

# Formwork And Types Of Formwork

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**Abstract:** This study has been undertaken to understand the various types of formwork their advantages and disadvantages. In Indian economy construction sector hike up the GDP of India which is valued over 2.7 trillion INR. It is increased significantly as compared to July 2020, since the value of shows shrank due to covid-19 pandemic. As Indian population is sublime and every year its on the peal which is second largest in the world after China hence, development of land has become more important to tackle the situation; so providing best type of formwork has made scientist and special civil laurette to think about the materials used for formwork which can be reused and less wastage can occur and also construction sector is the vast growing in field of sustainable development. More than 30% cost of project dependent on formwork in my research paper I have mention some of the best suitable formworks to cope the needs of humans. Although, some of the advanced technologies are grasping the speed of construction and are available in our India such as MIVAN.

**Key words – Formworks, Shuttering, MIVAN Shuttering, Steel formwork, Plywood.**

## I. INTRODUCTION

Formwork is one type of temporary mold in which concrete is poured to cast the required shape of concrete.

Formwork is made from timber or steel, the surface in contact with the concrete being selected to give the required finish. The form work and its associated false work must have sufficient strength to support the weight of the wet concrete without significant distortion. For concrete formwork mostly timber and steel are the materials most commonly used for form work, a range of other materials are used, mainly for specialist applications.

Formwork is an essential component in the construction industry and can be termed as a temporary or permanent form into which concrete is poured, which subsequently becomes hard .Formwork in construction has been used for hundreds and thousands of years to aid in building structures of all sizes and shapes

### A. RESEARCH OBJECTIVE

- To know about the formwork.
- Types of formwork.
- General construction of Formwork.
- Purpose and use of Formwork.

## II. RELATED WORK

### A. IMPORTANCE OF FORMWORK IN CONSTRUCTION WORK

Form work is essential for any construction; its main advantage is that it can't be replaced with any other technology Formwork facilitates in lowers the timeline and prices of the mission via way of means of decreasing the ground-to-ground production cycle time which approach greater initiatives can satisfy their budgetary demands. Formwork particularly related to concrete. It facilitates in generating clean completed floor of the concrete .Formwork allows production managers to provide actual on-time shuttering and de-shuttering of formwork resources, which ends up in enhancing mission effectiveness and aid usage. It presents exact structural protection via way of means of providing answers in opposition to all overlay loads, generating exceedingly secure and realistic structures

### REQUIREMENT OF GOOD FORMWORK

- It must be capable to withstand all types of dead load and live load
- It is partially good to have waterproof character so that it won't absorb water from concrete
- Entire formwork should be rigidly constructed and propped, so that there should be no deformation in the shape and retain its original shape.
- Deflection and shrinkage should be minimum.

**B. TYPES OF FORMWORK MATERIAL****1. Timber formwork:**

Most common type of formwork among all others is Timber formwork. It is extensively used in construction from the ancient period. It is the oldest type of formwork use in construction. Timber formwork is highly used in construction among all the other types of formwork. It is easily available and it is easy to used in construction work but when it comes to large projects it is very time consuming. It can easily cut and joint in any shape and size. Timber formwork is low cost. It is light in weight. It is free from termite attacks and is easily workable. It is feasible in all season when chemical treatment is imposed on it so as to improve the strength of timber in humid region.



Figure 1. Timber Formwork

**2. Steel formwork:**

Steel formwork is famous for its durability strength and its repeated use for longer period of time. It can be used only in large number of project as it is costlier for smaller project. Steel offers a smooth surface and to get desire design of the structure as compared to timber design of the structure as compared tu timber formwork it can be mold is the various structure as compare to timber formwork.



Figure 2. Steel Formwork

**3. Plywood formwork:**

Plywood formwork is one of re-molded timber resin-bonded plywood sheets are attached to timber frame to makeup panels of the required size. It is strong flexible and easy to handle. Its life is short compared to other materials.



Figure 3. Plywood Formwork

**4. Fabric formwork:**

To satisfy the need of construction element we used fabric formwork to cope up with the situation occurred on construction site. They can be replaceable to any formwork that is timber, steel, plywood. The flexibility of fabric formwork makes it possible to produce concrete members of any shape.



Figure 4. Fabric Formwork

**5. Aluminium formwork:**

As we know density of aluminium is  $2.7 \text{ g/cm}^3$  that makes the metal light weighted than steel. This is the main advantage we used aluminium over steel and even it is prove economical



Figure 5. Aluminium Formwork

**C. FACTORS AFFECTING SELECTION OF FORMWORK****Adaptability and flexibility**

Form work should be adaptable for various shapes and sizes of the structural systems so that it can be used for various project. The formwork should be viable for the particular project based on cost and availability

**Quality and surface finish**

As quality and surface finish is entirely depend on type of formwork we use, as a strength of formwork and resistant tool deformation the sheathing material such as plywood steel aluminum and rubber should be appropriately chosen based on the required finish and feasibility

**Availability**

Materials and supplier availability consider for avoiding shortage problems during execution

**Cost**

This is the vital factor for deciding formwork system as one must know the capital provision for formwork in the project.

**Time factor**

The fast floor cycle is always desirable for contractors and owners for the owner faster floor cycle reduces the short term financial charges and allow early utilization of constructed facility

### III.SCOPE OF RESEARCH

- To help understand feasible formwork material that can be used in construction sector.
- To explore previous and upcoming innovations in the construction formwork sector.
- To understand the benefits of types of formwork used in construction sector.

### IV.RESEARCH METHODOLOGY

Initially a personal visit to most of the places was scheduled to interview the individuals who had worked on all these innovative building ideas. But due to the second wave of COVID-19 the survey could not be conducted. Hence, a survey was done with the help of google search and talking to concerned individuals over call.

### V.DATA COLLECTION

The data was acquired with the help of Google Research and some research papers.

### VI.RESULTS

Through this research a lot of things have become clear. Following are the points that are our opinions and views on the basis of the research and we concluded –

Comparison of different types of formwork is done successfully

### VII.CONCLUSION

The different types of form work and the materials used in the formation of formwork are categorized like timber, steel, MIVAN etc.

As formwork is important in the casting of concrete on site of the construction the strength of the formwork is also important so as to follow the resistance capacity towards the backpressure of the concrete ,hence durability of the formwork is also determined.

Formwork is more feasible and convenient for any construction work.

### VIII.REFERANCE

1. <https://www.designingbuildings.co.uk/wiki/Formwork>
2. <https://www.google.com/search?q=formwork+types&oq=formwork+types+&aqs=chrome..69i57j35i39j0i19i22i30i5.6650j0j15&sourceid=chrome&ie=UTF-8>
3. <https://www.ques10.com/p/50137/explain-the-requirements-of-good-formwork-with-nam/>
4. <https://theconstructor.org/building/formwork-technical-functional-economical-safety-requirements/6833/>