PRECAST CEMENT PRODUCTS

1. INTRODUCTION:

Reinforced cement concrete products are becoming popular as modular house and apartment buildings are based on standard designs. There are large no of architectural products required like window sills/ lintels, door frames, slabs for floors and roofs, wall panels etc.

Similarly modern planning of water supply, storm water, sewage systems, electricity supply, road rail construction requiring culverts etc. are likely to need good quality products in huge volumes.

2. PRODUCT & ITS APPLICATION:

Various products are becoming popular in this sector for variety of applications as listed above. Entrepreneur can look at popular products on internet produced by leading units all over the world to narrow down his product selection. Some are listed below

Prefabricated Building Products:
Door frames, windows frames, Columns, chajahs, roof slabs, lintels, ventilators, wall partition panels, compound wall segments, cement concrete small pillars for compound wall, slabs for canal lining, tiles, personal linings, sills, trusses etc.

Reinforced cement concrete spun pipes and Boxes:
RCC Spun pipes are used for small culverts, water supply, and storm water drainage and sewerage systems. Pipes up to 1000 mm Dia were exclusively reserved for manufacture in the SSI sector. However several large units are in this sector. These pipes are widely used for water drainage, sewerage, culverts and irrigation. RCC pipes are classified as pressure and non-pressure pipes viz.

NPI, NP2, NP3, P1, P2, P3 for use in specific conditions. Precast Square box are used in culverts on large road/ rail projects.

3. DESIRED QUALIFICATIONS FOR PROMOTER:

The promoter with experience in construction business and training civil engineering will be able to be able to manage the project well.

4. INDUSTRY OUTLOOK/TREND

While a majority of Indian structures both residential, commercial and infrastructure are being built the cast in place or in-situ mode, there is a growing popularity for precast technology within the Indian construction community. It has been adopted in India, but was mostly limited to civil structures such as tunnels, bridges& flyovers and underpasses.

The precast product industry has large unit such as Bemco Sleepers Ltd, Dony Polo Udyog Ltd, GPT Infraprojects Ltd, Hindustan Prefab Ltd, Indian Hume Pipe Co Ltd etc. Construction conglomerates L&T and Shapporji Pallonji have dedicated divisions for precast production. Amongst builders/ developers Supertech Ltd, Amrapali Group, Sobha Developers, Malar Infra, Tata Realty and Teemage Precast, Readycrete, Gaursons, Raheja Group, Precast India Infrastructures have adopted precast technology for mega housing and infrastructure projects and many others have plans to use precast technology in the future. There are many small medium scale units for production of smaller and standard items viz RCC pipes, poles, blocks, and other articles viz benches decorative columns etc.

A small country like Finland with a population of just over five million people has about 100 precast plants. Which indicates the scope for India to reach and surpass that number? Precast plants are customized as per the level of automation and production capacity and customer needs. Most of our plants are tailor made. Curved precast panels with a variety of highly attractive and durable finishes are now manufactured. Precast construction is virtually unlimited in its application and is suitable all types of designs and construction.

5. MARKET POTENTIAL AND MARKETING ISSUES. IF ANY:

The construction industry in India is around USD 500 million and precast has only 2% share vis-à-vis the traditional method of construction. However, a gradual shift is occurring and precast building technology is rapidly gaining a foothold in the Indian market and primary among them is the need for affordable housing. Urban Infrastructure gap estimates the urban housing shortage in the country at about 29 million units. The demand for affordable housing is likely to rise from 25 million households to more than 38 million units by 2030, by when the urban population is likely to surge to 600 million. Besides housing all associated services and commercial activities will have to be established. This indicates the potential in this sector.

All the Precast products are consumed by construction activities carried out by Housing sector builders, Public Health Engineering Department, Public Works Departments, Agriculture and Forest Department, National Highways, Environment Engineering Department, Panchayats, Municipal Corporations etc. These are the bulk consumers of RCC Products and spun pipes. Most of the Govt agencies retain contractors for such works and approved civil contractors executing the works of the Government Department and Public Sector Undertakings are main contractors. Presently government is giving stress on rural irrigation and improving methods of water supply scheme, so the demand for pipes is increasing.

6. RAW MATERIAL REQUIREMENTS:

These products are made from cement, coarse and fine aggregate, sand, mild steel and HT rods and bars as per the need of several projects. Moulds may be made from wood, ply wood boards and steel fabrications.

7. MANUFACTURING PROCESS:

RCC casting uses seasoned teak wooden moulds or steel fabrication for the manufacture depending upon their shape, size, design and specifications.

Cement sand and aggregate in proper ratio with adequate water are mixed in concrete mixer. Sometimes the concrete mix of different ratios is required to be tested for the desired strength etc. properties. As per design the wooden or

steel moulds are selected and the moulds are well lubricated to ensure release of cast and get good surface. The moulds are filled with concrete mixture to desired thickness. Then the mold filled with concrete mixture is put under the vibrator process. The filled mold has to be filled by removing the air bubbles and loose water. The mold is allowed to dry till the setting time of cast. After removing from the mold the pre-cast material is cured for 15~20 days. After inspection the products are ready for dispatch.

RCC spun pipe is prepared in proportion of 1:2:5:2:5 of cement stone, metal and sand respectively. The cement concrete is fed into the moulds during rotation which spreads inside evenly. These pipes are also reinforced the time required for completion of this operation depends upon the diameter and class of the pipe. The pipes are kept in the mold for 24 hours. On the following day the pipes are removed from the moulds and submersed in water in the curing tank for about 15-20 days depending upon the class of the pipe. The specimens of the pipes are subject to the following tests viz: Hydro-static pressure test, three edge load bearing test and Absorption test.

8. MANPOWER REQUIREMENT:

The unit shall require highly skilled service persons. The unit can start from 10 employees initially and increase to 26 or more depending on business volume.

Sr. No.	Type of Employees	Monthly Salary	No of Employees				
			Year 1	Year 2	Year 3	Year 4	Year 5
1	Skilled Operators	18000	1	2	4	4	4
2	Semi-Skilled/ Helpers	8000	6	6	12	16	16
3	Supervisor/ Manager	25000	1	1	2	2	2
4	Accounts/ Marketing	18000	1	1	2	2	2
5	Other Staff	7000	1	2	2	2	2
	TOTAL		10	12	22	26	26

9. IMPLEMENTATION SCHEDULE:

The unit can be implemented within 6 months from the serious initiation of project work.
The unit is based on selection of location, renting premises for the unit.

Sr. No.	Activities	Time Required in Months
1	Acquisition of Premises	2
2	Construction (if Applicable)	2
3	Procurement and Installation of Plant and Machinery	2
4	Arrangement of Finance	2
5	Manpower Recruitment and start up	1
	Total Time Required (Some Activities run concurrently)	6

10. COST OF PROJECT:

The unit will require total project cost of Rs 125.74 lakhs as shown below:

Sr. No.	Particulars	In Lakhs
1	Land	20.00
2	Building	20.00
3	Plant and Machinery	35.95
4	Fixtures and Electrical Installation	4.10
5	Other Assets/ Preliminary and Preoperative Expenses	2.00
6	Margin for working Capital	43.69
	TOTAL PROJECT COST	125.74

11. MEANS OF FINANCE:

The project will require promoter to invest about Rs 68.31 lakhs and seek bank loans of Rs 57.44 lakhs based on 70% loan on fixed assets.

Sr. No.	Particulars	In Lakhs
1	Promoters Contribution	68.31
2	Loan Finance	57.44
	TOTAL:	125.74

12. WORKING CAPITAL REQUIREMENTS:

Working capital requirements are calculated as below:

Sr. No.	Particulars	Gross Amount	Margin %	Margin Amount	Bank Finance
1	Inventories	53.59	40	21.44	32.16
2	Receivables	22.50	50	11.25	11.25
3	Overheads	2.00	100	2.00	0.00
4	Creditors	22.50	40	9.00	13.50
	TOTAL	100.60		43.69	56.91

13. LIST OF MACHINERY REQUIRED:

Sr. No.	Particulars	UOM	Quantity	Rate	Total Value
	Main Machines/ Equipments				
1	Pipe Molding Machine	Nos.	1	350000	350000
2	Slab / Wall panel Casting machine	Nos.	1	1200000	1200000
3	Cement Concrete Batch mixing Plant	Nos.	1	600000	600000
4	Concrete Vibrators	Nos.	4	30000	120000
5	Gantry / OHT cranes	Nos.	1	300000	300000
6	Fork Lifts	Nos.	1	600000	600000
7	Moulds of diff sizes for slabs/columns and pipes 300 to 1200 mm dia	Nos.	30	8000	240000
8	Testing machines	Nos.	5	20000	100000
1	Tools and Ancillaries				
2	Misc. product Moulds	Nos.	10	4000	40000
3	Other Tools	Nos.	1	15000	15000
4	Misc. Tools / spares	LS	5	6000	30000
	Fixtures and Elect Installation				
	Could storage racks	Nos.	5	8000	40000
	Other Furniture	LS	2	10000	20000
	Telephones/ Computer	LS	2	25000	50000
	Electrical Installation	LS	1	300000	300000
	Other Assets/ Preliminary and Preoperative Expenses	LS	1	200000	200000
	TOTAL PLANT MACHINERY COST				4205000

All the machines and equipment are available from local manufacturers. The entrepreneur needs to ensure proper selection of product mix and proper type of dies and tooling to have modern and flexible designs. It may be worthwhile to look at reconditioned imported machines, dies and tooling. Some of the machinery and dies and tooling suppliers are listed here below:

1. Buildmate Projects Pvt Ltd
   Mr.Venkata Ratnam (CEO)
   Sy no 60,61,62, Gundlapochampally Village, Medchal Road, Hyderabad – 500014.

2. Fab-India Industries
   No. 16, Khodiyar Estate, Inside Shakriba Estate, Phase 4, Vatva, G. I. D. C.

   Ahmedabad - 382445, Gujarat, India

3. Technocore Precast Plant & Machinery Services
   Plot No. 89 & 90, Phase 5, I. D. A., Jeedimetla,
   Near Ganesh Mandir, Hyderabad-500055

4. Speedcrafts Limited
   Shashank Agarwala (Director - International Sales)
   Layak Bhawan, East Boring Canal Road Patna - 800001, Bihar, India

4. Nilkanth Engineering Works
   Hasmukh Solanki (Proprietor)
   Plot No. 5503/2, Phase -4 , G.I.D.C., Vatva
   Ahmedabad- 382445, Gujarat, India

5. Apollo Inffratech Private Limited
   No. 1525/1, Ahmedabad-Mehsana State Highway Village Rajpur, Tal. Kadi, Mehsana- 382715, Gujarat, India

14. PROFITABILITY CALCULATIONS:

Sr. No.	Particulars	UOM	Year Wise estimates				
			Year1	Year 2	Year 3	Year 4	Year 5

1	Sales	Rs Lakhs	270.00	360.00	450.00	540.00	630.00
2	Raw Materials & Other Direct Inputs	Rs Lakhs	214.37	285.83	357.29	428.74	500.20
3	Gross Margin	Rs Lakhs	55.63	74.17	92.71	111.26	129.80
4	Overheads Except Interest	Rs Lakhs	24.05	24.05	24.05	24.05	24.05
5	Interest	Rs Lakhs	6.89	6.89	6.89	6.89	6.89
6	Depreciation	Rs Lakhs	6.21	6.21	6.21	6.21	6.21
7	Net Profit Before Tax	Rs Lakhs	18.48	37.03	55.57	74.11	92.65

The basis of profitability calculation:

The Unit will have capacity of 9000 cubic meter per year of Precast Products including pipes, panels, slabs, columns etc. of different sizes and types. Depending size/ type/ grade the bulk sale/ distribution sales prices ranges from Rs 8000 per cubic meter of RCC to Rs 18000 per cubic meter for high end products depending on type, size and volumes.

The raw material cost ranges of cement ranges from Rs 4 to 7 per kg in bulk, aggregate costs range from Rs 400 per MT to Rs 900 per MT and reinforcement steel rods costs range from Rs 30 to Rs 45 per kg. The material requirements are considered with wastage/ scrap etc. of 10 % of finished products. The unusable scrap is sold at @ Rs 18 ~ 50 per Kg. and the income of same is added. Energy Costs are considered at Rs 7 per Kwh and fuel cost is considered at Rs. 65 per liter. The depreciation of plant is taken at 10 % and Interest costs are taken at 14 -15 % depending on type of industry.

15. BREAK EVEN ANALYSIS

The project is can reach break-even capacity at 20.03 % of the installed capacity as depicted here below:

Sr. No.	Particulars	UOM	Value
1	Sales at Full Capacity	Rs Lakhs	900.00
2	Variable Costs	Rs Lakhs	714.57
3	Fixed Cost incl. Interest	Rs Lakhs	37.15

4	Break Even Capacity	% of Inst Capacity	20.03

16. STATUTORY/ GOVERNMENT APPROVALS

The unit shall have to get state industrial unit registration from DIC, IEC Code for Export and local authority clearance. Depending on structure of finance the company shall need to register company with registrar of companies. The registration and approval for factory plan, safety for Fire etc. requirement, registration as per Labour laws ESI, PF etc. shall be required as per rules and applicability. Before starting the unit will also need GST registration for procurement of materials as also for sale of goods. As such there is no pollution control registration requirements, except installation of chimney/ blowers for heat treatment furnace / pickling line and ensure safe environment as per rules of factory safety. Solid waste disposal shall have to meet the required norms. Entrepreneur may contact State Pollution Control Board where ever it is applicable.

17. BACKWARD AND FORWARD INTEGRATION

The machines and equipment offer scope for diversification in to producing variety of products. The precast is essential for building design and planning for rapid construction activities. Entrepreneurs designing and developing products in advance for upcoming projects shall be very successful. Besides, these plants can offer ready concrete mix for site casting to builders. The unit can also of offer products to infra sector by using the spare capacities and machine capabilities. As such there is not much scope for organic backward or forward integration.

18. TRAINING CENTERS/COURSES

There are no specific training centers for wire drawing technology. There are training for dies and tools development run by several centers of excellence viz Indo German Tool Room at Ahmedabad, Rajkot, Chennai, and CTTC Bhubaneswar etc. shall be helpful.

The most important scope of learning is in new product design and development by associating with institutes like NID etc. Entrepreneur may also study the new product designs, product range, features and specifications of leading Brands / competitors across the world by scanning the Internet and downloading data.

Viz. North American, Europe, China etc. markets.

Udyamimitra portal (link : www.udyamimitra.in) can also be accessed for hand-holding services viz. application filling / project report preparation, EDP, financial Training, Skill Development, mentoring etc.

Entrepreneurship program helps to run business successfully is also available from Institutes like Entrepreneurship Development Institute of India (EDII) and its affiliates all over India.

Disclaimer:

Only few machine manufacturers are mentioned in the profile, although many machine manufacturers are available in the market. The addresses given for machinery manufacturers have been taken from reliable sources, to the best of knowledge and contacts. However, no responsibility is admitted, in case any inadvertent error or incorrectness is noticed therein. Further the same have been given by way of information only and do not carry any recommendation.

Source:- Udyami Mitra/Sidbi