

# Estimating & Cost Comparison Between Conventional and Mivan Technique

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**Abstract-** Firstly we have considered of mivan technology regarding the method of mivan construction. How to use of mivan system of construction and effective method about cost comparison between of mivan and traditional conventional method. In this paper we have found most effective and economical method regarding about cost, speed of construction, quality and also time saving factor. Discussion of project about cost comparison of mivan system with conventional construction method. After all we have estimate conventional building referring with help of existing plan Pune region area also detailed estimating each contents of mivan building and compare their respective rate of per square feet area and conclude that which method is suitable and economical. The paper also includes that remedial measure of mivan technique. This technique are among the basic objectives determining the successive project are required in term of Speed, Quality, Cost and Time Estimating both method of construction and comparing their respective rate with help of DSR (District schedule rate). It conclude must be given due to consider regarding with economy. This paper work we have tried to cover new aspect of mivan technology viz. cost comparison on high quality construction at better speed and reasonable cost.

**Index Terms-** Conventional building, mivan technique, long wall short wall method, Centre line method.

## I. INTRODUCTION

The modern methods of construction are broad range of processes and products that aims to improve business efficiency, quality, customer satisfaction, environmental performance, sustainability and the predictability of delivery timescales. The construction industry is one of the biggest industries in the whole world. The contribution of this industry towards the global GDP is enormous. In recent years due to globalization and advancement in technologies there has been a tremendous development in the construction industry. In the countries like India and

China the situation on the housing front is even worst. Due to ever increasing population in these countries there is an overgrowing demand for housing. Now keeping in view the gigantic task of providing affordable shelter to masses, adoption of modern and cost effective technology assumes greater significance.

Today there is a growing realization that the speed of construction needs to be given greater importance especially for large housing projects. "For undertaking mass housing works, it is necessary to have innovative technologies which are capable of fast rate construction and are able to deliver good quality and durable structure in cost effective manner. Several systems are adopted all over the world but Mivan system has proved to be reasonably economical and capable of fast rate construction of mass housing. In this system walls and slabs are cast simultaneously at site by use of specially designed, easy to handle light weight aluminum forms. The system is far faster than the traditional beam and column construction.

## II. METHODOLOGIES

The methodology adopted includes collecting the data from pune regional site literature reviews, case studies, internet, book's etc. As the above work is based on a live project the Architectural plans and the Structural drawings for both the buildings have been obtained from the engineer's in charge at the site. The estimate of materials has been calculated by using the principles/method of Quantity estimation which can be stated as:

There are two method of estimating are as below:

- A. Long and Short Wall Method or In-to-in method or P.W.D. Method
  - B. Centre line method.
- A. Long and Short Wall Method

In this method measure or find out the external lengths of walls running in the direction generally the long walls out-to-out and the internal length of walls running in the transverse direction in-to-in i.e. Of cross or short wall into-in and calculate quantities multiplying the length by the breadth and height of wall. The same rule applicable to the excavation in foundation, to concrete in foundation and to masonry. The simple method is to take the long walls of short or errors walls separately and to find out the Centre to Centre lengths of long wall and short walls from the plan. For symmetrical footing on either sides, the Centre line remains same for super structure and for foundation and plinth.

For long walls add to the center length one breadth of wall, which gives the length of the wall out-to-out, multiplying this length by the breadth and height and get the quantities, Thus for finding the quantities of earth work in excavation, for the length of trench out-to-out add to the Centre length one breadth of foundation. Adopt the same process for foundation concrete and for each footing. It should be noted that each footing is to be taken separately and the breadth of the particular footing is to be added to the Centre length.

Long wall length out-to-out = Centre to Centre length + half breadth on one side + half breadth on the other side = Centre to Centre length + one breadth.

Short wall length in-to-in = Centre to Centre length - one breadth.

That is, in case of long wall add one breadth and in case of short wall subtract one breadth from the Centre length to get the corresponding lengths.

**B. Centre Line Method**

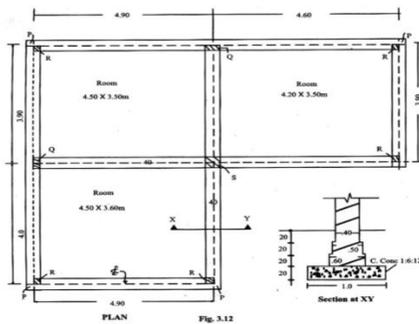


Fig 1: Center Line Method

In this method known as Centre line method. This method is easy and quick in calculations. In this method sum total length of Centre lines of all walls,

long and short has to be found out. This method is well suitable for walls of similar cross sections. In this method the total Centre line multiplied by breadth and depth of concerned item gives the total quantity of each item. In this method, the length will remain same for excavation in foundation for concrete in foundation, for all footings and for super structure (with slight difference where there are cross walls or number of junctions). It requires special attention and consideration at the junctions, meeting points of partition or cross walls, etc.

For rectangular, circular polygonal (hexagonal, octagonal etc.) Building having no inter or cross walls, this method is quite simple. For each junction half breadth of the respective items or footings is to be deducted from the total Centre length. Thus in the case of a building with one partition wall or cross wall having two junctions, for earthwork in foundation trench and foundation concrete deduct one breadth of trench or concrete from the total Centre length (half breadth for one junction and the breadth ( 2 x 1/2 = one) for two junctions. For footings, similarly deduct one breadth of footing for two junctions from the total Centre length and so on. If two walls come from opposite directions and meet a wall at the same point, than there will be two junctions.

**C. Mivan Technique**

The Mivan Technology System was developed by Mivan Company Ltd from Malaysia late 1990s as a system for constructing mass housing project in developing countries. The units were to be of cast-in-place concrete, with load bearing walls using a formwork of aluminum panels. To be erected by the hundreds, of a repetitive design, the system ensured a fast and economical method of construction. The concrete surface finish produced with the aluminum forms allows achievement of a high quality wall finish without the need for extensive plastering. This is one of the systems identified to be very much suitable for Indian conditions for mass construction, where quality and speed can be achieved at high level. The speed of construction by this system will better speed of most of the other construction technologies.



Fig 2: Mivan frame work

### III. RESULTS AND DISCUSSION

1. As per calculation total cost for building of area 55037.40 Sq.ft. by using conventional shuttering is Rs 33619043.2/- means Rs 823/- per Sq.ft.
2. As per calculation total cost for building of area 106984.89 Sq.ft. by using mivan shuttering is Rs 84591542.47/- means Rs 790.68/- per Sq.ft.
3. If we are comparing mivan shuttering with conventional shuttering mivan shuttering is more economical.
4. As per case study analysis when mivan shuttering use it gives 4 days cycle per floor but for conventional shuttering 21 days cycles per floor required.
5. Cost of conventional building in percentage for 1 sq.ft. is 0.24% and for mivan building is 0.093%. Therefore mivan technology is economical.
6. As case study mivan shuttering gives greater finishing quality as compared to conventional shuttering.
7. In mivan shuttering for achieving quality and speedy work more quantity of items required as compare to conventional shuttering.

### IV. CONCLUSION

1. From the all study of estimate and costing of conventional and mivan building, it is prove that the mivan is cost effective.
2. Also from the research it is observed that time for constructions require less as compared to conventional building. i.e. Time saving or rapid construction.

3. From the case study it is seen that quality of construction is better than conventional building construction quality.
4. But initial cost of mivan building is higher than conventional building.
5. Construction industry is the most important part of Indian economy, so Mivan technology plays an important role in growth of construction in India.

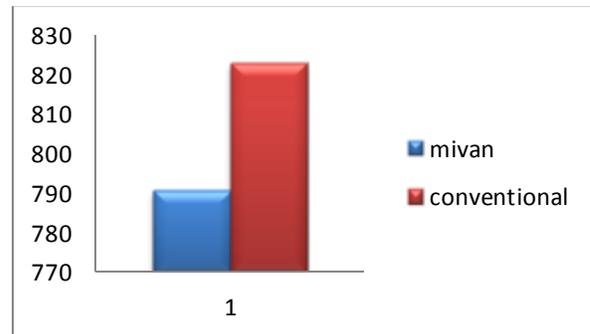


Fig 2: Cost Comparison per sq.ft.

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