

**FAST TRACK CONSTRUCTION-THE NEED OF TIME****Shivani R. Barve\*<sup>1</sup>****Prof.R.S.Ingalkar<sup>2</sup>**

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**ABSTRACT**

In our present world construction industries are the main ingredient for the development. So due to the rapid growth in construction industry, it is not possible to manage the project through conventional ways. We have also observed in many cases due to improper planning may lead to rework and produce many wastages such as over production, over run of cost and time, defects, accidents, unnecessary transportation etc. Traditional construction methods have proved to be ineffective in achieving this goal. Mechanization and parallel working have been the key mantras of fast-track construction. Technology, organization, information, education and productive skills will, therefore, play a critically decisive role in governing the future course of development. The prime objective of affordable housing in any country is to prevent formation of slums and enhance infrastructural development. Hence there is a need for mass housing which will be faster as well as cost effective. The alternate approach for the conventional method is fast track construction which involves monolithic and precast construction. The demand for residential housing is also increase and to cater for such demand also, conventional construction fails in providing required number of dwellings in time. Latest construction technology of fast and speedy construction is the only solution to this problem. This paper deals with fast-track construction practices, which is the need of the time, in construction. Construction as one of the top most industries undergo characteristic changes as fast as possible which would result in better returns.

**Keywords:**

Fast Track Construction, Formwork, Conventional, Mivan, Tunnel, Aluform, Time, High Rise Building,

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**INTRODUCTION**

The construction industry is one of the main sectors that provide important ingredients for the development of an economy. In India construction is the second largest industry therefore having a proper control on complexities of construction projects is the area of interest for all in construction sector. Presently the main challenges faced by construction industry to create certainty about delivery on time, on budget, quality and safety. The conventional methods have limitation to overcome these challenges. Steel being a reusable material, it is considered as a green building material too. Formwork which is the basic element in any construction project is one of the aspects where new techniques can be implemented for cost cutting in long run. Slip forms and moving forms (tunnels) will speed up the construction which in turn demands a very detailed planned parallel working on reinforcement. Selection of technology, methodology, materials along with the trained man power, proper planning and co-ordination are the keys to success in the fast-track construction. The COVID-19 pandemic has laid bare the fragility of the global healthcare system and needs an urgent revamp from civil engineers and architects. Currently, it is imperative to address the heightened demand for fast-track construction, keeping in view both—the present scenario and the long-term sight, to better prepare us for future outbreaks. Infrastructure development in India has set off in a major way in the last two Years and is witnessing impressive growth across various segments. To construct this massive & huge sort of construction in a very short time we required to adopt Fast track methodology.

**A. Conventional Formwork:**

The conventional formwork system usually consists of timber. This is the oldest type of formwork used in the construction industry. This type is very much suitable for small houses with two to three stories and still they are in use for such constructions. But this is not suitable for the big projects or high-rise buildings.

#### **B. Advanced Techniques In Formwork:**

As time progressed, the use of advanced techniques of formwork for construction of structures has gained wide acceptance. In the present competitive market, speed and efficiency are of prime importance; thus by use of advanced technology, the duration of project is reduced by using latest materials, equipment's and techniques which are effective, durable and intensify the pace of construction. Although initial investment in advanced formwork is high still its other merits such as speedy work and high-quality control proves better than conventional formwork system. Advanced formwork systems provide innovative solutions for today's complex high-rise developments, and open the doors for greater improvements in construction methods. The below mentioned formwork techniques are the trending techniques in construction industry.

Tunnel formwork  
Mivan formwork

#### **C. Tunnel Formwork:**

It is particularly effective in projects suited to repetitive cellular construction involving huge symmetrical work such as residential, hotels, student accommodation and prisons. Tunnel form is also used in several housing projects especially for earthquake resistant projects as the construction time is reduced.

#### **D. Aluminium Formwork / Mivan Formwork:**

Aluminum forms are identical in many ways to steel types. However, Aluminum forms are lighter than stainless steel because of their lower density, and this is its main advantage compared to steel. Since the resilience of Aluminum is smaller than that of steel in storage, stress and strain, wide parts may be utilized. When a huge amount of reuse is rendered in building, the shape is economical. MIVAN is an effective method for constructing vast numbers of houses in a short period. India that have been designed using the above method and which have proved very economic and successful for the Indian construction climate. In many countries such as Europe, Asia, and other parts of the world, this system is commonly used.

#### **E. Advantages of Advanced formwork over conventional formwork**

- It retains greater seismic tolerance
- The surface of good quality achieves dimensional continuity
- Customized to satisfy the needs of the client
- Project can be completed with short period compared to conventional formwork system
- Repetitive nature of construction provides effectiveness in production and minimizes the labour cost

#### **LITERATURE REVIEW**

With the introduction of advanced techniques for formwork there has been much comparison of the conventional techniques and advanced techniques of formwork. Deep Jayesh Mistry et.al (2021) analyzed that, Conventional methods of construction are cost-effective but cannot generate the work and speed required. The use of specialized formwork in construction customized to satisfy the need of the client. It is much better than typical formwork techniques. Prasad Kolekar et.al (2020) through their study concluded that, Mivan Formwork system overcome the drawbacks of conventional formwork system. Mivan formwork is cost effective, time efficient and produces better quality if the quantum of work is more. Bhagirathi Singh et.al (2019) compared conventional system & tunnel formwork system and concluded that advanced tunnel formwork is one of the new formwork techniques to hit Indian construction industry suitable for mass construction in Indian conditions. It delivers quality and speed at a rate which is higher than the speed achieved by most of the formwork systems. Sharmilaa.S et.al (2019) it made a

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conclusion that, conventional formwork often had poor safety features and gave slow rates of construction on-site and huge level of waste. Modern formwork systems, Mivan and tunnel form are designed for speed and efficiency. Vallabhy.S et.al (2018) studied that use of tunnel formwork technology the time of construction of a building can be greatly reduced. The construction of large multistory structure can be constructed efficiently using tunnel formwork than other construction technique. Harsh Kataria et.al (2017) concluded that, the conventional formwork which is less durable can be replaced with aluminum formwork, tunnel formwork. There is a huge loss of material, time, labor and money in conventional formwork which results in increasing total cost. Adopting new technologies need some initial investments but their future return can compensate all those investment in very quick time.

### METHODOLOGY

Infrastructure development in India has set off in a major way in the last two Years and is witnessing impressive growth across various segments. To construct this massive & huge sort of construction in a very short time we required to adopt Fast track methodology. By conventional method we required more time to complete the project. As the topic fast track construction is very vast, the scope of study of this is limited to certain areas in fast track construction techniques as Form work systems. Formwork which is the basic element in any construction project is one of the aspects where new techniques can be implemented for cost cutting in long run. Data for this study was acquired from a variety of online databases of journals, year projects by past students of the institution and other such sources. The two main types of techniques namely Aluform system & Tunnel formwork system is discussed.

### CONCLUSION

It can be concluded that the modern methods of construction such as Mivan formwork system & Tunnel form system are the key to meeting the demand for efficient, sustainable housing. Also the quality and speed must be given due consideration with regards to economy. Conventional formwork alone cannot cater the total need for mass housing backlogs. The main systems in use are Mivan technology and tunnel form. This sets out their key features- efficiency, safety, sustainability and other considerations in order to help construction professionals to take advantage of them to achieve modern, efficient concrete construction. Hence there is a need for enhancement and adoption of modern construction techniques to overcome the shortage of mass housing backlogs.

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