

**MINING PLAN FOR COLOUR GRANITE
OVER AN EXTENT OF 2.607 Hectare, IN S.No. 53 OF TEKKALI VILLAGE &
MANDAL, SRIKAKULAM DISTRICT, ANDHRA PRADESH STATE, INDIA**

(SUBMITTED UNDER RULE 12 OF G.C. & D.R. 1999)

APPLICANT

M/s. Madhucon Granites Limited.
Regd. Office : Madhu Complex,
Jublipura,
Khammam- 507 001. AP



APPROVED
PREPARED BY

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(2003)

DECLARATION

Certified that the Mining Plan for Colour Granite,

Over an extent of 2.607 Hectare,

In S. No. 53 of Tekkali Village & Mandai,

Srikakulam District, Andhra Pradesh State,

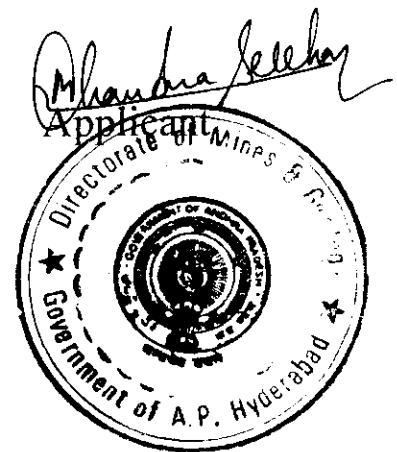
has been prepared in full consultation with me

and I have understood its contents

and agree to implement the same in accordance with the law.

Place : Hyderabad,

Date : 17 - 08 - 2003



CERTIFICATE

This is to certify that the provisions of Mines Act, Rules, Regulations,
Granite Conservation and Development Rules, 1999
have been observed in the Mining Plan for Colour Granite
over an extent of 2.607 Hectare,
at S.No. 53 of Tekkali Village & Mandal,
Srikakulam District of Andhra Pradesh State,
and wherever specific permissions are required,
the Applicant will approach the Director General of Mines Safety and
concerned authorities of Directorate of Mines and Geology for granting the permission.

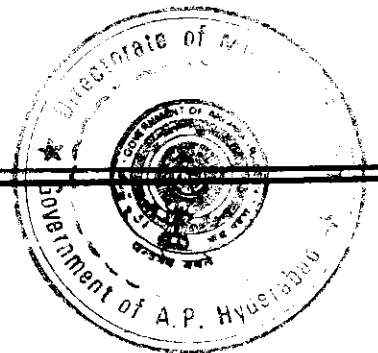
It is also certified that the information furnished in the Mining Plan
are true and correct to the best of my knowledge.

Place : Hyderabad

Date : 17 / 08 / 2003.



S.N. Suresha M.Sc.,
Recognized Geologist
(RQP/HYD/106/94/A)
(RQP/DMG/HYD/001/2001)
Hyderabad.



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(SUBMITTED UNDER RULE 12 OF G.C.& D.R. 1999)

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

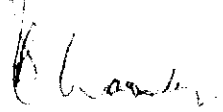
**Mining Plan Approval Letter No.
26008/MP-I/03, dated 27-10-2003**

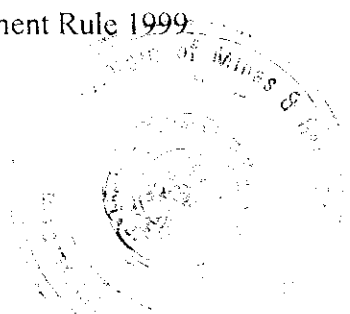
1.0 INTRODUCTION :

M/s Madhucon Granites Ltd., Khammam, is a versatile company having lot of experience in granite mining industry and earning foreign exchange by exporting the granite from different part of our country. They have got several quarry leases in Andhra Pradesh and elsewhere in India. They have applied for quarry lease for Srikakulam blue Granite over an extent of 2.607 Hectare at S. No. 53 of Tekkali Village & Mandal, Srikakulam Dt. AP State.

Initially the granite was identified in this area by M/s South Indian Granites, Prop. Smt. K. Triveni, Plot No. 21, Shiridi Nagar, Thotapalem, Vizianagaram. After field study they have applied for Prospecting license. The Office of Asst. Director of Mines & Geology, Srikakulam has recommended their application to the Director of Mines Geology. The Director of Mines & Geology Hyderabad, has considered the application and sanctioned the Prospecting License vide their Memo No. 12697/R1-3/99, dated 3/8/2002 for a period of 2 years from the date of execution of PL. The Prospecting License was executed at office of A.D.M&G Srikakulam vide their Proceeding No. 1557/Q/99 dated 26/9/2002. They have done the prospecting according to the 'Prospecting Scheme' and submitted the Prospecting Report to Office of ADM&G Srikakulam. Since they could not operate the quarry due to their personal problems they have transferred their PL in favour of M/s Madhucon Granites Ltd., Vide D.M.&G Hyderabad. letter No. 3807/R1-3/2003, dated 18/6/2003 for the remaining period ending on 25/9/2004. The transferred PL was executed at office of A.D.M&G Srikakulam vide their Proceeding No. 1557/Q/99 dated 24/6/2003. Subsequently M/s Madhucon Granites Ltd., have applied for Quarry Lease. Then the Office of ADM&G Srikakulam recommended their Q. L. application. After careful study of recommendations the Director of Mines & Geology asked the applicant, to submit approved Mining Plan vide their letter No. 24115/R1-3/2003 dated 12/08/2003 for grant of QL. There fore this mining plan has been prepared by following the guidelines prescribed by the Director of Mines & Geology, in confirmation with Granite Conservation and Development Rule 1999.

APPROVED


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



2.0 GENERAL :

2.1 Name of the applicant :

M/s. Madhucon Granites Limited.
Regd. Office : Madhu Complex,
Jublipura,
Khammam- 507 001. AP

2.2 Status of the Applicant:

The Applicant is a Limited Company of which Sri N. Nageshwar Rao is the Chairman & Managing Director. The company is versatile granite producers and having lot of experience in granite industry. The overall operation of granite industry, mines and company business is functioning under excellent guidance of Sri N. Krishnaiah, the Executive Director, of the company.

2.3 Type Of Granite Which The Applicant Intends To Mine :

Colour Granite (Srikakulam Blue).

2.4 Name, Address And Registration Number Of The Recognized Person Who Prepared The Mining Plan:

Sri. S.N. SURESHA, M.Sc., (Geo),
Recognised Geologist,
2-22-1/77/7, Mounika Apartments,
Bhagyangar housing Colony,
KPHB. HYDERABAD

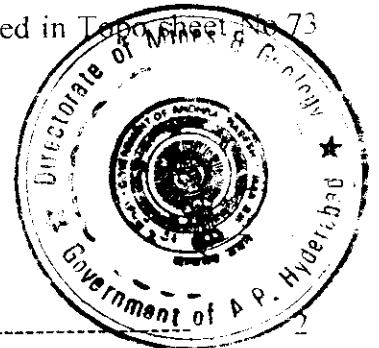
(Ph: 040 – 23068543)
98491 62562.

2.5 Name And Address Of The Prospecting Agency:

The prospecting was done by the applicant under the guidance of R Q P.

2.6 Details Of The Area:

(a) The applied area is a remote and barren land. It is located in Topo sheet No 73 B/2 between 84° 11' 17" Longitude and 18° 36' 40" Latitude.



(b) The Details of the area is given in following Table.

District & State	Taluka Mandal	Village	S.No.	Area in Hectare	Owner Ship & Occupancy Status
Prakasam A.P	Tekkali	Tekkali	53	2.607	Govt. Land

Boundaries : Boundaries :- West : Pl area of M/s Madhucon Granite Ltd., (3.00 Hectare area);
East : Govt. Land ; North : Govt. Land ; South : Govt. Land.

2.7 Period for which the Mining Lease is Required: For a period of 20 years.

2.8 Infrastructure :

The applied area is having very good Infrastructure like road, rail and drinking water etc. It is well connected by jeepable road from Tekkali at a distance of 6 Km. The village Tekkali is connected to National Highway No. 5 at a distance of 2 Kms. connecting vizag – Culcatta. The nearest Railway Station is situated at Palasa, air port and harbor are situated at Vizag. At a distance of 160 Kms. The mine is surrounded by few villages among which Tekkali is the nearest village which is having working category population, hospital, post & telegraph office, schools etc., The power line and telephone line is passing near by area at a distance of 1 Km north side of block (Gudem village). The drinking water is available from the open well situated at 500 m away south. The Vamsha Dhara irrigation canal is passing at a distance of 600 meters south of the applied area.

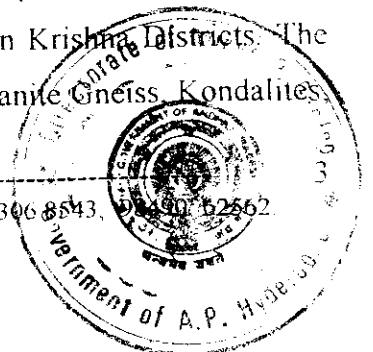
3.0 GEOLOGY AND RESERVES:

3.1 Brief description of Topography (Physiography) :

The applied area is elongated hilly area having slope from north - south. The gradient is gently towards south in direction. The highest level observed at northern side is 185 m RL. Whereas lowest level is recorded to be 60 RL at south. The height ranges from 120 to 125 m.

3.2 Regional Geology:

The rock formation belong to eastern ghat mobile belt of Archaean age. The mobile belt is divided into three zones viz Western Charnockites Zone (WCZ), Central Khondalite Zone (CKZ) and the Eastern Migmatite zone (EMZ). The EMZ is well developed in northern parts of the belt in Vishakapatnam, Vijaya nagaram, Srikakulam and partly in Krishna Districts. The broad distribution of rock types of rocks in Srikakulam district are Granite Gneiss, Kondalites.



Charnokites, Leptynites, Rajamundry Sand Stone, Alluvium deposits and quartzite at some places. The eastern part of the belt forms a plain country with isolated hillocks and rises as continuous hill range towards west presenting a rugged topography with lush green vegetation. The area is drained by two prominent rivers originating from Orissa, namely Nagavali and Vamshadhara passing almost parallel to one another at a distance of 8 Km part through the district and joins the Bay of Bengal.

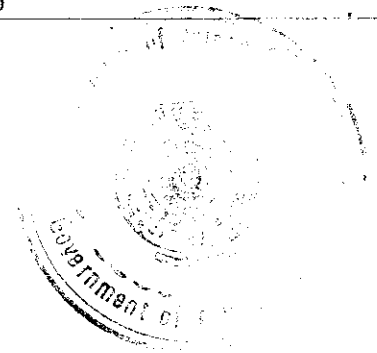
The Srikakulam - Vizianagaram- Vishakapatnam area exposes mainly Khondalite - Charnokite suite of rocks forming a part of the EGGB which include Charnokite, Khondalite - Charnokite to pyroxene granulite, migmatite, Leptynites and intrusive porphyroblastic charnokite and granite. Out these migmatite charnokite and leptynite are extensively quarried out as dimensional stone granite and traded as 'Srikakulam Blue' due to the presence of bluish opalescent quartz and bluish grey feldspar. Actually these are migmatite and migmatite-charnokites. The leptynites are called as 'Kashmir White'. The wavy structure forms due to migmatization of Charnokites. The general geological succession of the area is as follows.

Geological Era	Geological Units
Phenozoic	Tertiary Sedimentary Rocks, Quaternary deposits
Proterozoic	Granites and Epidote Gneiss
Late Archaean to Proterozoic	Unclassified Granites and Migmatites
Archean	Peninsular Gneiss with older granites and migmatites. Migmatite complex. Charnokite group. Khondalite group

3.3 Local Geology :

The local geology of the area is as follows :

Soil cover	:	Recent
Quartz feldspathic rock Khondalites (granite) Sillimanite gneiss	:	Archacons
Basement Rock	:	Not Encountered.



The subject area is having height of 125 m towards north from southern boundary. The granite in this area occur as concealed quartz-feldspathic rock with thin soil cover. The rock is considered to be archaean age falling under Eastern Ghat hill range.

The lithological units of the area is Mesocratic quartz feldspathic gneiss which are bluish grey in colour. These are consisting of blue quartz and feldspar constituents varying in proportions. The garnet and pyroxenes are in little quantity. Biotite mica and aphanitic ferromagnesium are also observed as accessories. The granite in this area is hard and compact with medium-course grain in texture. The alternative arrangement of felsic & mafic minerals of the rock mass gives decorative pattern with bluish gray back-ground. The trend of mineral is varying in alignment with NNW- SSE, N-S and NNE- SSW with moderate dips, which forms wavy banding. This kind of design increases the cost of blocks in blue granite. The rock is having vertical and horizontal joints are there. The applied area is slightly weathered and having lot of boulders on surface.

3.4 Brief description of litho : (not uniform)

Soil Cover	:	0 - 0.2 m on surface (along with joints the soil cover is there, which ranges from 0.2 to 2 m)
Boulders Zone	:	0 - 5 m (thickness varying from 2 to 8 m at different places) On the surface start from bottom of the hill to top of the hill.
Sheet rock.	:	5 - 70 m to 80 m from top of the hillock (geologically confirmed).

3.5 Details of Prospecting:

(i) Already carried out:

The applicant has dug two trial pits by cutting boulders at surface, as shown in geological plan of the area. The boulder cutting is done by utilising peclain and blasting for fragmentation. At pit No.1, 15 m length, 10 m width and average depth of 7 m was cut at 105 RL southern side of the area. Two boulder are cut to produce 1050 m³. At this pit by cutting boulder of 120 m³ volume, 39.33 m³ prime blocks are recovered. By cutting another boulder of 7.5 x 4.0 x 3.1 size, 26.12 m³ recovery is found. Therefore at this place 33 % and 28 % recovery is arrived. Rocks comprising small, medium and varying size blocks are produced along with waste such as fractured stones and unusable stones. Out of this some small boulders are still to be dressed and recovered.

At pit No.2 at 120-125 RL another pit of 20 m length, 10 m width and 2 m depth was cut to produce 400 m³ granite is produced. In this area 120 m³ of dimensional blocks are produced. So the recovery of 30 % is found at this place. Hence on an average 30 % recovery is recorded at this place. Different sizes varying from 1.55 L x 1.16 W x 1.00 D to 3.1 x 1.2 x 1.04 m totaling to 185.45 m³ is produced at this area. The waste generated during production is dumped at slope of the hillock at pit head as seen in Plate No. III.

Location	Size of the benches in the Pit				Remarks
	Length (m)	Width (m)	Depth (m)	Volume (m ³)	
Pit No. 1 At southern side	15	10	7	1050	0- 0.2 m : Soil cover (along boulders) 0 - 7 m : Granite Boulders.
Pit No. 2 At Central side of the area	20	10	2	400	0 - 0.1 m : Soil cover (along boulders) 0 - 2 m : Granite Boulders.

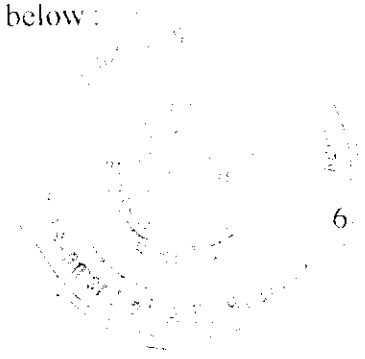
The applicant is also done Theodelite Survey and drawn Surface Geological Plan in 1 : 500 scale with 5 m contour interval.

(ii) Proposed to be carried out :

In this area granite is exposed to total height. Therefore the applicant is not proposed any exploration work.

3.6 Geological Reserves And Their Categorization:

In this area the granite is exposed to surface from 60 m RL to 185 m RL with boulders of varying sizes. Therefore the reserves exposed to surface from ground level is arrived as proved deposit. Anticipating 20 % voids and highly fractured granite zone the geological reserves have been arrived after deducting such volume as given in Annexure I. As witnessed in the area 5 m thickness of rocks at surface is containing different size boulders, hence this zone is separately calculated as boulders deposit. Most of the boulders are useful and anticipated to be yielding maximum recovery of dimensional granite. As seen in previous para the recovery found during PL period is about 30 % at surface. Since the bouldery zone is having weathered surface, fracture zones, cracks, joints widened due to natural reactions the % of recovery is found to be less in this zone. However in this area 30 % recovery is considered to arrive Recoverable reserves in boulders and proved deposit. The details of Geological Reserves is given in Annexure No. 1. However the brief description of reserves and their categorization is as below :



Zone	Geo. Res (m ³)	Res	Prime Reserves (m ³)	Waste (m ³)
Boulders	101700			
Less 20% Voids	20340			
Boulder Reserves	81360	30	24408	56952
Proved Reserve	951176			
Less 20 % Voids	190235			
Pvd. Deposit	760941	30	228282	532659

Total Geological Reserves = 842301 m³
Total Prime Granite Reserves = 252611 m³
Total waste = 589690 m³

3.8 Mineable reserves and the life of the mine:

The reserves locked in mines safety slope is considered during calculation of mineable reserves. The quantity of such reserves is arrived to be 454197 m³. Therefore the mineable reserves are arrived as following.

Geological reserves of 842301 - Reserves locked in mines safety slope 454197 = 388104 m³.

The details of calculation is given in Annexure I. The applicant is proposed to produce 801 m³ of prime dimensional blocks granite per year. There fore the life of the mine is arrived as below:

Prime Mineable reserves	116431 m ³	
-----	-----	145.34 years, Say 145 Years.
Annual production	801 m ³	

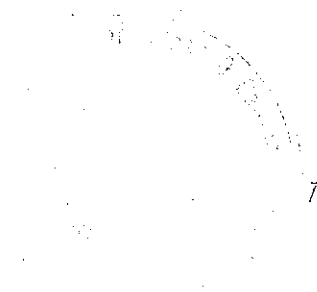
4.0 MINING: In this area partially mechanized open cast mining is adopted.

4.1 Opening up of the quarry (stages of quarry development):

The granite in this area is exposed to surface. The surface of the area is full of boulders, therefore initially the production will be won by cutting boulders to required size blocks.

(i) Removal/Excavation of O/B and other quarry wastes if any and its disposal:

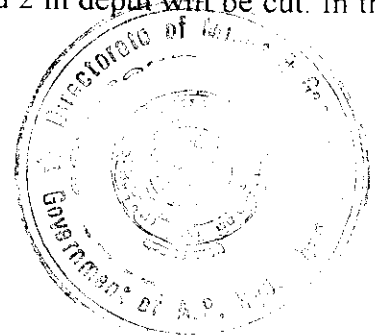
In this area the boulders of different size are having good quality, therefore they will be cut to produce required size blocks under production programme. Since most of the boulders are useful the mining for production and development work such as removal of small stones and weathered granite on surface will go hand in hand. The wastes produced during production is anticipated to be 1870 m³ per year. In first 5 years total quantity of waste of 9348 m³ will be generated. Such kind of waste will be disposed off at low levels of the hillock. The details of waste removed during development of mine is given in Annexure II.



- ii) Separation of Primary blocks from mother rock : The surface of the area is covered with varying size boulders and soil in joints and in between boulders. Therefore the small boulders of less than 0.66 x 0.66 x 0.66 m size and soil cover are easily removed from insitu with the help of poclain. Where as for massive boulders the dimensional blocks will be cut by employing Line drilling with 6" gap and blasting by using mild explosives. After blasting, the primary blocks will be loosened and separated from mother rock with the help of poclain. During separation of primary blocks the joints, weathered surface & fracture zones will be considered. The loosened blocks will be subdivided into secondary blocks, then removed from insitu
- iii). Subdivision of large (primary) block in to secondary blocks: The huge boulders (primary blocks) will be subdivided into secondary blocks of required size (3.2 x 2 x 2 m, 3 x 2 x 1.8 m, 2.6 x 2 x 1.5 m, 2 x 1.5 x 1 m & 0.66 x 0.66 x 0.66 m) after thorough inspection, by drilling line holes with the gap of 6". For smooth surface and neat blocks the diamond wire cutting will be done. The blocks will be used for manufacture of monuments at their factory situated at Khammam.
- iv) Production of commercial blocks: The secondary blocks finally dressed by chipping the corners and uneven surfaces to get the commercial blocks with right angle corners for good look and correct measurement. In this area maximum possible dimensional block are ranging to 3.2 m x 2 m x 2 m size. Regular sizes dimensional stones that can be retrieved from this quarry ranges from 180 c m to 260 c m length, 120 to 200 c m width and 100 c m to 180 c m height.
- v) Production for first five years period :

In first 5 years period it is proposed to produce granite from 120 to 145 RL central part of the area where the production was won in PL period by cutting prospective bench. Therefore by using the face opened at this place in first year the production will resumed by cutting boulders in first bench of 40 m length, 7 m width and 1.5 depth. In 2nd bench 2 m depth will be cut in same extent of area. At the end of the year total volume of 980 m³ will be excavated, after deducting 20 % voids total granite of 784 m³ will be produced. Anticipating 30% recovery the recoverable granite of 235 m³ will be produced. During this period 549 m³ of stony waste will be generated. At the end of the year the bottom level will reach 120 RL.

In second year the bench of 52 m length 10 m width and 2.5 m height will be cut to quarry 1300 m³ volume of material in first attempt. In second attempt 3 m depth will be cut to win 1560 m³ of volume. In 3rd bench 52 m length, 5 m width and 2 m depth will be cut. In this



area total quantity of 2704 m³ of granite will be produced after deducting 20 % voids etc.,. At the end of the year 811 m³ of recoverable granite will be produced. The bottom RL will reach 120.

In 3rd year it is proposed to produce 840 m³ of prime granite by cutting 3 benches of 2.5 m height each in an area of 550 m² at 130 RL. At the end of the year 1960 m³ of waste will be generated. The bottom RL proposed to reach 125 m.

In 4th year it is proposed to produce 922 m³ of prime granite. In first attempt 48 m length, 5 m width and 5 m height to cut 360 m³ volume material is produced along with void space. In second attempt 48 m length, 11 m width and 3 m height bench will be cut to produce 1584 m³ volume. In third attempt 2.5 m height bench will be cut in same extent of area, to produce 1320 m³ volume. In 4th attempt 48 m length, 6 m width and 2 m height will be cut to quarry 576 m³ of granite. At the end of the year total quantity of 3840 m³ volume will be removed to produce 3072 m³ of granite after deducting 20 % voids. Anticipating 30 % recovery, 922 m³ of granite and 2150 m³ of waste will be produced. The bottom level will reach 130 m RL.

In 5th year the production will be done at 140 RL. In this area 3 benches will be cut to produce 1198 m³ of prime granite, by cutting in an area of 624 m². In first 2 attempts 2.5 m height benches will be cut. In 3rd attempt 3 m height bench will be cut to produce 1198 m³ prime granite will be produced. At the end of the year the bottom RL of 134.5 m will be reached. The waste of 3460 m³ will be generated.

The details of production of granite, waste and weathered granite removal is given in Annexure II.

vi-(a) Reclamation Programme :

The applied area is a part of big hillock, therefore except degradation of height no mining impact is anticipated in this area. Therefore no reclamation programme is planed at this place in first lease period of 20 years.

Vi-(b) Type, capacity and number of equipment for the type of mechanization proposed:

The details of machineries being utilised at mines is as foliows :

Sl. No.	Type of machinery	Capacity	Unit
01	Compressors	600 cpm	2
02	Poclair	2.75 m ³ boom length -6.4 m	1
03	Tipppers	200 sft	2

4.2 Drilling and Blasting :

The shallow hole blasting will be conducted at the surface to remove the waste and overburden without disturbing the economical blocks.

The drill holes will be done in parallel line with 6 inches gap preferably at joint planes, and shot hole will be filled with gunpowder and blasted with the help of blue-sump safety fuse. The disintegrated granite pieces will be removed with the help of poclain and removed from insitu to dumping yard by tippers. Then the sheet rock or big boulders of granite will be produced.

4.3 Handling of blocks within the Quarry, Type and number of equipment deployed to handle the primary and secondary blocks: The primary blocks will be displaced with the help of poclain with 6.4 m boom length, from insitu mother rock. After separation by line drilling and mild explosive blasting. The secondary blocks produced from primary blocks will be shifted from quarry with the help of poclain and dumper/trucks.

5.0. STORAGE AND HANDLING OF THE EXPLOSIVES:

As given in above para the utility of the explosive at this mine is very less. The lessee will take explosives license for portable M & S Type Magazines and it will be stationed at dump proposed at central part of the area. The proposed capacity of the magazine is as follows:

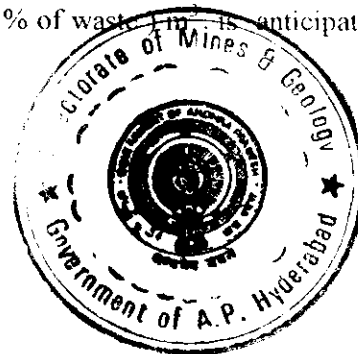
Class 2&3, Division I	= 100 Kgs.
6	„ I = 1500 mtrs.
6	„ I = 1000 Nos.

6.0 WASTE MANAGEMENT PLAN TO BE PREPARED IDENTIFYING THE SOURCES OF WASTE (SOLID, LIQUID) GENERATION AND THEIR CONTROL:

6.1 Solid Wastes: As given in previous para the generation of solid waste such as highly weathered granite etc., is anticipated. The quantity of such waste is anticipated to be about 9348 m³ in first 5 years period.

Estimated waste quantities that will be generated over the entire period:

The life of the mine is arrive to be 145 years. In this period the quantity of waste is anticipated to be about 271673 (mineable reserves of 388104 x 70 % of waste is anticipated to be stony waste generates during production.



Site Services :

The lessee company has provided well established site services such as medical aide provision, drinking water facility, safety measures to the workers at mines and rest shelter along with first aid and office rooms in the area neighboring to the applied area.

11.0 ENVIRONMENT MANAGEMENT PLAN.

In this area no trees cutting is expected except cutting of granite. Therefore the environmental impact is anticipated to be negligible.

11.1. **Base line information:**

- i) Existing land use pattern : The applied land is a part of hillock with high elevation. Therefore it is not being used for any purpose.
- ii) Water Regime: The applied land is a part of hillock. The rain water in rainy season constitutes the drainage system of the area. Except this no any other kind of water regime are located in this area.
- iii) Flora are Fauna: In applied area less density of vegetation or plants are there. There is no forest area in the nearby. No wild animals are reported in this area.
- (iv) Climatic conditions : The area is coming under semi-arid tropical zone of the globe. Normal average temperature of this area is learnt to be 30°C-48°C. The maximum temperature recorded in recent days is 51°C, minimum temperature is 18°C, during summer and winter seasons respectively.
- v) Human Settlement : The lease area is surrounded by 7 villages and few areas of workers concentrations. The literacy of the area is very less. The details of the villages is given in following table and the details of the location is demarked in plate no. I

Sl.No.	Name of the village	Location	Distance	Population
1	Tekkali	East	3 Km	20000
2	Palasa	East	6 Km	5000
3	Jarlakota	South	4.5 Km	1000
4	Kasibugga	South	5 Km	1000

vi) Public Buildings, places and monuments: There are no public building, places and monuments within 2.5 Km.

vii) Quality of air, ambient noise level and water : The quality of water is good. Naturally the air is pollution – free, but due to transportation pollution of air occurs. The noise is expected due to drilling and compressor operation, it is recorded to be tolerable (80-100 db).

viii) Does area (partly or fully) fall under notified area under water (prevention and control of pollution) Act. 1974.:

The area is not falling under notified area under water Act.1974.

11.2. Environmental impact assessment statement :

i) Land degradation : In this area the anticipated extent of quarrying is limited to 2.6 Hectare only. Therefore the impact of mining activity on environment of the local area is negligible except land degradation from high elevation to low elevation.

ii) Water regime: The applied area is not having any water reservoir within 500 m radius. However in rainy season water falls on surface will flow down ward and flows to plane lands. The mining activity will not disturbed flow of water.

iii) Water quality : The water quality is good since the flow of aesthetic mineralised water is not expected in this area. There will be no change in quality of water. The norms are as follows.

Sl.No.	Charectoristics	Desirable Limit	Maximum Permissible Limit
1.	Colour	5	25
2.	Odor & Taste	Un Objectionable	Un Objectionable
3.	Turbidity	5 NTU	10 NTU
4.	pH value	6.5 to 8.5	No relaxation
5.	TDS	500 mg. Per Ltre.	2000 mg. Per Ltre.
6.	Total Hardness	300 mg. Per Ltre.	600 mg. Per Ltre.

iv) Ambient air quality : In the mine certain amount of air pollution is anticipated. The base level and permissible levels of pollution is given as below.

Base Levels		Allowable Levels
SPM =	140 mg/m ³	360 mg/m ³
RSPM =	60 mg/m ³	120 mg/m ³
SO ₂ =	40 mg/m ³	80 mg/m ³
NO ₂ =	40 mg/m ³	80 mg/m ³
CO =	1.0 mg/m ³	5.0 mg/m ³

v) Noise levels: The noise produced due to machinery operation and vehicles will not be continuous throughout the day. Therefore the noise in this area will be less. However the permissible noise levels and working hours is given as below.

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

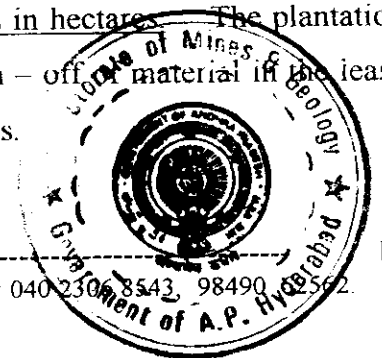
vi) Vibration levels : There is going to be hardly any impact on surroundings, as there are no much blasting and no utility of more explosives in this mine. The vibration causes due to movement of poclain and vehicles is under control.

vii) Socio-Economic conditions: There shall have positive impact in the rural area as there will be organized employment with social security and financial benefits.

viii) Historical monuments etc., : The area is free of any historical monuments within the distance of 5 km.

11.3 Environmental Management :

- i) Temporary Storage & Preservation of top soil: The soil mixed with small granite boulders is preserved in the form of dumps and part of it will be utilized for plantation.
- ii) Year wise proposal for reclamation of land affected by mining activity during first five years: In this area except degradation of land no impact is expected on the area. The proposals for reclamation will be made after complete excavation of granite.
- iii) Programme of Afforestation, year wise for the initial five years. Indicating number of plants with name of species to afforested under different areas in hectares. The plantation will be undertaken at borders and around the dumps to avoid run – off material in the lease area in first five years period. The details of plantation is as follows.



Year	No. of plants	No. of Rows	Location	Species
1 st Year	20	1	South-west 70 RL	Eucalyptus
2 nd Year	20	1	South-west 65 RL	Eucalyptus
3 rd Year	20	1	Southern side	Gulmohar
4 th Year	20	1	South-east 60-65 RL	Eucalyptus
5 th Year	20	2	„ „ 70 RL	Gulmohar

The plantation undertaken on dumps are temporary since the dumps may be removed from site as and when the area is required for mining. The plants will be grown in joint planes and fractures zones also.

iv) Stabilisation and vegetation of dumps along with waste dump management year wise for the first five years:

Stabilisation and plantation of will be made under the programme mention above table.

v) Measures to control erosion/sedimentation of water regime: The aerial erosion and erosion due to water flow by rain water will affect the surface but no water regime is observed.

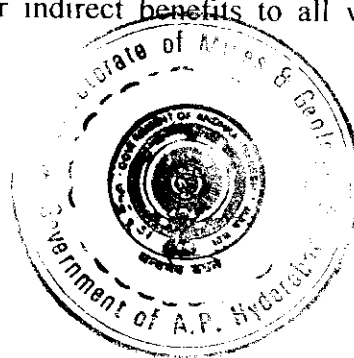
vi) Measures for dust suppression: Water sprinkling will be carried out on mine benches and haulage roads regularly. The dust arises at drilling hole will be suppressed by putting cloth at drilling hole. The laborers will be provided with Respirators etc., for using during drilling.

vi) Protective Measures to minimise ground vibrations and noise: To minimise ground vibrations it is proposed to use less quantity of explosives for blasting, reduce movement of heavy vehicles, maintain sufficient gradient of road, keeping good condition of machineries. To minimise noise it is proposed to keep compressor far from working spots and maintain machineries in good condition. However the ear-plugs will be provided to jack hammer operators.

viii) Treatment and disposal of water from the mine and beneficiation plant: In this area no water will be discharged from the mine.

ix) Measures for protection of historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity. No historical monuments or human settlements are there in or around the mine within 4 Km radius

x) Socio-economic benefits arising out of mining: The local people are engaged in mining. Due to establishment of these mines in this area the socio-economical condition of the area is developed enormously. There is a direct or indirect benefits to all wings of people including non- mining professionals.




This Mining Plan is Approved subject to the
Conditions/Stipulations Indicated in the
Mining Plan Approval Letter No.....
26008/MP-S/2003, dated. 21.10.2003

12.0 ANY OTHER RELEVANT INFORMATION :

The lessee company is following the minor mineral concession rules and metalliferous mines regulations 1961 and mines rules etc., The mining operations in this area is providing socio economical support to the local people. Therefore the existence of mining operations and quarry lease for commercial, dimensional block granite will be additional support for self employment as well as employment to the local people. The 'Srikakulam Blue' granite industry is a unique product available only at this part of the world. The characteristic wavy granite has got its own world popularity and enormous commercial demand. This granite is reaching far away places like China, Japan, Malaysia, Australia, Italy, Germany, America and Russian countries. Therefore this industry should be supported as the national interest.

The mining plan is prepared by


APPLICANT
(Authorised Signatory)

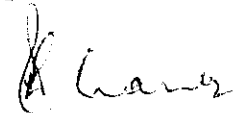
Place: Hyderabad.
Date: 22 / 8 / 2003.


S.N. SURESHA, RQP

(Reg.No.RQP/HYD/106/94/A)
(RQP/DMG/HYD/001/2001)
HYDERABAD



APPROVED


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

GEOLOGICAL RESERVES -
(2.607 H. - M/s Madhucon Granites Ltd.,)

Annexure : I

CS	Cat	CSA x (m ²)	CSI (m)	Geol. Res.(m ³)	% of Rec.	P. Gr. m ³	Waste m ³
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
AA'	Bld.	886	46	40756			
BB'	"	918	34	31212			
CC'	"	725	32	23200			
DD'	"	142	46	6532			
	Total			101700			
Less	20 % voids	*		20340			
	Boulders	Res.	*1	81360			
AA'	Pvd. Gr.	8850	46	407100			
BB'	"	7560	34	257040			
CC'	"	5310	32	169920			
DD'	"	2546	46	117116			
	Total			951176			
Less	20 % voids			190235			
	Pvd. Gr.	Res.	*2	760941			
Total	Of *1 + *2			842301	30	252690	589611

CS : Cross Section ; Cat.: Category; CSA : Cross Sectional Area; CSI : Cross Sectional Influence; Vol. : Volume; % of Rec. : Percentage of Recovery; P Gr.: Prime Granite Reserves;

- Voids between boulders and highly fractured granite.

Total applied area : 26070 m² Total Geol. Reser: 842301 m³,
Total Prime Reserves : 252611 m³,

Reserves locked in mines safety slope (60° angle) :

Location	length (m)	width(m)	height(m)	reserves (m ³)
Northern side boundary :	180	27	46	223560
Southern side boundary :	18	1	1	18
Eastern side boundary :	356	8	1	2848
Western side boundary :	371	20	46	341320
Total Reserves :				567746
Less 20 % void space (567746 x 20 %)				113549
Total reserves locked in mines safety slope				454197

Mineable Reserves = Geological Reserves - Reserves locked in mines safety slope

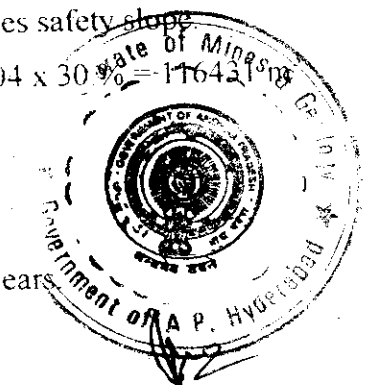
i.e., 842301 - 454197 = 388104 m³, Recoverable reserves : 388104 x 30 % = 116431 m³

Waste after prime reserves : 388104 x 70 % = 271673 m³.

The life of the mine is arrived as below:

Prime Mineable reserves = 116431 m³

Annual production = 801 m³ = 145.35, Say 145 Years



**PRODUCTION and DEVELOPMENT SCHEME
FOR FIRST 5 YEARS PERIOD**

(2.607 Ha. - M/s Madhucon Granites)

PRODUCTION:

(Please refer plate No. IV)

Yr.	Bench	SIZE OF THE PIT:			Volume (m ³)	% of Recovery	Prime Granite Produced (m ³)	Stony Waste (m ³)	B. L.
		Length (m)	Width (m)	Depth (m)					
I	2	3			4	5	6	7	8
I	1	40	7	1.5	420				122
..	2	..	..	2	560				120
	Total				980				
(-)	20 % Pod.	Void			196				
					784	30	235	549	
II	1	52	10	2.5	1300				125
..	2	..	..	3	1560				122
..	3	..	5	2	520				120
	Total				3380				
(-)	20 % Pod.	Void			676				
					2704	30	811	1893	
III	1	50	11	2.5	1375				130
..	2	..	..	..	1375				127.5
..	3	..	6	..	750				125
	Total				3500				
(-)	20 % Pod.	Void			700				
					2800	30	840	1960	
IV	1	48	5	1.5	360				137.5
..	2	..	11	3	1584				134.5
..	3	..	..	2.5	1320				132
..	4	..	6	2	576				130
	Total				3840				
(-)	20 % Pod.	Void			768				
					3072	30	922	2150	
V	1	48	13	2.5	1560				140
..	2	..	..	..	1560				137.5
..	3	..	..	3	1872				134.5
	Total				4992				
(-)	20 % Pod.	Void			998				
					3994	30	1198	2796	

Yr/B : Year / Bench; BL : Bottom Level;

Total Granite Produced	: 13354 m ³
Annual Granite Produced	: 2671 m ³
Total Prime Granite Produced	: 4006 m ³
Annual Prime Granite Produced	: 801 m ³
Total Stony Waste Produced	: 9348 m ³
Annual Stony Waste Produced	: 1870 m ³



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

NOTICE NO. 24115/R1-3/2003.

DATED: 12.08.2003.

Sub: Mines and Quarries - Quarry Lease application - Extent: 2.607 Hectares - S.No. 53 - Village: Tekkali - Mandal: Tekkali - Dist: Srikakulam - in favour of M/s. Madhucon Granites Limited for a period of 20 years - Approved Mining Plan called for - Reg.

Ref: 1. From M/s. Madhucon Granites, Q.L. Application dt: 28.6.2003.
2. From the ADM&G., Tekkali, Srikakulam Dist Lr.No. / File No. 668/Q/2003, Dated: 31.7.2003.

M/s. Madhucon Granites Limited in the reference 1st cited, have applied for grant of Quarry Lease for Colour Granite over an extent of 2.607 Hectares in Sy.No. 53 of Tekkali Village, Tekkali Mandal, Srikakulam District.

2. The Asst. Director of Mines and Geology, Tekkali, Srikakulam in the reference 2nd cited, has stated that the applied area is held under P.L. by the applicant. Further, the Asst. Director has recommended for grant of Quarry Lease for Colour Granite over an extent of 2.607 hectares in Sy.No. 53 of Tekkali Village, Tekkali Mandal, Srikakulam District in favour of M/s. Madhucon Granites Limited for a period of 20 years.
3. The Director of Mines and Geology, Hyderabad after careful examination of the above proposals of the Asst. Director of Mines and Geology, Srikakulam has proposed to grant the Quarry Lease over an extent of 2.607 Hectares in Sy.No. 53 of Tekkali Village, Tekkali Mandla, Srikakulam District in favour of M/s. Madhucon Granites Limited for a period of 20 years subject to the submission of Approved Mining Plan within six months from the date of receipt of this Memo.
4. Therefore, M/s. Madhucon granites Limited are 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.
5. Further, they are also informed that if they fail to submit the Approved Mining Plan 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 and Geology.

Sd/- T. Devendranath.

DIRECTOR OF MINES AND GEOLOGY.

Attested//

for DIRECTOR OF MINES AND GEOLOGY.

To:

M/s. Madhucon Granites Limited,

1-7-70, Jubli Pura, Khammam. (BY RPAD)

Copy to Asst. Director of Mines and Geology, Tekkali, Srikakulam Dist.

Copy to A.M.P. Section

Photo No. 1: Exposure of Granite Boulders.

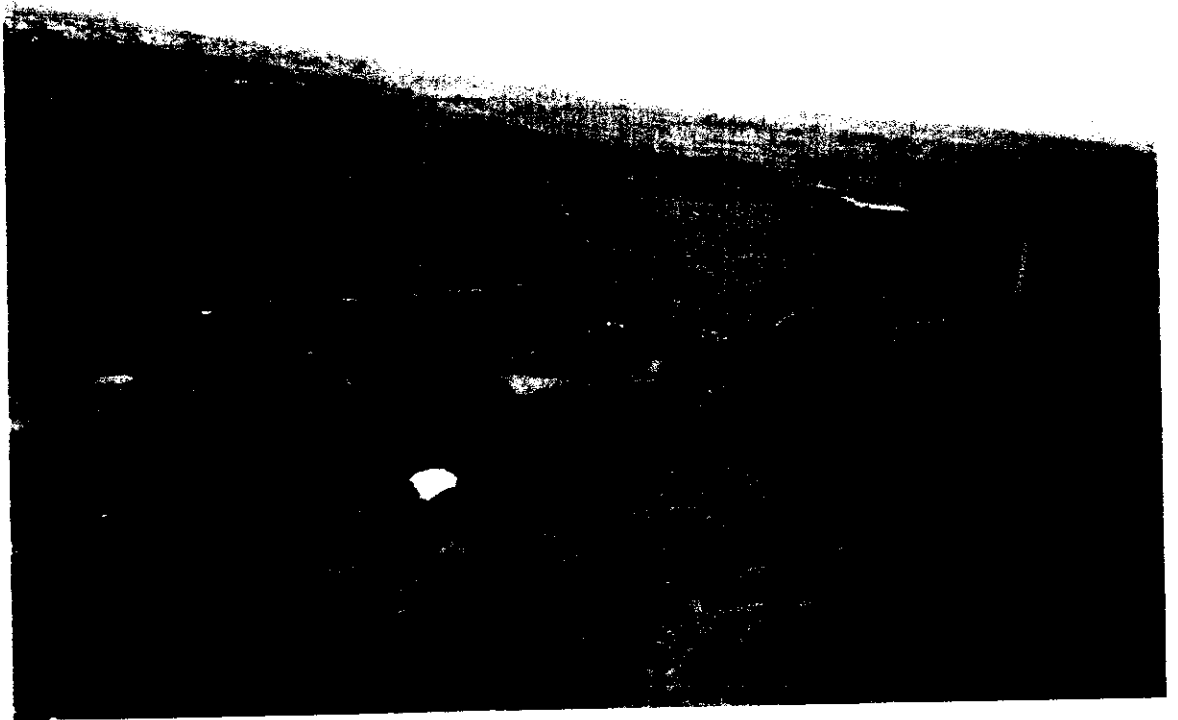


Photo No. 2: Workings at Pit No. 1. Secondary Cutting of Boulder.

