

**PRECAST DEVELOPMENT SO FAR IN INDIA**  
**IMPLEMENTATION CHALLENGES**  
**PLANNING FOR PRECAST**  
**AWARENESS OF PRECAST**  
**FUTURE OF PRECAST**

# DEVELOPMENT OF PRECAST IN INDIA SO FAR

- Number of precast manufacturing units have been set up and are being set up in India.
- The demand for precast systems is rising day by day
- The developers and Govt. Institutions have felt the necessity of completion of projects faster and thus pass on benefits to the customers early as well as for themselves



# Development of Precast in India so far

- Spirol from UK have set up a facility in south India to supply the steel plates required for beds duly tying up with a local firm
- Bianchi from Italy have set up the facility near to Mumbai and are supplying the tilting moulds required for making walls, as well as for forms for columns, beams and have already supplied to number of precast manufacturers in India.



S.No	Client	Equipment supplied from	Unit
I	<b>Hyderabad</b>		
1	Janapriya Developers,	Elematic, FINLAND	Battery Mould
2	PRECA	Prensoland, Spain	
3	Skill promoter	Nordimpianti, Italy	
II	<b>COIMBATORE</b>		
	TEEMAGE PRECAST	ECHO, from NETHERLANDS, & WECKENMANN, Germany	5 bed HCSplant Battery Mould
III	<b>CALICUT</b>	Weckenmann, Germany	Battery Mould
IV	<b>Chennai</b>		
	VME PRECAST	Elematic, Finland	HCS & Tilting Table wall unit



<b>V</b>	<b>PUNE</b>		
1	Precast India infrastructure (Bhate & Raje, panchshil)	Echo, Netherlands Vollert, Germany	6 bed HCS Plant Battery Mould
2	Best I precast	Bianchi & Nordimpianti Italy	HCS & Battery Mould
3	I Build (IBS) Pune		8 bed HCS plant
<b>VI</b>	<b>Mumbai</b>		
	L & T (Khopoli)	Echo Netherlands	6 bed HCS Plant
<b>VII</b>	<b>Bangalore</b>		
	Gauri Infrastructure	Moore living, New Zealand,	Battery Mould
<b>VII</b>	<b>Calicut</b>	Weckenmann	Battery Mould
<b>IX</b>	<b>Noida</b>		
	Supertech	Echo Netherlands	8 bed HCS plant Carousel Wall panel production



# Development of Precast in India so far

**Precast construction is fast catching up and is establishing itself as the construction technology for the future**

The different precast projects so far came up in India and are built by the different precast companies are a testimony of the same which are indicated below:



# BRIGADE ORCHARDS

- Basement + Stilt + G +7 Upper floors
- Residential Apartment; 256 flats of 2BHK & 3 BHK.



# BRIGADE ORCHARDS

The Sub-structure is cast-in situ and superstructure fully built using precast Elements like wall panels, slabs, beams, staircase flights, landing elements and parapet walls.





# PRECAST MULTI-LEVEL CAR PARK, TERMINAL IB, DOMESTIC AIRPORT MUMBAI

Multi-level Car Park (MLCP) was a unique project that has been successfully completed by L&T despite the challenges of being situated at busy junction of Domestic Airport and Western Express highway surrounded with many live line underground services.



# PRECAST MULTI-LEVEL CAR PARK, TERMINAL 1B, DOMESTIC AIRPORT MUMBAI

Built up area – 30,497sqm

8 Levels car parking

Comprising 2B + G+ 4



# **BHARAT FORCE RESEARCH AND DEVELOPMENT CENTRE (BFRD)**

Total Area: 1.1 lakh sq.ft

Total No. of Floors:

G+L1+L2+L3+Terrace

Delivered in 7.5 months



# SCHMERSAL INDIA

Built up area – 8880 sq m



**PRODUCTION FACILITY  
FOR SCHMERSAL INDIA PVT. LTD, PUNE**

# TRANSPORTATION OF COLUMNS



# ERECTION OF COLUMNS



# ERECTION OF COLUMNS





# ERECTION OF COLUMNS



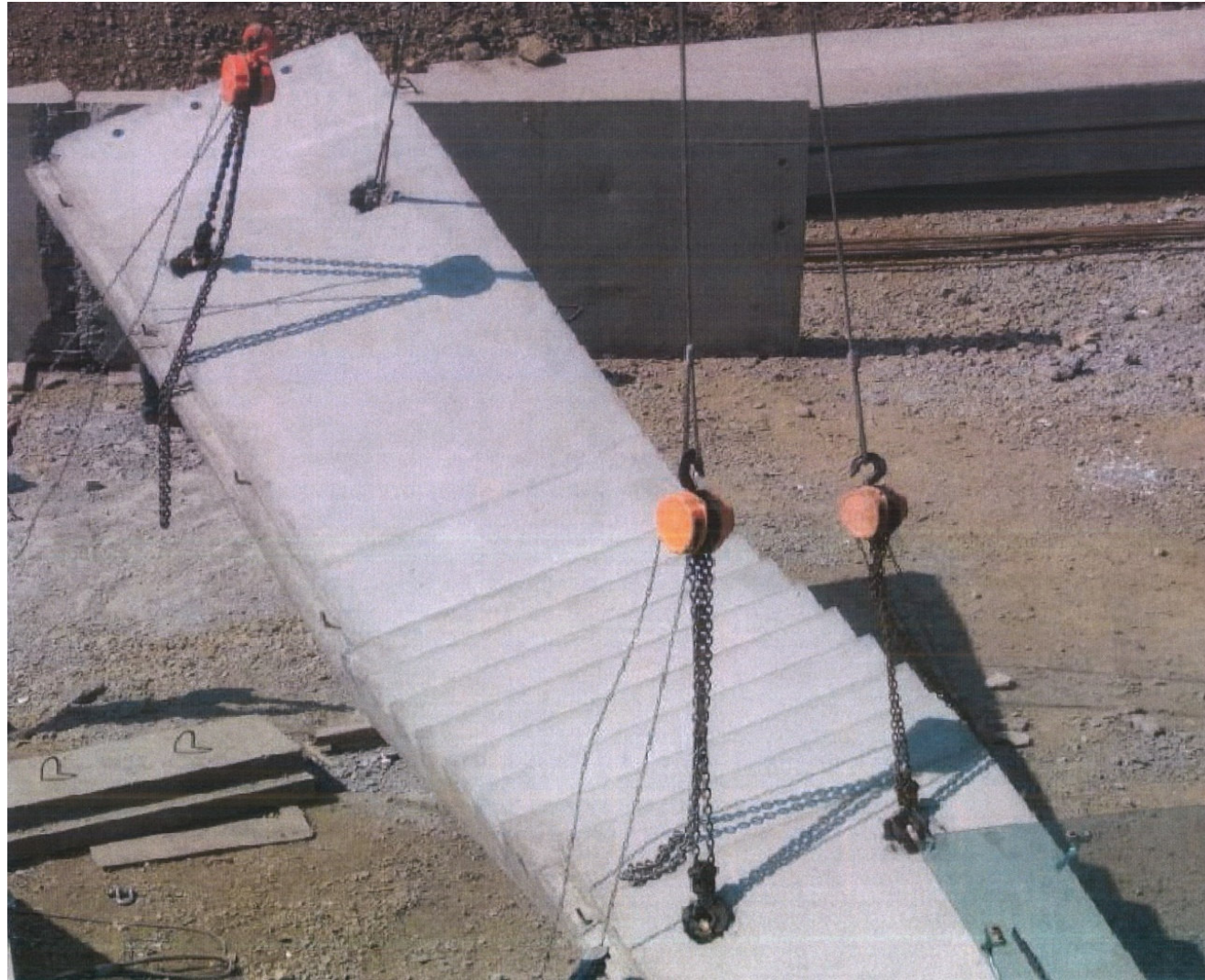
# ERECTION OF COLUMNS



# ERECTED COLUMN



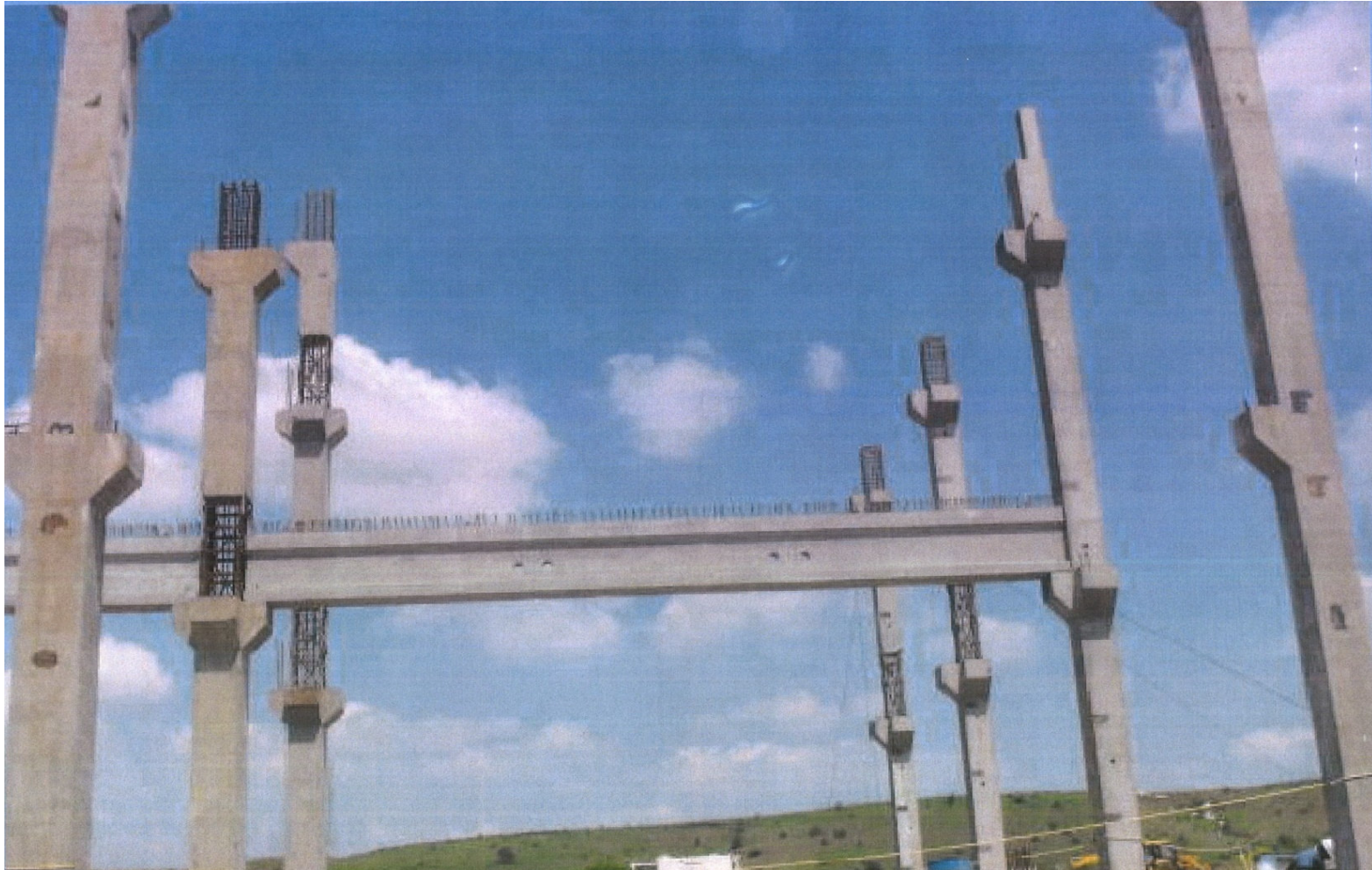
# ERECTION OF STAIRCASE



# STAIR CASE



# COLUMNS AND BEAMS



# COLUMNS AND BEAMS



# COLUMNS AND BEAMS





# COLUMNS, BEAMS AND SLABS



# DOUBLE T-SLAB



# COLUMNS, BEAMS AND SLABS



# ERECTION OF BOUNDARY WALL ELEMENTS



# BOUNDARY WALLS



# **INFOSYS MULTI LEVEL CAR PARKING**

Total Area = 4.5 Lakh Sq.Ft

Total No of Floors

Basement+10 Floors



# INFOSYS MULTI LEVEL CAR PARK PUNE

# FACADE



**INFOSYS MLCP**





**INFOSYS MLCP**



**INFOSYS MLCP**



**INFOSYS MLCP**



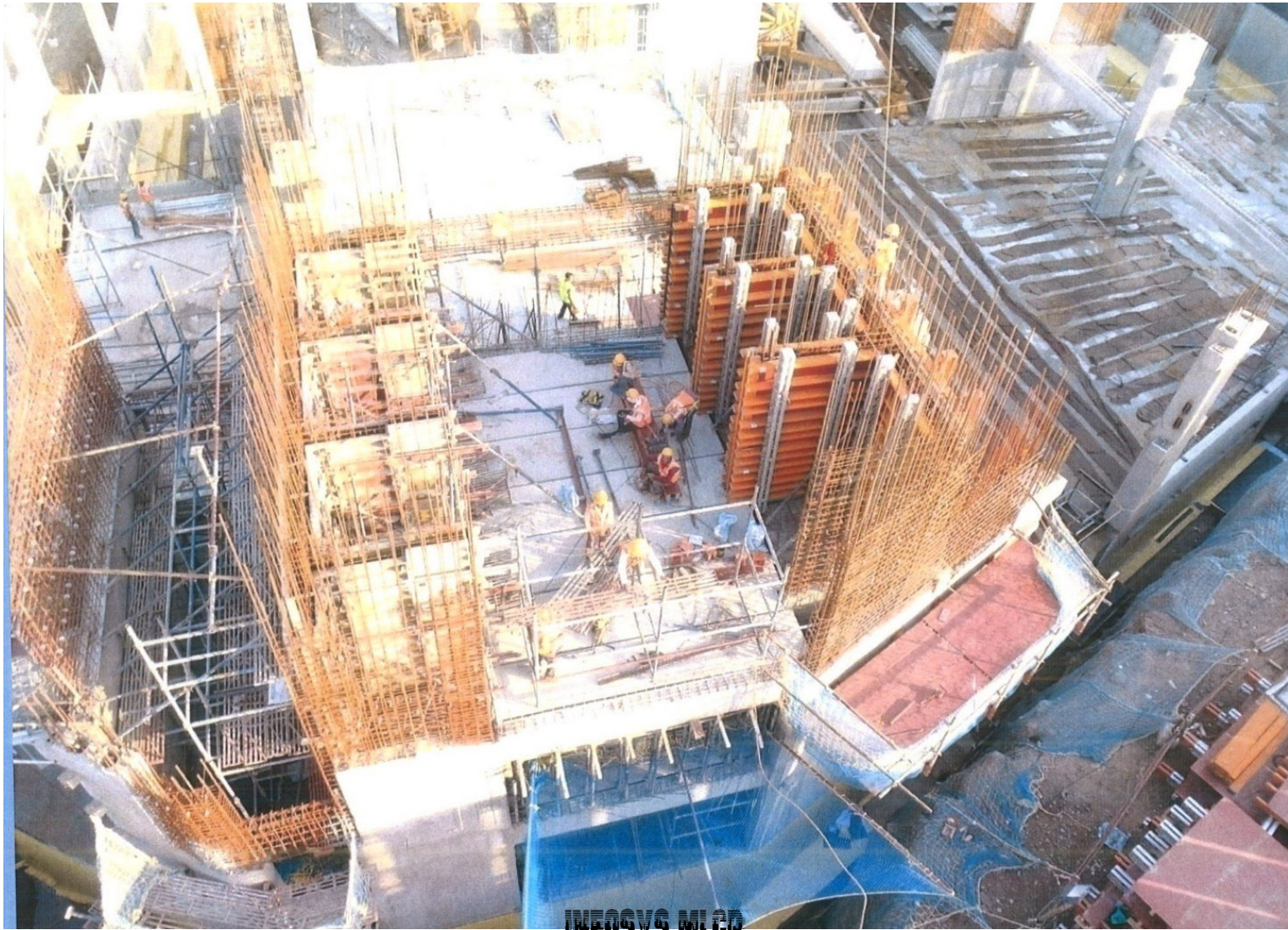
**INFOSYS MLCP**



**INFOSYS MLCP**



**INFOSYS MLCP**



**INFOSYS MLCP**



**INFOSYS MLCP**





**INFOSYS MLCP**

# **WTC-WORLD TRADE CENTRE, PUNE**

Built up area :16.5 Lakh Sq.Ft

Total No of Floors:

Basement+Podium+10 Floor



# BDA PROJECT

Bangalore Development  
Authority (BDA) B+S+18 floor  
housing project  
Doddabanhalli Bangalore

B+S+18 FLOOR HOUSING  
PROJECT, DODDABANAHALLI,  
BANGALORE

M/s. B.G.Shirke Construction  
Technology Pvt Limited, Pune  
built the structure using  
Prefab technology



# OFFICE BUILDING IN HYDERABAD.

- Stilts- 2no's + G +4 ; 1,65,000 sft
- Delivered in 4.5 months



# HOSPITAL BUILDING:

**G+4 – 1,20,000 sft : Built in 4 months**

Precast elements used are, viz.,  
Precast Prestressed Hollow core slabs,

Prestressed beams,

Precast Retaining walls, Precast Stairs,

Precast Lift walls,

Precast Architectural elements,

Precast ducts



# INDUSTRIAL BUILDING IN HYDERABAD

- Cadbury's project-  
2,20,000 sft
- Composite  
Construction:  
Steel columns and  
Beams + Precast  
Hollow core slabs
- Delivered in 5  
months



# INTERNATIONAL SCHOOL BUILDING IN HYDERABAD



# IT SEZ OFFICE BUILDING IN HYDERABAD

Stilt+ G+4 – 1,65,000 sft –  
built in 4 months

Precast elements used are,  
viz.,

Precast Prestressed Hollow  
core slabs,

Prestressed beams,

Precast Retaining walls,  
Precast Stairs,

Precast Lift walls





# INDUSTRIAL BUILDINGS

Industrial Wagon  
loading building in  
Hyderabad

Delivered in 4 months



**FEW OF THE PROJECTS CARRIED OUT BY  
VME GROUP, CHENNAI**

# D.R.D.O, CABS HANGER & OFFICES BUILDINGS, BANGALORE.



# NOVOTEL IBIS COMBO HOTEL, CHENNAI.



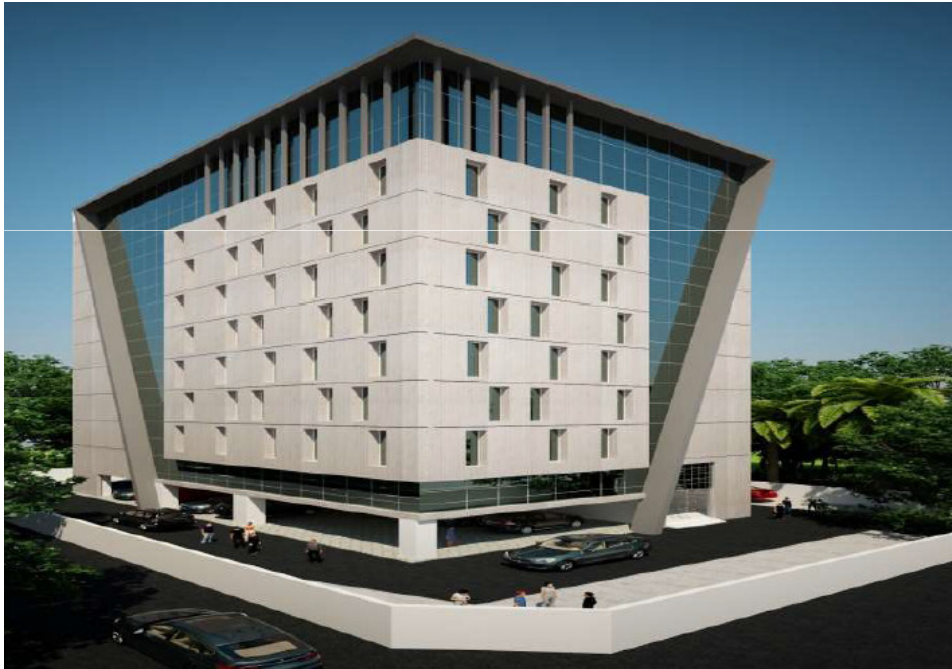
# KHIVRAJ MOTORS - CAR SHOWROOM, CHENNAI



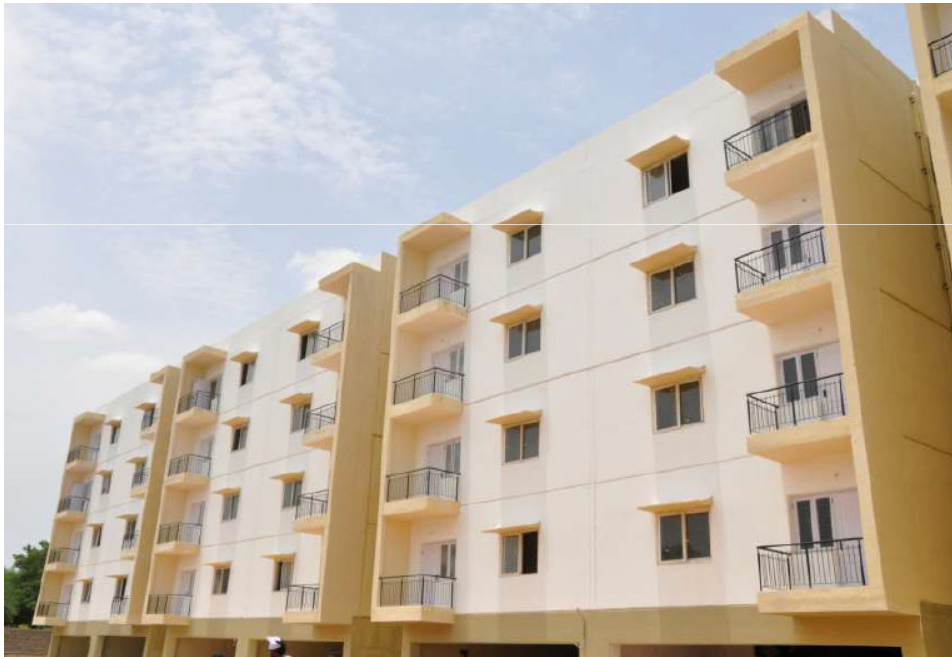
# CHENNAI SILKS SHOWROOM, TIRUNELVELI



# OFFICE BUILDING - GUINDY, CHENNAI



# LAKESIDE, CHENNAI





**FEW OF THE PROJECTS CARRIED OUT  
BY TEENAGE, COIMBATORE**

# MOS TSM CANTEEN BLOCK

- Built-up Area : 13,500 Sq.Ft
- Scope : Beams, Columns, Hollow core slabs, Wall panels, Solid Slabs and Staircase
- Time: 38 days



# M.S. ROTARY SCHOOL, TIRUPUR, TAMILNADU

- Duration : 28 Days
- Built-up Area : 19,000 Sq.Ft
- Scope : Beams, Columns, Hollow core slabs, Wall panels, Solid Slabs and Staircase



# M□S. SCM SILKS (P) LTD : TIRUPUR, TAMIL NADU

- Duration : 30 Days
- Built-up Area : 52,300 Sq.Ft
- Scope : Beams, columns, Hollow core slabs, Wall panels and staircase



# **M□S.CHRISTIAN MEDICAL COLLEGE VELLORE, TAMIL NADU**

- Duration : 27 Days
- Built-up Area : 49,500 Sq.Ft
- Scope : Beams, Columns, Hollow core slabs, Wall panels and Staircase



- Supertech, from Noida, Shobha Developers are meeting their in House requirements, while, KEF Infra, and other companies have also done different structures across India.



# PLANNING FOR PRECAST

- For any project, precast needs to be planned right from the beginning of involving all the consultants.
- Sound design and planning is a must involving all the consultants, viz., Architects, Structural, and MEP.
- In precast, after the design is frozen, elements will go for production. Thereby, there is a distinct advantage of design freezing point happens to the builders and developers.



# CHALLENGES IN IMPLEMENTATION OF PRECAST

The following are the challenges in implementation of precast into projects, viz.,

- Understanding of the Technology of Precast
- Affordability of Precast
- Setting up cost of Precast units and Payback period
- Viability of Precast Industry
- Entrepreneurs to set up
- Demand for Precast and Customers for absorbing/using the Precast units





# CHALLENGES IN IMPLEMENTATION OF PRECAST

- Precast Awareness amongst the builders and Developers
- Resistance to change from Conventional construction
- **Taxes on precast elements** is also one of the **main retarding factors** in precast development, compared with conventional construction



# CHALLENGES IN IMPLEMENTATION OF PRECAST

- By adopting for precast, Builders and developers should consider that the time for completion of projects will be reduced by 40 to 50% .
- This will in turn reduce overheads on men and machinery .
- The space could be leased out early or occupied and revenue accruals on early leasing will in fact give lot of savings compared to conventional construction

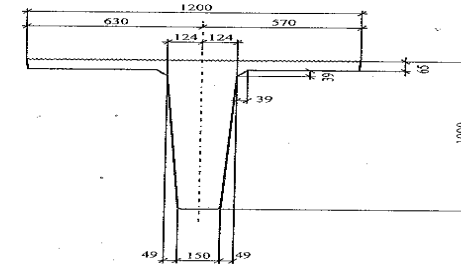
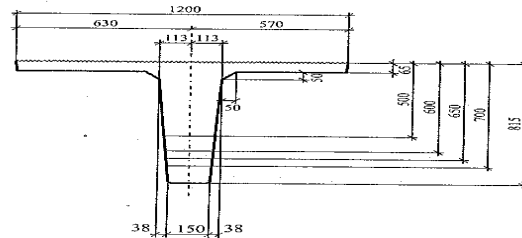


## PRECAST SET UP SCALE VS COST

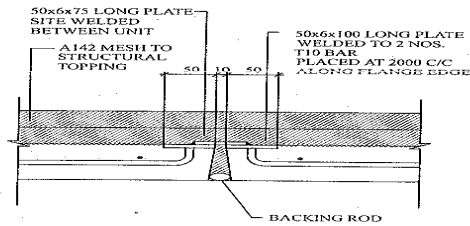
	Parameter	Units	Case-1	Case-2	Case-3
Scale	Built up area required	mn.sft	1	2	3
Investment	Precast plant	Rs cr	13	17	22
	Additional site machinery	Rs cr	3	4	4
	Any other major capex required	Rs cr	2	3	4
Total			18	24	30
Operating costs in precast	Operating cost of plant	Rs/sft			
	Material costs	Rs/sft			
	Total cost of production	Rs/sft			
	Transportation costs	Rs/sft			
	Labour costs	Rs/sft			
	Operating cost of onsite equipment	Rs/sft			
	Total cost of construction	Rs/sft	1000	950	900
Costs in conventional construction	Material costs	Rs/sft			
	Operating machinery	Rs/sft			
	Labour costs	Rs/sft			
	Total cost of construction	Rs/sft	1200	1200	1200
Labour	Skilled labour required	no.	40	40	40
	Unskilled labour required	no.	20	20	20
Time	Time of construction using precast	days	12 to 15 months	15 to 18 months	20 to 24 months
	Time of construction using conventional	days	36 months	48 months	60 months
	<b>Assumptions:</b>				
	Unit size	500 sft			
	Design	Simple			
	Configuration	G+4			



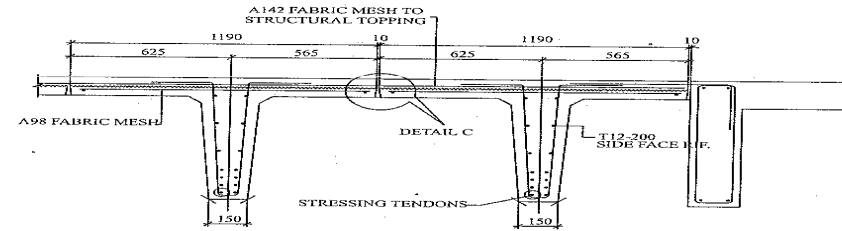
### T Slab Typical Details



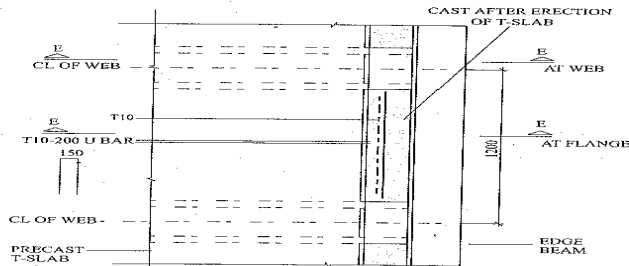
TYPICAL CROSS SECTIONS



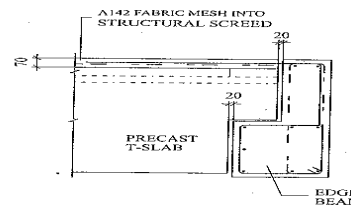
DETAIL - C



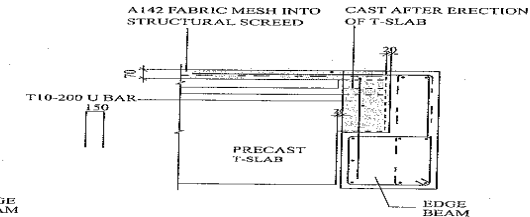
TYPICAL CROSS SECTION OF SINGLE T-SLAB  
(COMPOSITE SECTION)



TYPICAL PART PLAN OF  
T-SLAB AT EDGE BEAM



SECTION E-E AT WEB



SECTION E-E AT FLANGE



# **AWARENESS OF PRECAST IN DESIGN COMMUNITY IN INDIA**

- There is a big need for making aware of precast technology and its modular construction to the people involved in construction sector
- Architects and Structural Engineers in India, also need to imbibe these technology issues, and start implementing them into their projects and help the clients reap the benefits of using them



# AWARENESS OF PRECAST IN DESIGN COMMUNITY IN INDIA

- This time, PEPSCON 2017 is being held in New Delhi with the main theme of Housing for all (HFA) by 2022, and precast requirement for HFA, besides dealing about other technologies suitable for construction
- The details of projects constructed so far using precast, composite construction and other technologies will be presented in the conference duly giving information related to Design aspects, execution and costing, etc.,



# Awareness of Precast in Design community in India

- PSI (Pre Engineered structures society of India, [www.pessi.in](http://www.pessi.in)) is making efforts by conducting workshops in the name of PEPSCON every year in Hyderabad and other cities and thereby creating awareness of precast buildings and dissemination of knowledge amongst Design Engineers, Entrepreneurs and Developers.
- Engineering associations like ACCE(I) , ICI, and other agencies at Mumbai and Delhi are also conducting the workshops on precast





# FUTURE OF PRECAST

- From the conventional construction of framed structure type, the Industry have moved forward for monolithic construction using Aluminum formwork.
- Now, precast is fast catching up, and more and more developers are looking for precast as a way forward, to construct the projects faster and precast have established itself as a strong technology for quicker deliverables along with high quality and strength



# FUTURE OF PRECAST

- DDA, Bangalore development authority, Bhubaneshwar Development authority, Chattisgarh state Govt., and various other state govt organisations have been calling the tenders for construction of houses based on precast type of construction to construct the projects faster.
- Brigade, Shobha and Supertech have already constructed Multi story residential towers in Bangalore and Noida. Shapoorji Pollongy & Contracting are building multi story residential towers for Peenya project to Tata housing which is totally precast



# FUTURE OF PRECAST

- Even the MES / Defence establishment have opted for construction of precast to realise Quality and faster construction.
- VME have recently delivered a structure for DRDO at Bangalore covering an area of 1,20, 000 sft in a very short time
- Developers in Mumbai are looking forward for the precast companies to come forward and construct buildings for them, and there is a need for number of precast companies to be set up in Mumbai and Delhi to meet the present demands, and in other cities to meet the demand for construction



# REQUIREMENTS

- Number of Entrepreneurs are also required to set up the precast companies across the country
- Banks will be required to lend the loans required for setting up of the precast industries
- Precast is the solution to meet the demands of HFA mission too
- Government should promote the precast industry in a big way to achieve the HFA mission and remove the excise duty on precast products for construction of houses for ESW and LIG, such that the cost of unit comes down and will be affordable to the beneficiaries and the mission of HFA will be achievable





# KETHANAKONDA



3/4/2017



3/4/2017





3/4/2017



3/4/2017



3/4/2017



3/4/2017



3/4/2017



3/4/2017



3/4/2017



3/4/2017





3/4/2017



3/4/2017



3/4/2017



3/4/2017

92



3/4/2017



3/4/2017



3/4/2017



3/4/2017





3/4/2017



3/4/2017

98