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MINING PLAN FOR COLOUR GRANITE

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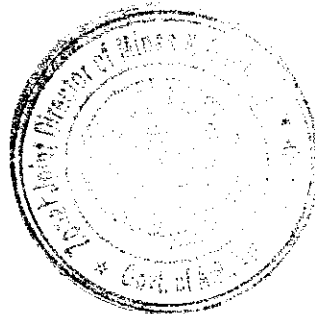
FOR

Sri. NALLURI PADMA RAO

Over an extent of 5.400 Hectares in Sy. No. 441
Vasundhara (V) Meliaputti (M) Srikakulam District, A.P.

OWNER

→ Sri. NALLURI PADMA RAO
Hyderabad



Prepared By

V.T. CHANDER

(Regn. No. RQP / DMG / HYD / 02 / 2001
RQP / HYD / 179 / 2000 / A)

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

☎ : 040-24068218 📠 : 9391056234

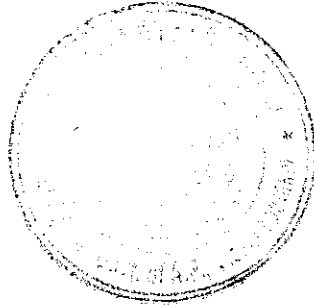
E - Mail : ccgeoengg@yahoo.com,
ccgeoengineer@rediffmail.com

DECLARATION

Certified that the Mining Plan has been prepared in full consultation with me in respect of our 'Sri. Nalluri Padma Rao, over an extent of 5.400 Hectares in Sy. No. 441 of Vasundhara (V), Meliaputti (M), Srikakulam District, Andhra Pradesh., and I have understood its contents and agree to implement the same in accordance with law.

Date :

Place : Hyderabad



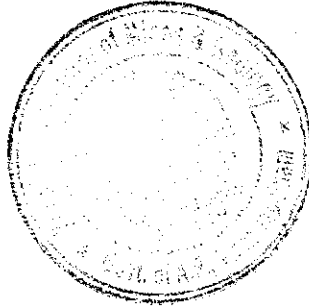

Sri. NALLURI PADMA RAO

CERTIFICATE

This is to certify that Mining Plan in respect of quarry lease area over an extent of 5.400 Hectares in Sy. No. 441 of Vasundhara (V), Meliaputti (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 :

Place : Hyderabad



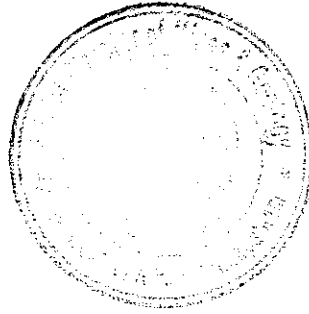

Sri. NALLURI PADMA RAO

CERTIFICATE

The provision of Granite Conservation and Development Rules 1999 have been observed in the preparation of Mining Plan for Colour Granite, over an extent of 5.400 Hectares in Sy. No. 441 of Vasundhara (V), Meliaputti (M), Srikakulam District, Andhra Pradesh., to be leased to Sri. Nalluri Padma Rao, Hyderabad.

Whenever specific permissions are required the applicant will approach the concerned authorities.

Certified that "The information furnished in the Mining Plan is true and correct to the best of my knowledge".



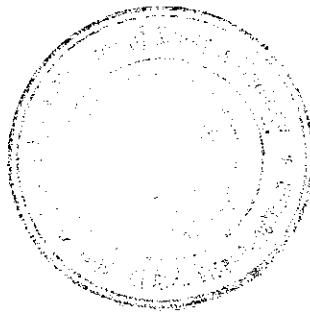
Date : 23 / 11 / 2007

Place : Hyderabad

RQP
V.T. Chander
23/11/07
(V.T. CHANDER)

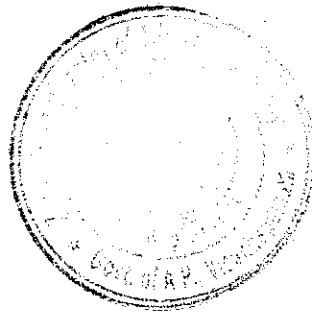
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LIST OF PLATES

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MINING PLAN FOR COLOUR GRANITE

FOR

Sri. NALLURI PADMA RAO
Over an extent of 5.400 Hectares in Sy. No. 441
Vasundhara (V) Meliaputti (M) Srikakulam District, A.P.

By

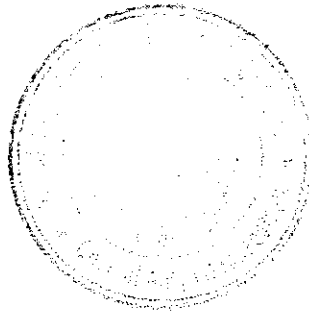
V.T. CHANDER
Consultant Geologist & RQP

1.0 INTRODUCTION

Sri. NALLURI PADMA RAO, Hyderabad, were granted quarry lease for Colour Granite, over an extent of 5.400 Hectares in Sy. No. 441 of Vasundhara (V), Meliaputti (M), Srikakulam District, Andhra Pradesh, vide Director of Mines & Geology, Hyderabad Proceedings No. 16206 / R1-1 / 2004 dated 01-03-2007. The quarry lease deed was executed on 20-04-2007, vide Assistant Director of Mines & Geology, Tekkali, Srikakulam District, vide Proceedings No. 932 / Q / 2004 dated 20-04-2007 for period from 20-04-2007 to 19-04-2027. (Annexure - I).

As per Rule 12 (5) (a) (iii) of APMMC Rules 1966, the mining plan is to be submitted by Sri. Nalluri Padma Rao, Hyderabad, within 2 years from the date of execution of quarry lease deed.

Sri. Nalluri Padma Rao, Hyderabad, approached Sri V. T. Chander, Consultant Geologist & RQP for preparation of mining plan. Accordingly mining plan is prepared as per the guidelines given by Govt. India. Ministry of Steel & Mines, GCDR of 1999.



APPROVED

N. Subbalu
Zonal Joint Director of
Mines and Geology 3/11/2008
Govt of A.P.
Isakhapatnam-1

This Mining plan is Approved subject to
the Conditions & Restrictions indicated in
the Mining plan approved under No.
3405/MP/07 - dated 3.1.08

2.0 GENERAL

- 2.1 Name and address of the applicant : Sri. NALLURI PADMA RAO,
S/o. Koteswara Rao,
Partner : M/s. S.R. Constructions,
Flat No. 109, Indrolak Complex,
Road No. 1,
Banjara Hills,
Hyderabad – 500 029.
- 2.2 Status of the applicant : Private Individual
- 2.3 Mineral for which applicant intends to mine : Colour Granite
- 2.4 Name and address of the RQP who prepared the prospecting report : V.T. CHANDER
RQP / DMG / HYD / 02 / 2001
RQP / HYD / 179 / 2000 / A
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.
☎ : 040-24068218
☎ : 9391056234
- 2.5 Name and address of the prospecting agency : Sri. NALLURI PADMA RAO,
Hyderabad.

2.6 Details of the Area

The applied area falls in the Survey of India, Toposheet No. 74 / B (Scale : 1 : 2,50,000) and is bounded East Longitude : 84° - 07' - 15" and North Latitude : 18° - 16' - 12". The applied area is located 100 M North of the road leading from Patapatnam to Meliaputti Village at a distance of 5 Kms. Vasundhara Village is located 500 M South of the applied area. A detour due north by 100 M from Vasundhara Village road point will lead to lease area.

The details of the area are as tabulated below :

District State	Mandal	Village	Sy. No.	Extent	Ownership of Occupancy
Srikakulam Andhra Pradesh	Meliaputti	Vasundhara	441	5.400 Hectares	Govt. Land

Cadastral Map certified by the Asst. Director of Mines & Geology, Tekkali, Srikakulam, in favour of Sri. Nalluri Padma Rao, is given as Plate No. II.

- 2.7 Period for which Quarry lease granted = 20 Years (From 20-04-2007 to 19-04-2027).

2.8 Infrastructure and Communication

Availability of Water	The ground water is available at 10 – 15.0 M below ground level at the foot hill.
Availability of Electricity	Electricity is available in Vasundhara village.
Communication Network	The Vasundhara Village is located 5 Km East of Patapatnam on Srikakulam to Meliaputti Road. Patapatnam Town is located on Srikakulam to Parlakimidi Town (Orissa State). Amenities like Post Office, Telephone Facility, Police Station, Primary Health Center etc., are available at Patapatnam Village at a distance of 5 Kms from Site. The Meliaputti Town is located 5 Kms due East of the Site.
Road Network	The Patapatnam Town is located 80 Kms from Srikakulam Town on the road leading from Srikakulam to Parlakimidi Town (Orissa State). The area is well connected by Govt. & Private Transport Facility.
Nearest Rail Head	Nearest Rail Head is located at Amudalavalasa, which is located 90 Kms from the Site.
Port Facility	Vishakapatnam Port is about 180 Kms from area.
School	Education Facilities from Primary School to College are available at Patapatnam Town.
Medical Facility	Medical Facility available at Patapatnam Town and Parlakimidi (Orissa State).

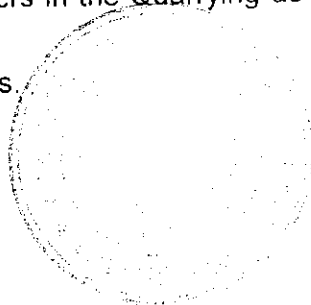
BOUNDARIES

North	Barren Lands & Hill
South	Barren Lands & Beyond 100 M Agricultural Lands
East	Barren Lands
West	Barren Lands

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.

Additional Infrastructure that will be created

- Employment to Villagers in the Quarrying as Quarrying of Colour Granite is new to this part.
- Development of Roads.



3.0 GEOLOGY & EXPLORATION

3.1 Physiography

Location : Meliaputti Mandal is located at about 70 Km NNE of the Srikakulam and lies between North Latitude 18°-10'-20" and 18°-20'-10" and East Longitude 84°-5'-6" and 84°-20'-10" forming parts of Survey of India, Toposheet No's. 74 B / 1, 2 & 5. The mandal is bounded by Vajrapukotturu mandal on the East, Pathapatnam on the West, Tekkali on the South and Orissa State on the North.

Physiography and Drainage : The geographical area of the mandal is 193.73 Sq.Km. and comprises of 115 villages. The hill range in the area as has a maximum altitude of 300 M above m.s.l at Chandangiri. The mandal is drained by "Mahendratanya" river on the North Western side. The general pattern of drainage is dentritic to sub-dentritic.

3.2 Regional Geology

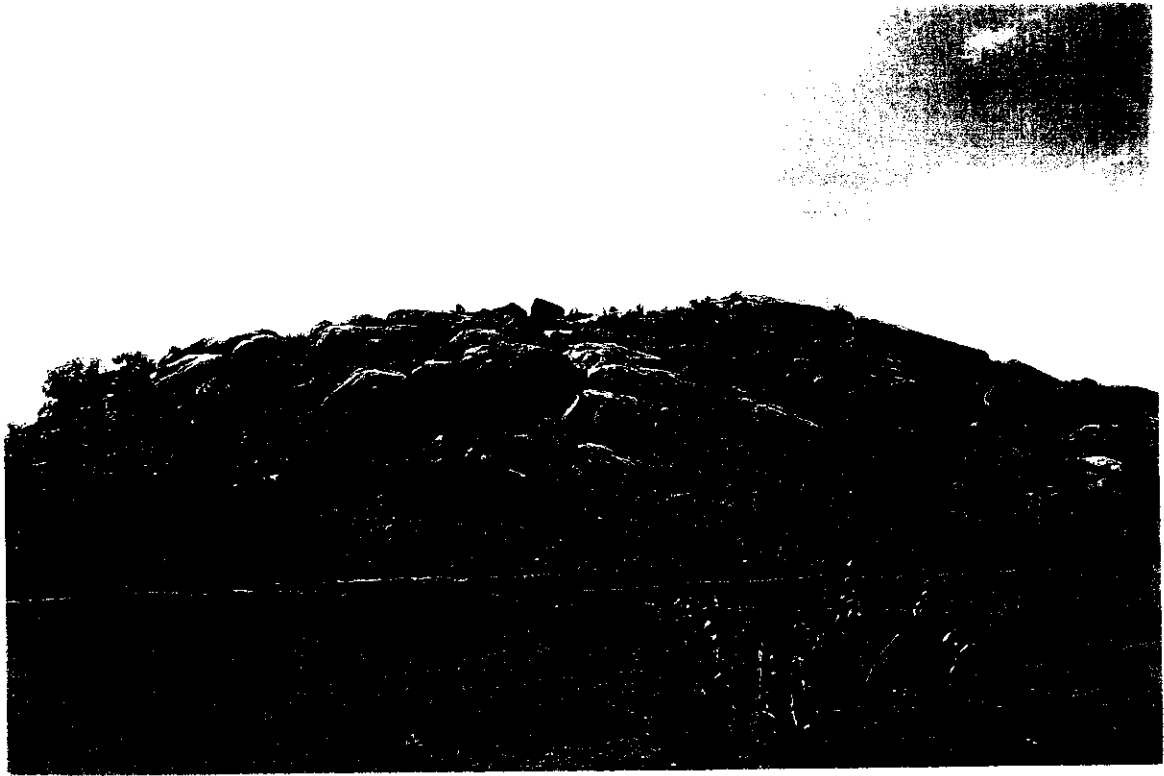
The Eastern Ghat Mobile Belt (EGMB) is more than 600 Km in Length from Srikakulam in the North to Ongole in the South. This belt is more than 100 Km in Width in Northern Part and Tapers down to less than 20 Km in the South, it has broad arcuate trend with Westward convexity. The NNE -SSW trend in the 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 :

Stratigraphic Unit	Lithology
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

PHOTOGRAPH SHOWING THE VIEW OF THE HILL & ELEVATION IN THE LEASE AREA



PHOTOGRAPH SHOWING THE CLOSE VIEW OF THE BOULDERS ON THE PEAK OF THE HILL



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.

Metamorphism :

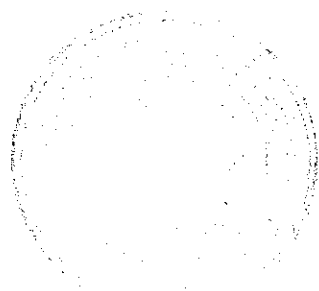
The Eastern Ghat Supergroup of rocks constitute the highly metamorphosed sector of the Precambrian belt of the Indian shield. Rocks belonging to Khondalite and Charnockite groups have been metamorphosed under regionally high temperature and hydrostatic pressure conditions and belong to pyroxene granulite sub facies of granulite facies of metamorphism. It is also suggested that the Eastern Ghat super group of rocks have been subjected to deep-seated metamorphism. Khondalite rocks belong to the granulite facies (two - pyroxene facies) of regional metamorphism. Charnockitic rocks show, at places, retrograde characters by development of biotite, hornblende and cordierite. The lower facies of metamorphism, viz hornblende granulite facies is well displayed by the migmatites derived from both khondalites and charnockites. The occurrence of remnants of granulite facies rocks within migmatites of the low facies of metamorphism is correlatable to the earlier isoclinal folding while the retrograde effects so widely observed in the khondalites and charnockites are due to regional migmatization. Unusual mineral assemblages like sapphirine, spinel, cordierite, kornepine, and aillimanite - orthopyroxene suggest that these minerals crystallized at temperatures of 800 c to 950 c and pressures of 6 to 10 Kb.

Geochronology :

Dating of rock types of Eastern Ghat region was attempted by using methods like Pb, U-Th, K-Ar, Rb-Sr and fission track. On the basis of age determination of detrital monazite, the Eastern Ghat orogeny closed at 1570 million years ago. On the basis of formation of khondalites from folding and metamorphism of pelitic sediments, an age of 1600 million years was given to khondalites. From the age of zircons it is suggested that khondalites and charnockites are of 2600 million years ago. On the basis of orogenic cycle, the Eastern Ghat orogeny is included under Precambrian III (1600 to 2500 Million Years). Khondalite group of rocks and pyroxene granulites are the products of granulite facies metamorphism around 3000 million years ago, the migmatitic rocks are given the age of 1600 million years and the post - Achaean granites are dated as 800 million years.

3.2.1 Local Geology

Geology : The mandal represented by a high topographic relief and is characterized by hills forming the extensions of the Eastern Ghats and following a general trend of NW-SE. Khondalite and Charnockite groups of rocks and their migmatitic derivatives are the major rock types in the area.



The geological succession is as follows :

Recent to Sub - Recent	Alluvium, Soil
Tertiary	Laterite Porphyroblastic Granite Gneiss
Migmatite Group	Migmatites, Predominantly after Charnockite and Pyroxene Granulite
Charnockite Group	Basic Charnockite, Pyroxene Granulite
Khondalite Group	Quartz - Feldspar - Garnet Sillimanite Gneiss (Khondalite) Calc. Granulite / Calc. Silicate / Quartzite

----- Basement not Known -----

Khondalite : This is the main rock type occupying ridges and hills in the northern part of mandal. The rock is well foliated but often weathered and migmatized. The rock unaffected by migmatization stands out as hard resistant bodies. Clusters of sillimanite and large sized porphyroblasts of garnet are developed at the contact aureole with quartz-feldspathic injections. Megascopically, the rock is medium to coarse grained, well foliated and gneissose in structure. The gneissosity is developed due to arrangement of quartz - rich layers alternating with garnet-sillimanite rich bands. Quartz, Feldspar, mostly kaolinised, slender sillimanite needles, leached garnet are the main mineral constituents. The general trend of foliation of formation is NE-SW with steep dips to South East. Laterite cappings are observed on hill tops at places. Sillimanite gneiss is the predominant lithounit of khondalite group. The rock occurs as sharp crested hills, strike ridges or as thin bands with in migmatite. It is composed of quartz, potash feldspar, garnet, sillimanite with accessory amounts of graphite.

Granite Gneiss : Granite Gneisses comprising feldspar gneiss and garniferous granite gneisses are fairly abundant in the mandal. These gneisses contain quartz, feldspar, garnet, hypersthene and biotite. The strike of foliation of rock type varies from N 40 W, S 40 E to N 60 W - S 60 E. Garnetiferous granitic gneisses occur in almost all the thickly forested hill ranges. Quartz, Feldspar, Garnet, Biotite and Iron Ore Mineral are the main constituents. The gneisses are medium to coarse grained, having a gneissose texture. Two sets of joints are observed, one set is parallel to the foliation and other is perpendicular to the foliation.

Laterite : Laterite occurs as a thin capping over the weathered khondalite and gneisses. It is hard and compact.

Graphite Schist : Graphite Schist occurs to the north of Peddamadi Village as lens shaped exposure and is not of economic significance.

Quarrying activity in Meliaputti Mandal : The Meliaputti mandal consists of 115 villages. The potential areas for quarrying granite are given below :

Vasandhara Village is situated on the North Western side of Mahendratnaya river. The hillock is 150 M long trending in NE-SW direction. It is a government land in Survey No. 441 of Vasandra Village.

The Meliaputti Mandal is situated in the hilly region of 'reserved forest'. The mandal is favourably situated with respect to the infrastructural facilities like road, availability of labour etc., The hillocks are covered with boulders and sheet rock. The 'Forest Conservation Act' may hinder exploitation of the granite deposit. The total rock bearing area in the mandal is 1,752.3 Ha. The southern portion of the mandal contain granitic gneisses and the northern part contains khondalitic rocks.

The granitic gneisses existing in the mandal are available in the form of boulders and sheet rock. The rock type is medium grained, hard and compact and this may be quarried as cut or dressed blocks of colour granite. The khondalite occurring in the remaining part of the mandal may be worked as building stone or road metal.

GEO TECHNICAL PROPERTIES

a) Parameters for Evaluation of Deposit

Quarrying in the locality has helped in studying the following parameters for evaluation of the deposit. Frequency of occurrence of the fractures and joints :

Two sets of joints are recorded in the Khondalite & Granitic Gneiss.

1.	N 70° E – S 70° W Vertical Nature
2.	N 20° E – S 20° W Sub Vertical

These joints are closely spaced at the contact of the country rock and on the surface giving raise to bouldery nature.

1.	Variation of Strike	Not Applicable
2.	Splitting Pattern of Strike	Even
3.	Foliation	Absent
4.	Occurrence of Intrusives	Absent
5.	Interaction of Host Rock	Not Applicable
6.	Extent of Weathering	Restricted along the Joint Planes only
7.	Amount of Weathering	Limited
8.	Climatic Condition	The area experiences semi arid climatic conditions with summer day temperatures raising upto 47° and receives an average rainfall of 1,050 mm, the prevalent wind direction is SW-NE and SE-NW.

Exploitable Stone available and possible output per month :

Total Mineable Reserves Estimated to be - 7,53,654.30 M³

On an average 2,350 M³ Per Year output is anticipated.

b) Important Parameters for evaluation of Stone Quality

1.	Texture and Grain Size	Medium Grained, Equigranular, Hard & Compact
2.	Colour and Aesthetic Beauty of the Stone	Brownish
3.	Hardness	Varying between 6 – 7 on Moh's Scale
4.	Minerological Composition	Generalized Minerological composition of Granitic Gneiss is as follows :
a)	Augite	25 – 40%
b)	Plagioclase Felspars	42 – 50%
c)	Clino Pyroxene	15%
d)	Amphibole	> 5%
e)	Biotite	2.7%
5.	Density / Specific Gravity	The bulk density of Granitic Gneiss is 4.5
6.	Water Absorption Ratio	Fresh Rock has no water absorption capacity
7.	Porosity	Porosity is negligible
8.	Compression Strength	Not Measured
9.	Abbrasiveness	Not Measured
10.	Permeability	The Granitic Gneiss in the fresh state is totally impermeable.
11.	Rock Quality, Designation	RQD test not conducted
12.	Young's Modulus Elasticity	Not Measured
13.	Degree of Weathering under Hand Lens / Microscope	Degree of Weathering varying with depth of rock. it is 2 – 3 Cm deep on the surface and it is absent in deep seated rock
14.	Glossiness	Samples taken good polish

c) Defects in Dimensional Stone

1.	Criss Crossing of Veins	Fine thread like acidic veins seen in the rock, but rarely occurring
2.	Closely Spaced Joints	Closely Spaced Joints trending in different directions both vertical and horizontally disposed restricted to weathered upper layers only. Joints are widely spaced in the fresh rock
3.	Dark Or White Patches	Dark Patches or Striations recorded in some of the outcrops, but they have a limited aerial extent

4	Greater Texture Variations	Textural Variation is absent. Texturally the rock is uniform
5.	Alteration due to Metamorphism and Weathering	No alteration due to Metamorphism is noticed.
6.	Defects at Contact Zone due to Mineralogical Textural and Colour Changes	The rock in lease area is represented by Migmatite and Granitic Gneiss. Hence, no defects in the rock are noticed.

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 lease 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: 1,000 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: 1,000 Scale.

3.3.1-3 Exploratory Mining

As the granite deposit is totally exposed in the area as part of the ridge rising 80 M above ground level in the lease area. No exploratory mining was taken up in the area as the rock mass is Proved Marketable Deposit.

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 the mound is wavy and irregular.

4.2 Categorization of Reserves

The deposit is exposed on a part of the hill. The entire deposit exposed on the surface is classified under "Proved".

4.3 Method of Estimation of Reserves

The exposed deposit is found to be irregular in shape as it is exposed on a part of the hill. Hence, the area is computed by applying the cross sectional area by taking 4 cross sections A-A1, B-B1, C-C1 & D-D1 (Plate No. III).

Cross Section	Cross Sectional Area	Sectional influence	Volume of Rock Mass	Recoverable Rock Mass for Blocks @ 20%
	(M ²)	(M)	(M ³)	(M ³)
A - A1	21,549.00	56.00	12,06,744.00	2,41,348.80
B - B1	21,874.00	56.00	12,24,944.00	2,44,988.80
C - C1	16,106.00	56.00	9,01,936.00	1,80,387.20
D - D1	7,305.00	59.50	4,34,647.50	86,929.50
Total Rock Mass Estimated :			37,68,271.50	7,53,654.30

Market Grade Reserves = 7,53,654.30 M³

Life of the Mine = 7,53,654.30 M³ / 2,350

= 320.70 Years OR Say 321 Years

4.4 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 Colour 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 @ 20% = 7,53,654.30 M³.

Economic Marketable Reserves = 7,53,654.30 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.

ii) Ability to supply consumer in time

Lessee 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

Brown Granite from this part of Srikakulam district is having very good demand in the international market. The prices of rough blocks of gang Saw size ranging between Rs.8,000 to Rs.10,000 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 Mechanized 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 bouldery hill rising upto 80 M above ground level with in the lease area.

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 road / ramp will be constructed 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. 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 / splited with the help of feathers and wedges..
- The separated pieces 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 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 secondary 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 11,736 M³ of Colour Granite during the next 5 years. In order to produce this quantity an area of 6,447 M² will be utilized. Excavating 58,680 M³ of rock mass, and huge quantity of waste to the tune of 46,944 M³ is anticipated to be generated, with over all recovery percentage around 20%.

As the peak is rising upto the height of RL +150, the mining as to be taken up from the top of the peak and the material as to be sliced horizontally to the lower levels. Hence, demarcation of the year wise schedule could not be presented. The applicant will start slicing the boulders from the top and uniformly (Plate - V).

1st Year :

The mining operations will commence from the top of the peak at RL +150 the entire peak will be tackled during the 1st year between the grids E 50 - 150 & N 100 - 200 forming a bench height of 3 M. during the first year a total area of 2,240 M² will be utilized.

In the 1st year it is planned to produce 1,344 M³ of economic grade rough blocks. To produce this quantity an area of 2,240 M² will be utilized. Producing 6,720 M³ of rock from which 20% (1,344 M³) of economic grade rough blocks will be obtained and 5,376 M³ of waste rock will be realised.

2nd Year :

In the 2nd year the operations will commence below the 1st year workings forming a bench height of 3 M and the bench will advance from North - South. During the 2nd year a total area of 3,166 M² will be utilized between the grids E 00 - 150 & N 100 - 250.

In the 2nd year it is planned to produce 1,900 M³ (1,899.60 M³) of economic grade rough blocks. To produce this quantity an area of 3,166 M² will be utilized. Producing 9,498 M³ of rock from which 20% (1,899.60 M³) of economic grade rough blocks will be obtained and 7,598.40 M³ of waste rock will be realised.

3rd Year :

In the 3rd year the mining will extend below 2nd year workings with North oriented faces advance further South maintaining average of 3 M bench height. An area of 4,353 M² will be covered during this year between the grids E 00 - 150 & N 100 - 250.

In the 3rd year it is planned to produce 2,612 M³ (2,611.80 M³) of economic grade rough blocks. To produce this quantity an area of 4,353 M² will be utilized. Producing 13,059 M³ of rock from which 20% (2,611.80 M³) of economic grade rough blocks will be obtained and 10,447.20 M³ of waste rock will be realised.

4th Year :

In the 4th year the mining will continue below 3rd year workings in the South and extend North with South oriented faces advance further North maintaining average of 4.5 M bench height. An area of 3,299 M² will be covered during this year between the grids E 50 – 150 & N 100 – 200.

In the 4th year it is planned to produce 2,969 M³ (2,969.10 M³) of economic grade rough blocks. To produce this quantity an area of 3,299 M² will be utilized. Producing 14,845.50 M³ of rock from which 20% (2,969.10 M³) of economic grade rough blocks will be obtained and 11,876.40 M³ of waste rock will be realised.

5th Year :

In the 5th year the mining will continue North of 4th year workings. South oriented faces advance further North maintaining average of 4.5 M bench height. An area of 3,235 M² will be covered during this year between the grids E 00 – 150 & N 150 – 250.

In the 5th year it is planned to produce 2,912 M³ (2,911.50 M³) of economic grade rough blocks. To produce this quantity an area of 3,235 M² will be utilized. Producing 14,557 M³ of rock from which 20% (2,911.50 M³) of economic grade rough blocks will be obtained and 11,646 M³ of waste rock will be realised.

YEAR WISE PRODUCTION FOR NEXT FIVE YEARS

Year	Area (M ²)	Bench Height (M)	Volume of Rock Mass (M ³)	Market Grade Rough Blocks @ 20% (M ³)	Waste Generation @ 80% (M ³)
1 st	2,240	3.0	6,720.00	1,344.00	5,376.00
2 nd	3,166	3.0	9,498.00	1,899.60	7,598.40
3 rd	4,353	3.0	13,059.00	2,611.80	10,447.20
4 th	3,299	4.5	14,845.50	2,969.10	11,876.40
5 th	3,235	4.5	14,557.50	2,911.50	11,646.00
Total			58,680.00	11,736.00	46,944.00
Average			11,736.00	2,347.20	9,388.80

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

6.2.2 Quantum of Excavation

To retrieve 11,736.00 M³ of Market Grade Rough Blocks a quantum of 58,680 M³ of Rock Mass has to be excavated out of which 46,944 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, 25 working days per month are considered. The production of 2,347 M³ per year can be easily achieved in a single shift with sufficient men and machinery.

The following machines were used :

S.No.	Machine	No's.
1.	Portable Diesel Compressor (365 Cfm / 7 Kg / Cm ²)	2
2	Jack Hammer	6
3	300 CK Poclain Hydraulic Excavator	1
4	Tippers (10 Tonnes)	2

With 31 No's of workers (Both skilled and semi-skilled)

a) Magazine Type and Capacity :

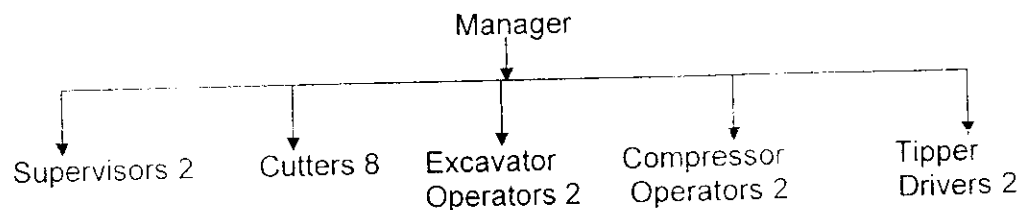
Not Applicable (No permission for storing the blasting material will be granted by the District Administration) The applicant proposes to use AGFRACT Chemical Compound whenever required.

b) Description of Processing Plant :

The applicant does not possess Granite Processing Plant

c) Organizational Chart :

The organogram 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. Covering an area of 224 M² between the grids N 50 – 100 & E 00 – 100.

7.0 CONCEPTUAL PLAN

In the ultimate context, the entire lease hold with colour granite will be mined out in the next 321 years.

Out of the total lease area of 5.400 Hectares (54,000 M²), the area proposed to be utilized for mining is about 6,447 M² (i.e., 0.645 Hectares). During the next five years a large dump covering an area of 2,351 M² with a height of 6 M will be formed around the mining pits during the present plan period between the grids N 350 – 475 & E 50 – 150.

The pit level has been designed considering safety zone of lease hold area. Conceptually the ultimate layout will be irregular in shape and the present peak of the hill will be sliced by 13.5 M.

Conceptually the hill profile of pit is expected to be irregular in shape. Ultimate pit slope would be 56° to provide the stability. Minimum bench width would be kept as 6 M from the faces at the end of the plan period. (Plate – VI, Conceptual Plan).

8.0 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 46,944 M³ of waste is expected to be generated with an average of 9,389 M³ per annum. The year wise waste generation in 5 years is as follows :

Year	Waste Generated (M ³)
1 st	5,376.00
2 nd	7,598.40
3 rd	10,447.20
4 th	11,876.40
5 th	11,646.00
Total	46,944.00
Average	9,388.80

- ii) **Dumping site particulars:** For dumping of waste generated during mining will be dumped temporarily between the grids N 350 – 475 & E 50 – 150 covering an area of 2,351 M².
- iii) **Estimated waste quantity that will be generated in the entire period:** At the rate of 9,389 M³ per year the volume of waste generated in balance lease period i.e., 20 years is estimated to be 1,87,780 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.

9.0 ENVIRONMENTAL MANAGEMENT PLAN

9.1 Baseline Information

i. Existing Land Use Pattern

The applied area is a part of the hill sloping on all sides. The whole area is covered by sparse vegetation and boulders. The soil existing in the applied area is bouldery and unfertile. The hill is exposed to a maximum height of 85 M above ground level with in the lease area (Between the grids E 50 – E 150 & N 100 – N 250). Area due South of the hill are agricultural lands and on three sides it is barren lands.

ii. Water Regime

The area around the hill are rich agricultural lands drained with river Mahendranaya and with numerous tanks.

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 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 Vasundara village is situated 0.50 Kms due South of the area. The population of this village is about 200. The village is surrounded by agricultural lands.

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.

9.2 Environmental Impact Assessment

1) Landscape Changes

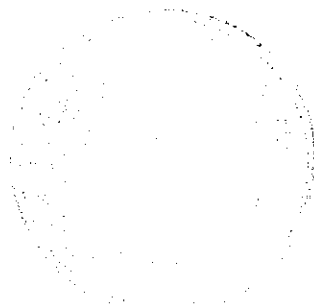
During the next 5 years 6,447 M² area will be excavated / sliced by 13.5 M giving an appearance as an table top. The mining will alter the shape of the present hill with the quarry pits.

2) Aesthetic Environment

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

3) Soil and Land Use Pattern

The soil cover is absent in the high-elevated areas. However, soil mixed with boulders is fertile but not useful for productive agricultural purposes. 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 will be utilized for afforestation.



4) **Agriculture**

The applied area is barren land and far away from agricultural lands. Therefore there is no adverse effect on agriculture.
The fine dust particles will disturb the air quality and the dust will settle on the plants and trees in turn the plants may get dirt.

The fine dust particles will settle in the water bodies and may change the water quality.

5) **Forest**

The applied area does not fall under forest zone.

6) **Vegetation**

The applied area barren hill with an exception of small shrubs, herbs and Thorny bushes grown along the interspaces of boulders and joints where some soil exists. Due to mining all this will be uprooted and the area will be exposed as barren land.

7) **Water Environment**

No Streams or Drainage lines exist in and around Quarry Lease area, except sheet flows during rain days.

COMPOSITION OF AIR (OR ATMOSPHERE) NEAR EARTH'S SURFACE

	Constituents of Air	Proportion in Atmosphere
1.	Nitrogen (N ₂)	78.084%
2.	Oxygen (O ₂)	20.946%
3.	Argon (Ar)	0.934%
4.	Carbondioxide (CO ₂)	0.033%
5.	Neon (Ne)	0.003%
6.	Helium (He)	
7.	Methane (CH ₄)	
8.	Krypton (Kr)	
9.	Hydrogen (H ₂)	
10.	Nitrous Oxide (N ₂ O)	
11.	Xenon (Xe)	
12.	Water Vapour (H ₂ O)	Variable
13.	Dust Particles	Variable

MAJOR POLLUTANTS IN AIR (OR ATMOSPHERE)

1.	Carbon Monoxide	47%
2.	Sulphur Oxides	15%
3.	Hydrocarbons	15%
4.	Nitrogen Oxides	10%
5.	Particulates	13%

SOURCES OF MAJOR POLLUTANTS IN AIR (OR ATMOSPHERE)

1.	Fuel Combustion in Vehicle (Transport)	42%
2.	Fuel Combustion in Stationary Sources	21%
3.	Industrial Processes	14%
4.	Forest Fires	8%
5.	Solid Waste Disposal	5%
6.	Miscellaneous	10%

8) Air Quality

For air, the following maximum tolerable pollutant levels have to be adopted in accordance with the limits laid down by the Central Pollution Control Board for the industrial and mixed use areas.

Area	Category	Concentration Microgrammes Per Meter Cube			
		SPM	SO ₂	CO	NO _x
A.	Industrial & Mixed Use	500	120	5,000	120
B.	Sensitive	100	30	1,000	30

Air quality 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

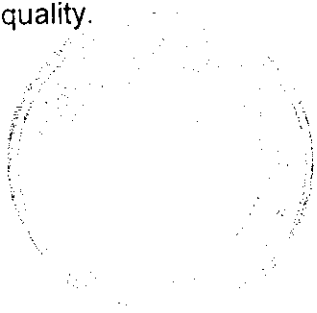
9) No water course is passing through the area excepting run off streams during monsoon.

Due to the mining of granite, no adverse effect is anticipated on the water regime of the area.

TOLERANCE LIMITS FOR INDUSTRIAL EFFLUENTS

S.No.	Characteristic	Tolerance Limits for Industrial Effluents Discharged Into Inland Surface Waters	Method of Test Reference
1.	Colour & Odour	-	IS : 2488 Part - I 1966
2.	Suspended Solids, Mg / l, Max	100	IS : 2488 Part - I 1966
3.	Particle Size of Suspended Solids	Shall Pass 850 Micron IS Sieve	IS : 2488 Part - I 1966
4.	pH Value	5.5 to 9.0	IS : 2488 Part - I 1966
5.	Oil & Grease Mg / l, Max	10	IS : 2488 Part - I 1966
6.	Lead (as Pb) Mg / l, Max	0.1	IS : 2488 Part - II 1968
7.	Chloride (as Cl) Mg / l, Max	1,000	IS : 2488 Part - III 1968
8.	Flouride (as F), Mg / l, Max	2.0	IS : 2488 Part - II 1968
9.	Dissolved Phosphates (as P), Mg / l, Max	5	IS : 2488 Part - IV 1974
10.	Sulphate (as SO ₄ -- 2) Mg / l, Max	1,000	IS : 2488 Part - III 1968
11.	Calcium (as Ca), Mg / l, Max	Where the mine water is directly used as drinking water maximum tolerable limit is 200 as per the above ISI specification for drinking water.	
12.	Magnesium (as Mg), Mg / l, Max	Where the mine water is directly used as drinking water maximum tolerable limit is 100 as per the above ISI specification for drinking water.	

It may be seen that the above table for water quality is a considerable modification on the ISI specification 2490 of 1981. The above modified table may be taken as the basis for evaluating the water quality.



10) Noise Levels

The haulage of machinery 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.

Regarding noise pollution, the DGMS circulars may be followed. The following table gives the actual noise levels as measured in mining areas :

	Equipment	Noise Level dBA	Measurement Location
a)	Mines		
	Graders	76 – 104	Operators Cab
	Dozers	84 – 107	Operators Position
	Drills	72 – 100	Operators Position
	Front – End Loaders	83 – 101	Operators Position
	Scrapers	92 – 104	Operators Position
b)	Fixed Plant Installations		
	Drill Sharpeners	102 – 122	Operators Position
	Pumps	89 – 100	Operators Position
	Quarry Plant Area	88 – 102	Various External Sites in General Plant Area
	85 M ³ / Min Compressor House with Corrugated Enclosure	52	300 M

SOME COMMON SOURCES OF SOUND (OR NOISE), THEIR INTENSITY AND THE LEVEL OF SOUND EXPERIENCED BY HUMAN BEINGS

	Source of Sound (Or Noise)	Level of Sound (Or Noise)	Effect of Sound (Or Noise) as experienced by Human Beings
1)	Heavy Vehicle (about 8 Metres away)	90 Decibel	Very Loud Sound

The haulage of 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

11) Vibration Levels

Blasting in the area is banned. The vibration generated by the machinery will be feeble with in 8 Hz.

12) Aesthetic Environment

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

13) Socio Economic Environment

6 villages within a distance of 4 Kms surround the applied area. The main occupation of villagers is agriculture and sheep raring. The commencement of mining activity in this area improves the socio-economic status of the local people by creation of employment.

14) 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.

15) Human Settlement

The nearest village Vasundhara is situated 0.50 Km from the area due South. Therefore there is no anticipation of adverse affect on the human settlement.

16) Recreational Facility

The surrounding village's people will go Parlakimidi Town (Orissa State) for purchases, medical & recreation.

9.3 Management Plan

1. Soil Conservation Methods

The fertile soil available will be used for plantation around site services and all along the road. Soil mixed with boulders, which is unfertile which will be used for laying roads.

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

Even after completion of lease period the hill remains except the reduction of elevation and slopes by the pits that will be formed.

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 mining will involve dust rising methods. The dust anticipated during dry seasons, due to haulage will be suppressed by sprinkling water. For this purpose, tractor mounted sprinkler will be deployed. The dust generated during the drilling will be suppressed by covering the drill rods by gunny cloth and dust extractors will also be deployed

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

Blasting is not permitted in the area. The noise generated by compressors, drilling & machinery like proclain / excavators and tippers will be high. The workers in the quarry area will be provided suitable headgear and noise reducing protective gear (Like Cotton Mufflers etc.) The machinery will be maintained properly for minimizing the noise.

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

No treatment is required.

7. Measures for minimising adverse effect on water regime

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

8. Afforestation Programme

The afforestation will be taken up all along the buffer zone. The species that have history of good survival and growth under similar site conditions shall be planted. The recommended plant species are given in table below :

RECOMMENDED PLANT SPECIES


S.No.	Trees Species	Common Name	Utility
1.	Axadirachta Indica	Neem	Fuel, Timber, Fodder
2.	Albizzia Sp.	Siris	Fodder, Fuel
3.	Dalbergia Sissoo	Sisham	Fodder, Timber
4.	Cassia Sp	Amaltaas	Fuel, Fodder
5.	Pongaamia Pinnata	Karanj	Fuel, Fodder
6.	Gliricidia Sepium		Fodder, Fuel, Timber
7.	Inga Dulce	Jungle Jalebi	Fodder, Fuel, Timber
8.	Eucalyptus Teriticornis	Eucalyputs	Fuel, Timber
9.	Holoptella Intergrifolia	Kanju	Timber, Fuel
10.	Annona Squamosa	Sharifa	Fuel

9. Preparation of dumping ground for stacking toxic mineral substance

No toxic minerals are present

10.0 ANY OTHER RELEVANT INFORMATION

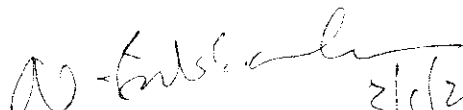
All the statutory provisions applicable to granite mining leases, such as Mines & Mineral Concessional Rules, Granite Conservation and Development Rules 1999, Mineral and Mining Rules, Indian Explosive Act, Payment and Wage Act, Workmen Welfare Act, Employees Provident Fund Act shall be adhered.


Sri. NALLURI PADMA RAO

RQP

(V. T. CHANDER)

RECEIVED


3/1/2008

This document is subject to
the provisions of the
3405/MP/07
3-1-08

ANNEXURE - I

GOVERNMENT OF ANDHRA PRADESH PROCEEDINGS OF THE ASST. DIRECTOR OF MINES AND GEOLOGY: TEKKALI

(Present:- Sri G.BHASKAR REDDY, M.Sc., Assistant Director)

Proce.No. 932/Q/2004

Dated 20-04-2007.

Sub:- Mines and Quarries-Quarry Lease for Colour Granite over an extent of 5.400 Hectare in Sy. No.441 of Vasundhara village, Meliaputti Mandal, Srikakulam District for a period of 20 years- Execution of quarry lease deed in favour of Sri N.Padma Rao, Partner: M/s S.R. Constructions - Work orders-issued.

Ref:- 1.Proce.No.16206/R1-1/2004 dt 01.03.2007 of the Director of Mines and Geology, Hyderabad.

2.Letter dated 20.04.2007 from Sri N.Padma Rao of M/s S.R.Constructions.

* * *

ORDER:

Through the reference 1st cited, the Director of Mines & Geology, Hyderabad has granted a Quarry lease for colour granite over an extent of 5.400 hectares in Survey No.441 of Vasundhara village, Meliaputti Mandal, Srikakulam District, for a period of 20 years.

The grantee vide reference 2nd cited, has submitted all the required mineral revenue paid challans, Security Deposit etc., and requested for execute the lease deed in the subject area, in favour of Sri N.Padma Rao, Partner of M/s S.R.Constructions.

SANCTION is hereby accorded to Sri N.Padma Rao, Partner of M/s S.R.Constructions to commence the quarrying operations for extraction of colour granite over an extent of 5.400 Hectare in Sy.No.441 of Vasundhara village, Meliaputti Mandal Srikakulam District for a period of 20(twenty) years with effect from 20/4/2007 to 19/4/2027 subject to the satisfaction of A. P. Minor Mineral Concession Rules,1966, Granite Conservation and Development Rules, 1999 and fulfillment of special conditions specified in the annexure appended to the sanction orders.

The grantee should maintain all the records and accounts in the forms prescribed by the Government. The lessee should submit quarterly returns in Form-'C' so as to reach the Director of Mines and Geology, Hyderabad, Deputy Director of Mines and Geology, Visakhapatnam and Assistant Director of Mines and Geology, Tekkali not later than 7th day of Quarter to which they relate. The grantee is also directed to obtain despatch permits under Rule 34 of A. P. Minor Mineral Concession Rules,1966 from the Assistant Director of Mines and Geology, Tekkali before transportation of mineral. *No explosives should be used by the lessee for the purpose of quarrying without a proper license issued by the competent authority.*

cl
MS
Assistant Director of Mines & Geology,
Tekkali

To
Sri Nalluri Padma Rao
S/o Koteswara Rao
Partner: M/s S.R.Constructions
Flat No.109, Indrolok Complex,
Road No.1, Banjara Hills,
Hyderabad 500 029.

Copy submitted to the Director of Mines & Geology, Hyderabad for favour of information.
Copy submitted to the District Collector, Srikakulam for favour of information.
Copy submitted to the Zonal Joint Director of Mines and Geology, Visakhapatnam for favour of information.
Copy submitted to the Deputy Director of Mines and Geology, Visakhapatnam along with a copy of lease deed for favour of information.
Copy to the Mandal Revenue Officer, Meliaputti along with a copy of the sketch for information.

Received for Sri Nalluri Padma Rao
20-11-07