

**MINING PLAN FOR COLOUR GRANITE  
OVER AN EXTENT OF 3.26 Hectare, IN S.No. 1 OF ADDUKONDA VILLAGE,  
TEKKALI 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,  
Khamman



**APPROVED**

**PREPARED BY**

Sri. S.N. SURESHA, M.Sc., ( Geo),  
Recognised Geologist,

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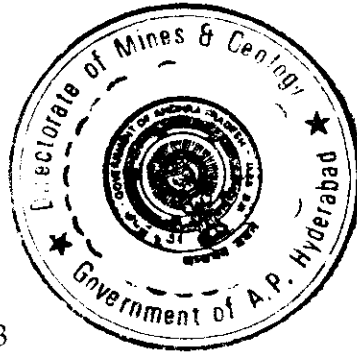
(2003)

**DECLARATION**

**Certified that the Mining Plan for Colour Granite,  
Over an extent of 3.26 Hectare,  
In S. No. 1 of Addukonda Village, Tekkali Mandal,  
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 : 22 - 08 - 2003



*Shanba Suresha*  
Applicant

**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 3.26 Hectare,  
at S.No. 1 of Addukonda Village, Tekkali 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

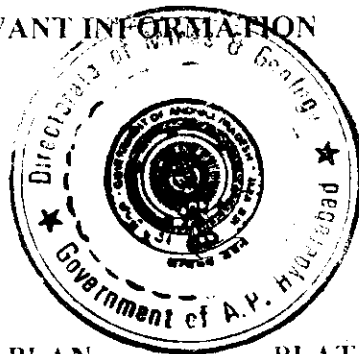
Date : 22 / 08 / 2003.

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

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This Mining Plan is Approved subject to the  
Conditions/Stipulations Indicated in the  
Mining Plan Approval Letter No. ....  
26429/MP.S/2003, dated 2/10/2003

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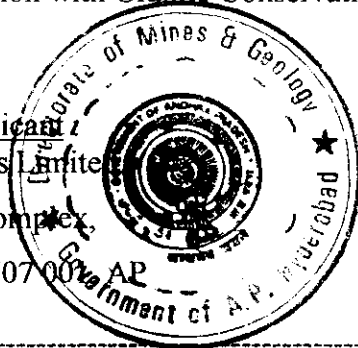
**1.0 INTRODUCTION :**

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 parts 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 3.26 Hectare at S. No. 1 of Addukonda Village, Tekkali Mandal, Srikakulam Dt. AP State.

Initially the granite was identified in this area by M/s Agarwal Granites, Prop. Sri. Nareshkumar Agarwal, Kanchili Village and Mandal, Srikakulam Dt. After field study they have applied for Prospecting License. The Director of Mines and Geology Hyderabad has granted PL in their favour vide Proceeding No. 24473/R1-38/98 dated 2/9/2000 for a period of 2 years from the date of Execution. The PL was executed at office of A.D.M & G Srikakulam vide their proceeding No. 3141/Q/98 dated 9/10/2000. Subsequently the PL has been transferred in favour of M/s Madhucon Granites Ltd., as per Office of D.M & G Hyderabad Proceeding No. 29348/R1-(3)/2002, dated 4/10/2002 for the remaining period ending on 8/10/2002. The transfer deed was executed at office of A.D.M & G Srikakulam, vide their Proc. No. 3141/Q/98 dated 4/10/2002. The PL holder has submitted the Report along with QL application requesting the Director of Mines and Geology to convert their PL into QL. 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. 36857/R1-3/2002 dated 20/08/2003 for grant of Quarry Lease. 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.

**2.0 GENERAL :**

2.1 Name of the applicant  
M/s. Madhucon Granites Ltd.  
Regd. Office : Madhu Complex,  
Jublipura, Khammam- 507000



**APPROVED**

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

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° 10' 13" Longitude and 18° 36' 20" 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	Addukonda	Tekkali	1	3.26	Govt. Land

Boundaries : Boundaries :- West : M/s Blue Wave Granite ; East : QL area of M/s Rathina Granites ;  
North : M/s T. S. Rocks ; South : QL area of M/s Ozoon Granites.

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 at Anjinapuram village. The drinking water is available from the open well situated at 500 m away south.

### 3.0 GEOLOGY AND RESERVES:

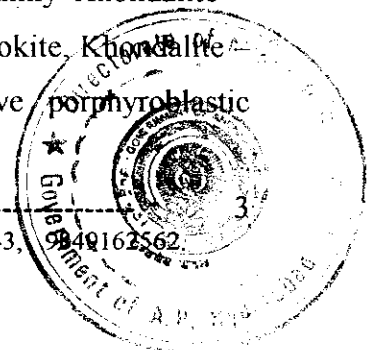
#### 3.1 Brief description of Topography (Physiography) :

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 145 m RL. Whereas lowest level is recorded to be 90 RL at south. The height ranges from 50 to 55 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 plan 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



chamokite and granite. Out these migmatite chamokite 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 theses are migmatite and migmatite-chamokites. The leptynites are called as 'Kashmir White'. The wavy structure forms due to migmatitisation of Charnokites. The general geological succession of the area is as follows.

Geological Era	Geological Units
Phenerozoic	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	   	: : :
Basement Rock	:	Not Encountered.

The subject area is having height of 72 m towards south from northern boundary. The average height is measured to be 30 m from contact of lease boundary. The granite is bluish gray in colour, medium to coarse grained, hard, compact, massive and crudely foliated. The rock occurs on small hillock with large bouldery outcrops concealed and embedded in soil. It contains concealed quartz-feldspathic rock with subordinate amount of garnet, hyperstherne, biotite and magnetite. The feldspar shows kaiolinisation effect. The magnetite is oxidized at places. The garnet and Hyperstherne show pyroblastic growth. The rock shows penetrative cracks and hairline fractures. The rock is considered to be archaeons age falling under Eastern Ghat hill range of





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 under aphanetic 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. The boulders are embedded in thin layer of lateritic soil. Due to presence of soil in between boulders shrubs and bushes are grown all around. The granite has vertical and oblique joints which are spaced allowing production of large stones.

#### 3.4 Brief description of Lithology : ( not uniform)

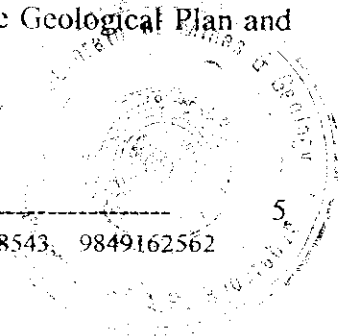
Soil Cover	:	0 - 0.2 m on surface (along with joints the soil cover is there, which ranges from 0.2 to 2 m)
Boulders Zone	:	0 - 5 m (thickness varying from 2 to 8 m at different places) On the surface start from bottom of the hill to top of the hill.
Sheet rock.	:	5 - 25 m to 30 m (average height) from top of the hillock (geologically confirmed).

#### 3.5 Details of Prospecting:

##### (i) Already carried out:

The applied area is having exposures of different size boulders all around. Therefore the prospecting is not done. However the applicant has conducted theodilite survey, geological mapping and sampling to know the market value of their granite.

The lease area was surveyed by adopting close traversing method. A temporary bench mark was established at the southern corner of the PL area. Contours have been drawn at 5 m interval to depict the relief of the area. Based on above work the Surface Geological Plan and Cross Section has been prepared on 1 : 500 scale.



(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 Categorisation:

In this area the granite is exposed to surface from 450 RL north to 522 RL south with boulders of varying sizes from lease boundary. Therefore the reserves exposed to surface is arrived as proved reserves. 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. Hence 30 % recovery is considered to arrive Recoverable reserves in boulders start from top to bottom of the area. The details of Geological Reserves is given in Annexure No. I. However the brief description of reserves is as following:

Details of Reserves and their categorization:

Zone	Vol. (m <sup>3</sup> )	% Rev.	Prime Volume (m <sup>3</sup> )	Waste (m <sup>3</sup> )
Boulders	153912			
Proved Reserve	522687			
Total Reserves	676599			
Less 20% Voids	135320			
Total	541279	30	162384	378895

Total Geological Reserves = 541279 m<sup>3</sup>

### 3.8 Mineable reserves and the life of the mine:

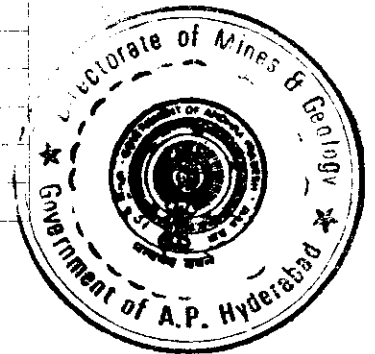
The reserves locked in mines safety slope is considered during calculation of mineable reserves. The quantity of such reserves is arrived to be 129932 m<sup>3</sup>. Therefore the mineable reserves is arrived as following

Geological reserves of 541279 - Reserves locked in mines safety slope 129932 = 411347 m<sup>3</sup>.

Prime Mineable Granite : 411347 x 30 % recovery = 123404 m<sup>3</sup>

Waste Expected : 411347 - 123404 = 287943 m<sup>3</sup>

The details of calculation is given in Annexure I. The applicant is proposed to produce 366 m<sup>3</sup> of prime dimensional granite per year. There fore the life of the mine is arrived as below:



Prime Mineable reserves	123404 m <sup>3</sup>	
-----	= -----	= 337.17 yrs. Say 337 years.
Annual prime Granite production	366 m <sup>3</sup>	

#### 4.0 MINING:

In this area partially mechanized open cast mining is adopted.

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

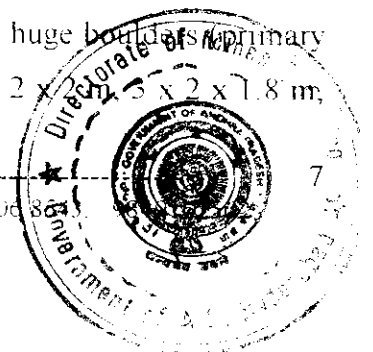
The granite in this area is exposed to surface. The surface of the area is full of boulders, therefore initially the production will be won by cutting boulders to required size blocks.

##### (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. The granite in this area is exposed to surface, therefore development work is not expected. However the development work such as removal of soil existing in between boulders, small stones and weathered granite on surface will be done simultaneously along with production. Such kind of work is negligible in this area. During production the stony waste will be produced by chipping and cutting of granite. The wastes produced during production is anticipated to be 854 m<sup>3</sup> per-year. In first 5 years total quantity of 4270 m<sup>3</sup> of waste will be generated. Such kind of waste will be disposed off at low levels of the hillock. The details of waste removed during development and production in this 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 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.

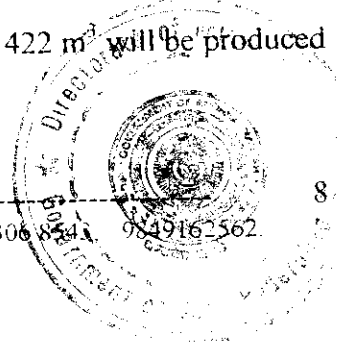
v) Production for first five years period :

In first 5 years period it is proposed to continue the mining to produce granite at 482.5 to 470 RL north- eastern part of the area where the feasibility of mining is comfortable. In first year the production will be resumed by cutting boulders in first bench of 77.5 m length, 8 m width and 2.5 depth. At the end of the year total quantity of 1550 m<sup>3</sup> volume will be excavated. In that volume 20 % voids is anticipating, that volume will be removed from total volume, then the net quantity of 1240 m<sup>3</sup> of granite will be produced. Anticipating 30% recovery the recoverable granite of 372 m<sup>3</sup> will be produced. During this process 868 m<sup>3</sup> of stony waste will be generated. At the end of the year the bottom level will reach 479.5 RL at western side and 477.5 RL at eastern side.

In second year the bench of 75 m length 8 m width and 2.5 m height will be cut to excavate 1050 m<sup>3</sup> of volume. Deducting 20 % void space net quantity of 1200 m<sup>3</sup> will be produced. Anticipating 30% recovery. The prime granite of 360 m<sup>3</sup> will be produced. At the end of the year 840 m<sup>3</sup> of waste will be produced. The bottom RL will reach 477.5 m at western side and 475 RL at eastern side.

In 3<sup>rd</sup> year it is proposed to produce 341 m<sup>3</sup> of prime granite by cutting bench of 71 m length, 8 m width and 2.5 m height. At the end of the year 795 m<sup>3</sup> of waste will be generated. The bottom RL is expected to reach 475 m RL at western side and 472.5 m RL at eastern side.

In 4<sup>th</sup> year it is proposed to produce 528 m<sup>3</sup> of prime granite by utilising 64 m length, 11 m width and 2.5 m height. The volume of 1760 m<sup>3</sup> will be excavated, in that volume 20 % void space will be deducted to win granite of 1408 m<sup>3</sup>. The prime granite of 422 m<sup>3</sup> will be produced



at the rate of 30 % recovery and waste granite of 986 m<sup>3</sup> will be produced. The bottom level will reach 472.5 m at western side and 470 m RL at eastern side..

In 5<sup>th</sup> year the production will be done at 470 RL. In this year it is proposed to produce 335 m<sup>3</sup> of prime granite, by cutting 2.5 m bench in an area of 62 m length and 9 m width. At the end of the year 781 m<sup>3</sup> of waste will be generated, the bottom RL of 470 m at western side and 467 RL at eastern side will be reached. The details of production of granite, waste and weathered granite removal in first 5 years 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. However plantation will be made on dumps and at joint places where soil is there.

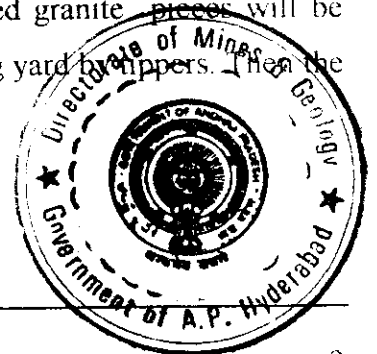
Vi-(b) Type, capacity and number of equipment for the type of mechanization proposed:

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

Sl. No.	Type of machinery	Capacity	Unit
01	Compressors	600 cpm	2
02	Poclain	2.75 m <sup>3</sup> boom length -6.4 m	1
03	Tippers	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 regular 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:

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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 4270 m<sup>3</sup> in first 5 years period.

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

The life of the mine is arrived to be 337 years. In this period the quantity of waste is anticipated to be about 287943 (mineable reserves of 411347 x 70 % waste) m<sup>3</sup> is anticipated to be stony waste generates during production.

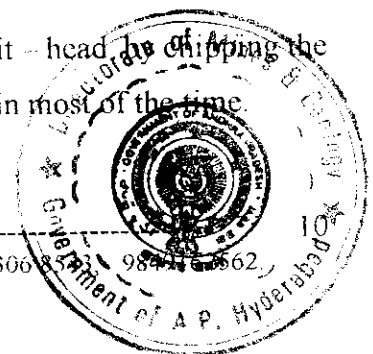
#### 6.2 Measures to be adopted for Solid Waste:

The waste produced will be stacked at southern side of the area (out side the lease)

6.3 Liquid Wastes: In this area no Liquid waste is anticipated.

#### 7.0 DRESSING:

In this area the dimensional blocks of granite will be done at pit - head, by chipping the sides etc., However in rope cutting the dressing problem will not arise in most of the time.



8.0 DESCRIPTION OF GRANITE PROCESSING PLANT:

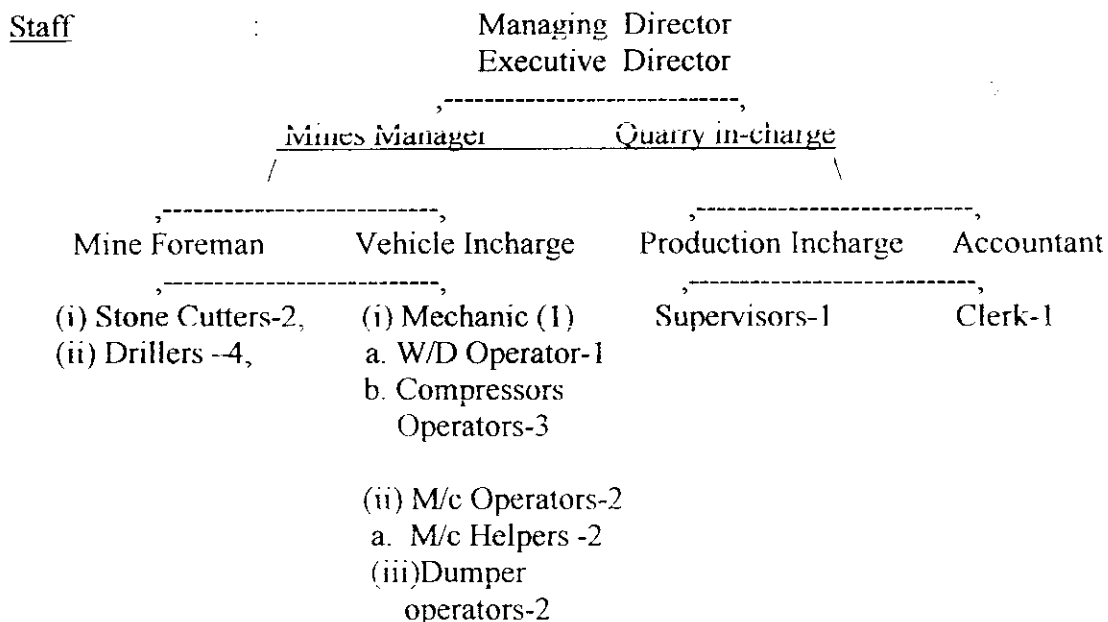
The applicant is having 100 % export oriented granite processing plant at Gollagudem village Khammam District. The approximate annual production is said to be 1000 Sq. Ft., and 150 Tons (6 containers) of granite monuments and tomb stones in a month. They have employed 65 man power. The details of machines, number of machineries & workers is given in Annexure IV.

9.0: MARKET ANALYSIS:

Assured and expected supply contracts: The applicant is a 100 % export organisation having assured supply orders for their granite blocks and monuments in China, Japan, Europe, Australia, USA and Canadian markets.

Pattern of demand : The M/s Madhucon Granite Ltd. is a Brand name with international fame produces beautiful monument and granite articles. Therefore it has got world popularity & good demand in market.

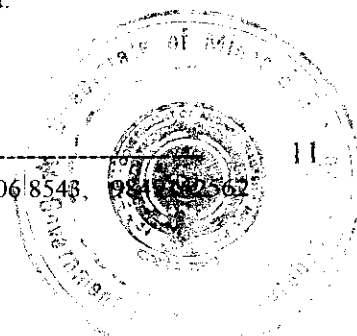
10.0 ORGANISATION CHART FOR THE QUARRY AND THE CAPTIVE UNIT:



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:



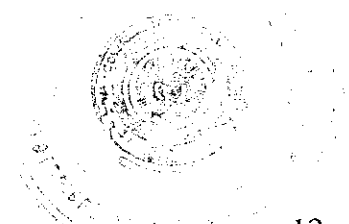
11.1. Base line information:

- 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 Km	Population
1	Tekkali	East	3	20000
2	Palasa	East	6	5000
3	Tarlakota	South	4.5	1000
4	Kasibugga	South	5	1000
5	Lingavalsa	East	2	500
6	Anjinapuram	North	1	500

- vi) Public Buildings, places and monuments: There are no public building, places and monuments within 1.5 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 3.26 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 <sup>3</sup>	360 mg/m <sup>3</sup>	
RSPM =	60 mg/m <sup>3</sup>	120 mg/m <sup>3</sup>	
SO <sub>2</sub> =	40 mg/m <sup>3</sup>	80 mg/m <sup>3</sup>	
NO <sub>2</sub> =	40 mg/m <sup>3</sup>	80 mg/m <sup>3</sup>	
CO =	1.0 mg/m <sup>3</sup>	5.0 mg/m <sup>3</sup>	

- 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
Sound Level dBA :	8	85	90	95	100	105	110



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 :

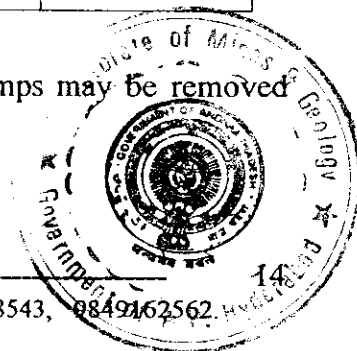
i) Temporary Storage & Preservation of top soil: The soil mixed with small granite boulders is preserved in the form of dumps and part of it will be utilized for plantation.

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 in soil cove existing in between gaps of boulders (joints) at lease borders and around the dumps to avoid run – off of material in the lease area in first five years period. The details of plantation is as follows.

Year	No. of plants ( Seedlings )	No. of Rows	Location	Type of Plants
1 <sup>st</sup> Year	20	1	Northern side	Eucalyptus
2 <sup>nd</sup> Year	20	1	North –western side	Eucalyptus
3 <sup>rd</sup> Year	20	1	South-eastern side	Gulmohar
4 <sup>th</sup> Year	20	1	South-western side	Eucalyptus
5 <sup>th</sup> Year	20	2	Southern side	Gulmohar

The plantation undertaken on dumps are temporary since the dumps may be removed from site as and when it is required for mining.



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

As explained in above para the plantation will be undertaken to avoid run off of waste. The dumps are stabilized and shaped trapezoid ally. The angle of repose is in such a manner that the run off is avoided. The trench will be dug around the dump to avoid run off

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.

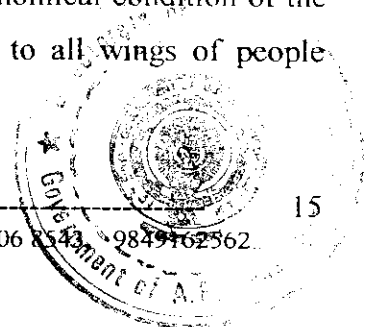
vi) Measures for dust suppression: Water sprinkling will be carried out on mine benches and haulage roads regularly. The dust arises at drilling hole will be suppressed by putting cloth at drilling hole. The laborers will be provided with Respirators etc., for using during drilling.

vii) 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.....  
26429/MP-I/2003 dated 27-10-2003

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.

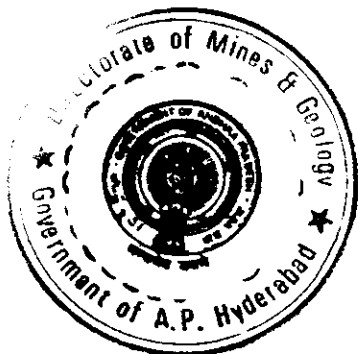
The mining plan is prepared by

  
APPLICANT  
(Authorised Signatory)


  
S.N. SURESHA, RQP

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

(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 -**  
(3.00 H. - M/s Madhucon Granites Ltd.,)

Annexure : I

CS	Cat	CSA x (m2)	CSI (m)	Vol. (m3)	% of Rec. (6)	P Gr. m <sup>3</sup> (7)	Waste m <sup>3</sup> (8)
(1)	(2)	(3)	(4)	(5)			
AA'	Bld.	675	46	28750			
BB'	„	850	50	42500			
CC'	„	825	50	41250			
DD'	„	812	51	41412			
	Total-1*			153912			
AA'	Pvd. Gr.	2260	46	103960			
BB'	„	2640	50	132000			
CC'	„	2392	50	119600			
DD'	„	3277	51	167127			
	Total-2*			522687			
	1* + 2*		(3*)	676599			
	20% voids of	3*	(-)	135320			
	Total	Res.		541279	30	162384	378895

\* Voids and fracture area volume are deducted from the total (boulders) reserves.

Total applied area : 32600 m<sup>2</sup>;

Total granite bearing area : 32600 m<sup>2</sup>

Total Geol. Reser : 541279 m<sup>3</sup>,

Reserves locked in mines safety slope (R L M S S) (60° angle) :

Location	length (m)	width(m)	height(m)	reserves (m <sup>3</sup> )
Northern side boundary	194	14	23	62468
Southern side boundary	148	9	16	21312
Western side boundary	161	10	29	46690
Eastern side boundary	212	2.5	4	2120
Total Reserves :				132590

Net R L M S S After deducting 20 % voids in 132590 - 2658 = 129932 m<sup>3</sup>

Mineable Reserves : 541279 - 129932 = 411347 m<sup>3</sup>.

Total Prime Mineable Reserves (411347 x 30 %) : 123404 m<sup>3</sup>.

Total Waste in mineable reserves (411347 - 123404) : 287943 m<sup>3</sup>

The applicant is proposed to produce 366 m<sup>3</sup> of prime dimensional granite per year. The life of the mine is arrived as below:

$$\frac{\text{Prime Mineable reserves } 123404 \text{ m}^3}{\text{Annual production of Prime Granite } 366 \text{ m}^3} = 337.17 \text{ yrs.}$$



**PRODUCTION and DEVELOPMENT SCHEME  
FOR FIRST 5 YEARS PERIOD  
(3.26 H. - M/s Madhucon Granites Ltd.,)**

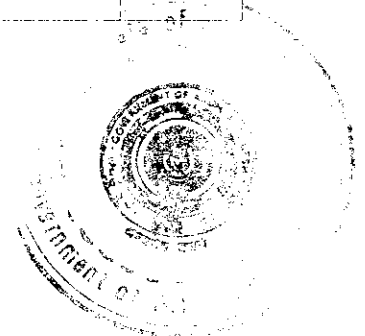
**PRODUCTION:**

(Please refer plate No. IV)

Yr.	Bench	SIZE OF THE PIT:			Volume (m <sup>3</sup> )	% of Rec.	Prime Gr. Produced (m <sup>3</sup> )	Stony Waste (m <sup>3</sup> )
		Length (m)	Width (m)	Depth (m)				
1	2	3			4	5	6	7
I	I	77.5	8	2.5	1550			
(-)	20 %	Voids			310			
Net	Prod.				1240	30	372	868
II	I	75	8	2.5	1500			
(-)	20 %	Voids			300			
Net	Prod.				1200	30	360	840
III	I	71	8	2.5	1420			
(-)	20 %	Voids			284			
Net	Prod.				1136	30	341	795
IV	I	64	11	2.5	1760			
(-)	20 %	Voids			352			
Net	Prod.				1408	30	422	986
V	I	62	9	2.5	1395			
(-)	20 %	Voids			279			
Net	Prod.				1116	30	335	781

Yr/B : Year / Bench; Rec. : Recovery; Gr.: Granite;

Total Granite Produced	:	6100 m <sup>3</sup>
Annual Granite Produced	:	1220 m <sup>3</sup>
Total Prime Granite Produced	:	1830 m <sup>3</sup>
Annual Prime Granite Produced	:	366 m <sup>3</sup>
Total Stony Waste Produced	:	4270 m <sup>3</sup>
Annual Stony Waste Produced	:	854 m <sup>3</sup>



S.N. SURESHA  
RQP

RQ

1/23  
1/24  
1/25  
2001

GOVERNMENT OF ANDHRA PRADESH,  
DEPARTMENT OF MINES AND GEOLOGY, HYDERABAD-63.

Notice No. 50357/M-3/202.

Dated: 20-03-2003.

Sub: Mines and Quarries - Quarry Lease Application -  
Extent: 3,200 Hectares - Sy.No. 1 - Village: Adakonda -  
Taluk: Birkali - Dist: Srikakulam in favour of  
M/s. Madhura Granites Limited for a period of  
20 years - Approved Mining Plan called for - Reg.

1. From M/s. Madhura Granites Limited, P.L.  
application dated: 10-10-2002.

2. From the A.M.G., Birkali Br. Co./P.L.O. Co.  
D.O. No. 1001, dt: 01.11.2002.

-cc-cc-

M/s. Madhura Granites Limited in the reference 1st cited,  
have applied for grant of quarry lease for Colour Granite over  
an extent of 3,200 Hectares in Sy.No. 1 of Adakonda Village,  
Birkali Taluk, Srikakulam District.

The A.M.G., Birkali, Srikakulam District, Birkali  
in the reference 1st cited, has found that the applied area  
is free from any of the Applicant. Further, the Asst. Director  
has recommended for grant of quarry lease for Colour Granite over  
an extent of 3,200 Hectares in Sy.No. 1 of Adakonda Village,  
Birkali Taluk, in Srikakulam District in favour of M/s. Madhura  
Granites Limited for a period of 20 years.

The Director of Mines and Geology, Hyderabad after  
careful examination of the above proposals of the Asst. Director  
of Mines and Geology, Birkali has proposed to grant the Quarry  
Lease over an extent of 3,200 Hectares in Sy.No. 1 of Adakonda  
Village, Birkali Taluk, Srikakulam District in favour of  
M/s. Madhura 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 order.

Therefore, M/s. Madhura 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.

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



*[Handwritten Signature]*

S. N. Suresh  
M. S.

Recognized Geologist  
RGP/2002/10/20



**A Photograph showing the exposed bouldery outcrop**



**A photograph showing the exposed bouldery outcrop**

*S. N. Suresha*

**S. N. Suresha**  
M. Sc.

Research Geologist  
OF DMO, No. 001, 2001