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M.S. Rounds, Angles, Channel, Tor Steel etc.

PRODUCT CODE	:	35450200X.
QUALITY AND STANDARDS	:	IS 226 : 1975 (Superseded By IS 2062 : 1992)
MONTH AND YEAR OF PREPARATION	:	January, 2003
PREPARED BY	:	Small Industries Service Institute 111-112, B.T. Road, Kolkata-700035

Introduction

Small Scale Re-Rolling Mills produce various types of rolled sections such as Round, Tor Steel, Flat, Square, Light Angle and Z Section. Among these products, M.S. Round and Tor Steel are the most popular products and therefore, this profile has been drawn incorporating the required machinery and equipment for manufacturing these items. Round and Tor steel are produced up to 25mm diameter.

Any construction work, whether that is civil or structural, require rolled sections like Round, Tor Steel, Flat, Angle etc. The products, as indicated in this profile are mainly for civil constructional work like Govt. office buildings, Hospitals, Hotels, Domestic houses, Dam, Bridges and various other establishments.

Market Potential

After independence, development work started in multi-directions. This development encompassed construction of Barrage, Hydro-Electric Power Station, and other establishments mentioned above. In city and urban areas, lot of domestic houses are being constructed. Besides this, both Central and State Govt. are spending huge amounts of money for construction of Houses for accommodating people of low income group. All this work will be continuing for a long time. As stated earlier, M.S. Rounds and Tor Steel are indispensable products in civil construction work and therefore, the demand for the same will not only continue but will also increase. As a matter of fact, there is sufficient gap between the demand and supply of Re-rolled products, which is revealed from the fact that the products are sold on hard cash basis.

Basis and Presumptions

The profile is drawn on the basis of following presumptions:

Working Hours/Shift	= 5 hours.
No. of shift/day	= 1
Working days	= 300
Total No. of working hours	= 1500
Working Efficiency	= 75%
Time period for achieving Capacity utilisation	= 3rd year from which production will be started.
Labour Charges	= As per Minimum Wages Act of State Govt.
Margin Money	= 25% of Capital Investment
Rate of Interest on Fixed and Working Capital.	= 14%
Operative period of the Project	= 10 years

Value of Machinery and Equipment is estimated on the basis of prevailing cost in the market.

Implementation Schedule

Project implementation will take a period of 8 months from the date of approval of the scheme. Break-up of activities with relative time for each activity is shown below:

Nature of Activities	*Period in Month (Estimated)*
i. Scheme preparation and approval	0–1
ii. SSI Provisional registration	1–1 1/2
iii. Sanction of loan	1–4
iv. Clearance from Pollution Control Board	3–4
v. Placement of Order for Delivery of M/c.	3–4
vi. Installation of Machines	4–5
vii. Power connection	2–5
viii. Trial run	5–5 1/2
ix. Commencement of production	5 1/2 onwards

Technical Aspects

Process of Manufacture

Standard Billets and scraps will be cut to required size by shearing machine and will be fed into coal fired heating furnace for heating at a temperature of about 1100°C or so.

After that, these stores will be fed into the roughing rolls and other rolls one by one, where cross sectional size will be reduced gradually. The semi-finished store is finally passed through the chilled rolls of the last stand which comprise of 2 rolls. Shape and size of the cross section of the finished products depend on grooves made on rollers. All kinds of sections except Tor Steel is finished at the last stand.

In case of Tor Steel, Scrap/Billet/Ingot are passed through special rolls, so that special rounds are formed with two ribs along the whole length of the bar and the same have ceration marks on the whole area of its surface. After this operation, these bars are twisted at cold condition by the help of a motor operated Twisting Machine and thus Tor Steel is formed.

Quality Control and Standards

In the market tested as well as commercial grade, re-rolled sections are sold. Commercial products are not so much controlled from the angle of quality, but tested quality products are tested in accordance with the Indian Standard Specification No. IS:226 : 1975 (Superseded by IS:2062 : 1992). The tests are comprised of chemical analysis of the product, determination of tensile strength and elongation percentage etc. In this profile, provision has been made for physical testing of the products, but

provision has not been made for chemical laboratory because the seller of Billets/Ingots will provide chemical analysis report for every lot.

Production Capacity (per annum)

i) Quantity : 3,660 M.T. of Rolled Products 100 M.T. Scrap.

ii) Value : Rs. 5,67,70,000

Motive Power

i) Plant and Machinery : 1200 H.P

ii) Office and Lighting : 20 H.P.

Pollution Control

In the Re-Rolling Industry the main operations are cutting to desired size, pre-heating and rolling. During pre-heating the coal fired/oil fired furnace with recuperator and raised stack height above 30 metres may produce pollution within the prescribed limit.

In rolling mill noise pollution is created to some extent; but due to large open shed of rolling mill the noise level is automatically maintained within the prescribed limit of noise pollution. The unit will take care to satisfy the pollution norms at the time of selection of machinery and equipment and also the process. Before finalisation of the project, necessary clearance will be obtained from Pollution Control Board.

Energy Conservation

Presently the energy conservation efforts are needed to be strengthened substantially. The potential for conservation however is high and all efforts need to be made by the individuals to realise it. The energy audit is an integral part of an energy conservation project for a systematic approach for decision. Electrical power is one of the main impulses in this type of industry which in our country is not sufficient and there is need to consume as little as possible. The machines are individually motorised so that the energy may be saved when the machines are not in use. Use of lubricant and proper maintenance of machine still further act towards energy conservation. The use of capacitor band where necessary, also helps to this effect.

No. of Employees

i)	Managerial	4
ii)	Technical	48
iii)	Watch and Ward	8

Financial Aspects

A. Fixed Capital (Non-Recurring Expenditure)

(i) Land and Building		Amount (In Rs.)
i)	Land measuring 2000 sq. mtrs.	6,00,000
ii)	Construction of boundary wall: Gate, General Office, Factory Shed, Store etc.	24,00,000
	Total	**30,00,000**

(ii) Machinery and Equipments (Indigenous) (Rs.)			
i)	230mm Rolling Mill of stands consist of 3 sets geared couplings, iron fly wheel, reduction gear, 230mm PCD pinion stand, spindles of couplings, one set of rolls, 7 nos. mill stands.	1 Set	31,22,000
ii)	Cooling Bed 13 Mtr. × 2 Mtr.	1	1,17,000
iii)	Coal fired furnaces 13 Mtr. × 2.75 Mtr. × 2 Mtr.	1	7,10,000
iv)	Shearing machine 37 mm with 20 H.P Motor	1	2,20,000
v)	Cropping machine with 10 HP Motor, capacity 12.5 mm to 25 mm	1	80,000

vi)	Twisting Machine with 10 HP Motor, capacity up to 16mm.	1	1,65,000
vii)	Twisting Machine with 20 HP Motor, capacity up to 25mm.	2	3,68,000
viii)	Piller Drilling Machine 25mm capacity with 2 HP Motor.	1	9,000
ix)	Heavy duty Lathe 3000mm with 5 HP Motor	1	90,000
x)	Bench grinder 240mm wheel with 1 HP motor.	1	6,000
xi)	Electric welding Set 500 amp.	1	18,000
xii)	Shaping machine with 2 HP motor	1	60,000
xiii)	Measuring instruments, hand tools etc.	LS	20,000
xiv)	Misc. tools and tackles	LS	25,000
xv)	Platform type weighing scale	1	30,000
xvi)	Overhead tank, deep tube well, pipe line, under ground tank, chain pully etc.	1 set	1,30,000
xvii)	Structure to hold over head channel for movement of long carrying Hot Billets.	LS	75,000
xviii)	Office furniture	LS	50,000
xix)	Typewriters, Computer, Fan, Telephone, Fire fighting equipment, First aid box etc.	LS	2,30,000
xx)	500 KVA step down Transformer, distribution Box, Fuse, cable etc.	LS	3,80,000
xxi)	Electric fittings and Installation @ 10% of the cost of Machinery		5,90,500
		Total	**64,95,500**

(iii) Pre-operative Expenses **Rs. 4,06,000**

Total Fixed Capital (i + ii + iii) **Rs. 99,01,500**

B. Working Capital (per month)

(i) Staff and Labour

Description		No.	Salary (In Rs.)	Amount (In Rs.)
i)	Works Manager	1	8,000	8,000
ii)	Production Foreman	1	7,500	7,500
iii)	Supervisor	1	5,000	5,000
iv)	Accountant	1	4,500	4,500
v)	Clerk-cum-Typist	1	3,000	3,000
vi)	Store keeper	1	3,000	3,000
vii)	Skilled Workers	3	2,000	6,000
viii)	Electrician	1	2,000	2,000
ix)	Semi-Skilled Workers	24	1,500	36,000
x)	Unskilled Workers	18	1,000	18,000
xi)	Peon	1	800	800
xii)	Watch and Ward	6	1,000.0	6,000
xiii)	Sweeper	1	700	700
	Perquisites @ 15%			15,075
		Total		**1,15,575**

(ii) Raw Materials

Description		Qty.	Rate (In Rs.)/M.T	Amount (In Rs.)
i)	Re-Rollable Scrap	120 MT	10,000	12,00,000
ii)	Billets	200 MT	12,000	24,00,000
iii)	Steam Coal	30 MT	1,800	54,000
iv)	Re-fractory, Lubricant clay, Rolls etc.	LS		40,000
		Total		**36,94,000**

(iii) Utilities	(Rs.)
Electricity and Water	2,00,000

(iv) Other Contingent Expenses		(Rs.)
i)	Maintenance and Spares	20,000
ii)	Transport Charge	20,000
iii)	Travelling	15,000
iv)	Postage and Stationery	2,000
v)	Telephone	3,000
vi)	Advt. and Publicity	5,000
vii)	Insurance and Taxes	5,000
viii)	Misc. Expenses	4,000
	Total	**74,000**
	Total Recurring Expenditure (i+ii+iii+iv)	**40,83,575**

Working Capital for 3 Months= Rs. 1,22,50,725

C. Total Capital Investment

i)	Non-Recurring Expenditure	Rs. 99,01,500
ii)	Working Capital	Rs. 1,22,50,725
	Total	**Rs. 2,21,52,225**

Financial Analysis

(1) Cost of Production (per year)		**(Rs.)**
i)	Total recurring cost	4,90,02,900
ii)	Depreciation on Building @ 5%	1,20,000
iii)	Depreciation on Machinery and equipment @ 10%	4,96,500
iv)	Depreciation on furniture, furnace, hand tools etc. @ 20%	1,88,000
v)	Interest on total Capital Investment @ 14%	31,01,311
	Total	**5,29,08,711**

(2) Sales Proceed (per year)

Items	**Qty. (M.T.)**	**Rate (In Rs.)**	**Amount (In Rs.)**
i) Rounds, Tor steel, Angles, Channels	3,660	15500/ MT	5,67,30,000
ii) Sale of Scrap	100	4000/ MT	40,000
		Total	**5,67,70,000**

(3) Profitability (per annum)

i) Profit = Total Sales – Cost of Production

= **Rs. 3861289**

ii) Cash Generation = Profit + Depreciation

= **Rs.4665789**

iii) % of Profit on Sales = $\frac{3861289 \times 100}{5,67,70,000}$

= **6.80%**

iv) % of Return on Investment = $\frac{3861289 \times 100}{2,21,52,225}$

= **17.91%**

(4) Break-even Point

Fixed Cost		**(Rs.)**
i)	Depreciation on Building	1,20,000
ii)	Depreciation on Machinery and Equipment	4,96,500
iii)	Depreciation on Furniture, Furnaces, Hard Tolls etc.	1,88,000
iv)	Interest on Total Investment	31,01,311
v)	Tax and Insurance	60,000
vi)	40% of Salary and Wages	5,54,760
vii)	40% of other Expenditure (Excluding Tax and Insurance)	3,31,200
viii)	40% of Utilities	9,60,000
	Total	**58,11,771**

B.E.P. = $\frac{\text{Fixed Cost} \times 100}{\text{Fixed Cost} + \text{Profit}}$

= $\frac{58,11,771 \times 100}{58,11,771 + 39,69,289}$

= $\frac{581177100}{9781060}$

= **59.4%**

Addresses of Machinery Suppliers

i) M/s. G.R.C.
1, Taratala Road,
Kolkata-700024.

ii) M/s. Standard Electricals
282, B.B. Chatterjee Road,
Kolkata-700042.

iii) M/s. Associated Engineers
32, G.C. Avenue,
Kolkata-13.

iv) M/s. Machine Tools Impex
75, S.C. Avenue,
Kolkata-700013.

v) M/s. Rona Udyog (P) Ltd.
18D, Everest House,
46C, Chowringhee Road,
Kolkata-700071.

Raw Material Suppliers

i) Steel Authority of India Ltd.
ii) Local Market.