

Flooring Tiles (Granite)

PRODUCT CODE	: N.A
QUALITY AND STANDARDS	: IS 3316:1974 Structural Granite
PRODUCTION CAPACITY	: Quantity : 75000 Nos. Value : Rs. 8250000
MONTH AND YEAR OF PREPARATION	: January, 2003
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INTRODUCTION

Granite is the most beautiful and reliable material for the building industry. It is used as a building material in the form of tiles and slabs and is a modular element for flooring, internal and external cladding, steps, sills, etc., in houses, offices, hotels, restaurants, hospitals, temples, etc. It is also used in the monuments.

Granite has been scarcely used in the past on account of high degree of hardness and difficulties in processing. The development of new and advanced technology and machinery has made it possible for the granite industry to reduce its production costs and considerably increase its production capabilities.

MARKET POTENTIAL

India is the second largest producer of granite after South Africa. Besides a

good domestic demand due to steady growth in the commercial complexes and other building industry, there is a good export potential for granite tiles. India has an established market in Singapore, Taiwan, Australia, Japan, USA, UK, Italy and Germany. Although there is an export potential for the product, with the envisaged scale of operation, it is advisable to concentrate on domestic market initially before stepping in for an ambitious export market.

BASIS AND PRESUMPTIONS

Efficiency: It is envisaged that the unit will run for 8 hrs a day and 300 days in a year. 75% efficiency of manpower and machinery is considered.

Time Period: Full capacity is expected to be achieved within 6 months of trial production.

Labour Wages: Minimum applicable wages are considered.

Interest Rate: 14% per annum is taken into consideration.

Margin Money: One-third of the total capital investment may be brought in by the promoter (s).

Pay back Period: About 4 years.

Land Cost and Construction Cost:

Land Cost Rs.200 per sq. metre

Construction Cost Office and Stores:
Rs. 2500 per sq. metre

Work Shed: Rs. 1800 per sq. metre

IMPLEMENTATION SCHEDULE

Sl. No.	Activity	Period (in months)
1.	Preparation of the project report Selection of site Provisional registration	2
2.	Availability of finance Construction of building, Procurement of machinery and equipment, Availability of electrical power	3
3.	Erection and commissioning, Trial runs, Recruitment of manpower	1
Total Implementation Period		6

TECHNICAL ASPECTS

Process of Manufacture

Granite blocks of 1 cft and 2 cft in size are procured from quarry owners. Blocks of various colours and shades are to be chosen depending on the customers requirements. Varieties of granite are available in various colours and shades in Karnataka, Maharashtra, Andhra Pradesh and Rajasthan. These

are Himalayan blue, Ilkal red, Cherry blossom, Blue rose, SK fantasy, Kanakpura multi colour, Hassan green, etc.

Granite blocks are fed into a fully automatic circular sawing machine for slicing. The spacing between the cuts is preset depending on the thickness of tiles to be required. The depth of the cut is adjusted depending on the hardness of the granite. The hardness varies depending on the varieties of granite. Diamond segmented blade is used for cutting or slicing in which, water is the coolant. Water re-circulation system is suggested for minimizing water consumption.

The tiles could be of different sizes viz. 6" x 6", 12" x 12" and 12" x 24". The thickness of the tiles ranges between 10 mm and 20 mm.

The sliced granite is sent for further processing in the following sequence:

- a) Rough surface grinding
- b) Smooth surface grinding
- c) Polishing

For the above three processes different grades of abrasive powders and polishing heads are used. Manual mode of operation of the machine is suggested for the above three processes. Polishing heads are replaceable for different operations on a single machine. Alternatively, three operations can be done on three different machines for increased production.

After polishing the individual tiles can be fed into an edge-cutting machine with double blade for parallel cutting of the two edges. Then, the tiles are positioned so that the other two parallel edges are also cut.

Double blade edge-cutting machines are preferred over single blade edge-

cutting machine because sizes are more accurate and 90° is easily maintained between the adjacent edges. Water is used as coolant.

Edge polishing may be done with abrasive stones manually or portable machines.

Finished tiles are inspected for accuracy in size, mirror polish, etc. Tiles with any visual defects in polishing are avoided.

Quality Control and Standards

The Bureau of Indian Standards has published the following standard for structural granite: IS 3316:1974 Specification for structural granite (first revision), Reaffirmed 1987.

According to the above specification, the product should be free from flaws, injurious veins, cavities and similar imperfections that would impair its structural integrity and would adversely affect its strength and appearance.

Besides the above attributes, the above standard also specifies requirements for the following parameters:

Size tolerance: ± 2 mm in length and breadth ± 1 mm in thickness.

Water absorption: Not more than 0.50%.

Compressive strength: Not less than 1000 Kgs/sq. cm.

Specific gravity: Not less than 2.6

Production Capacity (per annum)

Granite tiles size	Quantity (Nos.)	Price (Rs.)	Value (Rs.)
6" x 6"	50000	75	3750000
12" x 12"	20000	150	3000000
12" x 24"	5000	300	1500000
Total	75000		8250000

Motive Power 80 HP.

Pollution Control

Storage pits for slurry included

Energy Conservation Nil.

FINANCIAL ASPECTS

A. Fixed Capital

(i) Land and Building

	Sq. Metres	Rate (Rs.)	Value (Rs.)
Land	1,000	200	2,00,000
<i>Built Area</i>			
Office and Stores	100	2,500	2,50,000
Working Shed	400	1,800	7,20,000
Construction of pits for waste slurry storage, etc.			1,00,000
			Total 12,70,000

(ii) Machinery and Equipments

Description	Imp./ Ind.	Qty. (Nos.)	Rate (Rs.)	Value (Rs.)
<i>Production Unit</i>				
Circular sawing machine (automatic), max. Cutting depth 375 mm, diamond segmented circular saw of 1000 mm dia., 25 HP main motor, 1 HP elevating motor and other accessories	Ind.	2	6,00,000	12,00,000
Double blade edge cutting machine (manual), max. work size: 450x450 mm, vertical movement: 80 mm, diamond segmented blade (200 mm dia.), 2 HP motor and other accessories	Ind.	3	1,50,000	4,50,000

Description	Imp./ Ind.	Qty. (Nos.)	Rate (Rs.)	Value (Rs.)
Heavy duty polishing machine (manual), max. polishing area: 600x1200 mm, vertical movement: 200 mm, 3 HP motor, polishing heads and other accessories	Ind.	6	60,000	3,60,000
Testing equipment				Nil
Pollution control equipment				Nil
Storage pits for waste slurry included in construction				
Energy conservation equipment				Nil
			Sub Total	20,10,000
Electrification and installation charges				2,01,000
At 10% of cost of machines and equipment.			Total	22,11,000
Cost of diamond segmented saws, polishing heads, etc.				4,50,000
Cost of office equipment, working tables, etc.				1,41,000
			Total	28,02,000

(iii) Pre-operative Expenses Rs. 2,00,000

(Project report cost, non-refundable deposits, etc.)

Total Fixed Capital (i+ii+iii) 42,72,000

B. Working Capital (Per Month)

(i) Personnel (per month)

Designation	No.	Salary (Rs.)	Total (Rs.)
<i>Administration and Supervisory</i>			
Manager	1	8,000	8,000
Supervisor	1	5,000	5,000
Salesman	1	5,000	5,000
Accountant	1	5,000	5,000
Clerk	1	4,000	4,000
Watchman	3	2,000	6,000
Attendant	1	1,500	1,500
<i>Technical: Skilled and Semi skilled</i>			
Skilled workers	8	3,000	24,000
Semi-skilled workers	5	2,000	10,000
	Sub Total		68,500
<i>Perquisites: At 15% of Salaries</i>	LS		10,500
	Total		79,000

(ii) Raw Materials (per month)

Particulars	Imp./ Ind.	Qty. Unit	Rate (Rs.)	Value (Rs.)
Granite				
rough blocks	Ind.	500 Cft.	450	2,25,000
Packing materials	Ind.	LS		10,000
			Total	2,35,000

(iii) Utilities (per month)

Particulars	Qty.	Unit	Rate (Rs.)	Value (Rs.)
Electrical Power	8000	kWh	5.00	40,000
Water	250	kL	20.00	5,000
		Total		45,000

(iv) Other Contingent Expenses (per month)

Particulars	Value (Rs.)
Postage and stationery	2,000
Telephone	2,500
Consumable stores	30,000
Repairs and maintenance	15,000
Transport charges	7,500
Advertisement and publicity	5,000
Insurance	2,000

Particulars	Value (Rs.)
Taxes	2,000
Sales expenses	10,000
Miscellaneous expenses	4,000
Total	80,000

(v) Total Recurring Expenditure (per month) Rs. 4,39,000

(vi) Total Working Capital (on 3 months basis) 13,17,000

C. Total Capital Investment

i) Fixed Capital	Rs. 42,72,000
ii) Working Capital	Rs. 13,17,000
Total	Rs. 5,58,9000

MACHINERY UTILISATION

75% utilization has been considered on machinery and equipment. No bottleneck is expected in the operations.

FINANCIAL ANALYSIS

(1) Cost of Production (per year)

Description	Value (Rs.)
Total Recurring Cost	52,68,000
Depreciation on Building at 5%	53,500
Depreciation on Machinery and Equipment at 10%	2,21,000
Depreciation on Tools at 25%	90,000
Depreciation on Office equipment at 20%	28,200
Interest on total capital investment at 14%	7,82,460
Total	64,43,160

(2) Sales Turnover (per year)

Item	Qty.	Unit	Rate (Rs.)	Value (Rs.)
Granite Tiles of size (6" x 12")	50,000	Nos.	75	37,50,000
Granite Tiles of size (12" x 12")	20,000	Nos.	150	30,00,000

Item	Qty.	Unit	Rate (Rs.)	Value (Rs.)
Granite Tiles of size (12" x 24")	5,000	Nos.	300	15,00,000
Total				82,50,000

(3) Net Profit Before Tax (per year) Rs. 1806840

(4) Net Profit Ratio (%)

$$= \frac{\text{Net Profit per year} \times 100}{\text{Sales per year}}$$

$$= \frac{18,06,840 \times 100}{82,50,000}$$

$$= 21.90\%$$

(5) Rate of Return (%)

$$= \frac{\text{Net Profit per year} \times 100}{\text{Total Capital Investment}}$$

$$= \frac{18,06,840 \times 100}{55,89,000}$$

$$= 32.32\%$$

(6) Break-even Point

Fixed Cost (per year)

Description	Value (Rs.)
Depreciations	3,92,700
Interest on total capital investment	7,82,460
Insurance	24,000
40% of salaries and wages	3,79,200
40% of other contingent expenses (excluding insurance)	3,74,400
Total	19,52,760

B.E.P.

$$= \frac{\text{Fixed Cost per year} \times 100}{\text{Fixed Cost per year} + \text{Net Profit per year}}$$

$$= \frac{19,52,760 \times 100}{19,52,760 + 18,06,840}$$

$$= 51.94\%$$

Additional Information

It is advisable to set up units in the states where granite quarries are available. For example, Karnataka, Tamil Nadu, and Andhra Pradesh have good

deposits of granite rock. Granite being a minor mineral, is under the purview of State Governments and, Govt. policies on granite quarrying and lease vary from State to State.

The proposed project depends on the quarry owners for its raw material. Continuous availability of the desired quantity and quality (viz., colour, shade, etc.) is very important. The project is envisaged for supply of granite tiles to meet the consumption within the country, local or otherwise. To get export quality finish in the granite tiles, it is also advisable to install Chamfering machine, Grooving machine and Calibrating machine.

Addresses of Machinery and Equipment Suppliers

Granite Cutting and Polishing Machinery

1. M/s. M. L. Shah and Co (Machinery) Pvt. Ltd.
Lotus House, 5th floor, 33 A,
New Marine Lines,
Mumbai-400 020
2. M/s. Rajasthan Udyog
13, Heavy Industrial Area,
Jodhpur-342 003
3. M/s. Hensel (India) Pvt. Ltd.
No. 58, Country Club Road,
Singasandra,
Bangalore 560 068
4. M/s. Jodhpur Machine Tools
Suvidha Complex, Sector E-4,
Shastri Nagar,
Jodhpur-342 003
5. M/s. Rajasthan Industries
Behind Old Power House,
Jodhpur-342 001

6. M/s. Yantra Udyog
65/2, KCG Industrial Estate,
Kamakshipalya,
Bangalore-560 079
7. M/s. Afam Stonemachin
No. 85, Sharada Colony,
3rd Stage, 4th Block,
Basaveshwarnagar,
Bangalore-560 079
8. M/s. M. R. Industries
3, Varalin Industrial Estate,
Chand Lodiya Gots Road, Gota,
Ahmedabad-382481

Diamond Segmented Saws and Polishing Heads and Abrasives

1. M/s. Rajasthan Tools Pvt. Ltd.
13/A, Heavy Industrial Area,
Jodhpur-342 003
2. M/s. Winter Misra Diamond
Tools Ltd.
79, Jorbagh,
New Delhi-110 003
3. M/s. Neel Enterprises
15-A, Silver House,
Nr. Mahalakhmi Road,
Paldi, Ahmedabad-380 007
4. M/s. Bhukanvala Diamond Tools
Pvt. Ltd.
PO Box No. 946, The Peerage,
86, MV Road,
(Andheri-Kurla Road),
Andheri (West),
Mumbai-400 093

Raw Material Suppliers

1. M/s. Mysore Minerals Ltd.
39, M. G. Road,
Bangalore-560 001
Other local granite quarry owners.