

Comparative Study on the Modular Formwork System and Conventional Formwork System in Terms of Time, Cost, Quality and Safety

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Abstract:

This study compares modular formwork systems (MFS) and conventional formwork systems (CFS) in terms of time, cost, quality, and safety. The objective is to assess which system offers greater efficiency and value in modern construction projects. Data was collected through site observations, interviews with industry professionals, and case study analysis.

Findings show that MFS reduces construction time due to its easy assembly and repetitive use. Although the initial cost of modular systems is higher, they offer long-term savings through durability and reduced labor. In terms of quality, MFS delivers better surface finishes and minimizes rework. Safety is also enhanced due to less manual handling and standardized components. In contrast, CFS remains cost-effective for small or custom projects but often leads to higher labor needs and safety risks.

This research highlights the advantages of adopting modular formwork in large-scale and repetitive construction projects, contributing to faster, safer, and more sustainable building practices.

Keywords:

Modular formwork, construction efficiency, cost analysis, safety, quality control.