

Comparative analysis on cost and duration of MIVAN formwork building and Conventional Formwork building

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Abstract— The project involves cost and duration analysis of a building constructed by Conventional formwork building and MIVAN formwork building. The buildings are of G+12 floors and area of both the buildings are 771.92 Sqm with 2.95 m as the height of each floor. The analysis involves the quantity calculation for cost for both buildings and duration comparison of conventional formwork building and MIVAN formwork building.

Keywords:- MIVAN formwork, Conventional formwork, Cost, Duration.

I. INTRODUCTION

MIVAN formwork system has been a growing trend in recent years in many countries. The development of country could be depend on progress made by construction industry of that country. Further, the number of houses built in any country could also be development of that country. While there has been a progressive rise in stock of housing in India since independence, the speed has not kept pace with the rapid growth of population and urbanization of India. As a result, the accommodation shortage is increasing continuously and the situation has become problematic in urban areas.

Innovative technologies are essential which are capable of fast construction and are able to give good quality and durable structure in economical manner for mass housing”.

This world-class project is being designed on 400 acres of land at Dhanori, which is to be the center of greater Pune having 1, 2 & 3 BHK flats/ apartments.

Construction is important part of development and it is significant sectors of Indian economy. India is having second largest population in world and in future demand of housing increases desperately with this problem India should desperately need to plan for acquisition of land and rapid creation of dwelling units. Today there is growth in population for that speed of construction needs to be given greater importance especially for large housing projects. Fortunately, some of the advanced technologies for faster speed of construction are already available in the country for e.g. Prefabrication, autoclaved blocks, tunnel formwork, aluminum formwork (MIVAN Technology) of construction etc.

The use of MIVAN formwork in construction industry is very low in India compared to other countries. The use of MIVAN formwork in construction having great potential, especially needs for current developing India and not using MIVAN formwork as an alternative construction material and not using it where it is economical is a heavy loss for the country.

This new method of construction by MIVAN technology can increase productivity, quality and performance of work through the use of better construction equipment, materials, and time saving compared to conventional. MIVAN technology is new construction technology upcoming for successful completion of mass housing project in India. This study is

essential because it can provide the necessary information on the building cost and duration comparison between the conventional system and MIVAN building system in India’s construction industry.

II. METHODOLOGY

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

- The data needed for a project, interaction with builders, engineers and interviews with some of the selected respondents regarding the main objective of the topic were conducted for the data analysis stage.
- For accomplishing this project, Collection of the information regarding conventional methods of building technologies and study various concepts of MIVAN formwork building and its various applications is to be done by visiting ongoing site. Cost-effectiveness of MIVAN formwork building over conventional formwork buildings will be formulated

III. OBJECTIVES

- To compare the cost of building by using conventional formwork technique & by using MIVAN formwork technique.
- To compare the Duration of building by using conventional formwork technique & by using MIVAN formwork technique.
- To carry out which formwork is best for construction of building.
- To understand the concept of MIVAN formwork
- All above mention points will have been studied on a live case study.

IV. RESULT AND DISCUSSION:

(a)Details about the structure

It is a project of Pride group’s Pride world city a 400 acres township at Dhanori, Pune. I have collected the data about both the buildings MIVAN formwork building 4A6 and

conventional formwork building 4B3 both are of 12 floor and area is 860.77 Sqm having 6 flats of 3BHK(2) and 2BHK(4).

Sr. No.	Content	MIVAN building	Conventional building
1	Concrete grade	M15, M25, M40	M15, M25, M30, M40
2.	Thickness of wall	310mm, 300mm, 160mm, 140mm	230mm, 200mm, 160mm, 150mm, 100mm
3.	Steel	8mm, 12mm, 16mm, 25mm, 32mm	8mm, 12mm, 16mm, 25mm
4.	Slab	130mm, 110mm, 180mm, 200mm	110mm, 130mm, 150mm, 175mm
5.	No. of floors	12	12
6	Area	2BHK:-100.68sqm, 3BHK:-137.75sqm	2BHK:-100.68sqm, 3BHK:-137.75sqm

(b) The Result calculation are as follows:-

A) COST

a) MIVAN Formwork building

1. Cost of foundation of building =Rs.5000000
2. Cost of G+12 floor of area 771.92 Sqm=Rs.42250000
3. Total cost of building=Rs.42750000

b) Conventional Formwork building

1. Cost of foundation of building =Rs.5000000
2. Cost of G+12 floor of area 771.92 Sqm=Rs.48250000
3. Total cost of building=Rs.48750000

B) DURATION

a) MIVAN Formwork building

1. Excavation = 38 days
 2. RCC work =400 days
- Total= 438 days

a) Conventional Formwork building

1. Excavation = 37 days
 2. RCC work =348 days
 3. Brickwork= 150 days
 4. Internal Plaster= 135 days
 5. Ceiling POP= 120 days
 6. External Plaster= 90 days
- Total= 880 days

TABLE I. COMPARISON BETWEEN MIVAN FORMWORK BUILDING AND CONVENTIONAL FORMWORK BUILDING.

Content	MIVAN building	Conventional building
Duration of Construction	438 days	880 days
Total Cost	Rs.42750000	Rs.48750000
Wastage of formwork	Very less	More
Resistance to earthquake	More	Less than MIVAN system

C) Result Comparison

The comparison of MIVAN formwork building and Conventional Formwork Building are summarized in graphical format as follows.



Graph 1. Cost comparison



Graph 2. Duration comparison

V. CONCLUSION

Cost of MIVAN formwork building is 14.04 percent cheaper than the Conventional Formwork building. The construction of MIVAN building can be done in half duration of construction of conventional building of 12 floors. From the results of the case study it can be concluded that quality and speed must be given precisely consideration with regards to economy.

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