

MINING PLAN ON COLOUR GRANITE
Over an extent of 2.00 Hectares in Sy. No. 1
Addukonda (V), Tekkali (M), Srikakulam District, A.P.

For

Sri. T. N. Kalaimani
Tamil Nadu



APPROVED

Prepared By

V.T. Chander
Consultant Geologist & RQP
(RQP/DMG/HYD/02/2001)

H.No. 10-1, Flat No. 202, Mahalaxmi Ganapathi Complex,
Sai Baba Temple Lane, Beside Sri Sai Grammar High School,
P & T Colony, Dilsukhnagar, Hyderabad - 500 060.

☎ : 55618351, 24068218 ☎ : 31056234

CERTIFICATE

This is to certify that Mining Plan in respect of Quarry Lease area over an extent of 2.00 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, Andhra Pradesh. Has been prepared by Sri V. T. Chander, Consultant Geologist & RQP and we agree to follow the same in accordance to the provision of Law

Date :

T.N. Kalaimani
Applicant
(T. N. KALAIMANI)



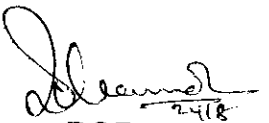
CERTIFICATE

The provision of Granite Conservation and Development Rules 1999 have been observed in the Mining Lease of Coloured Granite over an extent of 2.00 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, Andhra Pradesh., for Sri. T. N. Kalaimani, Tamil Nadu, whenever specific permissions are required the applicant will approach the concerned authorities.

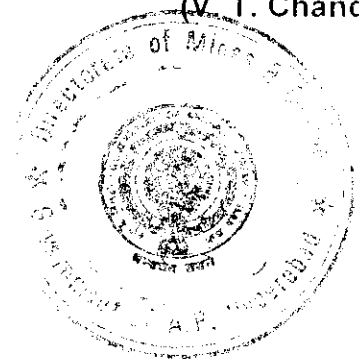
It is also certified that the information's furnished in the above Mining Plan are true and correct to the best of our knowledge

Date : 24.8.04

Place : Hyderabad

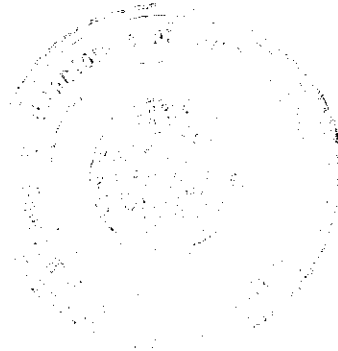

RQP

(V. T. Chander)



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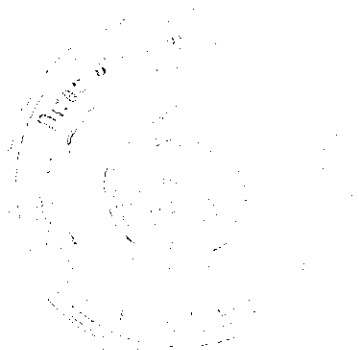


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LIST OF ANNEXURES

- I Copy of the DMG, Hyderabad, Notice No. 15327 / R1-3 / 2004 dated 16 - 07 - 2004.



MINING PLAN ON COLOUR GRANITE
Over an extent of 2.00 Hectares in Sy. No. 1
Addukonda (V), Tekkali (M), Srikakulam District, A.P.

For

Sri. T. N. Kalaimani
Tamil Nadu

This Mining Plan is Approved subject to the
Conditions/Stipulations Indicated in the

By

Mining Plan Approval Letter No.....

V.T. Chander

2-1935/98-1/2004, dated 4.10.2004

Consultant Geologist & RQP

1.0 INTRODUCTION

Sri. Jagan Mohan Rao, Tekkali, Srikakulam District, an Entrepreneur in Mining was granted the Prospecting License for Coloured Granite over an extent of 2.00 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, A.P. Vide Director, Mines & Geology, Hyderabad. Proceedings No. 3916 / R1-3 / 2000 dated 17 - 07 - 2002. The License deed was executed on 17 - 07 - 2002, Vide Asst. Director, Mines & Geology, Srikakulam Dist., Proceedings No. 53 / Q / 2000 dated 17 - 07 - 2002, for period of 2 years from 17 - 07 - 2002 to 16 - 07 - 2004.

Subsequently the Prospecting License was transferred to Sri. T. N. Kalaimani, Tamil Nadu, vide Director of Mines & Geology, Hyderabad Proceedings No. 3916 / R1-3 / 2004 dated 28 - 02 - 2004 for the unexpired period of Prospecting License upto 16 - 07 - 2004. The Prospecting License deed was executed on 15 - 04 - 2004, Vide Asst. Director, Mines & Geology Srikakulam Dist., Proceedings No. 53 / Q / 2000 dated 15 - 04 - 2004, for unexpired period ending on 16 - 07 - 2004.

After ascertaining the quality & quantity of the deposit Sri. T. N. Kalaimani, Tamil Nadu, have applied for grant of Quarry Lease. The Director, Mines & Geology, Hyderabad, after careful examination of the proposals has proposed to grant the quarry lease in the above said area for a period of 20 years. Subject to submission of approved mining plan within 6 months period. Vide Notice No. 15327 / R1-3 / 2004 dated 16 - 07 - 2004.

Sri. T. N. Kalaimani, Tamil Nadu, approached Sri V.T. Chander, Consultant Geologist and RQP (RQP / DMG / Hyd / 02 / 2001) For preparation of Mining Plan in the above mentioned quarry. Accordingly Prospecting Report is prepared as per the guidelines given by Govt. India. Ministry of Steel & Mines, GCDR Rules 1999.

APPROVED

Shankar

Dr. P. DAYASANKAR
DIRECTOR

DEPT. OF MINES & GEOLOGY
GOVT. OF A.P., HYDERABAD,



2.0 GENERAL

- 2.1 **Name and address of the applicant** : Sri. T. N. Kalaimani,
S/o. Natarajan,
129, S.N.D. Road,
Tiruchengode - 637 211.
Namakkal District,
Tamil Nadu.
☎ : 04288-252138, 242143, 250533
- 2.2 **Status of the applicant** : Private Entrepreneur
- 2.3 **Mineral for which applicant intends to mine** : Coloured Granite
- 2.4 **Name and address of the RQP who prepared the prospecting report** : V.T. Chander
RQP/ DMG/Hyd/02/2001
H. No. 10-1, Flat No. 202,
Mahalakshmi Ganapathi Complex,
Sai Baba Temple Lane,
Beside Sri Sai Grammar High School,
P & T Colony, Dilsukhnagar,
Hyderabad - 500 060.
☎ : 55618351, 24068218
• : 31056234
- 2.5 **Name and address of the prospecting agency** : Sri. T. N. Kalaimani,
Tamil Nadu
- 2.6 **Details of the Area**

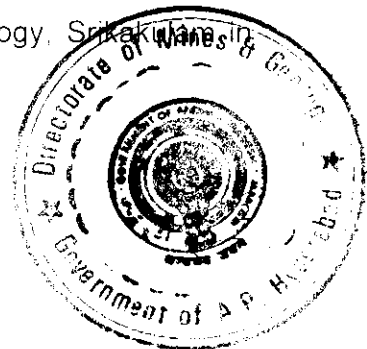
The applied area falls in the Survey of India Toposheet No. 74 B/2 and is bounded East Longitude 84° - 12' - 00" and North Latitude 18° - 37' - 40". It is situated 5 Kms North West of Tekkali Town. The road leading from Tekkali to Bheempuram via Sitampeta crossing villages Barigipeta, Rama Krishnapuram and a diversion towards West by 600 M at road crossing from Gopalapuram to Bheempuram will lead to the Site. The location of the area is indicated in Key Cum Location Map (Plate - I).

The details of the area are as tabulated below :

District State	Mandal	Village	Sy. No.	Extent	Ownership of Occupancy
Srikakulam Andhra Pradesh	Tekkali	Addukonda	1	2.00 Hectares	Govt. Land

Cadastral Map certified by the Asst. Director of Mines & Geology, Srikakulam, in favour of Sri. T. N. Kalaimani, is given as Plate No. II.

- 2.7 **Period for which Quarry Lease required = 20 Years.**



2.8 Infrastructure and Communication

Availability of Water	The Ground Water level is about 6 to 7.0 Mts. below ground level at the foot hill.
Availability of Electricity	Electricity is available at the Quarry area.
Communication Network	It is situated 5 Kms North West of Tekkali Town. The road leading from Tekkali to Bheempuram via., Sitampeta crossing villages Barigipeta, Rama Krishnapuram and a diversion towards West by 600 M at road crossing from Gopalapuram to Bheempuram will lead to the Site. Amenities like Post & Telegraph Office, Police Station, Primary Health Center etc., are available at Tekkali.
Road Network	The Tekkali Town is located 60 Kms North of Srikakulam on NH 5 from Visakhapatnam to Calcutta. The town is well connected with the road network.
Nearest Rail Head	Nearest Rail Head is located at Amudalavalsa (Srikakulam Road Station), which is located 16 Kms from the Srikakulam and 76 Kms from Tekkali.
Port Facility	Vishakapatnam Port is about 150 Kms from area.
School	Education Facilities from Primary School to College are available in Tekkali Town.
Medical Facility	Medical Facility available in Tekkali Town.

Boundaries

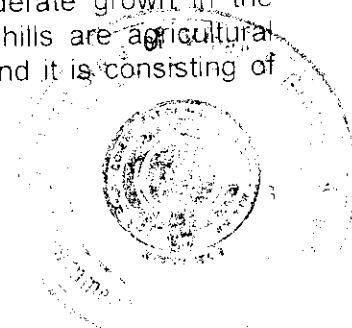
North	Barren Lands
South	Barren Lands and beyond 50 M are Agricultural Lands
East	Barren Lands
West	Lease area of M/s. Rayan Granites Pvt. Ltd.

Further vast potential exists for the employment of unskilled labour in the existing Granite Quarries and Allied Small-Scale Industries. The area experiences Semi - arid climatic conditions with an average Annual rainfall of 1000 mm. The local day temperature varies from 25° C in November to 48° C in April & May Months. The general wind direction reported is SW to NE and SE to NW

3.0 GEOLOGY

3.1 Phsiography

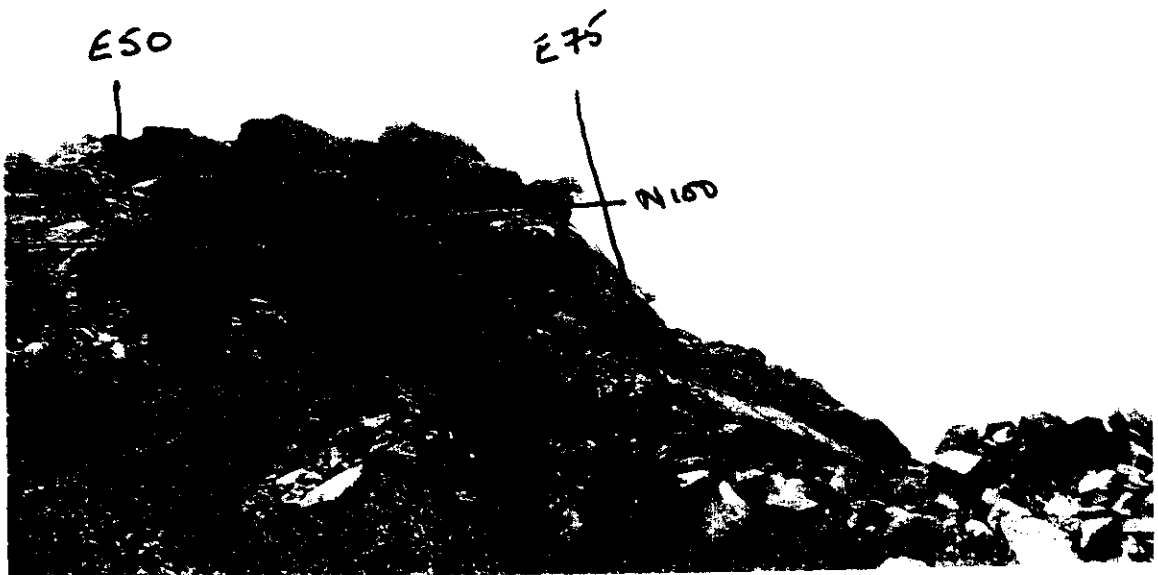
The applied area is located as a mound sloping on all sides. The surrounding areas are occupied by hills and mounds. The vegetation is moderate grown in the interstices of the soil between the boulders and below foot hills are agricultural lands. The mound is attaining 15 M from the ground level and it is consisting of huge boulders.



PHOTOGRAPH SHOWING THE VIEW OF PART OF THE LEASE AREA



PHOTOGRAPH SHOWING THE VIEW OF THE PEAK (PART) IN THE LEASE AREA
IN GRIDS N 100 - N 126 & E 50 - 76



3.2 Regional Geology

The Eastern Ghat Mobile Belt (EGMB) is more than 600 Km in Length from Srikakulam in the North to Ongole in the South. This belt is more than 100 Km in Width in Northern Part and Tapers down to less than 20 Km in the South, it has broad arcuate trend with Westward convexity. The NNE -SSW trend in the southern part of the belt changes NE-SW in the North. EGMB is divided into 3 longitudinal zones viz.

1. Western - Charnockitic Zone
2. Central - Kondalite Zone
3. Eastern - Migmatite Zone

While in the Northern parts in Srikakulam, Vizianagaram & Vishakapatnam Districts the central Khondalite Zone occupies major part of the area. where as Western Charnockite Zone occurs in the Southern part. The rocks in this belt are represented high-grade Granulite facies of Metamorphism and suffered by complex deformation. The stratigraphic succession of EGMB is as follows :

INTRUSIVES	Layered Anorthisites and associated Mafics and Chromiferous Ultra Mafics.
CHARNOCKITE GROUP	Charnockites with Mega Crystic K- Felspar Charnockite Two Pyroxene Granulite / Amphibolites.
KHONDALITE GROUP	Calc-Sillicate-Granulites. Garnet - Silliminite - Quartz - Biotite - K - Felspar - Graphite Gneiss (Khondalite) Quartzite - Garnet - Silliminite.
GRANITOID SUITE	Granitoid with Mega Crystic K-Felspar. Un differentiated (with Migmatitic Dia Tectite, Augen) Perferoblastic Granite and Gniesses. Garnet - Biotite Homophanus Granite / Gniess. Leptinite, Local Charnockite Neosomes and Relics.

In Srikakulam district the EGMB is represented by vide range of litho units Viz: Charnockites, Khondalites, Two Pyroxene Granulites, Migmatites, Leptinites and Intrusive Porphyroblastic Charnockites. Large enclaves of Acid Charnockites, Khondalites and Meta-Basic rocks occur within Migmatites, which are largely seen in the area lying between R. Vamsadhara and Coast line.

3.2.1 Local Geology

Topography

The applied area falls on a mound raising to a maximum height of 15 M above the ground level with in the area. There are two peaks in the center of the area and sloping in all the directions. The entire mound is covered with boulders. The soil is embedded with in the joints and interstices of the boulders. The boulders are of the size ranging between 9 M x 3 M x 2 M and 3 M x 2 M x 1 M were as the smaller boulders range from 1 M x 1 M x 1 M to 0.5 M x 0.5 M x 0.3 M.

Geology

The Migmatites and Migmatised Charnockite deposits are commercially known as "SRIKAKULAM BLUE". The Migmatite essentially consists of Blue Quartz and Bluish Grey to Light Grey Felspar with accessory minerals like Hypersthene, Hornblende and Biotite. The rock displays Wavy Banding, Ptygmatic folding of Bands, Paleosom – Mesosom – Leucosom and Minimal Lineation. A number of parallel slips trending N – S, NNW – SSE and NNE – SSW cut across the Wavy Banding, Pinching and Displacing the bandings that imparts additional beauty to the stone besides its Blue Colour. The arrested enclaves of Charnockite (Locally known as Oil Patches) and healed hairline fractures (Known as White and Coloured Lines) cutting across the Wavy Banding are considered defects.

Two sets of major joints :

1. N 70° E – S 70° W
2. N 20° E – S 20° W

3.3 Details of Exploration

3.3.1 Prospecting Operations Carried Out

The following prospecting operations were carried out in applied area.

3.3.1-1 Geological Traverses and Mapping

The applied area was traversed to demarcate the exposures of the Colour Granite and to record the structural features in the outcrops, the data regarding litho units collected and Surface Geological Map on 1 : 500 Scale prepared (Plate – III).

3.3.1-2 Topographic Survey

A micro optic theodolite is used for conducting the topographic survey. An assumed benchmark of 100 M used to measure the elevation differences in the applied and also to prepare the surface elevation contour map on 1 : 500 Scale.

3.3.1-3 Exploratory Mining

Geological mapping of the applied area revealed the Migmatites forms as a mound raising up to maximum height of 15 M above ground level. The exploratory mining was carried out in the Southern part of the mound. The exposed boulders were tackled by drilling with Jack Hammers and converting these boulders into blocks. The quarrying advanced South to North, benches facing South wards. A ramp / road was formed from South Eastern of the applied area to reach the workings. The mining is of semi mechanised type.

In the trial pit of 40 M x 10 M x 2 M a total of 800 M³ of Rock Mass with soil, undersized boulders were retrieved from the workings and after dressing 52 M³ of Economic Grade and Marginal Grade Rough Blocks recovered showing the recovery of about 10% are the blocks with sizes ranging 300 x 200 x 200 and 270 x 140 x 150 and the balance 220 x 150 x 100 & 180 x 100 x 100.

The following machines are used :

1. Poclain - 1 No.
2. Compressor - 1 No.
3. Jack Hammers - 5 No's.

With 25 No's of workers (Both skilled and semi-skilled)

3.4 Future Programme

Since the deposit is proved no further exploratory programme is recommended

4.0 RESERVES

4.1 Geometry of Deposit

Geological Traverses and the study exposures of the mound facilitated to assess the shape and size of the deposit in the area. It is in irregular shape. The surface of the mound is wavy and irregular with two peaks.

4.2 Method of Estimation of Reserves

The exposed deposit is found to be irregular in shape as it is exposed on hill, the volume is computed by cross sectional area method by taking 5 Cross Sections A-A1, B-B1, C-C1, D-D1 & E-E1.

Cross Section	Cross Sectional Area (M ²)	Sectional Influence (M)	Volume of Rock Mass (M ³)
A - A1	3,586.75	28	1,00,429
B - B1	5,362.5	28	1,50,150
C - C1	5,508.0	28	1,54,224
D - D1	5,678.2	28	1,58,989.6
E - E1	5,379.75	28	1,50,633
Total Rock Mass Estimated :			7,14,425.6

$$\text{Mineable Reserves} = 7,14,425.6 \text{ M}^3 \times 40\%$$

$$\text{Recoverable Rock mass 40\% (60\% constitute Soil, Undersized Boulders)} = 2,85,770.24 \text{ M}^3$$

$$\text{Recoverable Market Grade Reserves @ 20\%} = 2,85,770.24 \text{ M}^3 \times 0.2$$

$$= 57,154 \text{ M}^3$$

$$\text{Life of the Mine} = 57,154 \text{ M}^3 / 1000$$

$$= 57 \text{ Years}$$

4.3 Categorization of Reserves

The deposit is exposed as mound is considered for computing the reserves. The entire deposit exposed on the surface is classified under "Proved".

4.4 Total Mineable Reserves

No deposit will be blocked under safety slopes. Hence entire rock mass after deduction of Soil Creep, Voids etc., are Mineable Reserves.

Total Mineable Reserves = 2,85,770 M³

4.5 Economic Marketable Reserves

The Granites, having good export market, rough blocks free of defects like fractures, joints, shears, hair line cracks, segregation veins, drastic colour variation and having Gang saw size are mostly preferred by exporters and international buyers. These are known as Economic or market grade. The Srikakulam Blue Granite is totally export oriented. Hence, all the blocks of Gang Saw size are only demanded by the exporters. The estimated quantity of rough blocks from the total rock mass is calculated @ 40% = 2,85,770 M³. The recovery of marketable grade is further anticipated at 20% from the above.

Economic Marketable Reserves = 57,154 M³

5.0 MARKET ANALYSIS

i) Assured and expected supply contracts

Mining activity in the adjacent quarries has revealed that only Gang Saw Size of (Economic Grade) Rough Blocks of 2.4 x 1.4 x 1.2 & 3 x 1.9 x 1.8 sizes are required by exporters and will be dispatched to different exporters in Bangalore & Mumbai. The applicant has dispatched 52 M³ to the market.

ii) Ability to supply consumer in time

Licensee is having sufficient men and machinery, besides huge and good quality rock at shallow depth. Therefore he is able to supply the material to the consumer in time.

iii) Pattern of demand

Srikakulam Blue Granite of Srikakulam is having very good demand in international market. The prices of rough blocks of gang Saw size ranging between Rs.8000 to Rs.10000 depending upon the colour of the rock.

Therefore, the material is having good demand and market is already established for the material from this mine.



6.0 MINING

6.1 Type of Mining

Quarrying of Colour Granite in the existing Quarry by Open Cast Semi Mechanised method.

Opening of Mine

The Colour Granite in this area is proposed to be mined by Open Cast, Semi-Mechanized method the Granite deposit in this area is exposed as a hill raising upto 85 M above ground level with boulders beneath it.

The following method of working is proposed :

Stage 1

Over Burden / Talus / Side Burden Removal :

Consists of development which includes removal of Weathered, Undersized and Defective Boulders using Proclaim / Excavator and using Tipper, this waste is dumped at dumping yard. A ramp already constructed during exploratory Mining will be further developed to reach the working pits.

Stage 2

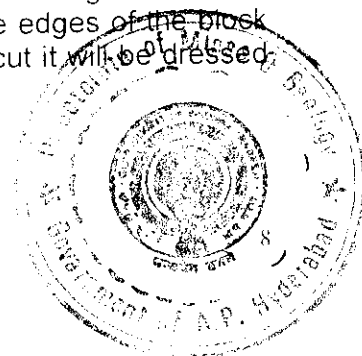
Extracting Boulder and Cutting them into Blocks with Conventional Methods :

After removal of Weathered, Undersized and Defective Boulders the fresh boulders exposed will be split into two or three pieces so that blocks can be made out of them. As the production is only for gang saw size, the boulders are split to the required size at the insitu stage. The undersized and defective blocks are removed. Usually, the advantage of natural joints present in the boulders are taken for splitting them or a line of shot holes are drilled vertically and horizontally at 10 – 15 Cm distance and the primary blocks will be wedged out or split it with the help of feathers and wedges. If the boulder or big enough one or two holes are drilled and blasted with a small charge of gunpowder.

The separated pieces are examined for defects and lines, then the block or blocks are marked in clear area and holes are drilled along the line of marking. with the help of feathers and wedges the waste portions are separated forming a rectangular blocks. Any bulges are removed by drilling and wedging making it perfect blocks. A perfect block is that all the sides shall make with each other 90°.

Dressing

After primary separation the rock mass will be carefully examined to avoid hairline cracks, mineral segregation's and veins etc. The dressing of the rough blocks will be made by chipping the edges and geometrically equating the edges of the block at the dressing yard. The rough blocks obtained after primary cut it will be dressed for obtaining good geometric shape of coloured granite.



Dressing of dimensional rough blocks for export :

Dressing is the final phase of mining operation, wherein the secondary rough blocks are squared into regular perfect rectangular sizes, thereby avoiding uneven bulge or cavities and other defects. Jackhammers with compressor, feather end wedges and sledgehammers are the equipment generally used for dressing the block.

6.2 Mining Programme for the next 5 Years

6.2.1 Scheme of Mining & Year Wise Production

During mining operations the applicant proposes to produce 1,786 M³ of Coloured Granite during next five years. In order to produce this quantity an area of 2,520 M² will be utilized.

1st Year :

The mining operations will commence from North of the existing Pit No. 1 forming a bench height of 6 M and the bench will advance towards North, during the first year a total area of 600 M² will be utilized.

In the First year it is planed to produce 288 M³ of economic grade rough blocks. To produce this quantity an area of 600 M² (30 x 20 M) will be utilized in the grids N 00 – N 50 & E 25 – E 75. Producing 3,600 M³ of rock mass from which 40% (1,440 M³) of suitable rock mass is excepted (After deduction of 60% wastage as Defective Boulders, Soil Creep etc..) from this economic grade rough blocks @ 20% (288 M³) will be obtained and 3,372 M³ of waste rock will be realised.

2nd Year :

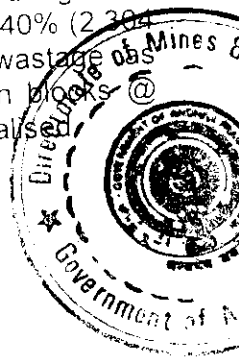
In the 2nd year the operations will commence from North of the existing Pit No. 1 and East of 1st year workings forming a bench height of 6 M and the bench will advance towards North, during the first year a total area of 600 M² will be utilized.

In the Second year it is planed to produce 288 M³ of economic grade rough blocks. To produce this quantity an area of 600 M² (30 x 20 M) will be utilized in the grids N 00 – N 50 & E 50 – E 125. Producing 3,600 M³ of rock mass from which 40% (1,440 M³) of suitable rock mass is excepted (After deduction of 60% wastage as Defective Boulders, Soil Creep etc..) from this economic grade rough blocks @ 20% (288 M³) will be obtained and 3,372 M³ of waste rock will be realised.

3rd Year :

In the 3rd year the mining will continue below the 1st year workings with South oriented faces advance further North maintaining average of 6 M bench Heig^{ht}. An area of 960 M² will be covered during this year.

In the third year it is planed to produce 461 M³ of economic grade rough blocks. To produce this quantity an area of 960 M² (32 x 30 M) will be utilised in the grids N 00 – N 50 & E 25 – E 75. Producing 5,760 M³ of rock mass from which 40% (2,304 M³) of suitable rock mass is excepted (After deduction of 60% wastage as Defective Boulders, Soil Creep etc..) from this economic grade rough blocks @ 20% (460.8 M³) will be obtained and 5,299.2 M³ of waste rock will be realised.



4th Year :

In the 4th year the mining will continue below the 2nd year workings in East of 3rd year workings. Maintaining average of 6 M bench Height. An area of 960 M² will be covered during this year

In the fourth year it is planned to produce 460.8 M³ of economic grade rough blocks. To produce this quantity an area of 960 M² (32 x 30 M) will be utilised in the grids N 00 – N 50 & E 50 – E 125. Producing 5,760 M³ of rock mass from which 40% (2,304 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.) from this economic grade rough blocks @ 20% (460.8 M³) will be obtained and 5,299.2 M³ of waste rock will be realised.

5th Year :

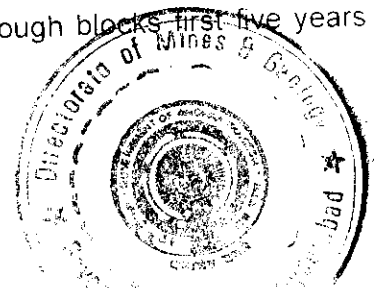
In the 5th year the mining will extent further North of the previous years workings. South oriented faces advance further North maintaining average of 6 M bench Height. An area of 600 M² will be covered during this year

In the fifth year it is planned to produce 288 M³ of economic grade rough blocks. To produce this quantity an area of 600 M² (60 x 10 M) will be utilised in the grids N 00 – N 75 & E 25 – E 125. Producing 3,600 M³ of rock mass from which 40% (1,440 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.) from this economic grade rough blocks @ 20% (288 M³) will be obtained and 3,372 M³ of waste rock will be realised.

YEAR WISE PRODUCTION FOR NEXT FIVE YEARS

Year	Dimensions L x W x Bench Height (M)	Total Rock Mass (M ³)	Recoverable Rock Mass @ 40% (M ³) after deduction of Voids & Soil Creep	Market Grade Rough Blocks @ 20% (M ³)	Waste Generation (M ³)
1 st Year	30 x 20 x 6	3,600	1,440	288	3,372
2 nd Year	30 x 20 x 6	3,600	1,440	288	3,372
3 rd Year	32 x 30 x 6	5,760	2,304	460.8	5,299.2
4 th Year	32 x 30 x 6	5,760	2,304	460.8	5,299.2
5 th Year	60 x 10 x 6	3,600	1,440	288	3,372
Total :		22,320	8,928	1,785.6	20,714.4
Average :		4,464	1,785.6	357.12	4,142.88

The mine layout for production of coloured granite rough blocks first five years is showed in Plate No. V.



6.2.2 Quantum of Excavation

To retrieve 1,785.6 M³ of Market Grade Rough Blocks a quantum of 22,320 M³ of Rock Mass has to be excavated out of which 20,714 M³ is waste in the form of under size boulder, defective boulder, soil creep and rock debris generated during production of Rough Blocks.

6.2.3 Production Schedule

The production of colour granite continuous to through out year expect during monsoon. That is 10 working months, 20 working days per month are considered. The production of 357 M³ per year can be easily achieved in a single shift with sufficient men and machinery.

The following machines are used :

- 1. Poclain - 1 No.
- 2. Compressor - 1 No.
- 3. Jack Hammers - 5 No's.

With 25 No's of workers (Both skilled and semi-skilled)

a) Magazine Type and Capacity :

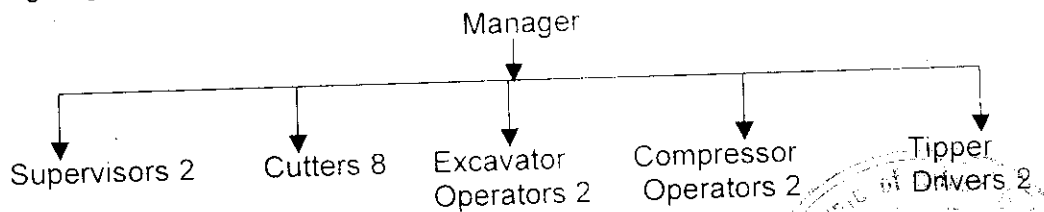
Not Applicable (No permission for storing the blasting material will be granted by the District Administration) The applicant proposes to use AGFRACT Chemical Compound whenever required.

b) Description of Processing Plant :

The applicant does not possess Granite Processing Plant

c) Organizational Chart :

The organ gram of the quarry in this area is as follows :

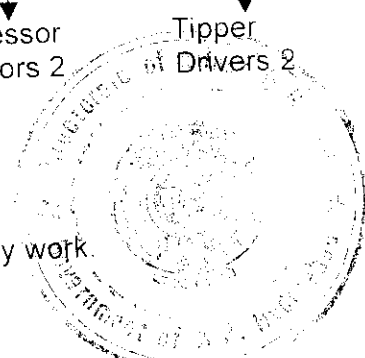


Besides above managerial and skilled staff

- Semi-Skilled of about 10 members.
- Unskilled workers 4 members are required for the quarry work.

d) Site Services :

The company at Quarry Site has already provided Rest Rooms, First Aid Room, Shelters, Lavatory and Bore well for Drinking Water.



7.0 SCHEME OF WASTE MANAGEMENT PLAN (SOLID & LIQUID) :

- i) **Solid waste for the first five years** : The granite body exposed to the surface. Hence, the weathering on the surface of the rock closely spaced joints and shears along with inherent defects like Moles, Dark patches and acidic veins contribute a large extent of waste generation during the mining.

It is estimated that in the next five years a total of 20,714.4 M³ of waste is expected to be generated with an average of 4,143 M³ per annum. The year wise waste generation in 5 years is as follows :

Year	Waste Generated (M ³)
1 st	3,372
2 nd	3,372
3 rd	5,299.2
4 th	5,299.2
5 th	3,372
Total :	20,714.4

- ii) **Dumping site particulars** : For dumping of waste generated during mining will be dumped along the Southern margin of the lease area between grids N 00 – N 50 & E 00 – E 25 covering an area of 800 M².
- iii) **Estimated waste quantity that will be generated in the entire period**: At the rate of 4,143 M³ per year the volume of waste generated in balance lease period i.e., 20 years is estimated to be 82,860 M³.
- iv) **Utilisation of waste if not prevented** :
- Soil can be utilized for reclamation of degraded area.
 - Weathered rock if it is sufficiently soft and devoid of rock fragments can be utilized for roads, filling of road side ditches, formation of approach roads to quarries, construction works etc.
 - Large and medium sized waste rock can be used as revetment for deep cut stream sections from preventing from soil erosion.
 - The waste generated during the mining will also be used for back filling of the mine pit after completion of mining.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

8.1 Baseline Information

i. Existing Land Use Pattern

The applied area is a mound sloping on all sides. The whole land is covered by sparse vegetation. The soil existing in the applied area is bouldery and unfertile. The mound is exposed to a maximum height of 15 M above ground level (Between grids E 25 – E 75 & N 100 – N 125).

ii. Water Regime

No Streams or Drainage lines exist in and around Quarry Lease area. Excepting the sheet flows during rainy days

iii. Flora and Fauna

The whole area is occupied by scattered sparse vegetation of thorny trees and small bushes. In the applied area no wild animals are witnessed as per the statements collected from the local population, since 50 years.

iv. Quality of Air, Ambient Noise Level and Water

- Air quality is good but at quarries it is filled with dust, due to haulage on the road, blasting etc
- The noise generated mostly due to blasting, drilling, vehicular traffic
- Granite mining will not effect water quality.

v. Climatic Conditions

The area is falling under semi-arid tropical zone. The area is having dry climate. The temperature recorded in this area is 25°C, in winter and about 48°C, in summer seasons. The wind direction is in SW to NE. The average annual Rainfall of the area is 1000 MM.

vi. Human Settlement

The village Gopalapuram is situated 2 Km due South East of the area. The population of this village is about 500. The village is surrounded by agricultural lands. The details of the villages in 2 Km, surrounding from the applied area is given in following table.

Table No. II : Human Settlement (Plate No - I)

S. No.	Village	Direction	Distance (Km)	Population
1.	Gopalapuram	South East	2	500
2.	Kothuru	North West	1.2	500
3.	Bheempuram	North West	2	500
4.	Dubbaguddi	North	1	300
5.	Sidipeta	South West	1.75	300

The main occupation of the local population is agriculture and sheep raring / Breeding and Quarry labour.

vii. Public Building, Palace and Monuments

No of public buildings, palaces and monuments are witnessed in and at the vicinity of the area.

viii. Quality of Air and Water

The air and water of the area are free from any kind of pollution, since no industries are established in the area.

ix. Whether the area falls under notified area under water act. 1974

The area will not fall under notified area under water Act. 1974.

8.2 Environmental Impact Assessment

1) Land Degradation

Granite mining will alter the physiographic scene; $\frac{1}{3}^{\text{rd}}$ of the present mound will be flattened and a dump covering 800 M² with 10 M Height will form as an artificial mound.

2) Air Quality

Air quality is good but at quarries it is filled with dust, due to haulage on the road, blasting etc. but it will be within the permissible limits by sprinkling water on roads and covering the drill rods with cloth.

Air quality will not be disturbed, as the quarrying is very limited.

AIR QUALITY

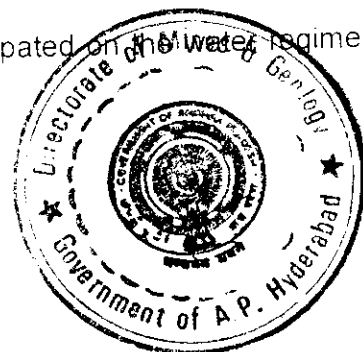
Base Level	Allowable Level
SPM = 140 $\mu\text{g}/\text{m}^3$	360 $\mu\text{g}/\text{m}^3$
RSPM = 60 $\mu\text{g}/\text{m}^3$	120 $\mu\text{g}/\text{m}^3$
SO ₂ = 40 $\mu\text{g}/\text{m}^3$	80 $\mu\text{g}/\text{m}^3$
NO ₂ = 40 $\mu\text{g}/\text{m}^3$	80 $\mu\text{g}/\text{m}^3$
CO = 1.0 $\mu\text{g}/\text{m}^3$	5.0 $\mu\text{g}/\text{m}^3$

Air quality is good but at quarries it is filled with dust, due to haulage on the road, blasting etc., but it will be within the permissible limits by adopting the following:

- The dust rising due to drilling will be controlled by covering the drill rods with cloth, dust extractors will also be employed
- Dust suppression on Haul road with sprinkling of water with chemical additives
- Proper functioning of dust suppression arrangements in the equipment

3) No water course is passing through the area excepting run off streams during monsoon.

The mining of Granite, no adverse effect is anticipated on the water regime of the area.



IS 10 500 - 1944

S.No.	Characteristic	Desirable Limit	Maximum Permissible Limit
1	Colour	5	25
2	Order & Taste	Un Objectionable	
3	Turbidity	5 NTU	10 NTU
4	pH Value	6.5 to 8.5	No Relaxation
5	TDS	500 mg. per ltr.	2000 mg. per ltr.
6	Total Hardness	300 mg. per ltr.	600 mg. Per ltr.

4) Noise Levels

The blasting and the haulage and the drilling of boreholes generate Noise. However, the probable noise level will be within the permissible limits and will not cause harm the applicant will provide suitable protective gear to the workers for minimizing the noise pollution and the machinery will be well maintained. The noise levels for various activities are

1. Compressor - 84 to 98 dB(A)
2. Tipper Empty - 88 to 91 dB(A),
Tipper Loaded - 95-103 dB(A)
3. Poclaim - 90 to 96 dB(A)
4. Blasting - 89 to 95 dB(A)

Permissible noise exposure for different period of time is given below :

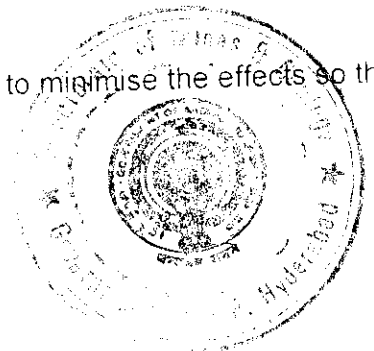
Duration Per Day (Hrs)	Sound Level Dba
16	80
8	85
4	90
2	95
1	100
½	105
¼	110
1/8	115

The blasting, haulage, machinery and the drilling of drill holes generate Noise. However, the probable noise level will be within the permissible limits with in 100 dB (A) and will not cause harm.

- The machinery will be maintained properly to reduce the noise
- The protective noise reducing gear like earmuffs, the company will provide earplugs.
- Proper maintenance of equipment

5) Vibration Levels

It is proposed to use low explosives and less quantity to minimise the effects so that the vibration generated will be feeble within 8 Hz



6) Aesthetic Environment

There is no aesthetic environment prevailing in and around the applied area.

7) Soil and Land Use Pattern

The soil cover is absent in the high-elevated areas. However, soil mixed with boulders, which are unfertile, is deposited along the buffer zone of the lease area. Hence, the land is not being used for agriculture purpose. Therefore the mining in this area will initiate utility of the land.

8) Agriculture

The applied area is barren land and far away from agricultural lands. Therefore there is no adverse effect on agriculture.

9) Forest

The applied area is not coming under forest zone. However, the applicant is proposing to undertake afforestation in the area.

10) Vegetation

The applied area is covered with scattered vegetation of small shrubs, herbs and Thorny bushes. However, no cutting of trees is involved in mining activity.

11) Socio Economic Environment

5 villages within a distance of 2 Kms surround the applied area. The main occupation of villagers is agriculture and sheep rearing. The commencement of mining activity in this area has improved the socio-economic status of the local people by employment in the quarries.

12) Occupation Health and Safety

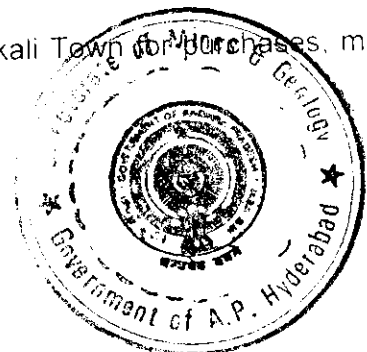
The mining in this area does not involve any hazardous methods. The mining is simple and open cast mining method. In this the possibilities of small injuries is anticipated. This applicant will be providing First Aid facilities at quarry site.

13) Human Settlement

The nearest village Dhubaguda is situated 1 Km from the area. Therefore there is no anticipation of adverse affect on the human settlement.

14) Recreational Facility

The surrounding villages people will go to Tekkali Town for purchases, medical & recreation.



8.3 Management Plan

1. Soil Conservation Methods

The soil cover is absent. The soil mixed with boulders is unfertile; hence, the land is not being used for agriculture purpose. Therefore the mining in this area will initiate utility of the land. The soil generated from the inter boulders will be spread in the buffer zone for afforestation.

2. Proposed for Reclamation of Land affected by Mining activity during and at the end of mining

Even after 20 years the mound remains $\frac{2}{3}$ rd of the present shape. Hence no reclamation is possible.

3. In case of forest programme for phased compensatory afforestation

The applied area will not come under forest zone.

4. Measures for Dust Suppression

- The dust anticipated during dry seasons, by transportation on road will however be suppressed by sprinkling water on roads. For this purpose, tractor mounted sprinklings will be deployed at this place.
- The dust that rises during blasting will be negligible because of less production and rare blasting.

5. Measures to minimum use vibrations due to blasting and check noise pollution

- The noise generated by compressors, drilling & machinery like proclain / excavators and tippers will be high. Proper maintenance of machinery will reduce the noise pollution.
- The workers in the quarry area will be provided suitable headgear and noise reducing protective gear (like cotton mufflers etc.)

6. Treatment and disposal of water from the mine at beneficiation plant

Granite Mines does not require beneficiation.

7. Measures for minimising adverse effect on water regime

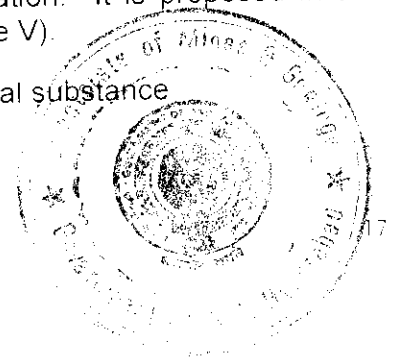
No Streams or Drainage lines exist in and around Quarry Lease area. In this area, the mining is confined to elevated place. Therefore no adverse effect is anticipated to water regime

8. Afforestation Programme

Since the entire Quarry Lease area is occupied by the deposit. The soil generated will be dumped all along the buffer zone for afforestation. It is proposed in this region by planting suitable type with 2 M spacing. (Plate V).

9. Preparation of dumping ground for stacking toxic mineral substance

No toxic minerals are present



9.0 ANY OTHER RELEVANT INFORMATION

All the statutory provisions applicable to granite mining leases, such as Mines & Mineral Concessional Rules, Granite Conservation and Development Rules 1999, Mineral and Mining rules, Indian explosive act, Payment and Wage act, Workmen Welfare act, Employees Provident fund act shall be adhered.

This Mining Plan is Approved subject to the Conditions/Stipulations Indicated in the

Mining Plan Approval Letter No.....

21935/12-2/2004 dated 4-10-2004

T.N. Kalaimani
APPLICANT
(T.N. KALAIMANI)

V.T. Chander
RQP

(V. T. CHANDER)

APPROVED

D.P. Dayasankar

D. P. DAYASANKAR
DIRECTOR

DEPT. OF MINES & GEOLOGY
GOVT. OF A.P., HYDERABAD,



ANNEXURE - I

GOVERNMENT OF ANDHRA PRADESH
DEPARTMENT OF MINES AND GEOLOGY, HYDERABAD

Notice No. 16327/ R1-3/ 2004.

Dt: 16-7-2004

Sub: Mines & Quarries - Quarry lease application for Colour Granite -
Extent 2.000 Hects. - Sy.No. 1 - Addukonda Village - Tekkali
Mandal - Srikakulam District - In favour of Sri.T.N.Kalaimani
for a period of 20 years - Approved Mining Plan Called for -
Reg.

- Ref: 1. From Sri.T.N.Kalaimani Quarry Lease application
dt: 5-5-2004.
2. From the ADM&G, Tekkali Letter NO. 340/Q/2004,
dt: 13-7-2004.

Sri.T.N.Kalaimani in the reference 1st cited have applied for grant of Quarry
lease for Colour Granite over an extent of 2.000 hecets. in S.No. 1 of Addukonda
Village, Tekkali Mandal, Srikakulam District.

The Asst. Director of Mines & Geology, Tekkali in the reference 2nd cited, has
stated that the applied area is held under Prospecting Licence by the applicant.
Further the Asst. Director of Mines & Geology, Tekkali has recommended for grant
of Quarry Lease for colour Granite over an extent of 2.000 hecets. in Sy.No. 1 of
Addukonda Village, Tekkali Mandal, in Srikakulam District in favour of
Sri.T.N.Kalaimani for a period of 20 years.

The Director of Mines & Geology, Hyderabad after careful examination of the
above proposals of the Asst. Director of Mines & Geology, Tekkali has proposed to
grant the Quarry Lease over an extent of 2.000 hecets. in Sy.No. 1 of Addukonda
Village, Tekkali Mandal, Srikakulam District in favour of Sri.T.N.Kalaimani for a
period of 20 years subject to the submission of Approved Mining Plan within six
months from the date of receipt of this Notice.

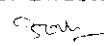
Therefore, Sri.T.N.Kalaimani is requested to submit the Approved Mining Plan
for the above area referred at para 2 for a period of 20 years within a period of six
months from the date of receipt of this notice for consideration of their Quarry lease
application.

Further, he is also informed that if he fail to submit the A.M.P. within a period
of six months from the date of receipt of notice it will be presumed that he is no
interest in his Quarry lease application and further action will be taken based on
material available with the Director of Mines & Geology.

Sd/- Dr.P.Daya Shankar,
Director of Mines & Geology,

Attested//


for Director of Mines & Geology

To

Sri.T.N.Kalaimani,
S/o Natarajan,
129, S.N.D. Road,
Thiruchengode - 637 211,
Namakkal District,
Tamil Nadu.
P.No. 04288-252138, 250533
Copy to the ADM&G, Tekkali.
Copy to RQP/A.M.P. section

