

SISI, Imphal

Project for Stone Crushing (Mechanical) Industry (SSI)

Prepared: 1997

1. Nature of Activity :- To manufacture various sizes of bally chelly or metal chelly 1/4", 1/2" or 3/4", 20 mm & 12 mm for different uses.

2.1 Purpose :

Stone chips is known as bally chelly. It is segregated into various sizes viz. 1/4", 1/2" etc. for different uses. The crushed stone chips aggregates are used for construction of roads, bridges, housing, industrial building construction and other cement based products like RCC pipes, PSC poles, precasted slabs, frames and beams etc. for fabrications.

Manipur state is a border state situated in the North-Eastern part of India and 90% of the area is in the hilly region. So raw material for this Industry is locally available and mineral deposits also available particularly in the district of Ukhrul and Chandel in the state.

The main occupation of the people is agriculture. Due to geophysical structure of the state and availability of raw material in the state, this stone crushing unit in SSI sector must be encouraged in near future, so that the employment will generate in the rural areas. It is advantageous, if the unit is set up near the Quarries where stones are available.

3. Market potential/ Demand feasibility :

Housing is a basic need of the society. Hence it is receiving increased focus and support from the Government whether it is housing or industrial construction activities, all building construction requires crushed stone. It is also required for cement based products like RCC pipes, PSC poles, Cement concrete hollow blocks, pre-cast cement concrete slabs, well rings, window and door frames and road lying etc.

Crushed stones fines or wastages are collected and used this as Sand for construction purposes. Demand for stone chips will continue to grow with the growth of its use in the state.

In Manipur state construction activities are increasing day by day due to over all standards of living of the people and direct proportion to its growth of population in the state. Hence there are vast scope for expansion of this Industry. Since very few of this units are operating by Tiny/Cottage are available in the state :

Profile : STONE CRUSHING

In view of above, it is envisaged that there is a good scope for the development of this industry especially in the backward area and rural areas to generate more employment opportunities and to meet the demand of the Urbanised markets in the Manipur state.

4. Process of Manufacture :

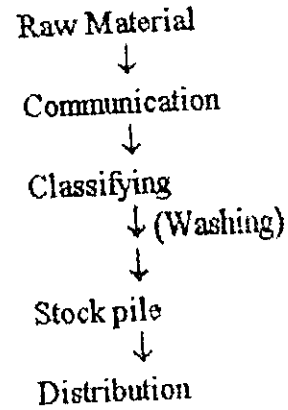
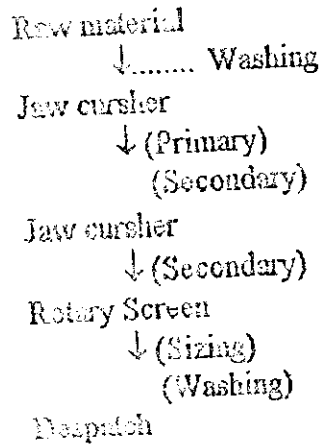
The stones of various sizes are fed into the jaw crusher for size reduction. Depending on the raw material may be fed to one or two jaw crushers in a sequence.

Then, these crushed stones are passed on to the rotating screen for size gradation. The material is handled through a conveyer belt to the different places of operation i.e Jaw crusher to the rotating screen. These stone chips have no. IS: - specification for the quality. However, it is graded into different sizes such as 1/4 " ,1/2" or 35 mm, 20 mm, for different uses.

Lot of fine dust emerges out during the crushing operation, pollution control measurement should take care to avoid health hazardous due to silica dust during production period. To control this hazardous water spray in the feeding stage is required. Suitable dust collector should be installed with necessary accessories for pollution control purposes with extension pipes etc.

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(i) Flow of process diagram :



5. Details of the scheme :

A. Background Information

(i) Name of the product :-	and by product, if any	Stone Chips fines as Sand
(ii) Type of unit :-		Individual
(Individual/ Institution)		
Annual Capacity :-		
(iii) Estimated Quantity :-		12,000 MT
Value :-		Rs. 21.80 lakhs
(iv) Estimated working days in a year:-		300 days
(v) Working hours in a day :-		8 hrs.
(vi) Type of raw materials :-		15,000 MT
Please refer Annexure - IV		
Value :-		Rs.9,60,000 (for raw material.)
(vii) Wastage, if any particulars :-		fine sand.
Quantity :-		3000 MT.
Value :-		Rs. 1.50 Lakhs

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$$\begin{aligned}\text{No. of units} &= \text{HP} \times \text{PF} \times \text{hrs} + \text{days} \times \% \text{ utilisation} \\ &= 90 \times 0.785 \times 8 \times 300 \times 0.5 \\ &= 84780 \text{ nos.}\end{aligned}$$

Total charges @ Rs. 1.50/units = Rs. 1,27,170

(b) Water LS = Rs. 1200

(c) Fuel :- 10 litres of diesel/ day
300 litres of diesel/yr

@ Rs 12/per = Rs. 36,000/-

Wages

Total = Rs. 1,64,370/-

(ix) Tools/ Equipment/ Machinery :-

Please refer Annexure - II

Value = Rs. 10,90,000 (including furniture cost)

(x) where work would be carried on :- Imphal/ other place in Manipur

(ai) Approximate area required:-

Please refer to Annexure - I

	<u>Particulars</u>	<u>Size</u>	<u>Area</u>
L.	(i) Workshop	30' x 15' = 450	500 Sq. ft.
	(ii) Office	5' x 10' = 50	
		-----	500 Sq.ft

Construction @ Rs. 200 per Sq.ft.

Value = Rs. 1,00,000/-

Number of Nos. Staff:

Please refer Annexure - VA

- 1) Technical - 4 Nos.
- 2) Administrative - 4 Nos.
- 3) Direct labour - 10 Nos.

 Total = 18 Nos.

= 4,14,000/-

Working Capital Requirement.Mixed Working Capital needs

	Rs. in value
(a) Salaries	2,94,000
(b) Repaire & maintainance	6,000
(c) Administrative Expenses Such as Stationery postage, Telephone etc.	3,000
(d) Interest on Term Loan @ 18% P.A (annexure -x)	1,46,000
(e) Insurance @ 1% On C.E + one cycle of turnover	10,610

 Total = 4,59,610

Fixed Working capital for one

operational cycle

=Rs. 1,14,902

Say Rs. 1,14,900

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Variable Working capital :-

	Rs.
(a) Wages	1,20,000
(b) Interest on fixed working Capital	82,729
	@ 18%
(c) Raw material	9,60,000
(d) Electricity, fuel	1,64,370
(e) Other consumables	10,000
(f) Transport	50,000

Total = Rs. 12,22,729

Therefore, Variable Working capital
for One year operating cycle = Rs.3,05,682

Therefore Total Working capital requirement =

(1) Fixed working capital = 1,14,900

(2) Variable Working Capital = 3,05,682

Total Rs. 4,20,582

Say, Rs. 4,20,000

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Working Capital Loan

90 % of Total W.C. of Rs. 4,63,800 = Rs. 4,17,420

Therefore Margin Money = Rs. 46,880

III Depreciation

Particulars	Value in Rs.	Depreciation %	Value in Depreciation Rs.
(a) Working Shed Building	1,00,000	5	5,000
(b) Plant & Machinery	10,70,000	10	1,07,000
(c) Furniture & Fixtures	20,000	20	4,000

Total Rs. 11,90,000 1,16,000

Cost Analysis (at 80% Capital Utilisation)

Cost of Production	:	Rs.
i. Fixed Cost	:	4,59,610
ii. Variable Cost	:	12,22,729
Total		16,82,339

iii. Estimated Sales Realisation (80% of the Total)

Particulars	Quantity	Rate Rs/MT	Value Rs. in lakh
(a) Stone chip 1/2", 3/4"	11,000 MT	190 per MT	20.90
(b) Fine as sand	1,000 MT	90 per MT	0.90
Total			21.80

IV. Gross Surplus
= Sales value - Cost of production

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v. Net Surplus
 = Gross Surplus - (Interest on term Loan + Interest on W.C. loan + Depreciation)

$$= 4,98,000 - 3,44,729$$

$$= 1,53,271$$

vi. Disposal Surplus

$$= \text{Net Surplus} + \text{Depreciation}$$

$$= 1,53,271 + 1,16,000$$

$$= 2,69,271$$

The project can pay back term loan in 4 years even at a capacity utilisation of 80%.

Ratio Analysis

I. Debt Equity Ratio	Rs. in Lakh
$\text{DER} = \frac{\text{Debt}}{\text{Equity}}$	Debt / Term Loan 9.12
= 13.32 / 4.73	W.C. Loan 4.20
= 2.8:1	13.32
	Equity own investment 3.23
	Share capital including 1.50
	4.73

II. Capital Employed to value of output Ratio

$$= \frac{\text{Fixed capital} + \text{working capital}}{\dots}$$

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$$= \frac{11.90 + 4.20}{21.80} = 0.71 : 1$$

III. Capital Employed to Net Value Employee Ratio

$$\frac{\text{F.C. + W.C.}}{\text{Net Value}} = \frac{11.90 + 4.20}{9.20} = 1.75:1$$

i.e. Net Value = output - (R.M. Power, Water, Fuel, Consumable Store, Depreciation)

$$= 21.80 - 12.60$$

$$= 9.20$$

IV. Investment per Worker Ratio

$$= \frac{\text{F.C. + W.C.}}{\text{Total no. of workers + Staff}}$$

$$= \frac{16.10}{18} = \text{Rs. } 0.89 \text{ Lakhs}$$

V. Production per Worker

$$= \frac{\text{output}}{\text{Total workers + staff}} = \frac{21.80}{18} = \text{Rs. } 1.21 \text{ Lakhs}$$

VI. Percentage of Raw Material to Value of Output

$$= \frac{\text{Value of R.M.}}{\text{Value of output}} \times 100$$

$$= \frac{9,60,000}{21,80,000} \times 100$$

VI. B.E.P. Calculation

$$\begin{aligned} \text{B.E.P.} &= \frac{\text{Fixed Cost}}{\text{Contribution}} \times 100 \\ &= \frac{\text{fixed cost}}{\text{sales value} - \text{variable}} \times 100 \\ &= \frac{5.33 \times 100}{21.80 - 11.82} \\ &= 52.3\% \end{aligned}$$

MACHINERY & EQUIPMENT SUPPLIERS

1. M/S Amic Industries (P) Ltd.
10, B.T. Road, Calcutta - 700056
2. M/S Keshab Machineries (P) Ltd.
25, Swallow Lane, Calcutta - 700001
3. NSIC Ltd.
Okhala Industrial Estate
PDTC, Delli.
4. M/S Ashok Engg. Works
8/1, Ajit Industrial Estate, Ahmedabad - 380023
5. M/S Jayant Engg. Co.
7, Patel Eastate, Swami Vivekananda Road
Dahisar (E) Mumbai - 400068

Construction of Workshop/Godown

Industry	Purpose for which construction is proposed	Specification given by industry director. location of area	Cost of construction per sq. ft	Total cost expected (Rs)	Time require for construction (in month)	Anticipated life of the assets (year)	Depreciation to be included in cost of production	Certificate by Architect
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Stone Crushing Unit	a) Working Shed b) Office	30'x15'=450 5'x10'=50 Total=500s.ft	Rs. 200/-	1,00,000	3 months	20 years	Rs.5000/- @ 5%	-

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Machinery/Equipments/Implemente

(1) Industry	(2) Process	(3) Type machinery/Equipment necessary	(4) From whom & where to be procured and where to installed	(5) Life of M/C (Year + Depreciation cost)	(6) Mode of supply	(7) Whether spare part provided along with supply	(8) Arrangement for servicing (inspection + repairs)	(9) Cost of M/C including transport installation etc.	(10) Change period if any	(11) Period time required for supply (in months)
Stone Crushing Unit	1. Crushing (primary)	Primary jaw crushing (12'x24') with std. jaw plates with 5HP motor.	Listed separately for all machines	10 years 10%	Through Banks	Yes	Units skilled workers or mechanic available	2,50,000	1 Year	3 months
	2. Secondary Crushing	Secondary jaw crushed (16'x9') fitted with std. jaw plates with 5HP motor		10 years 10%	"	"		2,00,000	"	"
	3. Sizing	Rotary screen (3'x12') with 10 HP motor		10 years 10%	"	"		1,00,000	"	"

S. No.	Particulars	Life	Rate	Total	Period
1	5. Polished Control	5 years 10%	2,10,000	2,10,000	1 month
2	6. Spare Part	10 years 10%	80,000	80,000	3 month
3	7. Office furniture & fixture	5 years 20%	20,000	20,000	-
4	8. Erection & installation charges	-	1,00,000	1,00,000	-
5	Belt Conveyor with 15 HP motor.	-	-	-	-
6	A. cyclopic dust collector with connecting pipes chutes with 10 HP motor.	-	-	-	-
7	Spare jaws, jaw fixture & hand tools.	-	-	-	-
8	Manufacture expert	-	-	-	-

Annexure F contd.

Time reqd. for installation	Total time reqd. for commissioning (from the day of order placed)	Time reqd. to obtain full capacity	Technical support provided from manufacturer	Whether special type of electricity/ power supply require	Whether insurance coverage provided	Number of workers/ nature of work	Whether training is necessary if so its nature	Remarks
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1. 4 weeks	4 months	1 month	simple working method	25 HP 3ph	yes	Primary Crushing	No	
2. 4 weeks	"	"	"	15 HP "	"	secondary crushing	"	
3. 4 weeks	"	"	"	10 HP "	"	sizing the crushing stone chip	"	
4. 4 weeks	"	"	"	10 HP "	"	carrying the stone chips after crushing	"	
5. 4 weeks	"	"	"	10 HP "	"	collect the dust during crushing process	"	

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Annexure III

Target : Physical (quantity + Value)

Target

I. Production/processing

- Items to be produced - stone chips ¼", ½" and fine sands
 Unit - MT
 Value - Rs. in lakh

1st Year		2nd Year		3rd Year		4th Year		5th Year	
Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
9000	16.5	10500	19.25	12000	21.80	13500	24.50	1500	27.50
60%		70%		80%		90%		100%	

- i. Estimated production : 12000 MT
 ii. %of the rated capacity : 80 %

II Sales:

- i. Wholesales : Rs. 21.80 lakhs
 ii. Retail sales : -
 iii. Percentage of the rated capacity = 80%

III. Employment.

i. Staff

- a) Administrative/supervisory - 4 nos.
 b) Technical - 4 nos.

ii. Direct cost.

- a) Technical/skilled workers - 10 nos.
 on the salary borne by the institute.
 b) Beneficiaries self-employment -
 getting earning.

Total (i + ii) - 18 nos.

iii. Employment Wages(in Rupees)

- a) For indirect labour - Rs. 1,20,000/-
 b) For direct labour - Rs. 1,74,000/-

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Annexure VA

I. Technical Administration and Direct or Labour

Category of staff	Design.	Number	Pay Scale (Rs)	Total /month	Expected exp. in a year (Rs.)
A. Technical					
	1. Supervisor	1 nos.	2500-50-3000	2500	30,000
	2. Mechanic	1 nos.	2500-50-3000	2500	30,000
	3. Skilled workers	2 nos.	1500-30-1800	3000	36,000

		4 nos.			96,000
B. Administrative					
	1. Manager	1 nos.	3000-100-4000	3000	36,000
	2. Clerk	1 nos.	1500- 30-1500	1500	18,000
	3. Watchman	1 nos.	1000- 25-1250	1000	12,000
	4. Peon	1 nos.	1000- 25-1250	1000	12,000

		4 nos.			78,000

II. Direct or Labour

Category of Direct labour	Number of Workers	Rate/day /Unit	Mode of pay. Payment	Total/annum	Days/Week
1. Unskilled workers or helpers	10 nos.	@Rs.40/-	Monthly	1,20,000	6 days

Grand Total (I + II) = Rs. 2,94,000/-

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Annexure X

Term Loan Requirement

Particulars	Value	Margin%	Margin Money Rs.	Term %	Loan Value Rs.
1. Land	1000 sq.ft @Rs. 50/sq.ft	own	-		
2. Building 500 sq.ft.	1,00,000	25%	5,000	75%	95,000
3. Plant & Machinery	10,70,000	25%	2,67,500	75%	8,02,500
4. Furniture & fixture	20,000	25%	5,000	75%	15,000
Total	11,90,00		2,77,000		9,12,500