

**MINING PLAN ON COLOUR GRANITE**  
Over an extent of 6.83 Hectares in Sy. No. 44  
Mukhalingapuram (V), Tekkali (M), Srikakulam District, A.P.

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*PG, Srikakulam*

For

M/s Venkateswara Granites  
Srikakulam



**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.  
Ph : 55618351, 24068218 \* : 31056234

**CERTIFICATE**

This is to certify that Mining Plan in respect of Quarry Lease area over an extent of 6.83 Hectares spread over in Sy. No. 44 of Mukhalingapuram Village, Tekkali Mandal, 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 : 17/6/2004

Place :

For M/s Venkateswara Granites  
Srikakulam



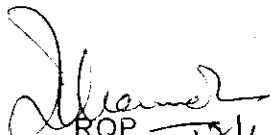
### CERTIFICATE

The provision of Granite Conservation and Development Rules 1999 have been observed in the Mining Lease of Colour Granite over an extent of 6.83 Hectares spread over in Sy. No. 44, of Mukhalingapuram Village, Tekkali Mandal, Srikakulam District, Andhra Pradesh. For M/s Venkateswara Granites, Srikakulam. Whenever specific permissions are required the applicant will approach the concerned authorities.

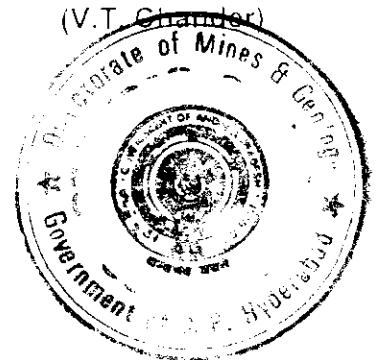
It is also certified that the information's furnished in the above Mining Plan are true and correct to the best of our knowledge

Date : 17-6-04

Place : Hyderabad

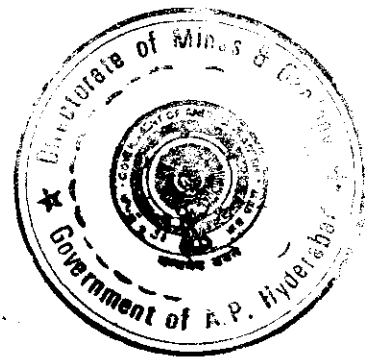
  
RQP 17/6

(V.T. Chandor)



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### LIST OF ANNEXURES

Copy of the Notice No. 15329 / R1-3 / 2004 dated 22-5-2004.



**MINING PLAN ON COLOUR GRANITE**  
Over an extent of 6.83 Hectares in Sy. No. 44  
Mukhalingapuram (V), Tekkali (M), Srikakulam District, A.P.

For

M/s Venkateswara Granites  
Srikakulam

By

V.T. Chander  
Consultant Geologist & RQP

**This Mining Plan is Approved subject to the  
Conditions/Stipulations Indicated in the  
Mining Plan Approval Letter No.....  
15734/MF-1/2004 dated 21-06-2004**

**1.0 INTRODUCTION**

M/s. Venkateswara Granites, Srikakulam a Private Firm was granted Prospecting License for 2 years for Colour Granite over an extent of 6.83 Hectares spread over in Sy. No. 44 of Mukhalingapuram Village, Tekkali Mandal, Srikakulam District, Andhra Pradesh. Vide Director, Department of Mines and Geology, Hyderabad. Proceedings No. 11692 / R1-3 / 2002 dated 12-09-2003. The lease deed was executed on 04-11-2003. Vide Asst. Director, Mines & Geology, Srikakulam Proc No. 1487 / Q / 2002 dated 04-11-2003 for commencement of prospecting operations.

After ascertaining the quality & quantity of the deposit M/s. Venkateswara Granites, Srikakulam 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. 15329/R1-3/2004 dated 22-05-2004.

M/s. Venkateswara Granites, Srikakulam approached Sri V.T. Chander, Consultant Geologist and RQP (RQP / DMG / Hyd / 02 / 2001) For preparation of Prospecting Report 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.

This mining plan is prepared in accordance with GCDR Rules 1999.

**APPROVED**

*(Signature)*

**Dr. P. DAYASANKAR**  
JOINT DIRECTOR  
DEPT. OF MINES & GEOLOGY  
GOVT. OF A.P. HYDERABAD.



## 2.0 GENERAL

- 2.1 Name and address of the applicant : M/s. Venkateswara Granites,  
Prop : Sri E. Ravindra Babu.  
(E. Ravindranath),  
C/o. Sri. V. Chiranjeevi,  
Gudem Village,  
Tekkali Mandal,  
Srikakulam District.
- 2.2 Status of the applicant : Private Firm
- 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.  
Ph : 55618351, 24068218  
Fax : 31056234
- 2.5 Name and address of the prospecting agency : M/s. Venkateswara Granites  
Prop : Sri. E. Ravindra Babu.  
(E. Ravindranath),  
C/o. Sri. V. Chiranjeevi,  
Gudem Village,  
Tekkali Mandal,  
Srikakulam District.

## 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 18°-39'-50" and North Latitude 84°-12'-20". It is situated 7 Kms North West of Tekkali Town and 1 Km West of Mukhalingapuram Village. The road leading from Tekkali to Meliaputti 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<br>Andhra Pradesh | Tekkali | Mukhalingapuram | 44      | 6.83<br>Hectares | Govt Land              |

Cadastral Map certified by the Asst. Director of Mines & Geology, Srikakulam in favour of M/s. Venkateswara Granites 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       | The Quarry is situated 7 Kms North West of Tekkali Town and 1 Km West of Mukhalingapuram Village. The road leading from Tekkali to Meliaputti will lead to the Site.<br>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 176 Kms from area.  |
| School                      | Education Facilities from Primary School to College are available in Tekkali Town.  |
| Medical Facility            | Medical Facility available in Tekkali Town.   |

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.

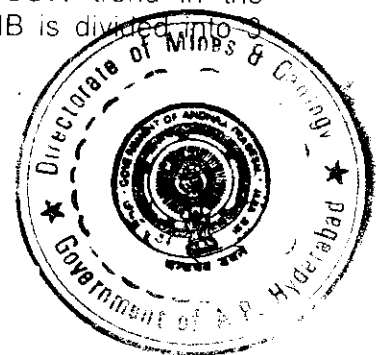
## 3.0 GEOLOGY

### 3.1 Brief Description of Topography

The Quarry area is located on Hill steeply sloping due West the relief of the area is between RL 82 to RL112 (i.e. Average Height of 40 M) with in Lease area. Vegetation is developed in between the joints and soil areas. The area is unfit for agriculture as it is strewn with boulders. The Hill is dissected by deep valley, which drains the rainwater from the lease area into a small tank. The area lying South of the Hills are Plain and Agricultural Lands and the Reserve Forest boundary is 100 M due West.

### 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





PHOTOGRAPHIC RECORD OF THE EXCAVATION



EXCAVATION



1. Western - Charnockitic Zone
2. Central - Khondalite 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 :

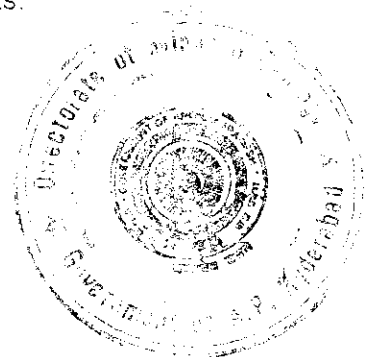
|                   |  |
|-------------------|--|
| INTRUSIVES        | Layered Anorthisites and associated<br>Mafics and Chromiferous Ultra Mafics.   |
| CHARNOCKITE GROUP | Charnockites with Mega Crystic K- Felspar<br>Charnockite Two Pyroxene Granulite /<br>Amphibolites.   |
| KHONDALITE GROUP  | Calc-Silicate-Granulites.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

In Srikakulam district the EGMB is represented by wide 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 Geology of the Area

The Migmatites and Migmatized 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. Three sets of major joints :

1. N - S
2. N 35° W - S35° E
3. E - W



## Brief Description of the Deposit

The Rock Mass exposed all over the hill is mostly defective with under sized boulders with fractures and fissures.

The deposit between the Grids N 200 – 250 and E 50 – 100 is the peak of the hill show prominent sized boulders with less intensity of fracture & fissures. To reach the deposit to this height (47 M above with in the lease area) lot of clearance has to be made, as the angle of slope is almost 60°

The Rock Mass has to be cleared and to be leveled by dumping the floating and defective boulders in the soil covered area in the grids N 50 – 100 and E 50 - 100 and the mining activity has to be taken up.

## Lithology

The area is occupied single Litho – Logical Unit Migmatized Charnockites but on Weathering it has produced following litho type. As per the excavated pits in the Grid East 100 – 200 & N 00 – 100.

0 – 0.5 Red Soil in between Boulders

0.5 – 6 Weathered & Highly Fractured and Fissured Boulders

6 M Below Fresh Boulders of Migmatized Charnockites

The area along the Grids N 00 – 200 & E 00 – 150 is the low lying area i.e., South West and West with in the lease area is Soil Zone with Scattered Boulders.

## 3.3 Details of Exploration

### 3.3.1 Prospecting Operations Carried Out

The following prospecting operations were carried out in P.L. area.

#### 3.3.1-1 Geological Traverses and Mapping

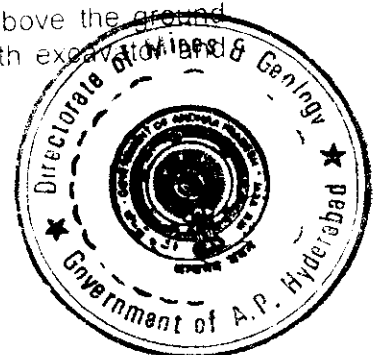
The applied area was traversed to demarcate the exposures of the Color Granite and to record the structural features in the outcrops, the data regarding litho units collected and surface geological map on 1 : 1000 Scale prepared (Plate - III).

#### 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 area and also to prepare the surface elevation contour map on 1 : 1000 Scale.

#### 3.3.1-3 Exploratory Mining

The Exploratory Mining was taken up in the grids E 100 – 200 & N 00 - 100. A road cum ramp was developed to reach the mound, which is 18 M above the ground level. The defective and undersized boulders were removed with excavators and the material was dumped in the dump by Tippers.



The large boulders were subjected to splitting with the help of Jack Hammers.

The boulders exposed were subjected to splitting and forming into cuboids. A total number of 391.555 M<sup>3</sup> of Market Grade Rough Blocks were and dispatched, about 500 M<sup>3</sup> are available at the quarry.

The following machinery was deployed :

- |                 |   |         |
|-----------------|---|---------|
| 1. Excavator    | - | 1 No.   |
| 2. Compressors  | - | 2 No's. |
| 3. Jack Hammers | - | 6 No's. |
| 4. Tippers      | - | 4 No's. |

#### Man Power

- |                         |   |          |
|-------------------------|---|----------|
| 1. Mines Manager        | - | 1 No.    |
| 2. Supervisors          | - | 2 No's.  |
| 3. Skilled Workers      | - | 10 No's. |
| 4. Semi Skilled Workers | - | 10 No's. |
| 5. Casual Labour        | - | 20 No's. |

## 4.0 RESERVES

### 4.1 Geometry of Deposit

Geological Traverses and the study exposures on the hill facilitated to assess the shape and size of the deposit in the area. It is in irregular shape. The surface of sheet rock is wavy and irregular and occupying 85% Of the applied area of 6.83 hectares (5.8055Ha).

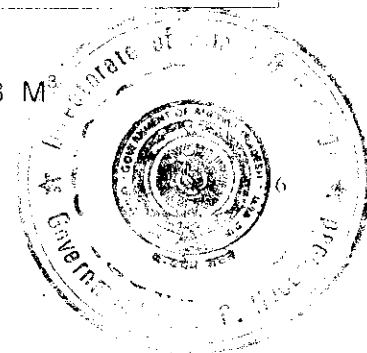
### 4.2 Method of Estimation of Reserves

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 for reserve estimation is adopted, taking 6 cross sections A-A1, B-B1, C-C1, D-D1 & E-E1, by placing cross sections parallel to the slope of the hill in order to cover the entire length of the area. Only the rock mass is taken in the consideration for reserve calculation. Non rock area is not considered.

| Cross Section                    | Cross Sectional Area (M <sup>2</sup> ) | Sectional Influence (M) | Total Volume (M <sup>3</sup> ) |
|----------------------------------|--|-------------------------|--------------------------------|
| A - A1                           | 2912.3                                 | 48.6                    | 1,06,545.8                     |
| B - B1                           | 2760.0                                 | 50                      | 1,38,000.0                     |
| C - C1                           | 9190.0                                 | 50                      | 4,59,500.0                     |
| D - D1                           | 6691.4                                 | 50                      | 3,34,570.0                     |
| E - E1                           | 4582.1                                 | 50                      | 2,29,105.0                     |
| <b>Total Rock Mass Estimated</b> |  |                         | <b>12,67,720.8</b>             |

(Deposit with Undersize Boulders and Soil Creep Constitute 60%)

= 7,60,632.48 M<sup>3</sup>



Total Geological Reserves = 12,67,720.8 – 7,60,632.48 M<sup>3</sup>  
 = 5,07,088.32 M<sup>3</sup>

**Reserves Blocked Under 60° Safety Slopes**

| Section        | Along | Section Area (M <sup>2</sup> ) | Sectional Influence (M) | Volume (M <sup>3</sup> ) |
|----------------|-------|--------------------------------|-------------------------|--------------------------|
| A – A1         | A     | 65                             | 40                      | 2,600                    |
|                | A1    | 92                             | 30                      | 2,760                    |
| B – B1         | B     | 59.5                           | 50                      | 2,975                    |
|                | B1    | 151.2                          | 50                      | 7,560                    |
| C – C1         | C     | 59.8                           | 50                      | 2,990                    |
| D – D1         | D     | 100.7                          | 50                      | 5,035                    |
|                | D1    | 196.4                          | 50                      | 9,820                    |
| E – E1         | E     | 232.1                          | 30                      | 6,963                    |
| <b>Total :</b> |       |                                |                         | <b>40,703</b>            |

**4.3 Categorisation of Reserves**

The deposit is exposed on Hill is treated as proved deposit.

**4.4 Total Mineable Reserves**

The deposit in this area is highly defective with Fissures, Hairline Cracks, Black Lines and Colour Variation. Therefore recovery % of Rough Blocks is 20%

Commercial Grade Recoverable @ 20% = 1,01,418 M<sup>3</sup>  
 Life of the Mine = 1,01,418 M<sup>3</sup> / 1000  
 = 101 Years

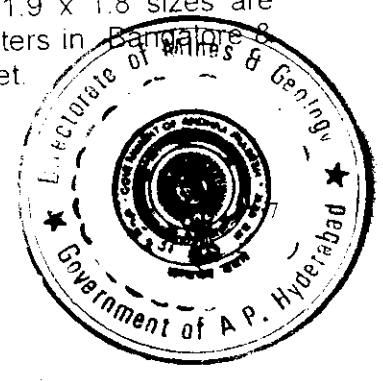
**4.5 Economic Marketable Reserves**

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.

**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 391.555 M<sup>3</sup> 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 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 on the hill with boulders.

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 will be constructed to the Grids E 100 – 200 & N 50 – 100 upto the peak of the hill.

#### Stage 2

##### Extracting Boulder and Cutting them into Blocks with Conventional Methods :

The proposed mining will start from the peak of the hill in the Grids N 100 – 150 & E 100 – 200. The peak will be reduced to the next level that is from RL 124 – 115 during the first year. In the subsequent years the mining will be restricted below this level.

- After removal of Weathered, Undersized and Defective Boulders
- The fresh boulders exposed will be split into two or three blocks depending upon the size of boulder.
- As the production is only for gang saw size, the boulders are split to the required size at the insitu stage.



- The advantage of natural joints present in the boulders are taken for splitting them with a line of holes drilled vertically and horizontally at 10 – 15 Cm distance and the blocks will be wedged out.
- If the boulder is big enough one or two holes are drilled and blasted with a small charge of gunpowder.
- The separated blocks will be 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 if present will be removed by drilling and wedging, making the block to perfect block.
- A perfect block is that all the sides shall make with each other 90°.

### Dressing

After separation, the blocks 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.

#### *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

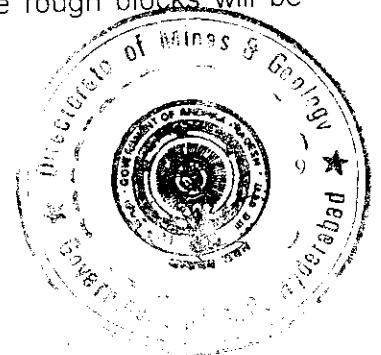
### 6.2.1 Scheme of Mining & Year Wise Production

During mining operations the applicant proposes to produce 720 M<sup>3</sup> of Coloured Granite per year. In order to produce this quantity an area of 600 M<sup>2</sup> will be utilized.

#### 1<sup>st</sup> Year :

The mining operations will commence from the highest peak in the applied area in the grids E 100 – 150 & N 100 – 150. This peak will be tackled forming a bench height of 6 M and the bench / Slice will reach the RL 225 during the first year a total area of 600 M<sup>2</sup> will be utilized

In the First year it is planed to produce 720 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 600 M<sup>2</sup> (30 x 20 M) will be utilised. Producing 3600 M<sup>3</sup> of rock from which 20% (720 M<sup>3</sup>) economic grade rough blocks will be obtained and 80% (2880 M<sup>3</sup>) of waste rock will be realised.



**2<sup>nd</sup> Year :**

In the 2<sup>nd</sup> year the Mining will start west of the 1<sup>st</sup> year working in the grids E 100 – 150 & N 100 – 150 covering an area of 600 M<sup>2</sup>. A bench height of 6 M will be tacked in 2 phases and the bench will advance towards South.

In the Second year it is planed to produce 720 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 600 M<sup>2</sup> (30 x 20 M). will be utilised. Producing 3,600 M<sup>3</sup> of rock from which 20% (720 M<sup>3</sup>) economic grade rough blocks will be obtained and 80% (2,880 M<sup>3</sup>) of waste rock will be realised.

**3<sup>rd</sup> Year :**

In the 3<sup>rd</sup> year the mining will continue below of the previous years workings in the grids E 100 – 150 & N 100 - 150 covering an area of 600 M<sup>2</sup>. A bench height of 6 M will be tacked in 2 phases and the bench will advance towards South.

In the third year it is planed to produce 720 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 600 M<sup>2</sup> (30 x 20 M). will be utilised. Producing 3,600 M<sup>3</sup> of rock from which 20% (720 M<sup>3</sup>) economic grade rough blocks will be obtained and 80% (2,880 M<sup>3</sup>) of waste rock will be realised.

**4<sup>th</sup> Year :**

In the 4<sup>th</sup> year the Mining will continue below 1<sup>st</sup> year E 100 – 200 & N 100 - 150 covering an area of 600 M<sup>2</sup>. A bench height of 6 M will be tacked in 2 phases and the bench will advance towards South.

In the fourth year it is planed to produce 720 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 600 M<sup>2</sup> (30 x 20 M). will be utilised. Producing 3,600 M<sup>3</sup> of rock from which 20% (720 M<sup>3</sup>) economic grade rough blocks will be obtained and 80% (2,880 M<sup>3</sup>) of waste rock will be realised.

**5<sup>th</sup> Year :**

In the 5<sup>th</sup> year the mining will continue East of 1<sup>st</sup> & 4<sup>th</sup> Year pit in the grids E 150 – 200 & N 100 - 150 covering an area of 600 M<sup>2</sup>. A bench height of 6 M will be tacked in 2 phases and the bench will advance towards South.

**In the fifth year** it is planed to produce 720 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 600 M<sup>2</sup> (30 x 20 M). will be utilised. Producing 3,600 M<sup>3</sup> of rock from which 20% (720 M<sup>3</sup>) economic grade rough blocks will be obtained and 80% (2,880 M<sup>3</sup>) of waste rock will be realised.





### YEAR WISE PRODUCTION FOR NEXT FIVE YEARS

| Year                 | Dimensions<br>L x W x Bench<br>Height (M) | Volume<br>(M <sup>3</sup> ) | Market Grade Rough<br>Blocks @ 20% (M <sup>3</sup> ) | Waste Generation<br>@ 80% (M <sup>3</sup> ) |
|----------------------|---|-----------------------------|--|---|
| 1 <sup>st</sup> Year | 30 x 20 x 6                               | 3,600                       | 720  | 2,880                                       |
| 2 <sup>nd</sup> Year | 30 x 20 x 6                               | 3,600                       | 720  | 2,880                                       |
| 3 <sup>rd</sup> Year | 30 x 20 x 6                               | 3,600                       | 720  | 2,880                                       |
| 4 <sup>th</sup> Year | 30 x 20 x 6                               | 3,600                       | 720  | 2,880                                       |
| 5 <sup>th</sup> Year | 30 x 20 x 6                               | 3,600                       | 720  | 2,880                                       |
| <b>Total :</b>       |   | <b>18,000</b>               | <b>3,600</b>   | <b>14,400</b>                               |
| <b>Average :</b>     |   | <b>3,600</b>                | <b>720</b>   | <b>2880</b>                                 |

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 3,600 M<sup>3</sup> of Market Grade Rough Blocks a quantum of 18,000 M<sup>3</sup> of Rock Mass has to be excavated out of which 14,400 M<sup>3</sup> is waste in the form of under sized boulders, defective boulders, soil creep and rock debris will be generated during Mining Plan period (Refer Table above in 6.3.1.)

#### 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 720 Cu. M per year can be easily achieved in a single shift with sufficient men and machinery.

##### a) Magazine Type and Capacity :

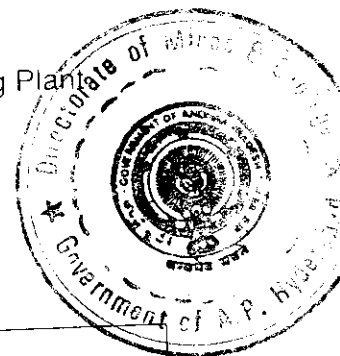
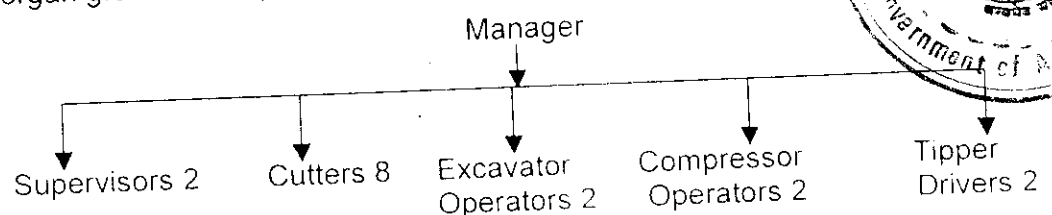
Not Applicable (No permission for storing the blasting material will be granted by the District Administration)

##### b) Description of Processing Plant :

M/s. Venkateshwara Granites doesn't 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) Machinery Proposed**

|                 |   |         |
|-----------------|---|---------|
| 1. Excavator    | - | 1 No.   |
| 2. Compressors  | - | 2 No's. |
| 3. Jack Hammers | - | 6 No's. |
| 4. Tippers      | - | 4 No's. |

**Man Power**

|                         |   |          |
|-------------------------|---|----------|
| 1. Mines Manager        | - | 1 No.    |
| 2. Supervisors          | - | 2 No's.  |
| 3. Skilled Workers      | - | 10 No's. |
| 4. Semi Skilled Workers | - | 10 No's. |
| 5. Casual Labour        | - | 20 No's. |

**d) Site Services :**

The company at Quarry Site will provide 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 14,400 M<sup>3</sup> of waste is expected to be generated with an average of 2,880 M<sup>3</sup> per annum. The year wise waste generation in 5 years is as follows :

| Year | Waste Generation in Cu. M |
|------|---------------------------|
| I    | 2,880 M <sup>3</sup>      |
| II   | 2,880 M <sup>3</sup>      |
| III  | 2,880 M <sup>3</sup>      |
| IV   | 2,880 M <sup>3</sup>      |
| V    | 2,880 M <sup>3</sup>      |



- ii) **Dumping site particulars :** For dumping of waste generated during mining will be dumped along the South East margin of the lease area, between Grids N 50 - 100 E 50 - 100 on non deposit area.

iii) **Estimated waste quantity that will be generated in the entire period:** At the rate of 2,880 M<sup>3</sup> per year the volume of waste generated in 20 years of lease period will be 57,600 M<sup>3</sup>.

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 part of the hill. The land is steeply sloping due West & South. The whole land is covered by boulders. The existing soil with in the joint planes of boulders is fertile. The hill is exposed to a maximum height of 124 M above ground level. (Between Grids N 100- 150 & E 150).

The neighboring areas are active with quarry operations.

#### ii. Water Regime

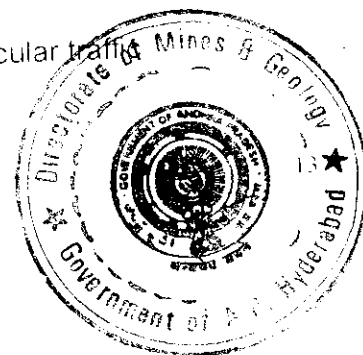
No Streams or Drainage lines exist in and around Quarry Lease area. Excepting the sheet flows during rainy days

#### iii. Flora and Fauna

The whole area is occupied by the vegetation with small bushes and shrubs in the interstices of joint planes. 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 nearest village Bendakayapeta is situated 1.0 Kms due 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.

Human Settlement (Plate No.I)

| S.No. | Village         | Direction  | Distance (KM) | Population |
|-------|-----------------|------------|---------------|------------|
| 1.    | Bendakayalacet  | East       | 1.0           | 500        |
| 2.    | Mukhalingapuram | North West | 1.0           | 500        |
| 3.    | Chiruthanapally | North East | 1.0           | 300        |
| 4.    | Lankapadu       | North East | 1.5           | 500        |
| 5.    | Narasingapally  | South West | 2.0           | 2000       |

The main occupation of the local population is agriculture and sheep rearing / 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

## i. Landscape Changes

## i) Land Degradation

Granite Mining will alter the physiographic scene; a large portion of the hill will alter its shape i.e., the part of the peak will be sliced vertically down i.e., from RL 230 – 119 in the first five years and at the end of the lease period i.e., after 20 years the size of the hill will be reduced by 1/5<sup>th</sup> of the present shape (Life of the mine is anticipated as 101 Years) to RL 90. A huge waste rock as dump will occupy the foot hills in the South West corner of the applied area forming into hill shaped dump (Due to 80% (57,600 M<sup>3</sup>) of Rock Waste generation).



## ii) 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 <sub>2</sub> = $40 \mu\text{g}/\text{m}^3$ | $80 \mu\text{g}/\text{m}^3$  |
| NO <sub>2</sub> = $40 \mu\text{g}/\text{m}^3$ | $80 \mu\text{g}/\text{m}^3$  |
| 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

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

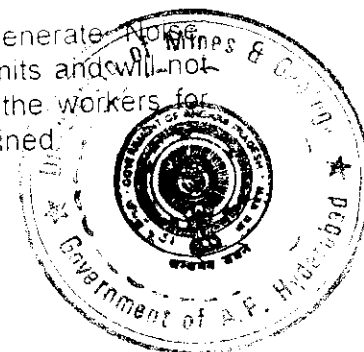
The mining of Granite, no adverse effect is anticipated on the water regime of the area.

## IS 10 500 – 1944

| S.No. | Characteristic | Desirable Limit | Maximum Permissible Limit |
|-------|----------------|-----------------|---------------------------|
| 1     | Colour         | 5               | 25                        |
| 2     | Odour & 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.           |

## iv) 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 d B (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

v) Vibration Levels

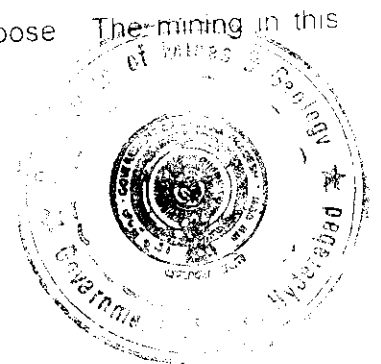
It is proposed to use low explosives and less quantity to minimise the effects so that the vibration generated will be feeble within 8 Hz

vi) Aesthetic Environment

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

vii) Soil and Land Use Pattern

- The soil present in the joint plane is fertile. The fertile soil will be separately stacked for laying over the dumps at later stage for afforestation.
- However, soil mixed with boulders, which is unfertile, is deposited along the Eastern margin of the lease area.
- Since, the land is not being used for agriculture purpose The mining in this area will initiate utility of the land.



viii) Agriculture

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

ix) Forest

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

x) Vegetation

The applied area is covered with vegetation of small shrubs, herbs and Thorny bushes, and deep rooted trees along the joints.

xi) 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.

xii) 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

xiii) Human Settlement

The nearest village Bendakayagudem is situated 1.0 Kms due East of the area. Therefore there is no anticipation of adverse affect on the human settlement.

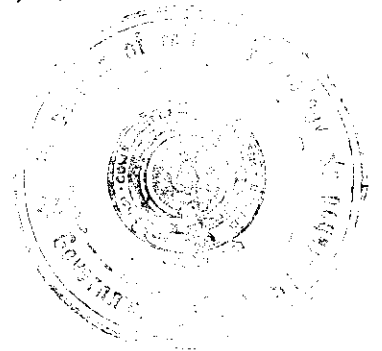
xiv) Recreational Facility

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

### 8.3 Management Plan

#### 1 Soil Conservation Methods

- The soil present in the interstices of joints will be stacked separately for afforestation at a later date.
- The soil mixed with boulders is unfertile; hence, the land is not being used for agriculture purpose. This mixed soil will be used for laying roads and ramps



2. Proposed for Reclamation of Land affected by Mining activity during and at the end of mining  
 Even after 20 years the size of the hill will be reduced only by 1/5<sup>th</sup> of the present shape (Life of the mine is anticipated as 101 Years) to RL 90. Hence, no reclamation is proposed due to presence of Economic Grade deposit below this level of operation.
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 excepts small part in the southern border of the applied area with soil mixed with boulders is deposited Afforestation program is proposed in this region by planting suitable type with 2 M spacing after the lease period.
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.

*[Handwritten Signature]*  
APPLICANT

*[Handwritten Signature]*  
RQP  
2/16

(V.T. Chander)

This Mining Plan is Approved subject to the Conditions/Stipulations Indicated in the Mining Plan Approval Letter No.....  
LS734/M.P-1/2004 dated. 21-06-2004.

**APPROVED**

*[Handwritten Signature]*  
**Dr. P. DAYASANKAR**  
JOINT DIRECTOR  
DEPT. OF MINES & GEOLOGY  
GOVT. OF A.P., HYDERABAD,



ANNEXURE - I

GOVERNMENT OF ANDHRA PRADESH  
DEPARTMENT OF MINES AND GEOLOGY :: HYDERABAD

Notice No. 15329 / R1-3/ 2004,

Dt: 22-5-2004

Sub: Mines & Quarries - Quarry lease application - Extent 6.83 Hects. -  
S.No. 44 - Village Mukhalingapuram - Mandal Tekkali - Srikakulam  
District of M/s Venkateswara Granites for a period of 20 years -  
A.M.P. called for - Reg.

Ref: 1. From M/s Venkateswara Granites , Prop: Sri.E.Ravindra Babu Q.L.A.  
dt: 6-5-2004.  
2. From the ADM&G, Tekkali File NO. 959/Q/2004, dt: 17-5-2004.

\*\*\*\*\*

M/s Venkateswara Granites , Prop: Sri. E.Ravindra Babu in the reference 1st cited ,  
have applied for grant of Quarry lease for Colour Granite over an extent of 6.83 hec. in  
S.No. 44 of Mukhalingapuram Village, Tekkali Mandal, Srikakulam District.

The Asst. Director of Mines & Geology, Srikakulam in the reference 2<sup>nd</sup> cited, has  
stated that the applied area is held under Prospecting Licence by the applicant. Further  
the Asst. Director has recommended for grant of Quarry Lease for colour Granite over an  
extent of 6.83 hec. in S.No. 44 of Mukhalingapuram Village, Tekkali Mandal, Srikakulam  
District in favour of M/s Venkateswara Granites for a period of 20 years.

The Director of Mines & Geology, Hyderabad after careful examinations of the  
above proposals of the Asst. Director of Mines & Geology, Srikakulam has proposed to  
grant the Q.L. over an extent of 6.83 hec. in S.No. 44 of Mukhalingapuram Village,  
Tekkali Mandal, Srikakulam District in favour of M/s Venkateswara Granites for a period  
of 20 years subject to the submission of A.M.P. within Six months from the date of  
receipt of this Memo.

Therefore, M/s Venkateswara Granites , Prop; Sri.E.Ravindra Babu 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 , they are also informed that if they 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 they have  
no interest in their Quarry lease application and further action will be taken based on the  
material available with the Director of Mines & Geology.

Sd/- T.Devendranath,  
Director of Mines & Geology

// Attested //

for Director of Mines & Geology

To

M/s Venkateswara Granites,  
Prop: Sri.E.Ravindra Babu,  
C/o Sri. V.Chiranjeevi ,  
Gudem (V),  
Tekkali (M),  
Srikakulam Dist.

Copy to the ADM&G, Tekkali , Srikakulam District.  
Copy to A.M.P. section.

