

BRICK FIELD (TRADITIONAL)



1.0 INTRODUCTION

The construction activity is one of the vital sectors of the economy. There is hardly any sector in the economy where there is no construction involved. There is tremendous increase in the growth of construction activities during the last decade and with the higher targets of growth envisaged in coming years and in the next decade the construction activity is poised to enlarge further. The general construction sector consisting of industrial projects, agricultural projects, defence projects commercial establishments and housing sector all contribute to the growth of construction activity.

Building bricks are used in the construction of the houses. This industry is spread all over India as cottage industry. It is a seasonal industry as in rainy season the brick kiln remains closed. Bricks are one of the mainstays of construction activities and constitute about 13 percent of the total cost of building material required for construction. By and large three types of materials are used in walling viz. Conventional Burnt Clay Bricks, different types of board and Concrete Blocks/Bricks. It has been established that the use of clay bricks provides a superior and comfortable physical living environment than the use of other materials as far as residential construction is concerned.

This project profile is for setting up of a brick field unit with installed processing capacity of 20 lacs nos. of bricks

covering 12 bighas of land, based on 175 working days (7 months) per annum and 8 working hours per day.

2.0 MARKET POTENTIAL

Bricks remain one of the most important building materials in the country. Brick making is a traditional industry in India, generally confined to rural areas. Notably, the Indian brick industry, with more than 1 Lakh production units producing about 100 billion tons a brick annually, is the second largest brick producer in the world after that of China. The industry has an annual turnover of more than Rs. 10,000 Crores and, very importantly, it is one of the largest employment generating industries, employing millions of workers. However, brick making is an energy intensive process as fuel costs account for almost 30% of the production cost.

Every year several construction works are undertaken. Several bridges, dams, roads, shopping complexes, commercial complexes, hospitals, hotels, educational institutions, Govt. offices and residential houses are constructed. All these civil construction activities consume large quantity of bricks and therefore consumption of bricks are increasing. The demand for housing is increasing as there is a heavy backlog of houses to be constructed in India and there is a scope of adding 50 lakhs houses every year. This allows a big demand for new flats and houses construction. The country consumes about 180 billion tons bricks,

exhausting approximately 340 billion tons of clay every year and about 5000 acres of top soil land is made unfertile for a long period. The demand supply gap for bricks is estimated to be 120 billion tons for the year 2012 thus leaving a scope for establishment of more brick fields across India.

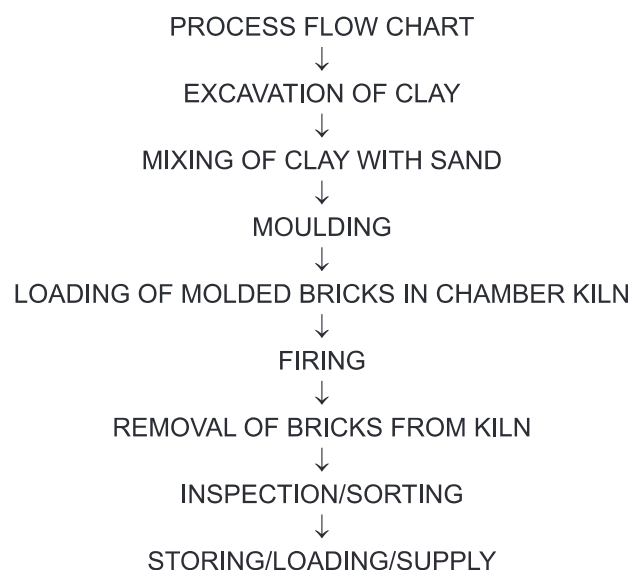
3.0 PROCESS DETAILS

The process of brick production is as follows.

In hand moulding, two methods are adopted. One is lying of bricks on the ground and another is the forming of bricks in one place and placing them for drying in drying yards. For the first method, generally wooden moulds are used. In this method the mould is placed on the ground. Either water or oil or fine sand is applied on the slides of the mould for easy removal of bricks. The prepared clay is thrown into the mould with a little force and the excess clay is removed with a stick.

The bricks are allowed to dry for a week or ten days and assembled as a clamp. Fuel wood or coal is placed and

the kiln is closed and lighted. After the firing is over the clamp is removed for sale.



4.0 COST OF THE PROJECT

The estimated project cost is given below:

		(Rs. in lacs)
		Amount (Rs)
Land & site development		Own Land/ On Lease
Building & civil works		6.33
Plant & Machinery		12.70
Misc. Fixed assets		0.72
Preliminary & pre-operative expenses		1.88
Contingencies & escalation @ 3%		0.59
Working capital		2.93
TOTAL		25.14

4.1 Land & Site Development: Details of land & site development are given below.

Total Land: 4 Acres; Covered Area: 3,000 Sq. Ft.

4.2 Building & Civil Works: Details of building & civil works are given below.

Particulars	Area (Sqft)	Rate (Rs)	Amount (Rs)
Material Storage cum Office	1000	275	275000
Labour Quarter (10 ft X 8 ft each)= 25 Nos.	2000	150	300000
Sub total			575000
Add: Electrification, water supply and sanitation @ 10%			57500
TOTAL			632500
Say (Rs. in lacs)			6.33

4.3 Plant & Machinery: Details of plant & machinery are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Kiln with all Accessories	1	980000	980000
Wheel Barrows	8	4000	32000
Cutter	1	20000	20000
Mixer, Loader, Box Feeder and Moulds etc.	LS	—	75000
Miscellaneous items	LS	—	25000
Sub total			1132000
Add: Installation, transportation etc @ 10%			113200
TOTAL			1270200
Say (Rs. in lacs)			12.70

4.4 Misc. Fixed assets: Details of miscellaneous fixed assets are given below.

Particulars	Qty	Rate (Rs)	Amount (Rs)
Fixtures and Fittings	LS	—	40000
Furniture	LS	—	15000
Miscellaneous items	LS	—	10000
Sub total			65000
Add: Installation, transportation, etc @ 10%			6500
TOTAL			71500
Say (Rs. in lacs)			0.72

4.5 Contingencies & escalation: Contingencies & escalation has been assumed at 3% of the cost of land & site development, building & civil works, plant & machinery and miscellaneous fixed assets.**4.6 Preliminary & pre-operative expenses:** Details of preliminary & pre-operative expenses are given below.

		(Rs. In lacs)
Particulars	Amount (Rs)	
Travelling expenses	10000	
Professional & other fees	50000	
Interest during implementation	77538	
Miscellaneous expenses	50000	
TOTAL	187538	
Say (Rs. in lacs)	1.88	

4.7 Working capital: Details of working capital are given below.

		(Rs. in lacs)		
	Period (Days)	Total Current Assets		
		Year 1	Year 2	Year 3
Raw materials	15	1.90	2.22	2.54
Power & utility	30	0.01	0.01	0.01
Salary	30	0.68	0.69	0.69
Finished Goods	15	2.27	2.59	2.91
Receivables	15	2.47	2.88	3.29
Total		7.33	8.38	9.44
Working capital margin in Year 1 (40%)	2.93			

5.0 MEANS OF FINANCE

The means of finance for the project is estimated as below.

(Rs. in lacs)

Particulars	Percent	Amount
<u>EQUITY</u>		
A. Equity from Promoters	40%	10.06
B. Subsidy from Central/State Govt.	-	
<u>DEBT</u>		
Term Loan from Banks/Financial Institutions	60%	15.08
TOTAL	100%	25.14

6.0 PROFITABILITY STATEMENT

(Rs. in lacs)

Particulars	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
<u>A. INCOME</u>							
Production capacity (Nos./ annum)	2000000	2000000	2000000	2000000	2000000	2000000	2000000
Capacity utilisation	60%	70%	80%	80%	80%	80%	80%
Production/ annum at capacity utilisation	1200000	1400000	1600000	1600000	1600000	1600000	1600000
Price of Bricks (Rs/Piece)	5	5	5	5	5	5	5
Total income/ annum	60.00	70.00	80.00	80.00	80.00	80.00	80.00
<u>B. OPERATING EXPENSES</u>							
Raw materials	46.32	54.04	61.76	61.76	61.76	61.76	61.76
Power & fuel	0.10	0.12	0.14	0.14	0.14	0.14	0.14
Salary	8.30	8.34	8.38	8.43	8.47	8.51	8.55
Repair &	0.33	0.33	0.34	0.35	0.36	0.36	0.37
Other Expenses	0.18	0.21	0.24	0.24	0.24	0.24	0.24
Total Operating Expenses	55.23	63.04	70.86	70.91	70.96	71.01	71.06
Operating profit	4.77	6.96	9.14	9.09	9.04	8.99	8.94
<u>C. FINANCIAL EXPENSES</u>							
Depreciation	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Interest on Term Loan	1.21	1.11	0.91	0.71	0.51	0.31	0.11
Interest on Working Capital Loan	0.35	0.40	0.45	0.45	0.45	0.45	0.45
Net Profit	2.64	4.91	7.30	7.45	7.60	7.76	7.91
Net cash accruals	3.56	5.84	8.23	8.38	8.53	8.68	8.83
Principal Repayment	0.00	2.51	2.51	2.51	2.51	2.51	2.51

6.1 Production capacity: Total production of bricks at 100% capacity utilization is estimated as below.

No. of bricks/annum	2000000 Nos.
Total production per annum at 100% capacity (Nos)	2000000 Nos.

6.2 Raw materials: Total expenses on raw materials at 100% capacity utilization are estimated as below.

Particulars	Qty Reqd	Price per truck (10 Ton Load)	Amount (Rs.)
Clay Soil @ 3.5 Ton per 1000 bricks	7000 Tons	4000	2800000
Coal for burning @150 Kg per 1000 bricks	300 Tons	150000	4500000
Firewood @ 70 Kg per 1000 bricks	140 Tons	30000	420000
Expenses on raw material at 100% capacity (Rs)			7720000

6.3 Power & fuel: Total expenses on power & fuel at 100% capacity utilization is estimated as below.

Particulars	Quantity	Power (Kw)	Total (Kw)
Plant & machinery	--	0.00	0.00
General Lighting	10	0.10	1.00
Total power requirement/ day (Kw)			1.00
No. of hrs/day	8		
Nos. of days/annum	175		
Annual power requirement (kwh)	1400		
Rate per unit (Rs)	3.50		
Expenses on power (Rs)	4900		
Estimate of Utility			
Expenses on other Utility (Rs)	12000		
Expenses on power & Utility at 100% capacity (Rs)	16900		

6.4 Salary: Total expenses on salary in the 1st year are estimated as given below. It is assumed that salary expenses will increase @ 0.5% every subsequent year.

Particulars of Employees	Numbers	Salary/ Month (Rs)	Cost/annum (Rs)
Manager	1	10000	120000
Kiln Operator	2	5000	120000
Skilled workers	5	4000	240000
Unskilled workers (On contract for 7 months)	50	1000	350000
Expenses on salary in the 1st year (Rs)			830000

6.5 Repair & Maintenance: Total expenses on repair & maintenance in the 1st year is estimated as given below. It is assumed that expenses on repair & maintenance will increase @ 2% every subsequent year.

Particulars	Cost (Rs)	Rate	(Rs. in lacs) Amount (Rs)
Building & civil works	6.33	1.00%	0.06
Plant & Machinery	12.7	2.00%	0.25
Misc. Fixed assets	0.72	1.50%	0.01
Expenses on repair & maintenance in year 1			0.33

6.6 Other Expenses: Other expenses have been assumed at 0.3% of sales realisation.

6.7 Depreciation: Depreciation has been calculated by straight line method. The details of calculation are given below.

(Rs in lacs)			
Description	Cost (Rs)	Rate	Amount/annum (Rs)
Building & civil works	6.33	3.34%	0.21
Plant & Machinery	12.70	5.28%	0.67
Misc. Fixed assets	0.72	6.33%	0.05
TOTAL			0.93

6.8 Interest on term loan & principal repayment: Interest rate has been assumed at 8%. Duration of Loan repayment has been considered for a period of 7 years including moratorium period of 1 year with equal monthly instalments. The details of calculation are given below.

(Rs in lacs)								
Month	Year	1	2	3	4	5	6	7
Month 1	Opening balance	15.08	15.08	12.57	10.06	7.54	5.03	2.51
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest (8%)	0.10	0.10	0.08	0.07	0.05	0.03	0.02
	Closing balance	15.08	14.87	12.36	9.85	7.33	4.82	2.30
Month 2	Opening balance	15.08	14.87	12.36	9.85	7.33	4.82	2.30
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.10	0.08	0.07	0.05	0.03	0.02
	Closing balance	15.08	14.66	12.15	9.64	7.12	4.61	2.09
Month 3	Opening balance	15.08	14.66	12.15	9.64	7.12	4.61	2.09
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.10	0.08	0.06	0.05	0.03	0.01
	Closing balance	15.08	14.46	11.94	9.43	6.91	4.40	1.89
Month 4	Opening balance	15.08	14.46	11.94	9.43	6.91	4.40	1.89
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.10	0.08	0.06	0.05	0.03	0.01
	Closing balance	15.08	14.25	11.73	9.22	6.70	4.19	1.68
Month 5	Opening balance	15.08	14.25	11.73	9.22	6.70	4.19	1.68
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.04	0.03	0.01
	Closing balance	15.08	14.04	11.52	9.01	6.49	3.98	1.47
Month 6	Opening balance	15.08	14.04	11.52	9.01	6.49	3.98	1.47
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.04	0.03	0.01
	Closing balance	15.08	13.83	11.31	8.80	6.28	3.77	1.26
Month 7	Opening balance	15.08	13.83	11.31	8.80	6.28	3.77	1.26
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.08	0.06	0.04	0.03	0.01
	Closing balance	15.08	13.62	11.10	8.59	6.08	3.56	1.05
Month 8	Opening balance	15.08	13.62	11.10	8.59	6.08	3.56	1.05
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.06	0.04	0.02	0.01
	Closing balance	15.08	13.41	10.89	8.38	5.87	3.35	0.84
Month 9	Opening balance	15.08	13.41	10.89	8.38	5.87	3.35	0.84
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.06	0.04	0.02	0.01
	Closing balance	15.08	13.20	10.68	8.17	5.66	3.14	0.63
Month 10	Opening balance	15.08	13.20	10.68	8.17	5.66	3.14	0.63

	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.04	0.02	0.00
	Closing balance	15.08	12.99	10.47	7.96	5.45	2.93	0.42
Month 11	Opening balance	15.08	12.99	10.47	7.96	5.45	2.93	0.42
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.04	0.02	0.00
	Closing balance	15.08	12.78	10.27	7.75	5.24	2.72	0.21
Month 12	Opening balance	15.08	12.78	10.27	7.75	5.24	2.72	0.21
	Repayment	0.00	0.21	0.21	0.21	0.21	0.21	0.21
	Interest	0.10	0.09	0.07	0.05	0.03	0.02	0.00
	Closing balance	15.08	12.57	10.06	7.54	5.03	2.51	0.00
	Principal Repayment	0.00	2.51	2.51	2.51	2.51	2.51	2.51
	Interest	1.21	1.11	0.91	0.71	0.51	0.31	0.11

7.0 DEBT SERVICE COVERAGE RATIO (DSCR)

Year	1	2	3	4	5	6	7
Profit After Tax (Net Profit)	2.64	4.91	7.30	7.45	7.60	7.76	7.91
Depreciation	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Interest	1.21	1.11	0.91	0.71	0.51	0.31	0.11
Total	4.77	6.96	9.14	9.09	9.04	8.99	8.94
Interest	1.21	1.11	0.91	0.71	0.51	0.31	0.11
Loan repayment	0.00	2.51	2.51	2.51	2.51	2.51	2.51
Total	1.21	3.63	3.43	3.23	3.03	2.82	2.62
DSCR	3.95	1.92	2.67	2.82	2.99	3.18	3.41

Average DSCR = 2.85

8.0 BREAK EVEN POINT (BEP)

	(Rs. in lacs)		
Year	1	2	3
A. Net sales	60.00	70.00	80.00
B. Variable cost			
Raw materials	46.32	54.04	61.76
Power & utility	0.10	0.12	0.14
Other expenses	0.18	0.21	0.24
Interest on Working Capital Loan	0.35	0.40	0.45
Total variable cost	46.95	54.77	62.59
C. Contribution (A-B)	13.05	15.23	17.41
D. Fixed & Semi-fixed Costs			
Salary	8.30	8.34	8.38
Repair & maintenance	0.33	0.33	0.34
Interest on Term Loan	1.21	1.11	0.91
Depreciation	0.93	0.93	0.93
Total fixed cost	10.76	10.72	10.56
E. BREAK EVEN POINT	82.49%	70.38%	60.68%
F. BEP at operating capacity	49.49%	49.26%	48.54%
G. Cash BEP	45.23%	45.00%	44.28%

9.0 INTERNAL RATE OF RETURN (IRR)**(Rs. in lacs)**

Year	0	1	2	3	4	5	6	7
CASH OUTFLOW								
Capital Expenditure	20.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Working Capital	0.00	7.33	1.05	1.05	0.00	0.00	0.00	0.00
Total (A)	20.33	7.33	1.05	1.05	0.00	0.00	0.00	0.00
CASH INFLOW								
Profit After Tax		2.64	4.91	7.30	7.45	7.60	7.76	7.91
Add: Depreciation		0.93	0.93	0.93	0.93	0.93	0.93	0.93
Add: Interest		1.21	1.11	0.91	0.71	0.51	0.31	0.11
Add: Salvage Value								
Total (B)	0.00	4.77	6.96	9.14	9.09	9.04	8.99	8.94
NET FLOW (B-A)	-20.33	-2.56	5.90	8.09	9.09	9.04	8.99	8.94

IRR = 25%

Sl. No.	Name of the Equipment Suppliers	Communication Address
1.	M/s B B Engineering Works	166/22, B. T. Road, Kolkata, West Bengal, Pin – 700 008.
2.	M/s Flowmech Engineers Private Ltd.	C - 196/2, 2nd Floor, Mayapuri Industrial Area, Phase - 2, New Delhi - 110 064
3.	M/s Micro Engineering Works	No. 6 / 140, Gandhi Nagar, Nallampalayam Road, Nanjai Gounden, Pudur, G. N. Mills Post, Coimbatore, Tamil Nadu , Pin – 641029.