



Precast Concrete Construction: Pros and Cons in Construction Practice

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ABSTRACT

Precast concrete construction: Advantage and Disadvantage

In this paper we are going to discuss about precast concrete construction (PCC). Target cost and also show how this type of construction has modernised the construction industry. We will discuss how PCC is going to be more efficient than the traditional construction method in the terms of cost, safety, environmental friendly nature and time consumption on the other hand we will also discuss its pros and cons.

Keywords: - PCC, Effective budgeting, Reduce construction cost, Local available material, Skills & technology, Housing is basic need of human.

1. Introduction:

Precast concrete construction is a modern construction technique which helps in improving sustainable building practices by cost reduction process and fast way of construction. The main advantage of PCC is it is manufactured in factory in control manner ensuring its quality and also required less time for construction process. This method helps in reduce wastage, enhance decision and save environment.

2. Methodology:

The methodology of precast concrete construction involve systematic process from design to installation the process is given below

Design Phase: Include project planning, Architecture and structure design.

Precast component manufacturing: This include model preparation, Concrete mixing, Casting, Demoulding and finishing.

Quality Control: This stage include quality check, Inspection and different test were done on precast concrete.

Transportation: Planning for the delivery of the precast is done including factors such as Route, delivery charges, etc.

Foundation for precast: Foundation is to be done on site according to design. Machinery such as cranes were setup at proper place.

Connection and joints should be check before and after installation

After placement: Proper grouting and sealing is done grouting is place between joints for expansion and contraction. Final checking is done properly.

Maintenance and monitoring is done at time to time.

3. Specifications :

Precast construction entails the off-site production of building or structure components, which are then transported to the construction site for assembly. Depending on the particular project, precast construction specifications may differ, but the following common components are usually included:

General specifications: A thorough explanation of the precast concrete components, taking into account their sizes, tolerances, and finishes.

Resources: Indicate the kind and calibre of materials used in precast elements, such as cement, admixtures, aggregates, and reinforcing steel.

Production Method: Explain the casting, curing, and finishing processes involved in the production of precast elements.

Quality Assurance: Describe the quality control processes, such as material and completed precast element testing.

Moving and Managing: Establish protocols for the handling and delivery of precast components to the building site.

Setting up: Describe the steps involved in installing precast elements, such as levelling, alignment, and connecting techniques.

Joints and Connections: Describe the different kinds of joints and connections that precast elements have. Safety and Resistance to Fire

4. Observation :

Pros of precast concrete construction

- PCC is first mode of construction than the conventional building practice.
- It helps in saving cost and maintaining efficiency.
- Hi-Tech helps in maintaining quality, saving time, reducing cost of production.
- All production is done in close factory so the waste management is done properly and this reduces the pollution drastically.
- Due to construction in industry impact of unconditional weather reduce and the construction process can be done in any season.
- Prakash is done in control manner show the quality is check time to time.
- Labour safety is optimize properly due to the production done in the factory.

Cons of precast concrete construction

- Large long span building components need specialize d drugs and machineries to transport it from factory to site.
- Precast one casted then it is very difficult to modified.
- Large precast transportation is very challenging especially uncongested urban areas.
- Initial cost of investment of specialized equipment and labors are very high.
- Connecting two joints together create a challenging issue.
- Maintenance of some precast component have to be done properly.
- Long pant limitation aesthetic limitation is also drawback of precast.

5. Results and discussion :

Present information about the strength, load-bearing capacity, and environmental resistance of precast elements in terms of their structural performance.

Construction Speed and Efficiency: Examine the data to pinpoint precise areas where time savings were noteworthy, and then talk about how this will affect project completion and scheduling.

Cost Analysis: Give a thorough cost analysis that contrasts traditional construction techniques with precast construction.

Present research results regarding the quality control procedures used in the production of precast elements.

Precast Technology Innovations: Describe the major technological developments and innovations that have been noticed in the precast building sector.

Data on the material usage, energy consumption, and waste generation associated with precast construction should be presented.

Architectural Versatility: Provide examples of how precast elements have been used in a variety of construction projects to achieve architectural versatility.

Excellence and Effectiveness Trade-off: Precast construction offers high quality through regulated manufacturing, but flexibility comes at a cost. Precast elements are standardized, which may restrict design options and require careful planning in the design stage.

Safety and Speed: Reducing construction activities on site improves safety, but this is reliant on how well the installation and transportation procedures work. Overall project success depends on striking a balance between safety precautions and project pace.

Environmental Impact: The energy-intensive production processes and transportation emissions associated with precast concrete have an impact on the environment.

6. Conclusions :

In conclusion precast concrete construction has some pros and cons like every technology have, but this technology is more advantages than its drawbacks. This technology will boost the construction sector. Including convectional and PCC every construction sector have their drawback. The PCC has enhance

the speed of construction also increase cost efficiency and sustainability by using both convectional and PCC we can achieve the best technique for the current and the future projects. As the technology evolved more eco friendly an efficient techniques will be introduce.

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