R.C.C. Spun Pipe

PRODUCT CODE	:	94432
QUALITY AND STANDARDS	:	IS 458
MONTH AND YEAR OF PREPARATION	:	January, 2003
PREPARED BY	:	Small Industries Service Institute C - 1 and 2, Industrial Estate, MSK Mill Road, Gulbarga – 585 102 Phone No.: 08742-20944

Introduction

Reinforced cement concrete spun pipes upto 1000 mm dia are exclusively reserved for manufacture in the SSI 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. These pipes are made from cement, coarse and fine aggregate, sand, mild steel and HT rods and bars.

Market Potential

Public Health Engineering Department, Public Works Departments, Agriculture and Forest Department, National Highways, Environment Engineering Department, Panchayats Municipal Corporations are the bulk consumers of RCC spun pipes. Most of the customers are approved civil contractors who are executing the works of the Government Department and Public Sector Undertakings. Presently government is giving stress on rural irrigation and improving methods of water supply scheme, so the demand for pipes is increasing.

Technical Aspects

Process of Manufacture

The reinforced cage is first prepared on the cage-winding machine by hand process. The cage is then placed inside the pipe mould which is then hoisted up and mounted horizontally on the turn unions. It is rotated by driving shaft with variable speed arrangement, the rotation is kept slow in the beginning and then the speed is increased. The concrete mixture for the 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. The time required for completion of this operation depends upon the diameter and class of the pipe. The pipes are kept in the mould 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 specimen of the pipes are subject to the following tests viz: (1) Hydrostatic pressure test (2) Three edge bearing test (3) Absorption test.

Quality Control and Standards

The Bureau of Indian Standards has formulated IS 458:1971, for maintaining Quality of the product.

Production Capacity (per year)

Quantity : 20,000 Running meter

Value : Rs. 40,28,000.

Motive Power 20kW.

Pollution Control

The project does not create any noise or water pollution. The air pollution in mixing area need to be contained by providing cyclonic dust collector. Workers may use dust mask.

Energy Conservation

General precautions for saving electricity are required to be followed by the unit by adopting energy conservation techniques.

Financial Aspects

A. Fixed Capital

(i) Land and Building	(Rs.)
Land 2 acre Building	2,50,000
a) Office, Testing laboratory 35Sq. m.	87,500
b) Production shed 100 Sq. m.	1,50,000
c) Stores room 30 Sq. m.	60,000
d) Curing tank 40 x 20mtrs.	75,000
e) Well, pump set, overhead water tank etc.	70,000
Total	6,92,500

(ii) Machinery and Equipments

Description	Qty Nos.	Value (Rs.)
Pipe moulding machine of 2 metre length complete set with 10HP motor	1	2,00,000
Gauge winding machine	2	40,000
Concrete mixer	1	50,000
Collar winding drum with stand	2	26,000
Gantry with pull-push trolley	1	1,20,000
Testing equipments	LS	1,00,000
Collar moulds complete with end rings, tie rods, riving ring for pipes 100mm to 600mm dia and 2 metre length pipes	40	2,00,000
Pipe moulds 100mm to 600mm dia 2 metre with accessories	40	3,50,000
Electrification and installation charges	LS	50,000
Office equipment and furniture	LS	75,000
Total		12,11,000

(iii) Total Fixed Investment	(Rs.)
Land and building	6,92,500
Machinery and Equipment	12,11,000
Pre-operative expenses	80,000
Total	19,83,500

B. Working Capital (Per Month)

(i) Staff and labour (per month)

Description	Salary	Nos.	(Rs.)
Manager	6,000	1	6,000
Supervisor	4,500	1	4,500
Skilled workers	2,100	6	12,600
Un-skilled workers	1,800	10	18,000
Perquisites @15%			6,150
Total			47,250

(ii) Raw Material (per month)			(Rs.)
Cement	20MT	Rs. 3,000/MT	60,000
Steel	4MT	Rs. 18,000/MT	72,000
Coarse and fine aggregate	LS		20,000
Mould oil grease and misc. expenses	LS		20,000
		Total	1,72,000

(iii) Utilities (per month)		(Rs.)
Electrical power	20kW	7,500
Water	LS	2,000
	Total	9,500

(iv) Other Contingent Expenses (per month)	(Rs.)
Postage and Stationery	500
Telephone	1,000
Repair and Maintenance	2,000
Travelling expenses	1,000
Transport charges	5,000
Miscellaneous expenses	1,000
Insurance	1,500
Total	12,000

(v) Total Recurring Expenditure (per month)	(Rs.)
Staff and labour	47,250
Raw Material	1,72,000
Utilities	9,500
Other contingent expenses	12,000
Total	2,40,750
(vi) Total Working Capital for 3 months	7,22,250

C. Total Capital Investment

Fixed capital	Rs. 19,83,500
Working capital	Rs . 7,22,250
Total	Rs. 27,05,750

Machinery Utilization

Sufficient and timely availability of Grey cement will ensure optimum utilization of the installed capacity. The pipes are kept immersed in water for curing purpose in such a way that one is not put on the other. Sufficient moulds are required to maintain regular production otherwise non-availability of required pipe moulds or collar moulds will be a bottleneck in the optimum capacity utilization.

Financial Analysis

(1) Cost of production (per annum)	(Rs.)
Recurring Expenditure	28,89,000
Depreciation on Building @ 5%	22,125
Depreciation on Machinery and Equipment @ 10%	53,600
Depreciation on moulds @15%	82,500
Depreciation on furniture @ 20%	15,000
Interest on total investment @ 14%	3,78,805
Total	34,41,030
or Say	34,41,000

(2) Turnover

Items	Qty	Rate	Value (Rs.)
RCC spun pipes 2 meter length	20,000	212/ per pipe	42,40,000
	(– 5% rejection)		2,12,000
		Total	40,28,000

(3) Net Profit

= Rs. 40,28,000 – 34,41,000
= Rs. 5,87,000

(4) Net Profit Ratio Over Turnover

$$= \frac{\text{Net profit x 100}}{\text{Turnover}}$$

$$= \frac{5,87,000 \times 100}{40,28,000}$$

= 14.57%

(5) Rate of Return on Total Investment

$$= \frac{\text{Net profit x 100}}{\text{Total Investment}}$$

$$= \frac{5,87,000 \times 100}{27,05,750}$$

$$= 21.7\%$$

(6) Break-even Point

Fixed Cost	(Rs.)
Total Depreciation	1,73,225
Interest on total investment	3,78,805
40% of salaries	2,26,800
40% of other Contingent expenses	50,400
Insurance	18,000
Total	8,47,230

B.E.P.

$$= \frac{\text{Fixed cost} \times 100}{\text{Fixed cost and profit}}$$

$$= \frac{8,47,230 \times 100}{8,47,230 + 5,87,000}$$

$$= 59.1\%$$

Addresses of Machinery and Equipment Suppliers

1. M/s. Prakash Fabricators
   1034 E, Rajaram Road,
   Kolhapur (Maharashtra)
2. M/s. A. P. L. Industries
   415, Dave Industrial Estate,
   Bhakti Nagar Station Road,
   Rajkot – 2 (Gujarat)
3. M/s. Buildtech Engineering Co.
   Shree Ashadweep Complex,
   16-Civil Lines,
   Roorkee – 247 667,
   (Uttar Pradesh)
4. M/s. Karthik Industries
   36, J.C. Road,
   Bangalore-560 002
5. M/s. Susanji Udyog Pvt. Ltd.
   C-47, Industrial Estate,
   Sanathnagar,
   Hyderabad – 500 018
6. M/s. Apco Concrete Blocks and Allied Product
   7th Mile, Kanakpura Road,
   Doddasandra Post,
   Bangalore – 560 062
7. M/s. Ashok Engineering Works
   81, Ajit Industrial Estate Rakhial,
   Ahmedabad – 380 023
8. M/s. Hydro Engineering Works
   K1/116, CIDC,
   Mori, (Gujarat)