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## A REVIEW PAPER ON PRECAST CONCRETE STRUCTURES

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### ABSTRACT

The tremendous growth of population of India leading towards huge demand for housing in India. Government of India initiate PMAY (Pradhan Mantri Awas Yojna) scheme objective of the scheme is to provide proper house to all the homeless person. To achieve this target the utilization of precast technology does provide faster construction. Precast concrete structural system displaying non-linear response. Characteristics can be classified in two categories as equivalent monolithic system and jointed system. Application of precast technology is only two percent of the total Indian Construction Industry. It is found that overall cost required in precast concrete structure method reduce by 20% in comparison to conventional method in buildings.

**Keywords:** Precast, Monolithic, Conventional Management, Components, Resources.

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### I. INTRODUCTION

Adoption of modern technology can provide quality of construction while using minimum resources quality of precast concrete is higher as it manufactured under great control. It has high efficiency durability, thermal property, time saving and less dependency of work force. Construction industry is huge energy consuming industry and precast concrete products will continue to be more energy efficient. Precast concrete structure means a concrete member that is cast and cured at a location in a control environment. Precast modules need to be assembled in a manner to avoid any moisture and water leakage problems. There are different type of precast concrete forming system for architectural application, differing in size, function and cost.

### II. LITREATURE REVIEW

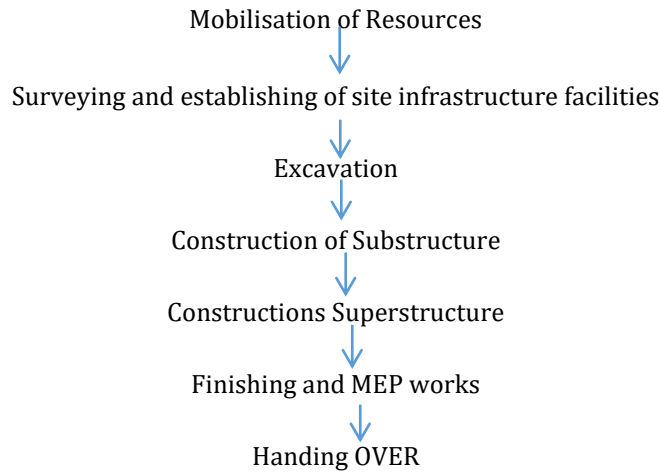
- Two main factors are considered which are "cost" and "time". Cast insitu method of concreting require lots of time because concrete require minimum 28 days to achieve 99% strength. Precast construction provide better productivity , reduce the duration time of the project and cost and also dependency of the work. Its reducing formwork cast compare to site cast concrete work.
- Control casting condition and high quality forms allow for greater control of surface finishes . Durable permanent steel forms are reuse several time. Reduction requirements for form work and scaffolding 75 % less than cast in situ concrete. Ever highly exposed concrete unit are virtually maintenance free and have a design life of 120 years. Precast structure meet the highest standers for resistance to sound transmission.
- The production of construction is high and waste are minimum but it has own drawback as precast system has not been fully implemented in India and there is less knowledge about this method in the construction sector of India.

### III. METHODOLOGY

Achieved through the use of suitable connection to cater for all service , environmental and ultimate load conditions . Precast element are manufactured in casting beds 800 feet or more in length. High strength steel strands are strung the length of the bed and tensioned. Conventional reinforcing, weld plates, blockouts, lifting loops and other embedded items are added as needed. Concrete is poured into moulds or forms or casting beds. Once the concrete has cured to sufficient strength , the casting are cut into sections of desired length. Provide column and wall panels for support beam and slab elements. Since these member carry mainly axial load with

little bending force ,they may be conventionally reinforced without prestressing .a hollow core slab offers the ideal section by reducing deadweight.

Connecting the elements together is not just a question of fixing the element to each other , but it is to structural integrity of the whole structure. Precast concrete element is a finite size and must therefore be joined to other element to form a complement structure.



**IV. PRECAST ELEMENT LAYOUT**

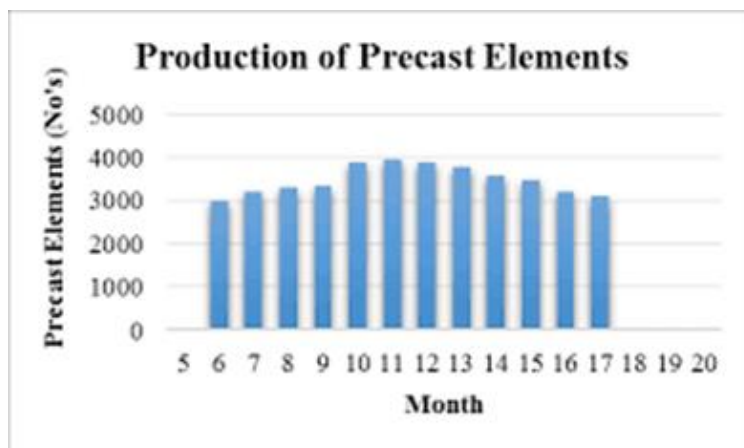
**Table 1.** Precast element details in 2BHK and 3BHK units

SN.	Elements types	No. of elements in 2BHK/ 2 Units	No. of elements in 3BHK/ 3 Units
1	Walls	32	38
2	Beams	3	5
3	PBS	4	4
4	Slabs	10	12

In the present study total 236 precast element were plant for every typical floor which include void, beam, precast beam-slab (PBS) and slab .

**V. PRODUCTION OF PRECAST ELEMENT**

Materials used for precast concrete structures are concrete, steel reinforcement, structural steel and bolts, non cementious material (Elastomeric bearings for Neoprene, rubbers and mastics are used for soft bearing pads, baking strips, etc ). The precast structure can be dismantaed, when required and they can then be suitably used everywhere. The moulds employed for preparing the precast unit are of steel with interact in all direction. This moulds are more durable and they can be used several times.



**Chart 1.** Production of precast

## **VI. CONCLUSION**

From the analysis it has been found that precast technology is adopted worldwide the application of precast construction technology is very effective and efficient in terms of executing large scale construction project like commercial and constitutional buildings. It has many properties such as it can withstand under seismic load, cyclic load etc. and save the requirement of man power, less wastage of material. Precast engineering is ideal mode of construction, one may conclude that precast engineering add to economic development via its criteria by providing employment opportunity. The initial investment for a precast yard is very high but it is also provides benefit of speedy construction.

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