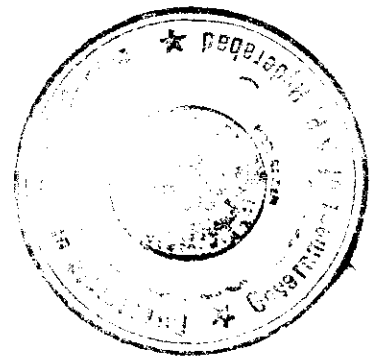


MINING PLAN ON COLOUR GRANITE
Over an extent of 4.306 Hectares in Sy. No. 01
Addukonda (V), Tekkali (M), Srikakulam District, A.P.

For

M/s. SONAL STONES & MARBLES (P) LIMITED
Chennai



Prepared By

V.T. CHANDER

Consultant Geologist & RQP
(RQP / DMG / HYD / 02 / 2001)

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

☎ : 55618351, 30941928 Tele Fax : 24068218 📠 : 9391056234

CERTIFICATE

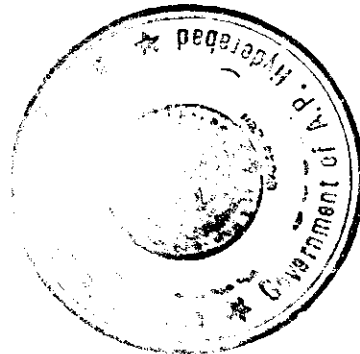
The provision of Granite Conservation and Development Rules '1999 have been observed in the Mining Lease of Coloured Granite over an extent of 4.306 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, Andhra Pradesh., for M/s. Sonal Stones & Marbles (P) Limited, Chennai, whenever specific permissions are required the applicant will approach the concerned authorities.

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

Date : 4th January '2006

Place : Hyderabad


RQP
(V. T. CHANDER)

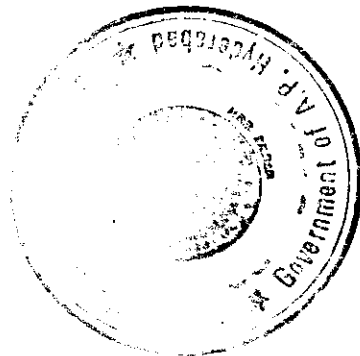


CERTIFICATE

This is to certify that Mining Plan in respect of Quarry Lease area over an extent of 4.306 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, Andhra Pradesh Has been prepared by Sri V. T. Chander, Consultant Geologist & RQP and we agree to follow the same in accordance to the provision of Law

Date : 4/1/2006

N. T. Rajasree
APPLICANT



INDEX

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LIST OF PLATES

PLATE	TITLE	SCALE
I	LOCATION & KEY PLAN	1 : 50,000
II	LEASE AREA PLAN	1 : 8,000
III	GEOLOGICAL PLAN	1 : 1,000
IV	GEOLOGICAL CROSS SECTIONS	1 : 1,000
V	MINE LAY OUT AND YEAR WISE PRODUCTION PLAN & CROSS SECTIONS	1 : 1,000
VI	ENVIRONMENTAL PLAN	1 : 5,000

LIST OF ANNEXURES

- I Copy of the DMG, Hyderabad, Notice No. 38371 / R1-1 / 2005 dated 25-11-2005.
- II Statement Showing the Size Wise Dispatches



MINING PLAN ON COLOUR GRANITE
Over an extent of 4.306 Hectares in Sy. No. 01
Addukonda (V), Tekkali (M), Srikakulam District, A.P.

For

M/s. SONAL STONES & MARBLES (P) LIMITED
Chennai

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.....
..G.S.O.43/R1-1/10/2005, dated 06.01.06

1.0 INTRODUCTION

M/s. Lokesh Enterprises, were holding the prospecting license for Colour Granites, over an extent of 4.306 Hectares in Sy. No. 1 of Addukonda (V), Tekkali (M), Srikakulam District, Andhra Pradesh.

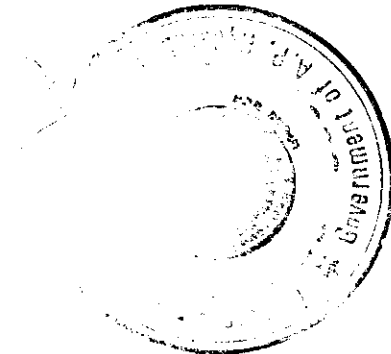
Subsequently the Prospecting Lease area was transferred to M/s. Sonal Stones & Marbles (P) Limited., Chennai, for the un-expired period of lease (i.e upto 23-01-2007) vide Director of Mines & Geology, Hyderabad, Proceedings No. 26623 / R1-3 / 2005 dated 19-11-2005. The transfer of lease deed was executed on 14-09-2005, vide Asst. Director, Mines & Geology Srikakulam District., Proceedings No. 1968 / Q / 2005 dated 14-09-2005.

After ascertaining the quality & quantity of the deposit M/s. Sonal Stones & Marbles (P) Limited., Chennai, have applied for grant of Quarry Lease. The Director, Mines & Geology, Hyderabad, after careful examination of the proposals has proposed to grant the quarry lease in the above said area for a period of 20 years. Subject to submission of approved mining plan within 6 months period. Vide Notice No. 38371 / R1-1 / 2005 dated 25-11-2005.

M/s. Sonal Stones & Marbles (P) Limited., Chennai, approached Sri V.T. Chander, Consultant Geologist and RQP (RQP / DMG / Hyd / 02 / 2001) For preparation of Mining Plan in the above mentioned quarry. Accordingly Prospecting Report is prepared as per the guidelines given by Govt. India. Ministry of Steel & Mines, GCDR Rules '1999.

APPROVED

P. Rajashekar Reddy
Joint Director
Dept. of Mines and Geology,
Govt. of A.P. Hyderabad.



2.0 GENERAL

- 2.1 Name and address of the applicant : M/s SONAL STONES & MARBLES (P) LTD.,
No. 2/2, Rams Flats - 35,
Vijaya Raghava Road,
Chennai – 600 017.
- 2.2 Status of the applicant : Private Firm
- 2.3 Mineral for which applicant intends to mine : Colour Granite
- 2.4 Name & address of the RQP who prepared the prospecting report : V.T. CHANDER
RQP/ DMG / HYD / 02 / 2001
H.No. 10-1, Flat No. 202,
Mahalakshmi Ganapathi Complex,
Sai Baba Temple Lane,
Beside Sri Sai Grammar High School,
P & T Colony, Dilsukhnagar,
Hyderabad - 500 060.
☎ : 55618351, 30941928, 24068218
☎ : 9391056234
- 2.5 Name and address of the Prospecting Agency : M/s Lokesh Enterprises,
Tekkali,
Srikakulam.

2.6 Details of the area :

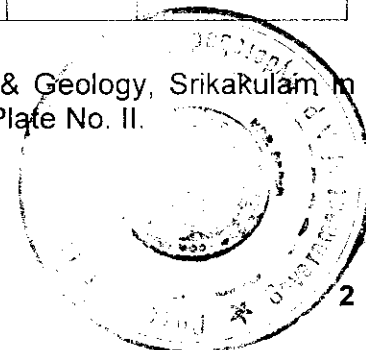
The applied area falls in the Survey of India, Toposheet No. 74 B / 2 and is bounded East Longitude : 84° - 12' - 00" and North Latitude : 18° - 38' - 00". It is situated 5 Km North West of Tekkali . The road leading from Tekkali to Temburu will lead to the site. The location of the area is indicated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

DETAILS OF THE AREA

District State	Mandal	Village	Sy. No.	Extent	Ownership of Occupancy
Srikakulam Andhra Pradesh	Tekkali	Addukonda	1	4.306 Hectares	Govt. Land

Cadastral Map certified by the Asst. Director of Mines & Geology, Srikakulam in favour of M/s. Sonal Stones & Marbles (P) Ltd, given as Plate No. II.

- 2.7 Period for which Quarry Lease granted = 20 Years



2.8 Infrastructure and Communication

Availability of Water	The Ground Water level is about 6 to 7.0 Mts. below ground level at the foot hill.
Availability of Electricity	Electricity is available at the Quarry area.
Communication Network	It is situated 5 Kms North West of Tekkali Town. The road leading from Tekkali to Bheempuram via., Sitampeta crossing villages Barigipeta, Rama Krishnapuram and a diversion towards West by 600 M at road crossing from Gopalapuram to Bheempuram will lead to the Site. Amenities like Post & Telegraph Office, Police Station, Primary Health Center etc., are available at Tekkali.
Road Network	The Tekkali Town is located 60 Kms North of Srikakulam on NH 5 from Visakhapatnam to Calcutta. The town is well connected with the road network.
Nearest Rail Head	Nearest Rail Head is located at Amudalavalsa (Srikakulam Road Station), which is located 16 Kms from the Srikakulam and 76 Kms from Tekkali.
Port Facility	Vishakapatnam Port is about 150 Kms from area.
School	Education Facilities from Primary School to College are available in Tekkali Town.
Medical Facility	Medical Facility available in Tekkali Town.

Boundaries

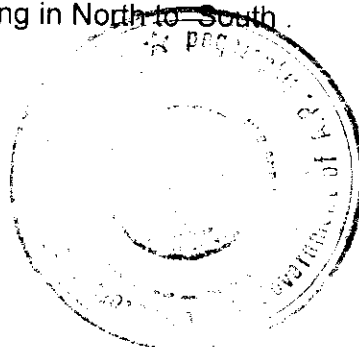
North	Quarry Lease Area of M/s. Ratna Granites & M/s. Reliance Granites
South	Quarry Lease Area of Sri Satya Narayana
East	Road & Agricultural Lands
West	M/s. Naidu Granites & M/s. Agarwal Granites

Further vast potential exists for the employment of unskilled labour in the existing Granite quarries and allied Small-scale industries. The area experiences Semi - arid climatic conditions with an average Annual rainfall of 1000 mm. The local day temperature varies from 25° C in November to 48° C in April & May months. The general wind direction reported is SW to NE and SE to NW.

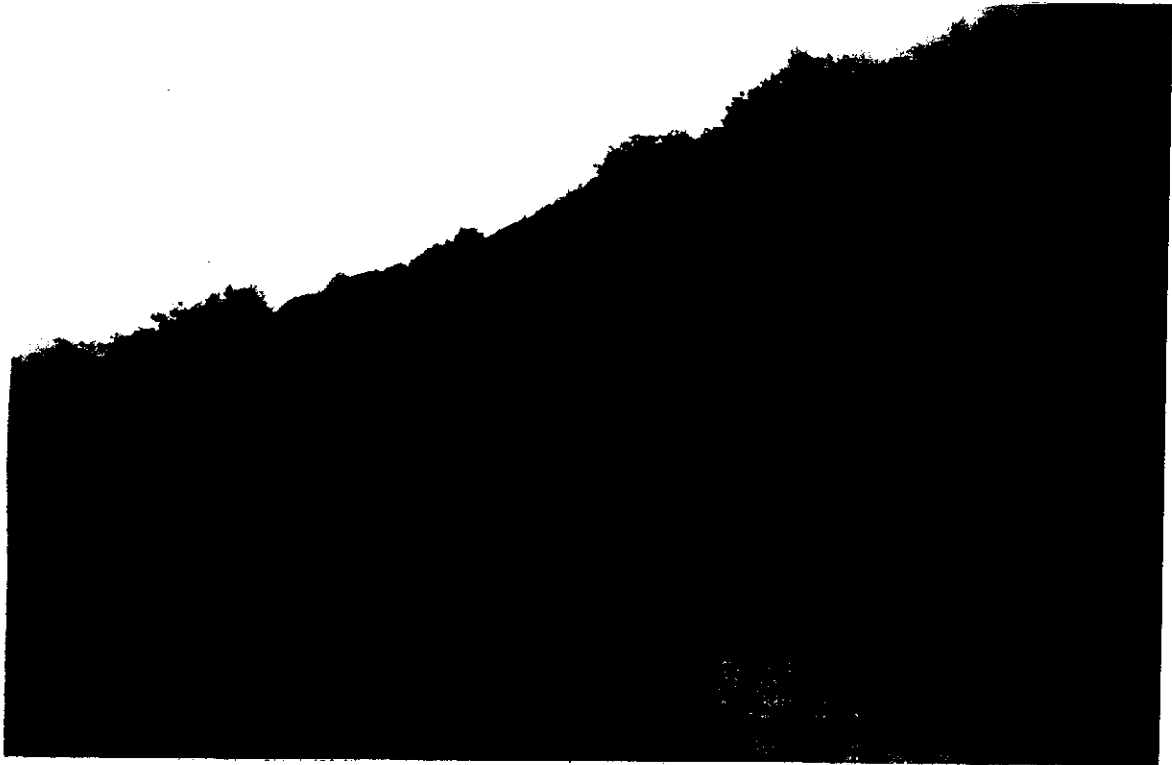
3.0 GEOLOGY AND EXPLORATION

3.1 Physiography

The applied area is located on hill, steeply sloping, the area is 75 Mts above ground level. One small hilly streams seen running in North to South.



PHOTOGRAPH SHOWING THE VIEW OF THE BOULDERS IN THE PIT NO. 1



PHOTOGRAPH SHOWING THE VIEW OF THE WASTE GENERATED & BLOCKS RECOVERED



3.2 Regional Geology

The Eastern Ghat Mobile Belt [EGMB] is more than 600 Km in length from Srikakulam in the North to Ongole in the South. This belt is more than 100 Km in width in Northern part and tapers down to less than 20 Km in the South, it has broad arcuate trend with 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, Two pyroxene Granulites, Migmatites, Leptinites and Intrusive porphyroblastic Charnockites. Large enclaves of Acid Charnockites, Khondalites and Meta-Basic rocks occur within Migmatites, which are largely seen in the area lying between R.Vamsadhara and Coast line.

Local Geology

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, Horneblende and Biotite. The rock displays wavy banding, ptymatic 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 black lines) cutting across the wavy banding are considered defects.

Two sets of major joints seen in the migmatites.

1. N70°E –S70°W.
2. N20°E –S20°W.

3.3 Details of Exploration

3.3.1 Prospecting Operations Carried Out

The following prospecting operations were carried out in applied area.

3.3.1-1 Geological Traverses & Mapping

The applied area was traversed to demarcate the exposures of the Colour Granite and to record the structural features in the outcrops, the data regarding litho units collected and Surface Geological Map on 1 : 1,000 Scale prepared (Plate - III).

3.3.1-2 Topographic Survey

A micro optic theodolite is used for conducting the topographic survey. A benchmark of 45 M used to measure the elevation differences in the applied area and also to prepare the surface elevation contour map on 1: 1000 scale.

3.3.1-3 Exploratory Mining

Geological mapping of the applied area revealed the Migmatites forms as a hill raising up to 75 M above ground level. Therefore mining operations were carried out at Northern edge of the hill in the applied. area. The exposed boulders were drilled by Jack Hammers and 1 bench of 5 M height was developed. The quarrying advanced South, a steep ramp is formed from south to the quarry.

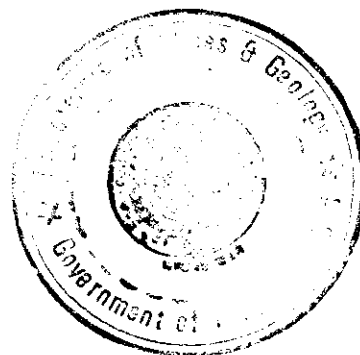
A 2nd pit was opened between the grids N 100 - 150 & E 150 - 200 and 1 bench of 3 M height was developed.

The mining is of semi-mechanised type.

In the trial pit with average depth 110 M x 20 M x 4 M & 30 M x 15 M x 3 M, a total of 10,150 M³ rock mass was retrieved from mother rock and after secondary cutting and dressing 93.102 M³ of economic grade rough blocks recovered (Annexure – II).

The following machines are used :

1. Poclair - 1 No.
2. Compressor - 1 No.
3. Jack Hammers - 5 No's



4.0 ESTIMATION OF GEOLOGICAL RESERVES

4.1 Geometry of Deposit

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

4.2 Method of Estimation of Reserves

The exposed deposit is found to be irregular in shape as it is exposed on hill, the volume is computed by multiplying area with the average height of 30 M.

4.3 Categorization of Reserves

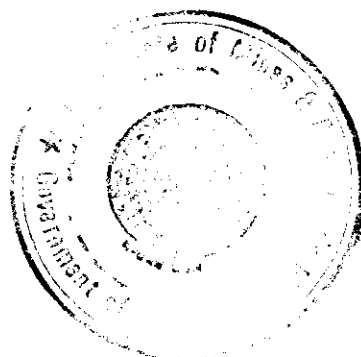
The exposed deposit is found to be irregular in shape as it is exposed on hill, the volume is computed by cross sectional area method by taking 5 Cross Sections A-A1, B-B1, C-C1, D-D1 & E-E1.

Cross Section	Cross Sectional Area (M ²)	Sectional Influence (M)	Volume of Rock Mass (M ³)	Recoverable Rock Mass for Blocks @ 20%
A - A1	957.8	50	47890	9578
B - B1	849.8	50	42490	8498
C - C1	211.15	50	10557.5	2111.5
D - D1	347.2	50	17360	3472
E - E1	322.26	50	16113	3222.6
Total Rock Mass Estimated :			1,34,410.5	26882.1

Total Geological Reserves Estimated = 26,882 M³

4.4 Total Mineable Reserves

No deposit will be blocked under side slopes, hence, entire geological reserves of 26,882 M³ are treated as mineable reserves.



4.5 Economic Marketable Reserves

The Granites, having good export market, rough blocks free of defects like fractures, joints, shears, hair line cracks, segregation veins, drastic colour variation and having 120 up size (Gang saw size) are mostly preferred by exporters,

Economic Marketable Reserves = 26,882 M³

5.0 MARKET ANALYSIS

i) Assured and expected supply contracts

Mining activity in the adjacent quarries has revealed that only Gang Saw Size of (Economic Grade) Rough Blocks of 2.4 x 1.4 x 1.2 & 3 x 1.9 x 1.8 sizes are required by exporters and will be dispatched to different exporters in Bangalore & Mumbai. The applicant has dispatched 52 M³ to the market.

ii) Ability to supply consumer in time

Licensee is having sufficient men and machinery, besides huge and good quality rock at shallow depth. Therefore he is able to supply the material to the consumer in time.

iii) Pattern of demand

Srikakulam Blue Granite of Srikakulam is having very good demand in international market. The prices of rough blocks of gang Saw size ranging between Rs.8000 to Rs.10000 depending upon the colour of the rock.

Therefore, the material is having good demand and market is already established for the material from this mine.

6.0 MINING

6.1 Type of Mining

Quarrying of Colour Granite 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 80 M above ground level with boulders 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 Proclaim / 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.

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.

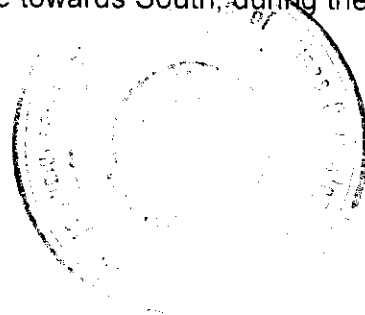
6.2 Mining Programme for the next 5 Years

6.2.1 Scheme of Mining & Year Wise Production

During mining operations the applicant proposes to produce 3,000 M³ of Coloured Granite during next five years. In order to produce this quantity an area of 5,000 M² will be utilized. Generating 27,000 M³ of Rock Waste.

1st Year :

The mining operations will commence from North of the existing Pit No. 1 forming a bench height of 6 M and the bench will advance towards South, during the first year a total area of 1,000 M² will be utilized.



In the First year it is planned to produce 600 M³ of economic grade rough blocks. To produce this quantity an area of 1,000 M² (100 x 10 M) will be utilized in the grids N 200 – N 250 & E 100 – E 300. Producing 6,000 M³ of rock mass from which 40% (2,400 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.,) from this economic grade rough blocks @ 25% (600 M³) will be obtained and 5,400 M³ of waste rock will be realised.

2nd Year :

In the 2nd year the operations will commence from South of 1st year workings forming a bench height of 6 M and the bench will advance towards South, during the first year a total area of 1,000 M² will be utilized.

In the Second year it is planned to produce 300 M³ of economic grade rough blocks. To produce this quantity an area of 1,000 M² (100 x 10 M) will be utilized in the grids N 150 – N 250 & E 100 – E 300. Producing 6,000 M³ of rock mass from which 40% (2,400 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.,) from this economic grade rough blocks @ 25% (600 M³) will be obtained and 5,400 M³ of waste rock will be realised.

3rd Year :

In the 3rd year the mining will continue below the 1st year workings with South oriented faces advance further North maintaining average of 6 M bench Height. An area of 1,000 M² will be covered during this year.

In the third year it is planned to produce 300 M³ of economic grade rough blocks. To produce this quantity an area of 1,000 M² (100 x 10 M) will be utilized in the grids N 150 – N 250 & E 100 – E 300. Producing 6,000 M³ of rock mass from which 40% (2,400 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.,) from this economic grade rough blocks @ 25% (600 M³) will be obtained and 5,400 M³ of waste rock will be realised.

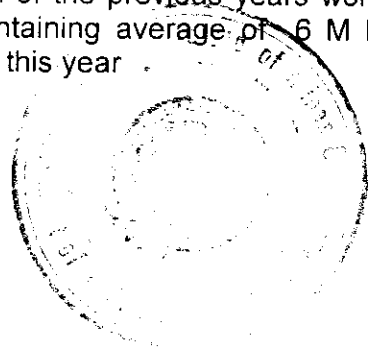
4th Year :

In the 4th year the mining will continue below the 2nd year workings in East of 3rd year workings. Maintaining average of 6 M bench Height. An area of 1,000 M² will be covered during this year

In the fourth year it is planned to produce 300 M³ of economic grade rough blocks. To produce this quantity an area of 1,000 M² (100 x 10 M) will be utilized in the grids N 150 – N 250 & E 100 – E 300. Producing 6,000 M³ of rock mass from which 40% (2,400 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.,) from this economic grade rough blocks @ 25% (600 M³) will be obtained and 5,400 M³ of waste rock will be realised.

5th Year :

In the 5th year the mining will extent further North of the previous years workings. South oriented faces advance further North maintaining average of 6 M bench Height. An area of 1,000 M² will be covered during this year



In the fifth year it is planned to produce 300 M³ of economic grade rough blocks. To produce this quantity an area of 1,000 M² (100 x 10 M) will be utilized in the grids N 150 – N 200 & E 100 – E 300. Producing 6,000 M³ of rock mass from which 40% (2,400 M³) of suitable rock mass is expected (After deduction of 60% wastage as Defective Boulders, Soil Creep etc.) from this economic grade rough blocks @ 25% (600 M³) will be obtained and 5,400 M³ of waste rock will be realised.

YEAR WISE PRODUCTION FOR NEXT FIVE YEARS

Year	Dimensions L x W x Bench Height (M)	Total Rock Mass (M ³)	Recoverable Rock Mass @ 40% (M ³) after deduction of Voids & Soil Creep	Market Grade Rough Blocks @ 25% (M ³)	Waste Generation (M ³)
1 st Year	100 x 10 x 6	6,000	2,400	600	5,400
2 nd Year	100 x 10 x 6	6,000	2,400	600	5,400
3 rd Year	100 x 10 x 6	6,000	2,400	600	5,400
4 th Year	100 x 10 x 6	6,000	2,400	600	5,400
5 th Year	100 x 10 x 6	6,000	2,400	600	5,400
Total :		30,000	12,000	3,000	27,000
Average :		6,000	2,400	600	5,400

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

6.2.2 Quantum of Excavation

To retrieve 3,000 M³ of Market Grade Rough Blocks a quantum of 30,000 M³ of Rock Mass has to be excavated out of which 27,000 M³ is waste in the form of under size boulder, defective boulder, soil creep and rock debris generated during production of Rough Blocks.

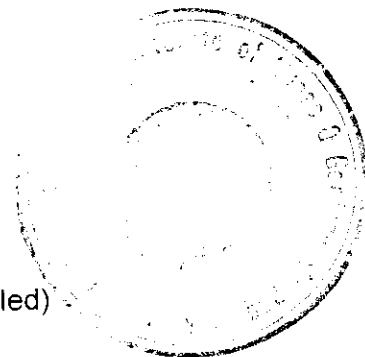
6.2.3 Production Schedule

The production of colour granite continuous to through out year expect during monsoon. That is 10 working months, 20 working days per month are considered. The production of 600 M³ per year can be easily achieved in a single shift with sufficient men and machinery.

The following machines will be used :

1. Poclain - 1 No.
2. Compressor - 1 No.
3. Jack Hammers - 5 No's.
4. Tippers - 3 No's.

With 25 No's of workers (Both skilled and semi-skilled)



a) **Magazine Type and Capacity :**

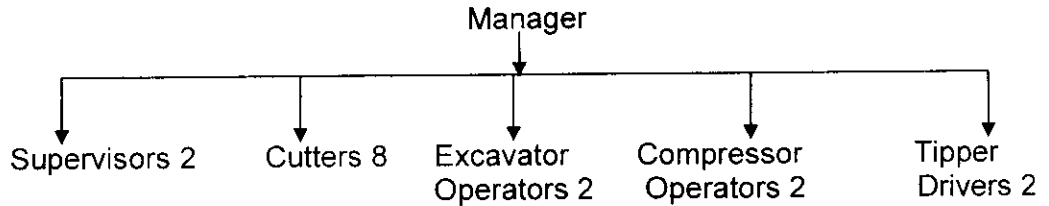
Not Applicable (No permission for storing the blasting material will be granted by the District Administration). The applicant proposes to use AGFRACT Chemical Compound whenever required.

b) **Description of Processing Plant :**

The applicant does not possess Granite Processing Plant

c) **Organizational Chart :**

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



Besides above managerial and skilled staff

- Semi-Skilled of about 10 members.
- Unskilled workers 4 members are required for the quarry work.

d) **Site Services :**

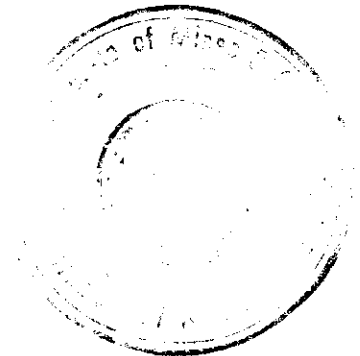
The company at Quarry Site will provide Rest Rooms, First Aid Room, Shelters, Lavatory and Bore well for Drinking Water.

7.0 **SCHEME OF WASTE MANAGEMENT PLAN (SOLID & LIQUID)**

i) **Solid waste for the first five years :** The granite body exposed to the surface. Hence, the weathering on the surface of the rock closely spaced joints and shears along with inherent defects like Moles, Dark patches and acidic veins contribute a large extent of waste generation during the mining.

It is estimated that in the next five years a total of 27,000 M³ of waste is expected to be generated with an average of 5,400 M³ per annum. The year wise waste generation in 5 years is as follows :

Year	Waste Generated (M ³)
1 st	5,400
2 nd	5,400
3 rd	5,400
4 th	5,400
5 th	5,400
Total :	27,000



- ii) **Dumping site particulars** : For dumping of waste generated during mining will be dumped along the Southern margin of the lease area between grids N 50 – N 150 & E 150 – E 300 covering an area of 700 M². This dump is temporary and will be cleared at later date.
- iii) **Estimated waste quantity that will be generated in the entire period:** At the rate of 5,400 M³ per year the volume of waste generated in balance lease period i.e., 20 years is estimated to be 1,08,000 M³.
- iv) **Utilisation of waste if not prevented :**
- Soil can be utilized for reclamation of degraded area.
 - Weathered rock if it is sufficiently soft and devoid of rock fragments can be utilized for roads, filling of road side ditches, formation of approach roads to quarries, construction works etc.
 - Large and medium sized waste rock can be used as revetment for deep cut stream sections from preventing from soil erosion.
 - The waste generated during the mining will also be used for back filling of the mine pit after completion of mining.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

8.1 Baseline Information

i. Existing Land Use Pattern

The applied area is a mound sloping on all sides. The whole land is covered by sparse vegetation. The soil existing in the applied area is bouldery and unfertile. The mound is exposed to a maximum height of 75 M above ground level (Between grids E 200 – E 300 & N 200 – N 250).

ii. Water Regime

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

iii. Flora and Fauna

The whole area is occupied by 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 1000 MM.

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.

HUMAN SETTLEMENT (PLATE NO - I)

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

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

vii. Public Building, Palace and Monuments

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

viii. Quality of Air and Water

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

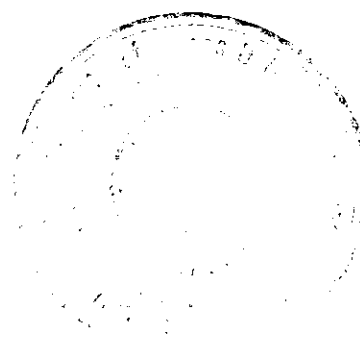
ix. Whether the area falls under notified area under water act. 1974

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

8.2 Environmental Impact Assessment

1) Land Degradation

Granite mining will alter the physiographic scene; $\frac{1}{3}$ rd of the present mound will be flatted and a dump covering 700 M² with 10 M Height will form as an artificial mound.



2) Air Quality

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

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

AIR QUALITY

Base Level	Allowable Level
SPM = $140\mu\text{g}/\text{m}^3$	$360\mu\text{g}/\text{m}^3$
RSPM = $60\mu\text{g}/\text{m}^3$	$120\mu\text{g}/\text{m}^3$
SO ₂ = $40\mu\text{g}/\text{m}^3$	$80\mu\text{g}/\text{m}^3$
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:

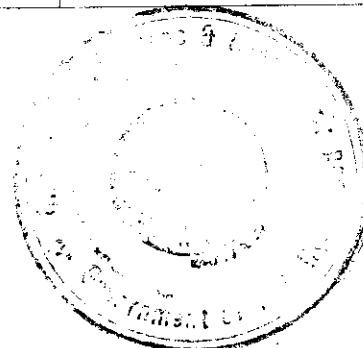
- The dust rising due to drilling will be controlled by covering the drill rods with cloth, dust extractors will also be employed.
- Dust suppression on Haul road with sprinkling of water with chemical additives.
- Proper functioning of dust suppression arrangements in the equipment

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

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

IS 10 500 – 1944

S.No.	Characteristic	Desirable Limit	Maximum Permissible Limit
1	Colour	5	25
2	Order & Taste	Un Objectionable	
3	Turbidity	5 NTU	10 NTU
4	pH Value	6.5 tp 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.



4) Noise Levels

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

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

PERMISSIBLE NOISE EXPOSURE FOR DIFFERENT PERIOD OF TIME IS GIVEN BELOW

Duration Per Day (Hrs)	Sound Level Dba
16	80
8	85
4	90
2	95
1	100
½	105
¼	110
1/8	115

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

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

5) 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

6) Aesthetic Environment

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

7) 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 buffer zone 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.



8) Agriculture

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

9) Forest

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

10) 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.

11) Socio Economic Environment

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

12) 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.

13) 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.

14) Recreational Facility

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

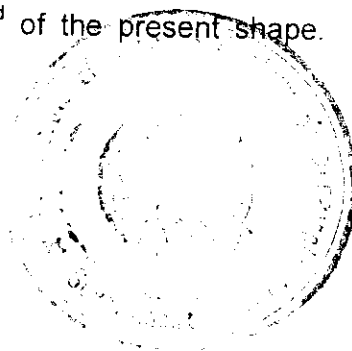
8.3 Management Plan

1. Soil Conservation Methods

The soil cover is absent. The 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. The soil generated from the inter boulders will be spread in the buffer zone for afforestation.

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

Even after 20 years the mound remains $\frac{2}{3}$ rd of the present shape. Hence no reclamation is possible.



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
Conditions, stipulations as indicated in the

4. Measures for Dust Suppression

Mining Plan Approval Letter No.....

42043 (R) 118/2006, dated 04.01.2006

- The dust anticipated during dry seasons, by transportation on road will however be suppressed by sprinkling water on roads. For this purpose, tractor mounted sprinklings will be deployed at this place.
- The dust that rises during blasting will be negligible because of less production and rare blasting.

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

- The noise generated by compressors, drilling & machinery like proclain / excavators and tippers will be high. Proper maintenance of machinery will reduce the noise pollution.
- The workers in the quarry area will be provided suitable headgear and noise reducing protective gear (like cotton mufflers etc.)

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

Granite Mines does not require beneficiation.

7. Measures for minimising adverse effect on water regime

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

8. Afforestation Programme

Since the entire Quarry Lease area is occupied by the deposit. The soil generated will be dumped all along the buffer zone for afforestation. It 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.

APPLICANT

N. Jayasankar

APPROVED

P. Raja Reddy
Joint Director
Dept. of Mines and Geology,
Govt. of A.P. Hyderabad.

J. RQP
(V. T. CHANDER)

GOVERNMENT OF ANDHRA PRADESH
DEPARTMENT OF MINES AND GEOLOGY, HYDERABAD

ANNEXURE - I

Notice No. 38471/R1-1/2005

Dated: 25-11-2005.

Subj: MINES AND QUARRIES - Quarry Lease Application for Colour Granite
Extent of 4.306 Hectares S.No.1 of Addukonda Village, Tekkali
Mandal, Srikakulam District - in favour of M/s Sonal Stones and Marbles
(P) Ltd. For a period of 20 years - Approved Mining Plan called for - Ref.

- Ref:- 1. From M/s Sonal Stones & Marbles (P) Ltd. Quarry Lease Application
dated 10-10-2005.
2. From the ADM&G, Tekkali, L.No.2249/Q, 2005, dated 16-11-2005.

M/s Sonal Stones and Marbles Private Limited in the reference 1st cited, has
applied for grant of quarry lease for colour Granite over an extent of 4.306 Hectares in
Sy.No.1 of Addukonda Village, Tekkali Mandal, Srikakulam District.

2. The Asst. Director of Mines and Geology, Tekkali in the reference 2nd cited, has
stated that the applied area is held under prospecting license by the applicant. Further,
the Asst. Director of Mines and Geology, Tekkali has recommended for grant of quarry
lease for Colour Granite over an extent of 4.306 hectares in Sy.No.1 of Addukonda
Village, Tekkali Mandal, Srikakulam District in favour of M/s Sonal Stones and Marble
Private Limited for a period of 20 years. The Asst. Director of Mines and Geology,
Tekkali further reported that the Quarry Lease applied area is under lease hold rights as
P.L. transferred to M/s Sonal Stones and Marbles Private Limited from M/s Laksh
Enterprises, vide Director of Mines and Geology Procd.No.26623/R1-3/2005, dated 16-8-
2005, which was executed on 14-9-2005, the transfer, license is valid upto 23-01-2007,
further the licensee have extracted for a quantity of 100 cubic meters of granite blocks
and dispatched nearly 94 cubic meters during the period from 24-01-2005 to 16-11-2005.

3. After careful examination of the above proposals of the Asst. Director of Mines
and Geology, Tekkali it is proposed to grant the quarry lease over an extent of 4.306
Hectares in Sy.No.1 of Addukonda Village, Tekkali Mandal, Srikakulam District in
favour of the submission of Approved Mining Plan within six months from the date of
receipt of this notice.

4. Therefore M/s Sonal Stones and Marbles Private Limited is requested to submit
the Approved Mining Plan for the above area referred at para 3 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 you 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/-V.D.RAJA GOPAL,
DIRECTOR OF MINES AND GEOLOGY.

To
M/s Sonal Stones & Marbles (P) Limited,
Director: V.K.Sundaram, No.2/2, Rams Flats, 35,
Vijaya Raghava Road, T.Nagar,
Chennai - 600 017.
Copy to the Asst. Director of Mines and Geology, Tekkali

(By RPAD)

// ATTESTED //
for DIRECTOR OF MINES AND GEOLOGY



ANNEXURE – II
SIZE WISE DISPATCHES

Permit No. 549 / Q / 2005 – 06 Dated 19-08-2005

OUT OF STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	01	01	A – 01	315 x 119 x 082	3.074
2.	02	05	02	229 x 101 x 131	3.030
3.	03	10	03	218 x 178 x 113	4.385
4.	04	29	04	234 x 109 x 077	1.964
5.	05	30	05	297 x 175 x 102	5.301
Total					17.754

Permit No. 561 / Q / 2005 – 06 Dated 23-08-2005

OUT OF STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	06	4	A – 08	218 x 141 x 132	4.057
2.	07	06	9	203 x 096 x 061	1.189
3.	08	13	15	191 x 098 x 070	1.310
4.	09	33	33	238 x 186 x 125	5.534
5.	10	39	39	325 x 150 x 099	4.826
Total					16.916



Permit No. 609 / Q / 2005 – 06 Dated 05-09-2005

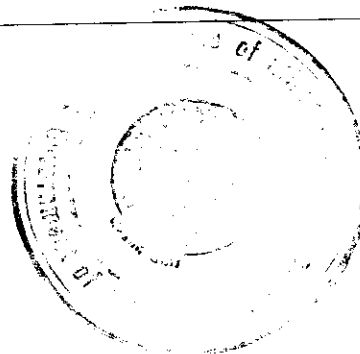
OUT OF STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	11	34	A - 34	293 x 198 x 182	10.556
Total					10.556

Permit No. 720 / Q / 2005 – 06 Dated 18-10-2005

OUT OF STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	03	15	A - 17	150 x 147 x 072	1.587
2.	04	16	18	229 x 150 x 088	3.023
3.	05	38	38	251 x 137 x 100	3.439
4.	06	08	11	265 x 111 x 147	4.324
5.	07	14	16	133 x 113 x 072	1.082
6.	08	25	27	205 x 121 x 108	2.679
7.	09	09	35	148 x 100 x 083	1.228
Total					17.362

Permit No. 691 / Q / 2005 – 06 Dated 10-10-2005

OUT OF STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	01	51	A - 44	328 x 180 x 125	7.380
2.	02	60	47	189 x 175 x 099	3.274
Total					10.654



WITH IN STATE					
S.No.	Way Bill No.	Lessee Code	Dept. Code A.D (T-30)	Measurements L x B x H (in Cms)	Volume in CBM
1.	01	03	A - 07	248 x 181 x 098	4.399
2.	02	45	41	280 x 150 x 089	3.738
3.	03	49	42	272 x 170 x 119	5.503
4.	04	50	43	270 x 109 x 109	3.208
5.	05	61	48	231 x 159 x 082	3.012
Total					19.860
Grand Total					93.102

