
COMPARATIVE ANALYSIS WITH MIVIAN FORMWORK & CONCREWALL STRUCTURE

Rohan D More¹, Dr. Y.S Patil²

^{1,2}*Civil Department, SSJCET, asangaon*

Abstract—This paper aims to point out the various aspects of construction of structure using mivian or any other formwork & using concrewall reduce the cost of construction and making low cost houses it is basic need of middle class people in our India. One of the most important factors in determine the success of a construction project in terms of speed, quality cost and safety of work is the formwork used in the project as it accounts about 30% of the total project cost of the structure. the aim of this paper is concrewall is best method or technology constructions of affordable small houses and G+3 structure. Nowadays, most projects are required by the client to complete in the shortest time possible as a means to minimize costs.

Keywords— Formwork, Duration, cost, quality, concrewall

I. INTRODUCTION

Objective of study To compare the formwork using structure & concrewall structure.

- 1) Cost Parameter
- 2) Time parameter
- 3) Quality Parameter

Relevance of study

Concrete formwork is the use of support structures and mould to create structures out of concrete which is poured into the moulds. There are many different types of formwork used in construction, usually wood, steel, aluminum. Concrewall is an industrial system for the construction of structural walls of reinforced concrete for buildings in single panel up to four storeys, g+3, and theoretically unlimited storeys in double panel. The system is composed of factory produced panels of undulated (wave shaped) polystyrene covered on both the sides by an electro welded zinc coated square mesh, which in turn are connected by 40 connectors per metre sq. realising a 3 dimensional hyper static reinforcement steel. The panels are assembled on site and in situ poured concrete (double panel, floors, stairs) and shotcreted concrete (single panel) to realize the different elements of the system

1.1 Mivan System

It is the most advanced formwork systems. It is fast, simple and adaptable. It produces total quality work which requires minimum maintenance. In this system the walls, columns and slab are casted in one continuous pour on concrete. Early removal of forms can be achieved by the air curing/ curing Compounds



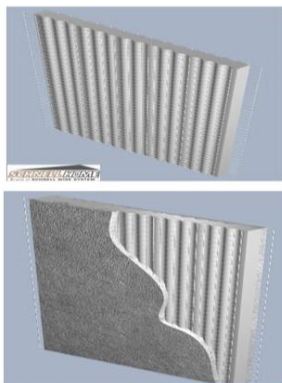
Fig1.Mivan Formwork

1.2. Concrewall construction system

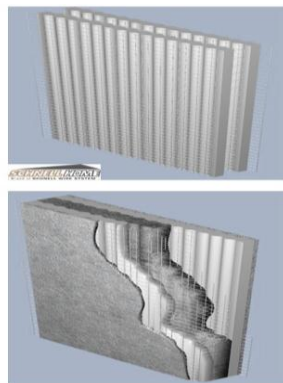
It is based on modular elements made of shaped polystyrene panels that are contained between two sheets of galvanised welded meshes. The vertical mesh wires are set along the polystyrene 'waves' thus creating reinforced concrete micro pillars once the panel is coated with concrete. The wires are bound to each other by the mesh' horizontal wires and joined orthogonally by the links which keep the two meshes together. Joint twisting is prevented by welding; in other words, as these joints are all welded, all transversal and longitudinal motion is prevented resulting in absolute in deformable panels

PANELS AND MESHES:

Single panel



Double panel



Floor panel

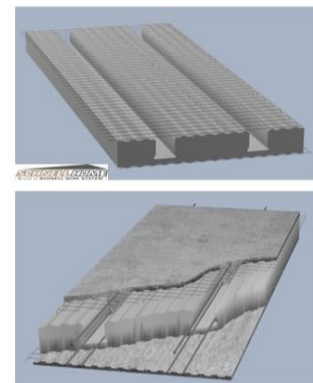


Fig2. PANELS AND MESHES

1.3 Components Of Mivan Formwork

The basic element of the formwork is the panel, which is an extruded aluminum rail section, welded to an aluminum sheet. This produces a lightweight panel with an excellent stiffness to weight ratio, yielding minimal deflection under concrete loading. Panels are manufactured in the size and shape to suit the requirements of specific projects. The panels are made from high strength aluminum alloy with a 4 mm thick skin plate and 6mm thick ribbing behind to stiffen the panels. All the formwork components are received at the site within three months after they are ordered. Following are the components that are regularly used in the construction.



Fig 3. Wall panel

1.4 METHOD OF CONSTRUCTION:



Fig 4.Placing of concrewall material.



Fig 5.Shot creting over a wall

II. COMPARISION BETWEEN MIVIN,CONVENTIONAL FORMWORK & CONCREWALL

SR NO	FACTOR	CONVENTIONAL	MIVIN FORMWORK	CONCREWALL
1	Quality	Normal	Superior quality available in aluminium form	Depends upon polystyrene panels
2	Speed of construction	Very slow rate due to step by step constructon activity	Walls and floor cast together one continuous operation it also a fast process	Wall ,floor are placed seperatly very fast process
3	Cost	About 10-15% of total cost of project	20-25% of cost of project	5-10% of cost of project very economical
4	Maintenance	Pay more cost on maintenance due to damage on formwork	Maintenance is very less in that type of formwork mostly used same size of room other wise no use	Maintenance is zero because directly placed panels

III. CONCLUSIONS

Following conclusions can be drawn from the present study. The use of Concrewall sheets or different panels in the Construction of building it is very economical. by adopting this methodology the construction work is fast and save in construction time. Also by adopting this new technology up to 30-40% cost of construction save also provide affordable houses to the poor people or lower economical people. The india's largest new problem is that common people does not afford high prices of house. now a days cost of construction are very high and this method is adopted by government agencies to solve that high rise cost problem. And result of concrewall construction building was really good so there is no problem to adopt this technology.

REFERENCES

- [1] Cost effectiveness of using Low cost housing technology in construction. Procedia engineering 14 (2011) (Vivian W.Y.Tam)
- [2] Low cost housing ACSGE-2009 (Rinku Taur and Vidyan Devi)
- [3] Low cost urban housing in India and habitat for humanity. (Abhijit v)
- [4] Emerging Trends in formwork. (IOSR-JMCE) Miss patil Dhanashree
- [5] Comparative analysis of formwork. IJRET (sandip Pawar)
- [6] Ketan Shah, " Modular formwork for faster, economical and quality construction", Indian Concrete Journal, July 2005, Volume 79, Pg.6-23.
- [7] "Building Formwork". Building construction By B.C.Punmia (2008 edition).