of traditional red brick wall is 6683 Rs/ Sqmtr. Due to use of precast walls cost of construction is reduced by 42.62 %. Also speed of construction will be more.

3. Time required for making the low cost house by using the precast is less than traditional house.
4. For effective house present study clearly state that precast technique is suitable for low cost housing.

Reference

1. Work Department (2016). C.S.R.
2. Dhiraj B. Tapkir, "Study and analysis of low cost housing based on construction techniques."
3. M. Chakravarti, "Estimating And Costing Specification And Valuations In Civil Engineering."