

**MINING PLAN ON COLOUR GRANITE**  
Over an extent of 15.00 Hectares, Sy.No 1,  
Adukonda (V), Tekkali (M), Srikakulam Dist. A.P.

For

*10008222225*

M/s Gallop Granites Ltd  
Calcutta

*M/S Kaligot International  
Limited*



**APPROVED**

Prepared by

V.T. Chander  
Consultant Geologist & RQP  
(RQP/DMG/HYD/02/2001)  
# 202, H.No 10-1, Mahalaxmi Ganapathi Complex,  
P&T Colony, Dilsukhnagar, Hyderabad 500 60.

**CERTIFICATE**

This is to certify that Mining Plan in respect of Quarry Lease area over an extent of Over an extent of 15.00 Hectares, Sy.No 1, Adukonda (V), Tekkali (M), Srikakulam Dist. 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

For GALLOP GRANITES

*[Handwritten Signature]*

Di

Date :

Place :

For M/s Gallop Granites Ltd  
Caicutta




## CERTIFICATE

The provision of Granite Conservation and Development Rules 1999 have been observed in the Mining Lease of COLOURED GRANITE, over extent of Over an extent of 15.00 Hectares, Sy.No 1, Adukonda (V), Tekkali (M), Srikakulam Dist. Andhra Pradesh. For M/s Gallop Granites Ltd. Calcutta

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

Certified that the information provided in the mining Plan is correct to the best of my knowledge

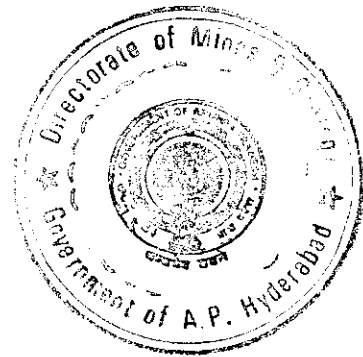
Date : September 18, 2003  
Place : Hyderabad

  
RQP  
(V.T. Chander)



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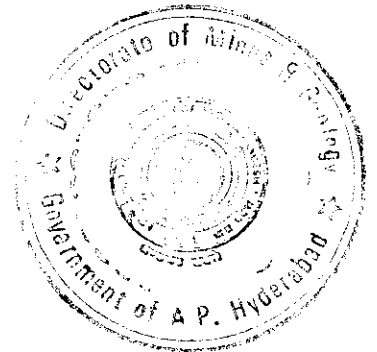


**LIST OF PLATES**

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**LIST OF ANNEXURES**

I Copy of the Notice 4350/Q/97 dated 19-12-1997



**MINING PLAN ON COLOUR GRANITE**  
Over an extent of 15.00 Hectares, Sy.No 1,  
Adukonda (V), Tekkali (M), Srikakulam Dist. A.P.

For  
**M/s Gallop Granites Ltd**  
**Calcutta**

By

**V.T Chander, Consultant Geologist & RQP**

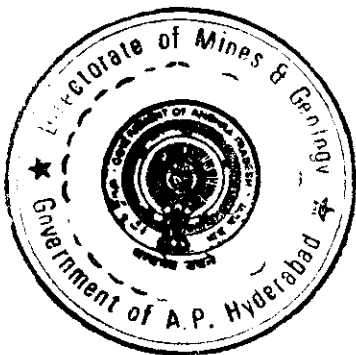
This Mining Plan is Approved subject to the  
Conditions/Stipulations Indicated in the  
Mining Plan Approval Letter No.....  
9342/M/2/03..... dated 12-11-2003

**1.0 Introduction**

M/s Gallop Granites Ltd, Calcutta., a private Limited, was granted Quarry lease for 15 years for colour granite over an extent of 15.00 hectares spread over in Sy.No 1 of Addukonda village, Tekkali Mandal, Srikakulam Dist. A.P. Vide Director, Department of Mines and Geology, Hyderabad. Proceedings No. 23091 /R1-3b/94 dated 08-12-1997. The lease deed was executed on 19-12-1997 and permission was granted by the Asst. Director, Mines and Geology, Srikakulam vide No.4350/Q/97 dated 19-12-1997 to commence Quarry operations.

As per the GCDR Rule 17 of 1999, all the owners of the existing quarries required to submit the mining plan to the Director of Mines & Geology, Hyderabad. For approval within stipulated time

M/s Gallop Granites Ltd, Calcutta., Approached Sri V.T. Chander Consultant Geologist and RQP (RQP/DMGHyd/02/2001) For preparation of Mining Plan in the above mentioned quarry. Accordingly Mining Plan is prepared as per the guidelines given by Govt. India. Ministry of Steel & Mines, GCDR Rules 1999, for the existing quarry.



**APPROVED**

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

## 2.0 GENERAL

- 2.1 **Name and address the applicant** : M/s Gallop Granites Ltd.  
Sagar Estate,  
Suit No. 6, 5<sup>th</sup> Floor,  
2- Clive Ghat Street,  
Calcutta -700001.
- 2.2 **Status of the applicant** : Limited Company
- 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  
H.No. 10-1 Flat No. 202  
Mahalakshmi Ganapathi  
Complex, P&T colony,  
Dilsuknagar.  
Hyderabad - 500 060  
☎ : 24068218, 55618351
- 2.5 **Name and address of the Prospecting Agency** : M/s Gallop Granites Ltd
- 2.6 **Details of the Area**

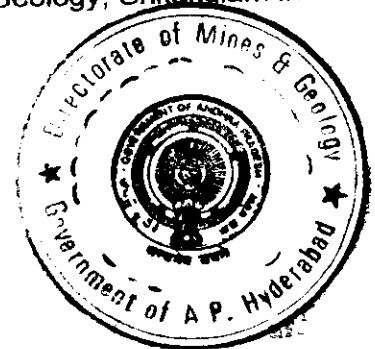
The applied area falls in the Survey of India Toposheet No.74 B/2 and is bounded East Longitude 84°- 12'-00" and North Latitude 18° - 38'-00". It is situated 5 Km North West of Tekkali. The road leading from Tekkali to Temburu will lead to the site. The location of the area is indicated in key cum location Map (Plate I).

**Table No.1 Details of the Area**

Dist./State.	Mandal	Village	S.No.	Extent	Ownership Of Occupancy
Srikakulam	Tekkali	Addukonda	1	15.00 Hec	Govt. Land (Existing Quarry)

- 2.7 **Period for which Quarry lease was granted = 15 years**

Cadastral Map certified by the Asst. Director of Mines & Geology, Srikakulam in favor of M/s Gallop Granites Ltd is given as Plate No II.



## 2.8 Infrastructure and Communication

- The applied area is 5 Km North West of Tekkali. The area can be approached by road from Tekkali –Temburu will lead to site.
- Amenities like Post & Telegraph office; Police station, Primary Health center etc. are available at Tekkali.
- Tekkali is the Mandal headquarters.
- Vishakapatnam port is about 150 km from area.
- Electricity is available at the Quarry area. The area is having good ground water potential.
- The ground water level is about 6 to 7.0 Mts below ground level at the foot hill.

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.

### Boundaries

North : Steraling Stone Granites	South : Barren Lands
East : Unleased Granite Deposit,	West : Dhanalakshmi Granites
NE : Barren Lands	SW : Pavani Granites
NW : Chatti Hanumantha Rao Lease Area & S. Shiva Prakash Lease Area	

## 3.0 GEOLOGY

### 3.1 Physiography

The Quarry area is located on hill; Addukonda steeply sloping due southwest & west the relief of the area is 110 Mts. Vegetation is developed in between the joints and soil areas.

### 3.11 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 actuate trend with west ward convexity. The NNE –SSW trend in the southern part of the belt changes NE-SW in the North. EGMB is divided into 3 longitudinal zones viz.

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

While in the northern parts in Srikakulam, Vizianagaram & Vishakapatnam Districts the central Khondalite Zone occupies major part of the area. Where as





Western Charnockite Zone occurs in the Southern part. The rocks in this belt are represented high-grade Granulite facies of Metamorphism and suffered by complex deformation. The stratigraphic succession of EGMB is as follows :

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

In Srikakulam district the EGMB is represented by wide range of litho units Viz: Charnockites, Khondalites, Twopyroxene 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 Coastline.

### 3.2 Geology of the Area

The Migmatites and Migmatized Charnockite deposits are commercially known as "Srikakulam Blue". The Migmatite essentially consists of Blue Quartz and Bluish Grey to Light Grey Felspar with accessory minerals like Hypersthene, Hornblends and Biotite. The rock displays wavy banding, ptygmatic folding of bands, paleosom – mesosom – leucosom and minimal lineation. A number of parallel slips trending N-S, NNW-SSE and NNE-SSW cut across the wavy banding, pinching and displacing the bandings, which imparts additional beauty to the stone besides its blue colour. The arrested enclaves of Charnockite (locally known as oil patches) and healed hairline fractures (known as white and coloured lines) cutting across the wavy banding are considered defects.

Three sets of major joints :

1. N – S
2. N 35° W – S 35° E
3. E – W

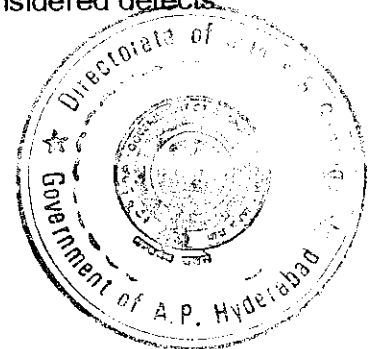
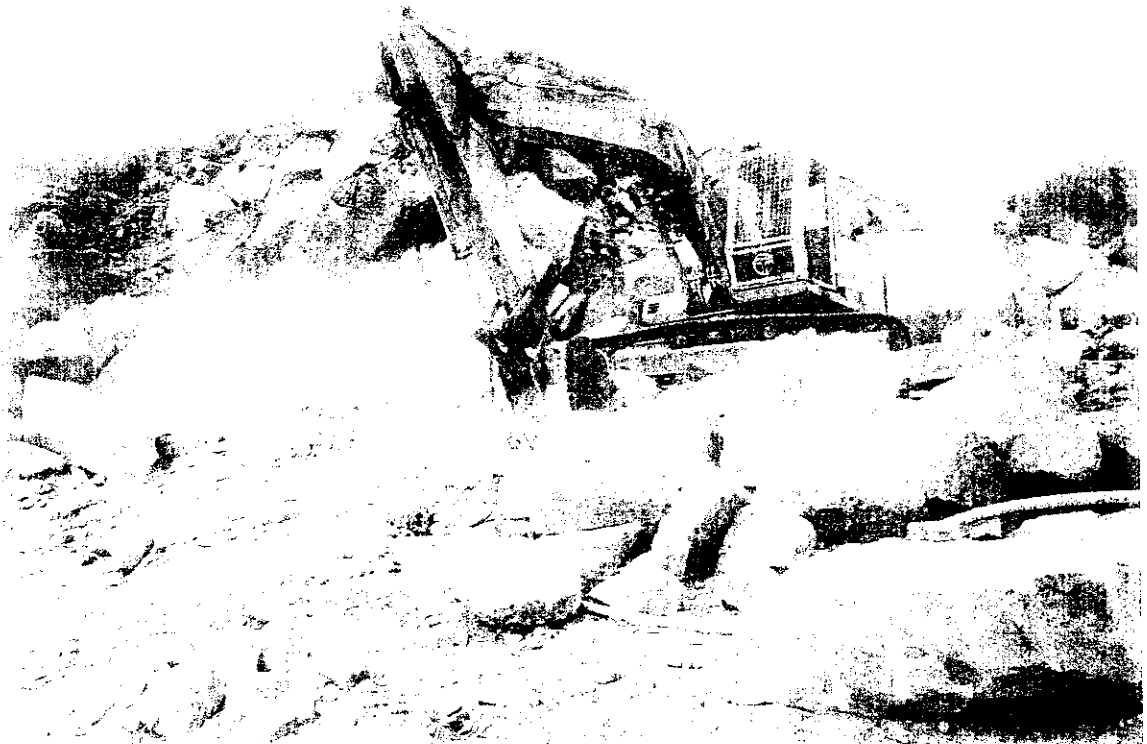


PHOTO SHOWING VIEW OF THE QUARRY



PHOTO SHOWING PRIMARY SPLITTING



#### 4.0 Exploration / Mining activity

##### 4.1 Present Status

The Mining Plan is prepared for the existing Granite Mine under operation since 1997, by the company. The Mine is in operation since 1999, exploration data is not available.

#### Mining Operations Carried Out

The deposit was occurring as both floating boulders embedded in the soil and weathered zone. The quarry was opened during the year 1998. In the first year developmental operations carried out include :

- Clearing of bushes on the deposit, removal of soil cover and small floating boulders, Talus etc.
- Laying of roads on the deposit and developing the infrastructure at quarry site, such as Shelters, Office Room, Lavatory, Drilling of Borewell for Drinking Water and Magazine etc.
- Deployment of Excavator for removal of over burden and boulders.

##### Pit No. 1

The mining operations were carried out starting from South of the lease area towards north directions. A pit of 8 Mtrs was developed in 60 x 80 x 3 dimensional area from which 14,400 Cu.M. of rock was retrieved from this pit.

##### Pit No. 2

The quarrying operation started from SW and advanced further NE direction. A pit of 40 x 40 was developed with bench height of 3 Mtrs. A total of 4,800 Cu.M. of rock mass was retrieved.

##### Pit No. 3

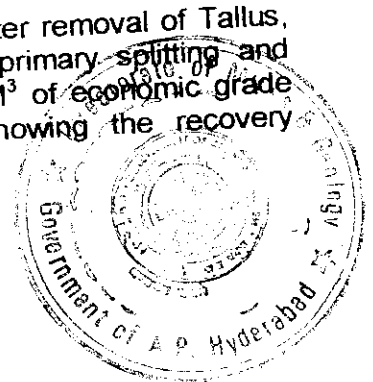
The mining activity shifted SE covers the lease area, a pit of covering an area of 80 x 80 x 6 M developed 38,400 M<sup>3</sup> material was retrieved.

#### The Details of Production Pits:

Pit No.	Dimensions in Mtrs	Volume of Material Excavated Cu.Mtrs	Lithology	Remarks
1.	60 x 80 x 3	14,400	0 - 1.5 M	Weathered and Jointed Rock Mass
2.	40 x 40 x 3	4,800	1.5 - 10 M 0 - 1.5 M	Fresh Boulders Weathered and Jointed Rock Mass
3.	80 x 80 x 6	38,400	1.5 - 3.00 M 0 - 1.5 M 1.5 - 6 M	Fresh Boulders Weathered and Jointed Rock Mass Fresh Boulders

Total : 57,600

A total of 57,600 M<sup>3</sup> Rock Mass was retrieved from the pits after removal of Tallus, Soil Creep. The fresh boulders exposed are subjected to primary spitting and dressing at the insitu stage only. Out of 57,600 only 5,621 M<sup>3</sup> of economic grade rough blocks were recovered and 5385 M<sup>3</sup> dispatched showing the recovery percentage < 10%.



**Details of Production so far Mined from the beginning of the Quarry :**

**Statement Showing Last Four Years Production and Despatch Details**

	YEAR	PRODUCTION (M <sup>3</sup> )	DESPATCH (M <sup>3</sup> )
1.	1999 to 2000	1012.765	984.186
2.	2000 to 2001	1085.384	1085.384
3.	2001 to 2002	1282.545	1305.838
4.	2002 to 2003	2240.356	2010.239
		-----	-----
		5621.05	5385.641
		-----	-----

The Srikakulam Blue Granite is having international demand and exported only in Gang Saw Size (1.20 Up). Therefore, all the above produced and dispatched rough blocks of this size only.

The following machines are used :

1. Excavators - 3 No's.
2. Compressor - 3 No's.
3. Tipper - 1 No.
4. Jack Hammers - 3 No's.
5. Crane - 1 No.

The following labour employed :

1. Drillers - 32 No's.
2. Cutters - 15 No's.
3. Supervisors - 3 No's.
4. Non Master Labour - 6 No's.

#### 4.2 Future Programme

Since the deposit is proved no further exploratory programme is recommended. Only quarrying the economic grade rough blocks (discussed in the following chapters.)

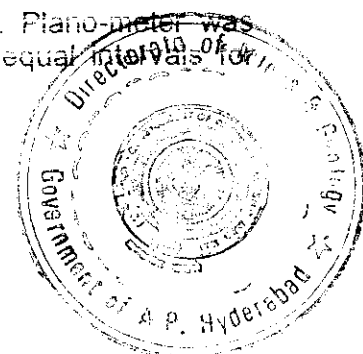
#### 5.0 Reserves

##### 5.1 Geometry of Deposit

Geological traverses and the study exposures on the hill facilitated to assess the shape and size of the deposit in the area. It is in irregular shape. The surface of sheet rock is wavy and irregular.

##### 5.2 Method of Estimation of Reserves

The exposed deposit is found to be irregular in shape as it is exposed on hill. The total area as per the scale is 1,53,884 Sq.M. or Say 15.30 Ha. The Cross Sectional method was adopted for estimation of reserves. Plano-meter was deployed for estimation. 5 cross sections were drawn at equal intervals for estimation ( Plate - IV).



### 5.3 Categorization of Reserves & Total Mineable Reserves

The deposit is exposed in the lease area. The deposit exposed on the surface is classified under "Proved"

Section	Sectional area in M <sup>2</sup>	Sectional influence in M	Total Rock Mass in M <sup>3</sup>	Deposit Blocked Under Safety Slopes in M <sup>3</sup>	Balance Rock Mass in M <sup>3</sup>	Deducting the Talus, Soil Creep, Undersize weathered & efective Boulders constituted 40% of the Rock Mass in M <sup>3</sup>	Recoverable Reserves in M <sup>3</sup> . @ 60%
A-A1	19,721	150	29,58,297	1,33,295	28,25,002	11,30,000	16,95,002
B-B1	7,112.2	100	7,11,220	6,54,200	57,020	22,808	34,212
C-C1	5,487	100	5,48,720	4,61,000	87,220	35,088	52,132
D-D1	8,291.6	100	8,20,163	1,20,380	6,99,783	2,79,913	4,19,870
E-E1	2,527.38	100	2,52,738	44,000	2,08,738	83,495	1,25,243
			52,91,138	14,12,920	38,78,218	15,51,287	23,26,851

Total Recoverable Deposits 23,26,851 M<sup>3</sup>

#### Details showing the Deposit Blocked Under Safety Slopes

Section	Sectional Area in M <sup>2</sup>	Sectional influence in M	Total Volume Blocked under safety siopes in M <sup>3</sup>
A-A1	A	368	36,800
	A1	1929.9	96,495
B-B1	B	2993	2,99,300
	B1	3549	3,54,900
C-C1	C	3136	3,13,600
	C1	1474	1,47,400
D-D1	D	1024	1,02,400
	D1	179.8	17,980
E-E1	E	348	34,800
	E1	92	9,200
Total Deposit Blocked			14,12,920

### 5.4 Economic Marketable Reserves

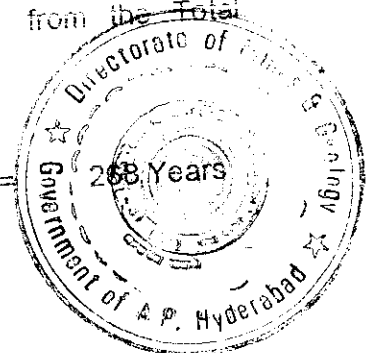
The Granites, having good export market, rough blocks free of defects like fractures, joints, shears, hair line cracks, segregation veins, drastic colour variation and having 120 up size (Gang saw size) are mostly preferred by exporters and international buyers. These are known as Economic or market grade. The recovery in future is anticipated as 25% from the Total Recoverable Deposits 23,26,851 M<sup>3</sup>

Economic Marketable Reserves

$$= 5,81,713 \text{ M}^3$$

Life of the Mine

$$= 5,81,713 / 2167 =$$



## 6.0 MINING

### 6.1 Type of Mining

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

#### Opening of Mine

The Colour Granite in this area is proposed to be mined by open cast, semi-mechanized method the Granite deposit in this area is exposed as a hill raising upto 135 M above GL. With boulders and sheet beneath it.

#### The following method of working is proposed:

##### Stage 1

##### Over burden/ Talus/ Side burden removal :

Consists of development which includes removal of Weathered, undersized and defective boulders using proclain/excavator and using tipper, this waste is dumped at dumping yard. A ramp already constructed during exploratory Mining will be further developed to reach the working pits.

##### Stage 2

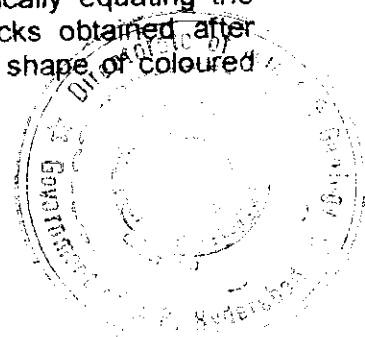
##### Extracting boulder and cutting them into blocks with conventional methods :

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

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

##### Dressing :

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



- i) *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 2167 Cu.Mts. of Coloured granite per year. In order to produce this quantity an area of 7225 Sq.Mts. will be utilized.

#### I Year :

The mining operations will commence from west of the existing Pit No. 3 in West to East, located in the grid North 300-400 and East 300-400 forming a bench height of 6 M in two stages between RL 203 – 197 and the bench will advance towards East, During the first year a total area of 1400 Sq. M will be utilized.

**In the First year** it is planned to produce 2100 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 1400 (40 x 35 M) Sq. Mts. will be utilised. Producing 8400 Cu. M of rock from which 25% (2100 Cu. M) economic grade rough blocks will be obtained and 75% (6300 Cu. M) of waste rock will be realised.

#### II Year :

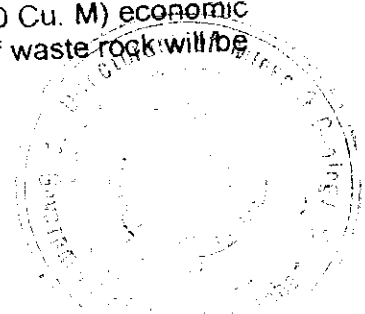
In the 2<sup>nd</sup> year the Mining advances East of first year working in the grid East 300-400 and North 300-400. The mining continues further from first year oriented faces advance further East maintaining average of 6 M bench Height. An area of 1600 Sq.M will be covered during this year.

**In the Second year** it is planned to produce 2400 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 1600 (40 x 40) Sq. Mts. will be utilised. Producing 9600 Cu. M of rock from which 25% (2400 Cu. M) economic grade rough blocks will be obtained and 75% (7200 Cu. M) of waste rock will be realised.

#### III Year :

In the 3<sup>rd</sup> year the mining will continue from second year pit between grids East 300 and enters E 400 – 500, North 300-400 with oriented faces advance further East maintaining average of 6 M bench Height. An area of 1280 Sq. M will be covered during this year.

**In the third year** it is planned to produce 1920 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 1280 (40 x 32 M) Sq. Mts. will be utilised. Producing 7680 Cu. M of rock from which 25% (1920 Cu. M) economic grade rough blocks will be obtained and 75% (5760 Cu. M) of waste rock will be realised.



**IV Year :**

In the 4<sup>th</sup> year the Mining will shift to South of the first year working pit in the grids East 300 – 400 North 300-400. Maintaining average of 6 M bench Height. An area of 1600 Sq.M will be covered during this year

**In the fourth year** it is planed to produce 2400 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 1600 (40 x 40 M) Sq.Mts. will be utilised. Producing 9600 Cu. M of rock from which 25% (2400 Cu. M) economic grade rough blocks will be obtained and 75%(7200 Cu. M) of waste rock will be realized

**V Year :**

In the 5<sup>th</sup> year the mining will continue East of 4<sup>th</sup> year pit in the grids East 300 – 400 North 300-400. South oriented faces advance further North maintaining average of 6 M bench Height. An area of 1225 Sq.M will be covered during this year

**In the fifth year** it is planned to produce 1837 M<sup>3</sup> of economic grade rough blocks. To produce this quantity an area of 1225 {35x 35M } Sq.Mts. will be utilised. Producing 7350 Cu. M of rock from which 25% (1837 Cu. M) economic grade rough blocks will be obtained and 75%(5513 Cu. M) of waste rock will be realised.

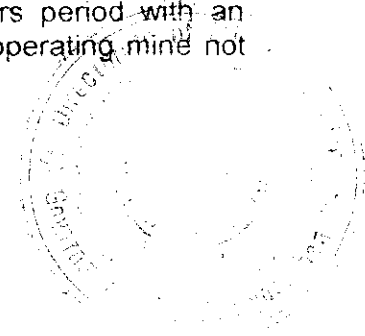
**ANNEXURE - II**

Year	L x W x Bench Height			Volume in M <sup>3</sup>	Market Grade Rough Blocks with 25%	Waste Generated in M <sup>3</sup> with 75%
	M	M	M			
1 <sup>st</sup>	40	35	6	8400	2100	6300
2 <sup>nd</sup>	40	40	6	9600	2400	7200
3 <sup>rd</sup>	40	35	6	7680	1920	5760
4 <sup>th</sup>	40	40	6	9600	2400	7200
5 <sup>th</sup>	35	35	6	7350	1837	5513
	Total:				10,657	31,973
	Average				2131	6395

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

**6.3.2 Quantum of Excavation**

In the first five years it is proposed to produce a total of 10,657 Cu. M of commercial grade rough blocks, to obtain this at the rate of 25% recovery, a huge mass of rock waste will be generated. It is estimated that a total of 31,973 Cu. M waste will be generated for the first 5 years period with an average of 6,395 Cu. M of waste / year. Since this is an operating mine not much of the overburden expected to be generated.





### 6.3.3 Production Schedule

The production of colour granite continuous to through out year expect during monsoon. That is 10 working months, 20 working days per month are considered. The production of 2167 Cu. M per year can be easily achieved in a single shift with sufficient men and machinery.

#### a) Magazine Type and Capacity :

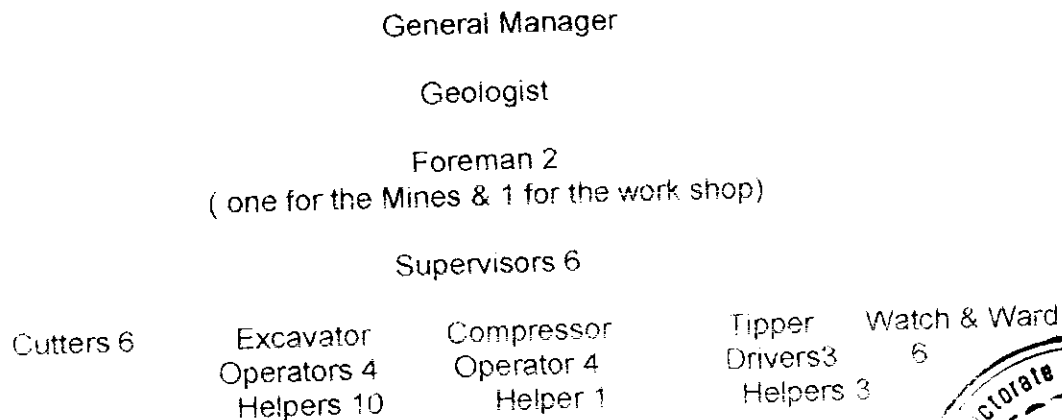
Not Applicable as The district administration is not issuing the explosive licenses in the district due to law & order problems

#### b) Description of Processing Plant :

M/s Gallop Granites Doesn't possess Granite Processing Plant

#### c) Organizational Chart:

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



Besides above managerial and skilled staff

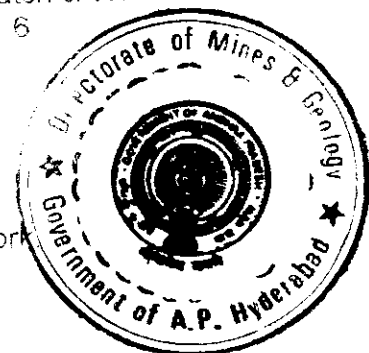
- Mess personnel i.e. 2 Cooks & 4 Assistants
- Semi-skilled of about 10 members,
- Unskilled workers 4 members are required for the quarry work

#### d) Site Services :

Rest Rooms, Mess, First Aid Room, Shelters, Lavatory, Borewell for Drinking Water are provided at Quarry Site.

#### e) Market Analysis :

This material is having very good demand in Europe – especially Germany for making monuments. The company is owning this premium quarry, which is having a large extent, and very good quality because of good quality & proper demand the company is in direct selling of this material to Europe through its exclusive buyers. Our consistant effort to strive for better quality standards makes it even better for the international market.



## 7. 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 32,587 Cu. M of waste is expected to be generated with an average of 6, 517.4 Cu. M per annum. The year wise waste generation in 5 years is as follows :

Year	Waste Generation in Cu. M
I	6300 Cu. M
II	7200 Cu. M
III	5760Cu. M
IV	7200 Cu. M
V	5513 Cu. M

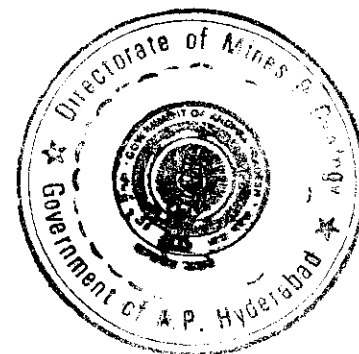
- ii) **Dumping site particulars** : For dumping of waste generated during mining will be dumped along the eastern margin of the lease area, where the country rock granite is exposed.
- iii) **Estimated waste quantity that will be generated in the entire period** : At the rate of 6517.4 Cu. M per year the volume of waste generated in balance lease period i.e., 7 years is estimated to be 45619.8 Cu. M.
- iv) **Utilisation of waste if not prevented** :
- Soil can be utilized for reclamation of degraded area.
  - Weathered rock if it is sufficiently soft and devoid of rock fragments can be utilized for roads, filling of road side ditches, formation of approach roads to quarries, construction works etc.
  - Large and medium sized waste rock can be used as revetment for deep cut stream sections from preventing from soil erosion.
  - The waste generated during the mining will also be used for back filling of the mine pit after completion of mining.

## 8.0 ENVIRONMENTAL MANAGEMENT PLAN

### 8.1 Baseline Information :

- i. Existing land use pattern :

The applied area is hill. The land is steeply sloping due North and East. The whole land is covered by sparse vegetation. The soil existing in the applied area is bouldery and unfertile. The hill is exposed 135 M above GL and occupies entire quarry lease area.



ii. Water Regime :

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

iii. Flora and Fauna :

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

iv) Quality of Air, Ambient Noise Level and Water :

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

v Climatic Conditions :

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

vi) Human Settlement :

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

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

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

vii) Public building, palace and monuments :

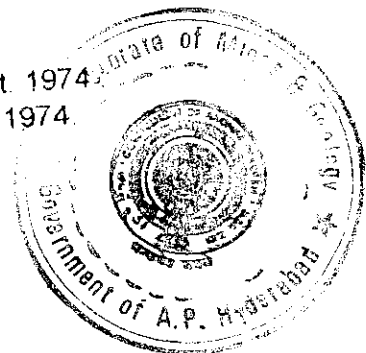
No of public buildings, palaces and monuments are witnessed in and at the vicinity of the area.

viii) Quality of air and water :

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

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

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



## 8.2 Environmental Impact Assessment

### i) Land scape Changes

#### i) Land Degradation:

Granite Mining will alter the physiographic scene; a small portion of the hill will alter its shape.

#### ii) Air Quality:

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

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

### AIR QUALITY

Base Level	Allowable Level
SPM = $140 \mu\text{g}/\text{m}^3$	$360 \mu\text{g}/\text{m}^3$
RSPM = $60 \mu\text{g}/\text{m}^3$	$120 \mu\text{g}/\text{m}^3$
$\text{SO}_2 = 40 \mu\text{g}/\text{m}^3$	$80 \mu\text{g}/\text{m}^3$
$\text{NO}_2 = 40 \mu\text{g}/\text{m}^3$	$80 \mu\text{g}/\text{m}^3$
CO = $1.0 \mu\text{g}/\text{m}^3$	$5.0 \mu\text{g}/\text{m}^3$

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

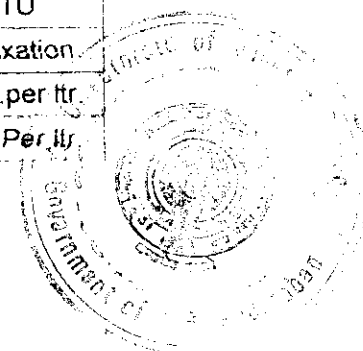
- Covering the drill rods with cloth will control the dust rising due to drilling, dust extractors will also be employed.
- Dust suppression on Haul road with sprinkling of water with chemical additives.
- Proper functioning of dust suppression arrangements in the equipment

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

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

### IS 10 500 - 1944

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



## ii) Noise Levels:

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

The noise levels for various activities are

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

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

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

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

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

## iii) Vibration Levels :

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

## vi) Aesthetic environment:

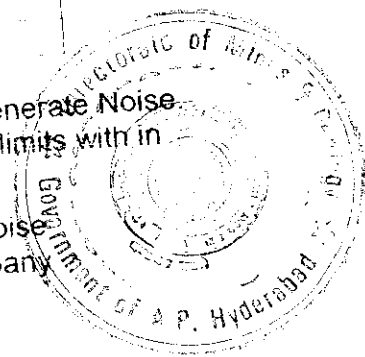
There is no aesthetic environment prevailing in and around the applied area.

## vii) Soil and land use pattern:

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

## viii) Agriculture:

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



- ix). Forest:  
The applied area is not coming under forest zone. However, the applicant is proposing to undertake afforestation in the area.
- x). Vegetation:  
The applied area is covered with scattered vegetation of small shrubs, herbs and Thorny bushes. However, no cutting of trees is involved in mining activity.

ix) Socio Economic Environment :

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

x) 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.

xi) Human Settlement :

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

xii) Recreational Facility :

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

### 8.3 MANAGEMENT PLAN

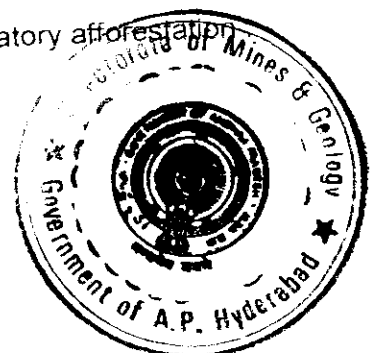
1. Soil Conservation Methods :

The soil cover is absent. However, soil mixed with boulders is unfertile. Hence, the land is not being used for agriculture purpose. Therefore the mining in this area will initiate utility of the land

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

Even after 20 years 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.



This Mining Plan is Approved subject to the 7  
Conditions/Stipulations Indicated in the

Mining Plan Approval Letter No.....

4. Measures for dust suppression : 9344/172-1/2003... dated 14.10.2003.

The mining will not involve dust rising methods. The dust anticipated during dry seasons, by transportation on road will however be suppressed by sprinkling water on roads. For this purpose, tractor mounted sprinklings will be deployed at this place. The dust rises during blasting will be negligible because of less production and rare blasting.

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

It is proposed to use low explosive and less quantity to meet the production requirement and also to minimize the affects & feeble vibration generated during blasting.

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 muffers etc.)

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

Granite Mines does not require beneficiation.

7. Measures for minimising adverse effect on water regime :

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

8. Afforestation Programme :

Since the entire Quarry Lease area is occupied by the deposit excepts small part in the southern border of the applied area with soil mixed with boulders is deposited Afforestation program is proposed in this region by planting suitable type with 2 M spacing (Plate V).

9. Preparation of dumping ground for stacking toxic mineral substance :  
No toxic minerals are present

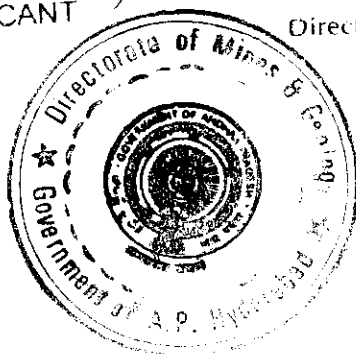
9.0 ANY OTHER RELEVANT INFORMATION

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

For GALI OP GRANITES LTD.

APPLICANT

Director



APPROVED

*[Signature]*  
RQP  
(V.T. Chander)

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

GOVERNMENT OF ANDHRA PRADESH  
DEPARTMENT OF MINES AND GEOLOGY

PROCEEDINGS OF ASST.DIRECTOR OF MINES AND GEOLOGY:SRİKAKULAM.

(PRESENT: SRI D.SANTHAPPA,M.Sc.,)

Proceedings No. 4350/Q/97,Dated 19-12-1997.

Sub: MINES AND QUARRIES - Quarry Lease for colour Granite over an extent of 15.000 Hectares in S.No.1 of Addukonda Village, Tekkali Mandal, Srikakulam District - Granted in favour of M/s Gallop Granites Limited - Execution of Lease deed - Work Orders issued - Regarding.

Ref: 1.Prock.no.23091/R1-3h/94, dt.8-12-97 from the Director of Mines and Geology, Hyderabad.  
2.D.Dis.4228/94, dt.29-9-97 from the Dt.Collector, Srikakulam.  
3.Letter dated -12-97 from M/s Gallop Granites Limited.

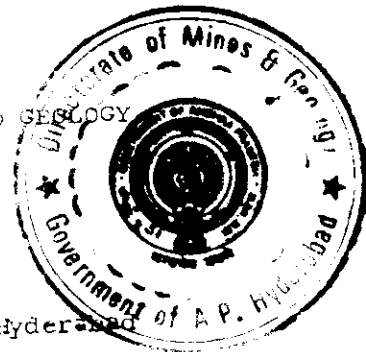
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ORDER:

The Quarry Lease granted in favour of M/s Gallop Granites Ltd., Calcutta for colour granite in S.No.1 of Addukonda Village, Tekkali Mandal, Srikakulam District over an extent of 15.000 Hectares for a period of 15 years has been executed on 19-12-97 by the undersigned. The Quarry Lease is valid for a period of 15 years from 19-12-97 to 18-12-2012.

M/s Gallop Granites Limited, Calcutta is hereby permitted to enter and work the quarry area under the provisions of A.P.M.M.C.Rules, 1966 and conditions laid down in G.O.Ms.No.317, Industries and Commerce Department, dated 9-7-92 and subsequent instructions issued on the matter from time to time. The lessee should submit the quarterly returns to the concerned Asst.Director of Mines and Geology, Srikakulam, Dy.Director of Mines and Geology, Visakhapatnam and the Director of Mines and Geology, Hyderabad. This work order is issued subject to the condition that the Govt. reserve the right to cancel the quarry lease granted and executed under A.P.M.M.C.Rules, 1966 without assigning any reasons and giving notice and the conditions imposed in the grant order and Appendix.

ASST.DIRECTOR OF MINES AND GEOLOGY  
SRİKAKULAM.



To  
M/s Gallop Granites Ltd,  
Managing Director, Sri R.K.Gupta,  
2-Clive Ghat Street(5th Floor)  
Suit No.6, CALCUTTA-700 001.

Copy submitted to the Director of Mines and Geology, Hyderabad  
for favour of information.  
Copy submitted to the Dy.Director of Mines and Geology, Visakhapatnam  
for favour of information.  
Copy submitted to the Dt.Collector, Srikakulam for favour of informn.  
Copy submitted to the Chief Executive Officer, Z.P, Srikakulam for  
favour of information.  
Copy submitted to the R.D.O/Tekkali for favour of information.  
Copy to the Mandal Revenue Officer, Tekkali for information.  
Copy to the Mandal Development Officer, Tekkali for information.  
Copy to the Surpanch, Addukonda Village, Tekkali Mandal,  
Srikakulam District for information.