MINING PLAN

AND

PROGRESSIVE MINE CLOSURE PLAN

OF

PARTANGO STONE MINE

VILLAGE- PARTANGO (GAITHIBAD), P.S. - DOMCHANCH, DISTRICT – KODERMA, JHARKHAND

LEASE AREA - 10.12 Hectares/25.00 Acres
LEASE PERIOD - APPLIED FOR GRANT OF MINING LEASE
DATE OF APPLICATION OF ML - 13.05.2015
PLAN PERIOD - 2016-17 TO 2020-2021
CATEGORY OF MINE - 'A' CATEGORY (OTFM) OPEN CAST MINE

TYPE OF LAND USE	AREA IN HECTARES/ACRES
FOREST	10.12/25.00
TOTAL	10.12/25.00

PREPARED UNDER - Rule 34 of JMMCR, 2004 AMMENDMENT DATED 31.05.2014
- Rule 23B of MCDR, 1988

-APPLICANT-

RAM CHANDRA MEHTA MANOJ KUMAR MEHTA AMITABH KUMAR

Village - Bigha, Thana- Nawalshahi
P.O. – Phulwariya & DIST.-Koderma, Jharkhand- 825418

PREPARED BY:

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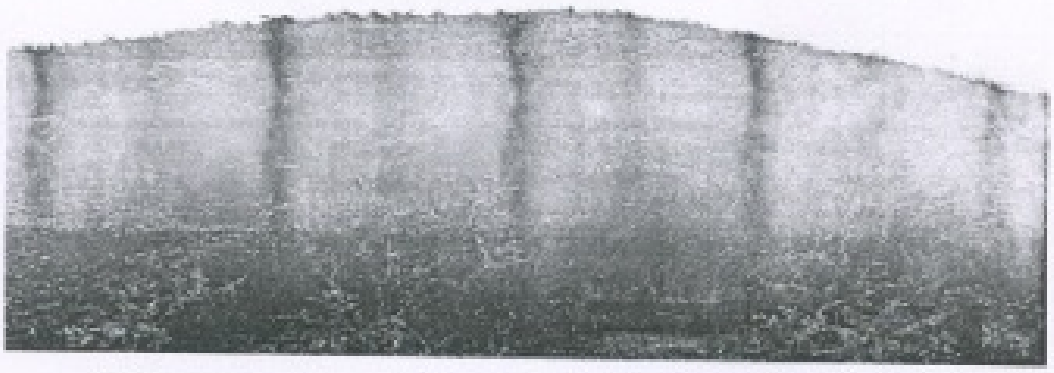
PARTANGO STONE MINE

VILLAGE- PARTANGO (GAITHIBADI), P.S. - DOMCHANCH, DISTRICT – KODERMA, JHARKHAND



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-APPLICANT-

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INTRODUCTION

Partango Stone Mine, (Lessee Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar) covers an area of 25.00 Acre (10.12 Ha), is located in Partango(Gaithibad) village (Thana - Domchanch) of Koderma district of Jharkhand State.

Partango stone Mine over an area of 10.12 hectares/25.00 Acres in village Partango(Gaithibad), P.O. & P.S. - Domchanch, Dist. – Koderma, Jharkhand applied for Mining Lease in favour of Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar for a period of ten(10) years (Copy of the Mining Lease Application & Form B is enclosed as Annexure –I & II)

Partango Stone mine is located in survey of India Topo Sheet No. 72 H/11 and bounded by Latitude: 24° 27' 15.69"N to 24° 27' 7.50"& Longitude: 85° 41' 46.70"to 85° 41' 47.01".

The lease area is connected with state highway (Koderma - Domchanch road) and the distance from the lease is 2.65 km and Ranchi-Patna road (NH-31) by a motorable road constructed by R.E.O. This NH-31 road is away from the lease area with distance of 12 Km. Nearest railway station at Koderma on Eastern Railway at a distance of 25 Km. The nearest Airport is Birsa Munda Airport at Ranchi which is about 140 Km away from the area. The lease area is away from the district headquater towards west direction with 10 km distance. The area around the project is covered with thin forest.

The leasehold area is the fresh (virgin) area and only two small old pits exist there. The production target of the lessee is about 11260 Cum per annum (Approx); the method of mining adopted is by opencast semi-mechanized category 'A' (OTFM).

The mining plan of Partango stone mine of has been prepared under Rule 34A of Jharkhand Minor Mineral Concession (Modified) Rules, 2004 & Rule 23 B of MCDR 1988 for an area of 25.00 acres or 10.12 Hectares of area in village Partango(Gaithibad) in Koderma district of Jharkhand and submitted to Directorate of Mines & Geology, Department of Mines, Govt. of Jharkhand), Nepal house, Doranda, Ranchi for its approval.

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Details of Mining Lease (ML) :-

Table-1

Particular	Area in Ha/Ac	Postal Address	Type of Mineral	Status & Remarks
Partango Stone Mine Lessee Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar	10.12/25.00	Village-Bigha Thana-Nawalshahi Dist.- Koderma State-Jharkhand Pincode- 825418	Stone	

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1.0 GENERAL :

1. a) Name of the applicant/lessee/Rule 45 registration no. :

Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar

Address :

Village	:	Bigha
Thana	:	Nawalshahi
P.O.	:	Phulwariya,
District	:	Koderma
State	:	Jharkhand
PIN	:	825418
Phone No.	:	09431924580
Email	:	.....

1. b) Status of applicant/lessee:

Private Individual	-	No
Co-operative Association	-	No
Private Company	-	No
Public Limited Company	-	No
Public Sector Undertaking	-	No
Joint Sector Undertaking	-	No
Other (lease Specify)	-	Yes (Partnership)

1. c) Mineral(s) which is / are included in the prospecting license (For Fresh grant):

Not applicable

1. d) Mineral(s) which is / are included in the letter of Intent / lease deed:

Stone

1. e) Mineral(s) which is the applicant /lessee intends to mine:

Stone

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1. F) Name of Recognized Person under rule 22C of MCR,1960 or a Person employed under clause (c) of Sub rule (1) of rule 42 of MCDR, 1988(Applicable for Scheme of Mining only)preparing Mining Plan:

Name	:	B.B. Lall
Address	:	1236/2 Lajpat Nagar, Near Lala Lajpat Rai School, Pundag, Argora, Ranchi, Jharkhand- 834004
Pin code	:	834004
Phone No	:	0651-2902588
Email	:	gems.projects@yahoo.in
Mobile no.	:	08987461947
Registration no	:	RQP/RNC/140/2009/A
Date of Grant/ Renewal	:	05.03.2009
Validity upto	:	Valid up to 04.03.2019

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2.0 LOCATION AND ACCESSIBILITY OF THE MINING BLOCK

1. a) Lease Details (Existing Mine):

The leasehold area is fresh (virgin) area.

Name of the Mine: **Partango Stone Mine**

Lat/Long of any boundary point: 24° 27' 15.69" to 85° 41' 46.70"

Date of grant of lease: - Applied for Mining Lease (13.05.2015)

Period/Expiry Date: - Applied for Mining Lease for period 10 years

Date of Expiry - **Not Applicable**

Name of leaseholder - **Ram Chandra Mehta Manoj Kumar Mehta Amitabh Kumar**

Postal address:

Village	:	Bigha
Thana	:	Nawalshahi
P.O.	:	Phulwariya,
District	:	Koderma
State	:	Jharkhand
PIN	:	825418
Phone No.	:	09431924560

2. b) Details of applied /lease area with location map (fresh area /mine):

Reference plan - Plate No. – I (Key Plan)

Total lease area /applied area:		10.12 Ha/25 Acre
District & State	:	Dist. – Koderma & State – Jharkhand
Taluka	:	Domchanch
Village	:	Partango (Gaithibad)

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Break up of leasehold land area.

Table – 2

Forest		Non-forest	
	Area (Ha)/Ac		Area(ha)
Forest land	10.12/25.00	(i) waste land,	Nil
		(ii) grazing land,	Nil
		(iii) Agriculture land,	Nil
		(iv) others(specify)	Nil
Total	10.12/25.00		Nil
Grand total	10.12 Ha/25.00 Acre		

Whether the area falls under Coastal Regulation Zone(CRZ)?If yes, details thereof:

No

Existence of public road/railway line, if any nearby and approximate distance

The lease area is connected from state highway (Koderma - Domchanch road) and the distance from the lease is 2.65 km and Ranchi-Patna road (NH-31) by a motorable road constructed by R.E.O. This NH-31 road is away from the lease area with distance of 12 Km. Nearest railway station at Koderma on Eastern Railway at a distance of 25 Km. The nearest Airport is Birsa Munda Airport at Ranchi which is about 140 Km away from the area. The lease area is away from the district headquater towards west direction with 10 km distance. The area around the project is covered with thin forest.

Toposheet No with latitude & longitude of all corner boundary point/pillar:

Toposheet No. - F45A 10

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Table - 3

Sl. No.	Latitude	Longitude	Code
1	24° 27' 15.69"	85° 41' 46.70"	BP1
2	24° 27' 17.03"	85° 41' 52.28"	BP2
3	24° 27' 17.76"	85° 41' 54.27"	BP3
4	24° 27' 14.04"	85° 42' 1.21"	BP4
5	24° 27' 13.59"	85° 42' 1.40"	BP5
6	24° 27' 7.69"	85° 41' 58.54"	BP6
7	24° 27' 7.50"	85° 41' 47.01"	BP7

2. c) Attach a general location map showing area and access routes. It is preferred that the area be marked on a Survey of India topographical map or a cadastral map or forest map as the case may be. However, if none of these are available, the area may be shown on an administrative map.

Key plan Prepared based on Survey of India Toposheet is attached as Plate –I

Applied Mining lease area plan over cadastral map is enclosed as Plate –II

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3.1 DETAILS OF APPROVED MINING PLAN / SCHEME OF MINING (If any):

Not applicable as this is fresh area.

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PART – A

1.0 GEOLOGY AND EXPLORATION:

1. a) Description of topography, drainage pattern, vegetation, climate, rainfall data of the mining lease area.

Topography:

Koderma district is the part of Chotanagpur plateau. Altitude of the area varies between 392 msl to 592 msl in general. The highest peak is the Debour ghati (677 msl) in the Koderma reserve forest. Southern part of Chandwara block, Jainagar block and Markacho block consists of pediplain areas. Koderma block consists mostly of dissected plateau (Plateau hills and valleys). Upper portion of Satgawan block consists of Pediplain, middle portion by ridges and valleys and lower portion by erosional valley.

The entire lease area is covered with hillocks and forests. Altitude of the lease area varies from 438m to 396m above mean sea level in general. There are many adjacent hillocks around the lease area having altitude above 300m above mean sea level. The topography of the Lease area over 10.12 hectares/25.00 acres is on hill with steep undulation. The general slope of the lease area and surrounding is almost north-south side. The area is of forest land.

Drainage Pattern:

No river or nallah is passing through the lease area. However two main rivers of the districts are **Barakar River** and **Sakri River**.The Barakar river flows from west to east in the southern part of the district and supports Teliya Hydel project, a multipurpose dam constructed on it. Rivers flowing from west to east are Ponchkhara, Keso, Akto, Gurio and Gukhana nadi and these are the tributaries of the **Barakar River**. **Sakri River** is the main river in the northern part of the district which flows from south and east to North West.

Vegetation:

The lease area is in forest and there is no existence of trees in this area. However, the Bushes are observed in the lease area.

Climate:

Due to lower elevation than Hazaribag plateau the area receives comparatively low rainfall

and show higher temperature. The average rainfall of the area is 1200 mm. and most of the rainfall takes place during rainy season. The average annual temperature remains about 25°C, but summer and winter season records many variations in temperature ranging from the lowest temperature of 2°C to 30°C in January to 40°C to 45°C in May.

Rainfall data:

The average rainfall (10 years) in the district is 1125.1mm. Monthly average rainfall of the district is given below-

Table-4

Months	Average Rainfall in mm.
January	4.5
February	6
March	8
April	6.7
May	25.1
June	165.7
July	323.7
August	322.9
September	214.3
October	40
November	4.0
December	4.2

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1. b) **Brief description of Regional Geology with reference to location of lease/applied area:**

Regional Geology:

In Koderma district biotite-granite gneiss, phyllite mica-schist, Intrusive granite, pegmatite veins, Amphibolite hornblende schist, Quartzite and alluvium cover most of the areas. In Chandwara block three- fourth areas are covered by biotite granite gneiss and one-fourth area is covered by Phyllite mica-schist and Quartzite. In Jainagar block eighty percent area is covered by Biotie granite gneiss and twenty percent area is covered by quartzite and phyllite mica –schist. Markacho block has forty-five percent area covered by Phyllite mica schist, forty-five percent area by biotite granite gneiss and ten percent by Quartzite. In Koderma block Phyllite-mica schist and Intrusive granite are the main rock types. In Satgawan block, central portion of the block and adjacent to Sakri river alluvium is the main formation. Southern portion of the district is covered by Intrusive granite, Phyllite – mica schist and quartzite while the northern portion of the block has Quartzite, Amphibolite hornblende schist and gneisses.

In Koderma blocks thick lateritic soil capping is placed above granite. Alfisols (Red sandy soils) and Ultisols (Red yellow soils) are major soils. These soils are light textured, slightly acidic and poor in Nitrogen and Phosphorus and are fairly rich in Potassium. Alluvial soils occur along the rivers and Nala courses.

The stratigraphic sequence is as follows:-

Age	Lithology
Recent	Alluvium
----------Uncomformity----------	
Lower Gondwanas	Sandstone, Shale
----------Uncomformity----------	
Pre-Cambrian	Phyllite, Schist, Gneiss
----------Uncomformity----------	
Archean	Granite Gneiss, Quartzite & Associated Intrusives

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1. c) Detailed description of geology of the lease area such as shape and size of the mineral/ore deposit, disposition various litho-units indicating structural features if any etc. (Applicable for Mining Plan for grant & renewal and not for Scheme of Mining/Modifications in the approved mining plan/scheme of Mining).

The area is a part of Chhotanagpur Plateau and the geological formation of the lease area comprises mainly rocks of Archaean age with compact deposits. The area represents a hilly topography. The lease area consists of Granitic Gneiss rocks of archean age over which thick grity soil capping is placed. On the basis of geological field study, a geological map, which has been prepared with a contour interval of 3m showing all features of geology. (Refer Plate – IV).

1. d) (i) Name of prospecting/exploration agency:

The lessee himself was carried out exploration work in the said lease area.

(ii) Address:

Village	:	Bigha
Thana	:	Nawalshahi
P.O.	:	Phulwariya,
District	:	Koderma
State	:	Jharkhand
PIN	:	825418

(iii) Email address and phone no:

Email	:	.....
Phone No.	:	09431924560

1. e) Details of prospecting/exploration already carried out :

i) Number of pits and trenches indicating dimensions, spacing etc along and across the strike/ foliation with reference to geological plan.

No pitting & Trenching was done during exploration work.

ii) Number of boreholes indicating type (Core/RC/DTH), diameter, spacing, inclination, Collar level, depth etc with standard borehole logs duly marking on geological plan/sections.

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There are two old pits are exists in the leasehold area. Geological Mapping has done on the basis of old pits and rock exposure in the area.

iii) Details of samples analysis indicating type of sample (surface/sub-surface from pits/trenches/borehole etc) complete chemical analysis for entire strata for all radicals may be undertaken for selected samples from a NABL accredited Laboratory or Government laboratory or equivalent. Entire mineralized area may be analyzed meter wise with 10% of check samples. (At least for 10% of total samples may be analyzed in accordance to BIS and reports from NABL accredited/other government laboratory).

Not Applicable as the Stone is use as Building Materials.

iv) Expenditure incurred in various prospecting operations.

Total Expenditure incurred for prospecting by lessee is Nil.

1. f) The surface plan of the lease area may be prepared on a scale of 1: 1000 or 1: 2000 with contour interval of maximum of 10 m depending upon the topography and size of the area duly marked by grid lines showing all features **indicated under Rule 28(1)(a) of MCDR 1988.**

The Surface plan is prepared after conducting topographical survey by deploying electronic total station survey equipment. Accordingly, the plan is prepared showing all surface features & contour at interval of 3 meter, road, etc. as exists in Scale 1:1000. The same is enclosed as Plate III.

1. g) For preparation of geological plan, surface plan prepared on a scale of 1: 1000 or 1: 2000 scale specified under para 1.0 (f) of Part A of the format may be taken as the base plan. The details of exploration already carried out along with supporting data for existence of mineral, locations proposed exploration, various litho units along with structural features, mineralized/ore zone with grade variation if any may be marked on the geological plan along with other features indicated under Rule 28 (1)(b) of MCDR 1988.

In view of the above the Surface Geological plan has been prepared on a scale of 1:1000 with contour interval of 3 m. The detail of Geological survey work carried out including evidence of stone existence has been shown on the Geological Plan (Plate –IV).

1. h) Geological sections may be prepared on natural scale of geological plan at suitable interval across the lease area from boundary to boundary.

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Geological sections is prepared and attached as Plate IV.

1. i) Broadly indicate the future programme of exploration with due justification(duly marking on Geological plan year wise location in different colours) taking into consideration the future tentative excavation programme planned in next five years as in table below: -

The two old pits have already been developed within the same hillock towards north side therefore there is no requirement for further exploration programme within the same hillock.

1. j) Reserves and Resources as per UNFC with respect to the threshold value notified by IBM may be furnished in a tabular form as given below: (Area explored under different level of exploration may be marked on the geological plan and UNFC code for area considered for different categories of reserve/resources estimation may also be marked on geological cross sections).

Submit a feasibility/pre-feasibility study report along with financial analysis for economic viability of the deposit as specified under the UNFC field guidelines may be incorporated.

RESERVES AND RESOURCES FOR STONE AS ON 01.06.2016 AS PER UNFC CODE:-

Table-5

Classification	Code	Quantity in cum	Grade of mineral
Total Mineral Resources (A+B)		326300	Road and building material
A. Mineral Reserve			
(1) Proved Mineral Reserve	111	223100	
(2) Probable Mineral Reserve	122	51600	
B. Remaining Resources		51600	
(1) Feasibility Mineral Resource	211	32630	
(2) Pre-feasibility Mineral Resource	221	32630	
Pre-feasibility Mineral Resource	222	----------	
(3) Measured Mineral Resource	331	----------	
(4) Indicated Mineral Resource	332	----------	

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(5) Inferred Mineral Resource	333	----------
(6) Reconnaissance Mineral Resource	334	----------

Thus the entire proved reserve as estimated is categorized as 111

1. k) Furnish detailed calculation of reserves/resources section wise (When the mine is fully mechanized and deposit is of complex nature with variation of size , shape of mineralized zones, grade due to intrusion within ore zone etc, an attempt may be made to estimate reserves/resources by slice plan method). In case of deposits where underground mining is proposed, reserve/resources may be estimated by level plan method, as applicable, as per the proposed mining parameters.

Estimation and calculations of the reserve:

The existence of Stone in the lease area has been established based on the field observation in accordance to the two old pits. The reserve of stone mine has been estimated by cross sectional area method. A geological cross section A-A^{1} & B-B^{1} in the NS direction has been taken for estimating the reserve as shown in the geological plan. For reserve calculation up to depth of 30 m Stone has been taken proved reserve up to RL 390 m bench marks. The following basic parameter has been considered for estimation of reserve of stone in the ML area.

1. Top of hill RL : 438 m RL
2. Thickness of ore body 30 m
3. Recovery factor (overall) - 95%
4. Tonnage factor- 2.7 MT/cum
5. Generation of waste- 5%

Method of Reserve Estimation:

Considering the above parameters, the different categories of geological reserve have estimated by cross sectional area method as follows.

GR=A x Lx RF x TF Where
GR- Geological Reserve (MT)
A- Cross sectional Area (sq.m)
L- Length of influence (m)
RF- Recovery Factor (MT/cum)
TF- Tonnage factor (MT/cum)

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DIRECTORATE OF MINES AND GEOLOGY
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The mineral reserve has been arrived at after deducting reserves blocked under the safety barrier (7.5 m from lease boundary) and under ultimate pit slope (45 degree) from the geological reserve. However, the summaries of geological and mineable reserves have been estimated and tabled below.

Reserve Estimation

MINERAL RESOURCES & RESERVES

CLASSIFICATION OF RESERVE AS PER UNFC SYSTEM:

UNFC system has been adopted to categorize the mineral Resources and reserves. For the estimation of different mineral reserves, Occurrences of mineral of intrinsic economic interest, location, grade, quantity, geological characteristic etc. has been studied in detailed and are given hereunder:

i) Proved Mineral Reserve (111):

Detailed geological survey has been carried out and exposures have been found in the old pits. Sufficient exposures have been observed in the old pits. On that basis the proved reserve has been estimated based on the actual thickness of the stone body as exposed in pit faces. Thus, geological axis can be brought under Geological axis (G1). This is an virgin lease and in field observe old pits the area is forest land. Manpower/machine requirement has been estimated based on actual need. Infrastructure resources are already available. The stone of this area is commercial as to the demand of buyers. Thus, the reserve can be brought under Feasibility (F1). On economic front, the end use, land use pattern, working plan is already known or designed, thus, the reserve can be brought under Economic (E1). Thus proved reserves can be classified under 111 groups.

Geological Reserve of Stone (Proved)

Table – 6

Section	Cross section area	Length of influence	Volume in Cum.
A-A^{1}	690	200	138000
B-B^{1}	370	230	85100
		Total	223100

ii) **Probable Mineral Reserve (122):**

As the floor and side wall of the old pits is in the lease area, a further influence of 5m depth has been considered. This extension of the stone body is kept under probable category assuming that the ore body may continue further. The geological axis can be brought under G2. On feasibility axis, there will be no displacement but environmental clearance

has not taken. Thus, the reserves can be brought under F2. On the economic front, based on present scenario of market and infrastructure of area and grade of the stone from this area shall be utilized in lessee's own crusher. Hence it can be grouped under E1. Hence it can be grouped under E1. Thus probable reserve can be classified under 122 groups.

Geological Reserve of Stone (Probable):

Table – 7

Section	Cross section area	Length of influence	Volume in Cum.
A-A'	120	200	24000
B-B'	120	230	27600
		Total	51600

iii) Inferred Mineral Reserve (333)

As the floor and side wall of the old pits is in deposit zone, a further influence of 5m depth has been considered. This extension of the stone body is kept under possible category assuming that the ore body may continue further. But it is found that the stone available is not fully confirmed. The present market scenario this stone is not profit marketable due to expensive cost of mining, so we keep it in E3. It also found that the quality of stone deposit is gradually low in depth wise and the seepage of water is more so we keep it G3 and F3 category, thus inferred can be classified under 333 groups.

Geological Reserve of Stone (Possible)

Table – 8

Section	Cross section area	Length of influence	Volume in Cum.
A-A'	120	200	24000
B-B'	120	230	27600
		Total	51600

1. I) Mineral Reserves/Resources:

Mineral Resources: (Mineral resources may be estimated purely based on level of exploration, with reference to the threshold value of minerals declared by IBM)

RESOURCES FOR STONE AS ON 01.06.2016

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Table-9

Level of Exploration	Resources in Cum.	Grade
G1 - Detailed exploration	----------	Road & building material
G2 - General Exploration	326300	
G3 – Prospecting	----------	
G4- Reconnaissance	----------	

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Resources and Reserves within the lease may be arrived after applying results feasibility/pre- feasibility study and economic evaluation of deposit based on various factors such as:

a) Mining method, Recovery factor, mining losses, processing loss etc.
b) Cutoff grade, Ultimate pit depth proposed.
c) Mineral/ ore blocked dues to benches, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc, under forest, sanctuaries etc. where necessary permissions are not available.

RESERVES AND RESOURCES FOR STONE AS ON 01.06.2016:-

Table-10

Particular	UNFC Code	Quantity in Cu. mt	Grade
A. **Total Mineral Reserve**			Road and building material
Proved Mineral Reserve	111	223100	
Probable mineral Reserve	122	51600	
B. **Total Remaining Resources**		51600	
Feasibility mineral Resource	211	32630	
Prefeasibility mineral resource	221 and 222	32630	
Measured mineral resource	331	-----	
Indicated mineral resources	332	-----	
Inferred mineral resources	333	-----	
Reconnaissance mineral resource	334	-----	
Total Reserves + Resources		-----	

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2.0 – MINING

A- OPENCAST MINING

2. a) Description of existing as well as proposed method for excavation with all design parameters indicating on plans /sections.

Existing method of excavation with design parameter.

Two old pits are already opened in the lease area which is situated in northern & central part of the lease area.

Two old pits i.e. (PIT-1, PIT-2) are marked in Geological Plan Plate no. – IV within leasehold area (10.12 Ha/25.00Acre).

In the absence of any borehole (within the leasehold), close observation on existing old pits were made and lithology of supercumbent strata had been determined.

Description of proposed method for excavation with all design parameters.

The method of mining in this lease area will be opencast semi-mechanized category 'A' (OTFM) mining with deployment of pocklen (bucket capacity 0.9 cum), jack hammer (CPT 32 A) and compressor will be used at the time mining with combination of 10 ton truck/dumper capacity. Height of bench will be maintained at 6 m with a slope of angle about 45^0. Width of the bench will be not less than the height of the bench. During the mining operation all the rule and regulations like Metalliferous Mines Regulations' 1961 framed under the Mines Act' 1952. Jack-hammer (CPT 32 A) will be used for drilling in the productive benches for blasting purposes and depth of the drill hole will be done up to the depth of 3.0m depth with the diameter of 25.4mm. The holes shall be charged with ANFO. Run of mine (ROM) will be transported by 10t capacity truck to crushing plant.

Indicate quantum of development and tonnage and grade of production expected pit wise as in table below:-

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Year wise development & programme: Table -11

YEAR	Section Considered	Cross Section area	Length of Influence	Volume in Cum
1st year	B-B'	92	100	9200
2nd year	B-B'	101	100	10100
3rd year	B-B'	110	100	11000
4th year	B-B'	125	100	12500
5th year	B-B'	135	100	13500
			Total	56300

2. b) Indicate year-wise tentative excavation in m^3 along with development, ROM, pit wise as in table given below.

I – Insitu tentative excavation Table- 12

year	Pit No	Waste / OBR in m^3	Production of stone (ROM)		Stripping Ratio m^3 / te.
			Cum	MT	
2016-17	1st year	500	9200	24840	0.02
2017-18	2nd year	1300	10100	27270	0.04
2018-19	3rd year	2500	11000	29700	0.08
2019-20	4th year	2000	12500	33750	0.05
2020-21	5th year	3000	13500	36450	0.08
Total		9300	56300	152010	0.06

II - Dump re-handling (for the purpose of recovery of mineral):

Pit layout has been shown in development plan as mentioned above plate numbers and there is less generation of waste during this plan period. It is proposed that the waste to be generated during mining operation shall be used for making and maintaining the mine roads and

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surroundings etc. As such, proposal of separate dumping of waste is not given.

2. c) Enclose individual year wise development plans and sections showing pit layouts, dumps, stacks of mineral reject, if any, etc in case of 'A' category mines. Composite development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category mines.

Brief descriptions of year wise development plans & section, showing pit layouts for Mining Plan period i.e. 2016-17 to 2020-21 are given below:-

1st year working plan (2016-17) Plate no V:-

In this year first of all, necessary mining road shall be made for the movement of machinery etc. and then gradually development of benches will be done to reach the hill top. After reaching top of the hill, development shall be carried out benching method from top to bottom. During this year about 3897m^2 areas will be developed at the northern side of the lease area with one production bench of 6m height & width will be not less than height. During the 1st year mining will be started from the RL 435m to 417m.

Total production: Stone 9200 Cum.

Grade: Building and road grade.

2nd year working plan (2017-18) Plate no VI:-

In this year, Mining operation will be continued in the area of 3478m^2 will be developed with one production bench of 6m height and width will be not less than height towards northern side (from the RL 426m and reach to RL 417m). The advancement of the quarry will be towards south.

Total production: Stone 10100 Cum.

Grade: Building and road grade.

3rd year stage Plan (2018-19) Plate no VII:-

During this year about 2098m^2 area will be developed at the centre of the lease area with one production bench of 6m (upper) height and width will be not less than height (from the RL 426m and reach to RL 423m).

Total production: Stone 11000 Cum.

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Grade: Building and road grade.

4th year stage Plan (2019-20) Plate no VIII:-

During this year working will be in the area of 2037m^2 developed with one production bench of 6m height and width will be not less than height at RL value of 426m. The advancement of the quarry will be towards south.

Total production: Stone12500 Cum.

Grade: Building and road grade.

5th year stage Plan (2020-21) Plate no IX:-

In this 5th year working will be continued in the area of 1969.88m^2 with one production bench of 5m height towards southern side and width will be not less than height. Mining activity will be done from the RL 426m and reach to RL 420m. The advancement of the pit will be towards south.

Total production: Stone 13500 Cum.

Grade: Building and road grade.

2. d) Salient features of the proposed method of working indicating Category of mine.

The Mining Plan envisaged semi-mechanized Category 'A' Mine (OTFM), in which deployment of suitable size of mining production machinery can be used. Accordingly, height of bench has been kept as per regulation 106 of MMR 1960.

Method of working remains the same as shown in manual quarry i.e. entire mining mass is divided into bench which is worked by deepening method but because of adoption of mining machinery, bench height is increased which facilitates concentration of production so that mining equipment can be deployed.

Other reasons to adopt this methodology

i. Higher output to the quantity of stone.
ii. Geo-mining condition of mining mass.

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iii. By maintaining correct profile of the proposed quarry so that mining equipment can be shifted to different benches easily.

iv. Drudgery of pick cutter / basket loading can be reduced to minimum.

List of Machineries for excavation are given below:

Table – 13

Sl. No.	Particulars of Machine	Nos	Purpose
1	Excavator cum loader bucket capacity – 0.9 cum	01	Excavation & development of faces
2	Jack – hammer	1	Drilling / blasting
3	Compressor	1	For Jack – hammer
4	Truck	2	Transportation
5	Water sprinkler	01	For water spraying on haul road to control air pollution.

2. e) Description of the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. A reference to the plans and sections may be given. UPL or ultimate size of the pit is to be shown for identification of the suitable dumping site.

Year wise layout of mine working, are shown in stage plans (development plans) of each year working. Plate No. V to IX shows development of faces at the end of individual year during mining plan (i.e. 2016-17 to 2020-21) respectively.

Pit road layout inside the mine and surface road for transport to the crusher plant along with approach in the leasehold area are given in Plate No. V to XII.

2. f) Conceptual Mine planning up to the end of lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, Disposal of waste, backfilling of voids, reclamation and rehabilitation showing on a plan with few relevant sections.

Conceptual Mine Planning from 2016-17 to up to the end of lease.

As per UNFC classification Present Geological reserve & resources is 326300 cu mt of stone lying at a depth up to 480 meter surface level from the highest surface level of 438 meter. The present year wise RoM production target is 13500 cu .mt. So the life of mine is 326300/13500 = 24 years.

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Surface plan (Plate no. III) have been prepared for Partango stone Mine (10.12Ha/25.00 Acre) in which surface contouring have been done at the interval of 3m. The plan also shows un-mettled road, old pits etc.

Geological Plan (Plate no. IV) have been prepared in which exposed geological formation, existing old pits etc has been shown.

Geological Cross Section Plan (Plate no. IV) drawn to show the behavior of ore body/rock body, surface undulation etc has been shown.

i) Production:

The proposed production of stone during Mining Plan period i.e. 2016-17 to 2020- 21 (5 yrs) & Life of Mine (2021-22 to 2039-40) is as follows:-

Table -14

Plan Period	Production of Stone in cum
2016-17	9200
2017-18	10100
2018-19	11000
2019-20	12500
2020-21	13500
Total	56300
2021-22 to 2039-40 (Conceptual Period)	270000
Grand Total	326300

ii) Disposal of waste rocks and in saleable mineral:

Waste dump:

It can be seen from the development programme that there will be very less generation of waste during this plan period. It is proposed that the waste to be generated during mining operation shall be used for making and maintaining the mine roads and surroundings etc. As such, proposal of separate dumping of waste rocks is not required.

iii) Land Use Pattern:

Proposed Land use:

The leasehold area comprises the virgin area so; proposed land use pattern is as follows.

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PROPOSED LAND USE PATTERN FOR FIVE YEAR

Table – 15

Sl. No.	Pattern of land use	Area in Hectare	Area in Acres
1	Proposed Quarry	1.35	3.33
2.	Proposed road inside the lease area	0.05	0.12
3.	Proposed Plantation	0.90	2.25
3.	Area Non- utilized	7.82	19.30
	Total	**10.12**	**25.00**
4.	Proposed Road outside the Lease area	0.04	0.11
	Grand Total	**10.16**	**25.11**

Land use at the end of plan period:

Total 1.40 Ha/3.46 Acre area shall be used due to mining and allied activities by the end of the plan period.

Land use at conceptual stage:

This has been shown in Conceptual plan & Sections. It has been calculated that total 9.22 Ha/22.78 Acre area will be in use due to excavation.

CONCEPTUAL LAND USE PATTERN FOR LIFE OF MINE

Table – 15.1

Sl. No.	Pattern of land use	Area in Hectare	Area in Acres
1	Proposed Quarry	9.22	22.75
2	Prohibited & Protected Safety zone area earmarked for mining operation	0.90	2.25
	Total	**10.12**	**25.00**
4.	Proposed Road outside the Lease area	0.04	0.11
	Grand Total	**10.16**	**25.11**

v) Reclamation & Rehabilitation:

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Existing position:

The lease area is virgin.

Reclamation at the end of plan period:

There is no proposal of reclamation of quarry during this plan period due to the area is not fully exhausted.

Reclamation at conceptual stage:

As stated earlier the generation of waste is very less and it will be utilized for the maintenance and making of mine road and surroundings etc. The Mining lease area is exists on hill and surface level of the excavated area would be 380 meter after end of life of mine which is matched with the surface level of foot hill and its surroundings. Therefore, Reclamation & rehabilitation of the excavated quarry is not required.

One the mineral is fully exhausted at the end of life of mine, top soil would spread over the quarry floor to make suitable for growth of plant or agriculture purpose over all the excavated area and handed over to Forest Department.

vii) **Afforestation:**

Affoerstation for the ensuing plan period would be carried out over the safety zone and Afforestation for the life of mine over the excavated area is as given in Table - 16.

DETAILS OF AFFORESTATION SCHEME FOR LIFE OF MINE

Table no. -16

Sr. No.	Year	Over the green belt in Ha/Acre	Over the excavated quarry area Ha/Acre	Number of Plants
1	2016-17	0.18/0.45		500
2	2017-18	0.18/0.45		500
3	2018-19	0.18/0.45		500
4	2019-20	0.18/0.45		500
5	2020-21	0.18/0.45		500
	Total	**0.90/2.25**		**2500**
6	**20121-22 to 2039-40**		**9.22/22.75**	**23000**
		0.90/2.25	**9.22/22.75**	**25500**
Grand Total		**10.12/25**		**25500**

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B. UNDERGROUND MINING

Underground mining is not technically feasible in Partango Stone Mine. As the deposit is occured at a depth of 10 m from surface.

i) Mode of entry (adit, incline, shaft, ramp / incline).

Briefly describe the reason for choosing the mode of entry and its location with justification. Describe development and stoping method.

Not applicable as mine is of opencast working

iii) Underground layout

Attach a note briefly describing the underground layout using longitudinal sections / longitudinal vertical projection and level plans where necessary indication;

- sizes and intervals of levels and raises / winzes with proper reasoning
- proposed year wise/levelwise extent of development for five years along with the support system

Not applicable as mine is of opencast working

iii) **System of drilling and blasting**

Table -17

Drilling pattern in ore	Nil/Na
Drilling pattern in Rock	Nil/Na
Drilling pattern in Stopes	Nil/Na
Maximum number of holes blasted in a round.	Nil/Na
Charge per round (Kg)	Nil/Na
Charge per hole (kg)	Nil/Na
Type of explosive	Nil/Na
Powder factor (Norms)Rock development- Ore development- Stope-	Nil/Na
Powder Factor (Actual)Rock development- Ore development- Stope -	Nil/Na

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iv) **Method and sequence of stoping**

Describe briefly the method of stoping to be adopted, illustrated by plan, cross sections and longitudinal sections indicating broad parameters in the table below. In case it is open stoping attach a Geo technical report from a National Reputed agency on stability of open stopes. In case of filled stopes the detail of filling method to be described with supporting plans and sections. Broader thumb rule in respect of development be considered.

Table -18

	Stope parameters:	Nil/Na
1	Number of working stopes	Nil/Na
2	Size of the panel	Nil/Na
3	Level interval	Nil/Na
4	Thickness of crown pillar	Nil/Na
5	Thickness of Sill pillar	Nil/Na
6	Thickness of Rib pillar	Nil/Na
7	Size and interval of Stope pillar	Nil/Na
8	Size/shape of man way	Nil/Na
9	Size/shape of ore pass	Nil/Na
10	Method of stowing/back filling	Nil/Na
11	Method of drainage of stowed water	Nil/Na

v) **System of underground transportation: Describe in the table below.**

Table -19

From face to pit bottom or loading point. – Not applicable
From pit bottom to surface. – Not applicable
From surface to end use plant. – Not applicable

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Safety features provided on conveyor/ haulage track/ roadway– Not applicable

vi) **System of winding / hoisting :**

Attach a note briefly describing the system and linking with it's adequacy for the desired rate of material and man handling.

Not applicable as mine is of opencast working

vii) **Subsidence management may be described as below.**

Table -20

1	Whether surface areas being monitored are marked on plan? Details of surface features in the subsidence basin	Nil/NA
2	Whether monitoring points have been marked on plan as well as on ground?	Nil/NA
3	Maximum subsidence observed at monitoring points (mm)	Nil/NA
4	At what frequency subsidence monitoring is done?	Nil/NA
5	Whether results of monitoring are being properly recorded?	Nil/NA
6	Angle of draw observed on dip and strike side.	Nil/NA
7	Whether critical, sub-critical or super-critical area extracted?	Nil/NA

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Conceptual Mine planning up to the end of lease period taking into consideration the present available reserves and resources describing the ROM excavation. Disposal of waste, stowing/backfilling, surface subsidence, reclamation and rehabilitation showing on a plan with few relevant sections.

Not applicable as mine is of opencast working

viii) **Mine ventilation:**

Not applicable as mine is of opencast working

ix) Extent of Mechanization

Describe briefly with calculation for adequacy and type of machinery and equipment proposed to be used in different activities of drilling, material handling in development and stope, hauling, hoisting to surface, surface transportion and any:

i) **CALCULATION FOR REQUIREMENT OF EXCAVATOR.**

The Excavator will be backhoe type with 0.8 cum bucket capacity with combination of tippers of 10MT (4.5 cum) capacity.

a) Bucket fill Capacity	= 0.8 cum
b) Effective capacity of the Bucket	= 0.81 cum
c) Capacity of the dumper	= 4.5 cum
c) Effective capacity of the dumper of 0.9 factor	= 4.05 cum
e) No. of bucket require to fill a bucket	= (4.05/0.81) – 5
f) Average cycle time for excavation, loading of material to a tipper	= 6 minutes.
g) Average utilization of time per shift with 80% utilization factor	= 400 minutes.
h) Number of cycle per shift	= (400/6) = 67.
i) Average excavation, loading capacity of Excavator per shift	= (67 x 4.05) = 271.35 cum

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j) Total working day in a year = 230 days

K) Total Excavation and Loading capacity = 62410.50 cum.

Table – 21

Year	1st year	2nd year	3rd year	4th year	5th year
Year-wise quantity of material to be excavated and loaded. (cum)	9700	11400	13500	14500	16500
No. of working excavator required	1	1	1	1	1

From the above table it is clear that one excavator is required.

ii) CALCULATION FOR REQUIREMENT OF DUMPERS FOR DESPATCH OF STONE FROM MINE TO CRUSHER UNIT.

<u>For stone Transportation:</u>

The product stone shall send to crusher unit for crushing by dumper. For this, dumpers are required. The detailed calculation is given hereunder:

a) Average Hauling distance both way = 2000 m.

b) Average traveling time both way @ 15 kmph = 13 minutes (avg)

c) Average Loading time = 6 minutes

d) Average un-loading time = 2 minutes

e) Average cycle per trip = 11 minutes

f) Effective working time per shift with 80% utilization factor = 338 minutes

g) Average no. of trips per shift per dumper = 338/11 = 30nos.

h) Carrying capacity of the Truck = 4.35 cum

i) Hauling capacity of dumper per shift = 130.50 cum

j) Hauling capacity of dumper per shift per annum = 30015 cum

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Year-wise requirement of dumpers for stone boulder transportation

Table – 22

Years	1st year	2nd year	3rd year	4th year	5th year
Year-wise quantity of stone to be transported. (cum)	9200	10100	11000	12500	13500
No. of Dumpers required	2	2	2	2	2

From the above table it is clear 2 dumpers are required.

iii) Drilling:

Jack-hammer (CPT 32A) will be used for drilling in the productive benches for blasting purposes and depth of the drill hole will be done up to the depth of 3.0m depth with the diameter of 25.4mm as and when required. The holes will be charged with ANFO. The run-of-mine (ROM) will be transported by 10 t capacity truck to a crushing plant, which is located outside the lease area. In this type of deposit, no fixed pattern of blasting shall be done. Besides drilling and blasting, rock breaker will also be used for size reduction.

The following machines are proposed to be deployed to carry out mining operation in this mine refer table no. - 13

Transport from mine head to the destination (crusher point):-

The excavated stone material have been taken out from the pit head to destination i.e. crusher plant located outside the lease area will be transported by own Truck as well as hired dumpers as required time to time.

iv) **Loading equipment:**

Excavator cum loader with size of bucket 0.9 cum will be deployed at the time of mining operation and Trucks will be deployed for transporting the excavated ROM stone from mine head to crushing unit.

v) **Miscellaneous:**

Describe briefly and allied operations and machineries related to the mining of the deposit not covered earlier:

There is no allied operation.

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BLASTING:

Describe briefly:

a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.

For fragmentation and dislodging the hard stone, blasting is required. For this, drilling hole and blasting method is proposed to be adopted in the mine. The drilling hole shall be made by Jackhammer (CPT 32A) driven by air compressors. Jack-hammer (CPT 32A) will be used for drilling in the productive benches for blasting purposes and depth of the drill hole will be done up to the depth of 3.0m with the diameter of 25.4mm as and when required. Not more than 10 holes will be fired in one round. However, regular blasting is not required. Large sized boulders will be excavated by using hydraulic Excavators which will be reduced in size by drilling blasting as well as by using hydraulic rock breakers.

i) **Specification of Jack-hammer Drill**

*	Jack hammer	-	CPT 32A
*	Diameter of the drill rod	-	25.4 mm
*	Consumption of compressed air	-	2-2.5 cum/min
*	Pressure supplied up to	-	6 kgf/sq.m

ii) **Holes Required per Day:**

Requirement of hole per day is not specific. Both rock breaker and blasting will do as per requirement.

b) Type of explosive used/to be used:

To carry out blasting the holes will be charged with ANFO, class- III (Special Gelatin 80% strength) as per requirement of hardness of the stone and buster as well as class–vi explosive (detonator/ Electric detonator and safety length) will be used in the mine as per requirement of explosive.

c) **<u>Whether secondary blasting is needed, if so describe in brief:</u>**

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Not applicable.

d) **Storage of explosives (like capacity and type of explosive magazine):**

Blasting will be done by agency so, there is no necessary for storage of explosives.

e) **Precautions to be observed during drilling and blasting:-**

All the necessary precautions such as hoisting of red flag at a safe distance, alarming the people by whistling and shouting will be taken before blasting. A qualified blaster having blasters certificate will do blasting. Delay blasting will be done to control flying rock particles to avoid effect of blasting on nearby agricultural fields

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3. MINE DRAINAGE

3. a) Minimum and maximum depth of water table based on observations from nearby wells and water bodies

Maximum depth of water is 100 m from surface level.

3. b) Indicate maximum and minimum depth of Workings

Maximum & minimum depth of working is up to 6 meter.

3. c) Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged

As the depth of ground water level varies from 100 m from ground surface. Hence, it is not forseen any ground water seepage in the mined out area as the lease area is on hill. However in rainy season water will accumulate in the quarry for this water pump will be used for dewatering.

3. d) Description of regional and local drainage pattern. Also indicate annual rain fall, catchments area, and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc.

No river or nallah is passing through the lease area. Chando or Keso Nadi is at a distance of 3.6 kms in south –east direction away from the area which is tributary of Barakar River. Dulki nala is at a distance of 4.5 km in south-east direction from lease area. However two main rivers of the districts are Barakar River and Sakri River.The Barakar river flows from west to east in the southern part of the district and supports Teliya Hydel project, a multipurpose dam constructed on it. Rivers flowing from west to east are Ponchkhara, Keso, Akto, Gurio and Gukhana nadi and these are the tributaries of the **Barakar River**. **Sakri River** is the main river in the northern part of the district which flows from south and east to North West.

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4.0 STACKING OF MINERAL REJECT/SUBGRADE METERIALS & DISPOSAL OF WASTE

4. a) Indication of briefly the nature and quantity of top soil, overburden / waste and Mineral Reject to be disposed off.

The waste (overburden) consists of weathered soil which is reddish in colour and gritty in nature.

4. b) The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL unless simultaneous backfilling is proposed or purely temporary dumping for a short period is proposed in mineralized area with technical constraints & justification.

There is no proposed ground for external dumping is suggested under the plan period. From the development plan, it is clear that there will be less generation of overburden and intercalated waste from total excavation. It is proposed that all the waste shall be used for making and maintaining the mine road and surroundings etc.

4. c) Attach a note indicating the manner of disposal of waste, configuration and sequence of year wise build up of dumps along with the proposals for protective measures.

Due to the less generation of waste from the excavated area it is used for making and maintaining the mine road and surroundings. Hence, there is no any proposal is required for disposal of waste in the mining plan period.

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5.1 USE OF MINERAL AND MINERAL REJECT

The following are to be furnished in the interest of mineral conservation.

5.1 a) Description of the requirement of end-use industry specifically in terms of physical and chemical composition.

It is a raw material used for road, railway, building construction work. There is no chemical specification stipulated by any buyers. Only physical specification such as different sizes (0 - 5mm 21%), (5-10mm 17%), (10-20mm 31%) and (20-40mm 26%) (fines 05%) is required for different purposes. All the materials will be consumed by buyers.

5.1 b) Brief requirement of intermediate industries involved in up gradation of mineral before its end-use:

Not applicable.

5.1 c) Detail of requirements for other industries, captive consumption, export, associated industrial use etc.

Not applicable.

5.1 d) Indicate precise physical and chemical specification stipulated by buyers.

It is a raw material used for road, railway, building construction work. There is no chemical specification stipulated by any buyers. Only physical specification such as different sizes (0 - 5mm 21%), (5-10mm 17%), (10-20mm 31%) and (20-40mm 26%) (fines 05%) is required for different purposes. All the materials will be consumed by buyers.

5.1 e) Details of processes adopted to upgrade the ROM to suit the user requirements.

It is a raw material used for road, railway, building construction work. Only sorting and sizing is done as per consumer's requirement. All the materials will be consumed by buyers.

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6.0 PROCESSING OF ROM AND MINERAL REJECT

6. a) If processing / beneficiation of the ROM or Mineral Reject is planned to be conducted, briefly describe nature of processing / beneficiation. This may indicate size and grade of feed material and concentrate (finished marketable product), recovery etc.

Stone is used in raw form in road, civil construction etc. As such, no beneficiation is required. Only different sizes are required by different consumers. All the production of stone shall be utilized in lessee own crusher for size reduction as per the requirement. For this, lessee has installed a crushing/screening unit outside the lease area.

6. b) Give a material balance chart with a flow sheet or schematic diagram of the processing procedure indicating feed, product, recovery, and its gradeat each stage of processing.

Not required as ROM is directly dispatch to the buyer

6. c) Explain the disposal method for tailings or reject from the processing plant.

Not required as ROM is directly dispatch to the buyer

6. d) Quantity and quality of tailings /reject proposed to be disposed, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailings dam.

Not required as ROM is directly dispatch to the buyer.

6. e) Specify quantity and type of chemicals if any to be used in the processing plant.

Not required as ROM is directly dispatch to the buyer

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6. f) Specify quantity and type of chemicals to be stored on site / plant.

Not required as ROM is directly dispatch to the buyer

6. g) Indicate quantity (cum per day) of water required for mining and processing and sources of supply of water, disposal of water and extent of recycling. Water balance chart may be given.

Water Balance Chart -

1. Potable- 2KLD for drinking purpose,
2. dust supression-5 KLD along haul road,
3. Green belt development – 5 KLD,

   Total- 12KLD

Source-Bore well for drinking water and surface water for sprinkling & green belt.

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7.0 OTHER

Describe briefly the following:

7. a) Site services:

All the necessary facilities like drinking water, first-aid box etc. will be provided at the mine site.

7. b) Employment Potential:

Manpower deployment shall be as follows :-

Highly skilled person:	01
Skilled person :	**01**
Semi Skilled person:	**04**
Unskilled person:	**08**
Grand total:	**14**

Semi skilled and unskilled person may employed by surrounding villages.

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8.0PROGRESSIVE MINE CLOSURE PLAN UNDER RULE 23 OF MCDR'1988

8.1 Environment Base line information: Attach a note on the status of baseline Information with regard to the following.

Existing land use pattern indicating the area already degraded due to mining, roads, processing plant, workshop, township etc in a tabular form.

Existing Land Use Pattern:

Table -23

Land Use	Existing Land Use Area In Ha
Partially back filled quarry	NIL
Fully reclaimed area	NIL
Waste dump (external)	NIL
Road	NIL
Infrastructure	NIL
Total used area	NIL
Total lease area	NIL

Water regime:

There are no water bodies within the lease area. The mining will be restricted up to a moderate depth & the water table of the area is far below the ground because of mining will be done on hill. So, no seepages could be seen and entrance of surface water is not possible. Except during rainy season water could be clogged in the quarry.

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Quality of air:

The potential sources of air pollution from the mining are drilling, blasting, exhaust fumes of internal combustion machines and transportation of ore in the vicinity. Air pollution caused by mining and associated activities can be classified into the following categories:

- Gaseous pollutants (Nitrogen Oxides, Sulphur Dioxide and Carbon Monoxide); and
- Suspended Particulate Matter.

Ambient noise level:

In this small mine the noise level will be up to tolerable limit (80 db A°) and the noise level can be reduced by:

i. Choosing suitable equipment.
ii. Proper maintenance of vehicles.
iii. Afforestation.

Flora:

The lease area is in forest and there are trees exists in this area. Bushes observed in the lease area.

Following is the list of flora found within 5 KM radius to the lease.

List of Flora-

Table – 24

Common Name / Local Name	Scientific name
Mahua	Madhuca latifolia
Palas	Butea frondosa
Banyan	Ficus benghalensis
Cheju/kauri (Khajur)	Phoenix dactylifera
Bamboo	Babusa tulda
Sal, Sakhuna	Shorea robusta
Margosa/Neam	Azadirachta indica
Peepal/Pipal	Ficus religiosa

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Climatic condition:

Due to lower elevation than Hazaribag plateau the area receives comparatively low rainfall and show higher temperature. The average rainfall of the area is 1200 mm. and most of the rainfall takes place during rainy season. The average annual temperature remains about 25°C, but summer and winter season records many variations in temperature ranging from the lowest temperature of 2°C to 30°C in January to 40°C to 45°C in May.

Human settlements:

There are no human settlements within the lease hold, so there will be no displacement of PAF.

Public buildings, places of worship and monuments:

There are no Public buildings, Historical monuments & place of worship within the lease hold

Indicate any sanctuary is located in the vicinity of leasehold:

There is no any sanctuary is located within the vicinity of leasehold area.

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8.2 Impact Assessment: Attach an Environmental Impact Assessment Statement describing the impact of mining and beneficiation on environment on the following:

i) Land area indicating the area likely to be degraded due to quarrying, dumping, roads, workshop, processing plant, tailing pond/dam, township etc.

Proposed Land use

Table -25

Sl. No.	Pattern of land use	Area in Hectare	Area in Acres
1	Proposed Quarry	1.35	3.33
2.	Proposed road inside the lease area	0.05	0.11
3.	Proposed Plantation	0.90	2.25
3.	Area Non- utilized	7.82	19.30
	Total	**10.12**	**25.00**
4.	Proposed Road outside the Lease area	0.04	0.11
Grand Total		**10.16**	**25.11**

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ii) **Air quality:**

Impact & Management

Emission of dust due to movement of Vehicles and mining machineries, drilling & blasting will produce impact on air.

Mitigation Measures

a) The production of blast fumes containing noxious gases should be reduced by the following methods:

- Proper and proportionate mixing of fuel oil with ammonium nitrate to ensure complete detonation;
- Use of adequate booster/primer; and
- Proper stemming of the blast hole.

b) Advanced blasting technology to be adopted to minimize the damage on aquifers;

c) Dust due to drilling should be minimized by using wet drilling methods;

d) Regular maintenance of vehicles and machinery should be carried out in order to control emissions;

e) Cabins for jack hammer and dumpers and dust respirators to workmen should be provided;

f) Dust generated due to traffic roads should be reduced by water spraying at regular intervals;

g) Trucks should be covered with tarpaulin, during the transportation.

h) Greenbelt development should be taken up all along the roads;

i) The dust respirators should be provided to all workers in dusty atmosphere;

j) A good housekeeping and proper maintenance should be practiced which will help in controlling pollution.

The location of the sampling point is shown on environment plan.

iii) **Water quality:**

Impact & Management

Mining shall be carried out at a maximum depth of 12 meter from the surface of the hill. Existence of surface water sources are not in the lease hold area. So there is no change in the quality of water for the said plan period.

However, Rain water accumulated in the quarry shall be dewatered after testing and so far the drinking water is concern, the sources is far from the lease hold

Water quality test report is enclosed as Annexure - V

iv) **Noise levels:**

Impact & Management

In this small mine the noise level will be up to tolerable limit (80 db A) and the noise level can be reduced by the followings:

The deployments of HEMM equipment are very much limited and working shall be done in a single location. Therefore, noise level shall be below the tolerable limit (80dbA).

v) Vibration levels (due to blasting):

Impact & Management

In this mine, the vibrations are caused due to blasting. The vibrations by their mechanical effects act on existing rocks and subject them to tensile, compressive and shearing stresses, which spoil their mechanical characteristics with an immediate consequence.

Control of Vibrations:

- Blasting are performed strictly as per the guidelines specified under blasting technology;
- Overcharging is avoided;
- The charge per delay are minimized and preferably more number of delays are used per blasts;
- Blasting operations are carried out only during day time as per Mine Safety guidelines;
- A safe distance of about 500 m from center of blasting is maintained;
- During blasting, other activities in the immediate vicinity are temporarily stopped;
- Drilling parameters like burden, depth, diameter and spacing are properly designed to give proper blast;
- The mesh ratio E/V shall always be more than unity E/V >1 (E = hole spacing, V = distance between rows);
- Effective stemming of the explosives are done in the drill holes;
- The explosives Have;

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- High velocity of detonation;
- Density suited to its particular application;
- Good fume characteristics;
- Good water resistance; and
- Good storage qualities and resistance to atmospheric pressures and conditions.

vi) **Water regime:**

Impact & Management

There are no water bodies within the lease area. The mining will be restricted up to a moderate depth & the water table of the area is far below the ground because of mining will be done on hill. So, no seepages could be seen and entrance of surface water is not possible. Except during rainy season water could be clogged in the quarry.

vii) **Acid mine drainage:**

There will be no acid in mine drainage

viii) **Surface subsidence:**

There will be no surface subsidence as the mine working is by opencast method only.

ix) Socio-economics:

There is no habitation within the lease hold area. So there will be no displacement of PAF. But due to mining activity, socio economic conditions of nearby villagers would be improves by getting employment.

x) Historical monuments etc.

There is no historical monuments are found in the vicinity of the lease area.

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8.3 Progressive reclamation Plan :

To mitigate the impacts and ameliorate the condition, describe year wise steps proposed for phased restoration, reclamation of lands already/ to be degraded in respect of following items separately for 5 years period.

The excavated area shall be left which can be used as water Reservoir for Rain water Harvesting, the water of which be utilized by local people for their domestic purpose.

The details of proposed plantation are given below in the Table:

DETAILS OF AFFORESTATION SCHEME

Table no. -26

Sr. No.	Year	Over the green belt in Ha/Acre	Number of Plants
1	2016-17	0.18/0.45	500
2	2017-18	0.18/0.45	500
3	2018-19	0.18/0.45	500
4	2019-20	0.18/0.45	500
5	2020-21	0.180.45	500
Total		**0.90/2.25**	**2500**

Precautionary measures will be taken for carrying of the afforestation made by regular watering in the afforested area, to protect from grazing animals and proper manuring. Man will be deployed for protecting and doing the above.

8.3.1. Mined-Out Land:

Describe the proposals to be implemented for reclamation and rehabilitation of mined-out land including the manner in which the actual site of the pit will be restored for future use. The proposals may be supported with yearly plans and sections depicting yearly progress in the activities for land restoration/ reclamation/rehabilitation, afforestation etc, called "Reclamation Plan".

Production:

The production target for the next five years is as under:

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Table – 27

Year	Production of stone in cum
2016-2017	9200
2017-2018	10100
2018-2019	11000
2019-2020	12500
2020-2021	13500
Total :	56300

After the conceptual mining period, on the basis of proposed production planning and available reserve position, the ultimate pit area, ultimate pit depth, ultimate generation of waste, final pits slope, afforestation program me is given in the following table:

Table -28

Ultimate pit area for stone	0.8059 Ha
Average Ultimate pit depth	50 m
Ultimate generation of waste	9300cum
Total No. of plantation during the plan period	2500
Total No. of plantation at the conceptual Stage	--------

Reclamation and rehabilitation –

The excavated area shall be left which can be used as water Reservoir for Rain water Harvesting, the water of which be utilized by local people for their domestic purpose.

Land Use Pattern: Existing

Table – 29

Land Use	Existing Land Use Area in Ha
Old pits	NIL
Partially back filled quarry	NIL
Fully reclaimed area	NIL
Waste dump (external)	NIL
Road	NIL
Infrastructure	NIL
Total used area	NIL
Total lease area	NIL

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After Plan Period

The land Use Pattern at the end of 5 years plan period will be as under:

Table no. - 30

Sl. No.	Pattern of land use	Area in Hectare	Area in Acres
1	Proposed Quarry	1.35	3.33
2.	Proposed road inside the lease area	0.05	0.12
3.	Proposed Plantation	0.90	2.25
3.	Area Non- utilized	7.82	19.30
	Total	10.12	25.00
4.	Proposed Road outside the Lease area	0.04	0.11
Grand Total		**10.16**	**25.11**

Land use at the end of life of the mine:

Table no. - 31

Pattern of Utilization	At Conceptual period (Ha/Acre)
Quarry/pits	9.22/22.73
Waste Dump	--
Road	--
Proposed road outside the lease area	0.04/0.11
Infrastructure	--
Plantation in safety zone(Green Belt)	0.90/2.25
Total	**10.16/25.11**
Area Un Utilised	--
Grand Total	**10.16/25.11**

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8.3.2 Topsoil Management: The topsoil available at the site and its utilization may be described.

Top soil management:

(i) Top Soil: The topsoil is reddish brown in colour and gritty in nature. The soil is removed separately and used to maintaining the road.

8.3.3 Tailings Dam Management:

The steps to be taken for protection and stability of tailing dam, stabilization of tailing material and its utilization, periodic desilting measures to prevent water pollution from tailings etc, arrangement for surplus water overflow along with detail design, structural stability studies, the embankment seepage loss into the receiving environment and ground water contaminant if any may be described.

Not applicable.

8.3.4 Acid mine drainage, if any and its mitigative measures.

There will be no acid mine drainage, hence mitigative measures is not required.

8.3.5 Surface subsidence mitigation measures through backfilling of mine voids or by any other means and its monitoring mechanism.

There will be no surface subsidence due to open cast mining

The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table.

SUMMARY OF YEARWISE PROPOSAL FOR ITEM NO. 8.3

Table no. - 32

Items	Details	Proposed	Actual	Remarks
Dump management	Area afforested (ha)	Nil	Nil	
	No of saplings planted	Nil	Nil	
	Cumulative no of plants	Nil	Nil	

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	Cost including watch and care during the year	Nil	Nil	
Management of worked out benches	Area available for rehabilitation (ha)	Nil	Nil	
	Afforestation done(ha)	Nil	Nil	
	No of saplings planted in the year	Nil	Nil	
	Cumulative no of plants	Nil	Nil	
	Any other method of rehabilitation	Nil	Nil	
	Cost including watch and care during the year	Nil	Nil	
Reclamation and Rehabili-tation by backfilling	Void available for Backfilling (L x B x D) pit	Nil	Nil	
	Void filled by waste /tailings	Nil	Nil	
	Afforestaion on the backfilled area	Nil	Nil	
	Rehabilitation by making water reservoir	Nil	Nil	
	Any other means (specify)	Nil	Nil	
Rehabilitation of waste land	Area available (ha)	Nil	Nil	
	Area rehabilitated	Nil	Nil	
	Method of rehabilitation	Nil	Nil	
Others specify				

8.4 Disaster Management and Risk Assessment:

This may deal with action plan for high risk accidents like landslides, subsidence flood, inundation in underground mines, fire, seismic activities, tailing dam failure etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of lessee to meet such eventualities and the assistance to be required from the local authority may also be described.

The working is being carried out at shallow depth so heavy blasting is not required so no risk assessment or disaster management is required.

High risk factors such as earthquake, landslide, subsidence flood, fire, tailing dam failure etc. are not encountered nor anticipated during proposed five years plan period. As such, emergency plan for quick evacuation, protective measures are not proposed. Also, no local habitant exists as the working area is far away from the locality.

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8.5 Care and maintenance during temporary discontinuance:

An emergency plan for the situation of temporary discontinuance due to court order or due to statutory requirements or any other unforeseen circumstances may indicate measures of care, maintenance and monitoring of status of discontinued mining operations expected to re-open in near future.

Due to unforeseen reason the mine will be a closed temporarily then proper care of workers and staffs will be taken. Temporary discontinuance notice in the prescribed form D1 under rule 24 of M.C.D.R., 1988 will be sent to the concerned authority of Indian Bureau of Mines as well as in the prescribed form under MMR, 1961 to the authority of D.G.M.S., concerned State Government and concerned Labour Department within the stipulated time.

Security guards to take care of the infrastructure shall be kept under the roll of the management in case of any temporary discontinuation.

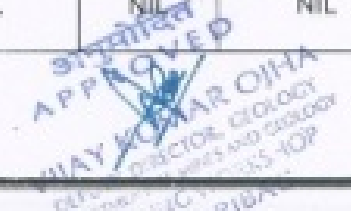
8.6 Financial Assurance:

The financial assurance can be submitted in any encashable form preferably a Bank Guarantee from a Scheduled Bank as stated in Rule 23(F)(2) of Mineral Conservation and DevelopmentRules,1988 for five years period expiring at the end of validity of the document. The amount calculated for the purpose of Financial Assurance is based on the CCOM's Circular no. 4 dated 2006 as below.

Table indicating the break-up of areas in the Mining Lease for calculation of Financial Assurance

Table no. - 33

Sl. No	Head	Area put on use at start of mining plan Ha.	Additional requirement during plan period Ha.	Total Ha.	Area considered as fully reclaimed & rehabilitated Ha.	Net area considered for calculation Ha.
A	B	C	D	E E=(C+D)	E	G G=(E-F)
1	Area under mining	NIL	1.35	1.35	NIL	1.35
2.	Storage for top soil	NIL	NIL	NIL	NIL	NIL
3.	Waste dump site	NIL	NIL	NIL	NIL	NIL



4.	Mineral storage	NIL	NIL	NIL	NIL	NIL
5.	Infrastructure-workshop, administrative building	NIL	NIL	NIL	NIL	NIL
6.	Roads	NIL	0.05	0.06	NIL	0.05
7.	Railways	NIL	NIL	NIL	NIL	NIL
8.	Tailing pond	NIL	NIL	NIL	NIL	NIL
9.	Effluent treatment plant	NIL	NIL	NIL	NIL	NIL
10.	Mineral separation plant	NIL	NIL	NIL	NIL	NIL
11.	Township area	NIL	NIL	NIL	NIL	NIL
12.	Others to specify (Parapet Wall & Garland Drain)	NIL	NIL	NIL	NIL	NIL
	Grand Total		1.40	1.40	----	1.40

Computation for financial assurance:

Balance area under use – 1.40 Hectares

Rate - Rs. 25000/- per hects.

Amount for financial assurance – 1.40 Hects X Rs 25000/- = Rs. 35000/-

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CONSENT LETTER FROM APPLICANT

The Mining Plan in respect of Partango Stone Mine over an area of 10.12 Ha/25.00 Acres, in village Partango (Gaithibad), P.O. Domchanch & District Koderma, State: Jharkhand, under Rule 24A of MCR, 1960 /12 of MCDR 1988 has been prepared by **B.B. LALL Registration Number RQP/RNC/140/2009/A.**

This is to request the Deputy Director Geology, Hazaribagh to make any further correspondence regarding any correction of the Mining Plan with the said recognized person at his address below :-

SHRI B.B. LALL.
REG. NO. - RQP/RNC/140/2009/A
1236/2, Lajpat Nagar, Near Lala Lajpat Rai School,
Pundag, Argora, Ranchi – 834004
Jharkhand,
Mobile: - 09431115961, 09934307900

We hereby undertake that all modifications / updating as made in the said Mining Plan by the said recognized person be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

Signature
Ramchandra Mehta
Name of the Mine owner

Place: Ranchi

Date: 09.06.2015

CERTIFICATE

It is certified that the Progressive Mine Closure plan of Partango Stone Mine of Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar over an area of 10.12 Ha/25 Acre complies with all statutory rules, Regulations, Orders Made by the Central or State Government, Statutory organization, Court etc which have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities.

The information furnished in the Progressive Mine Closure plan is true and correct to the best of our knowledge and records.

Signature

Ram chandra mehta

Name of the Mine owner

Place: Ranchi

Date: 09.06.2015

Office :Village - Bigha, P.O- Phulbaria, P.S. - Nawalsahi, Dist - Koderma, Jharkhand - 825418
Mobile - 91 - 9431924560
E-mail : amitabhconstructions@gmail.com

CERTIFICATE

"The provisions of Mines **Act, Rules** and **Regulations** made there under have been observed in the Mining Plan over an area of 10.12 hectares/25.00 Acres in Koderma district in Jharkhand state belonging to Partanga Stone Mine, and where specific permissions are required, the applicant will approach the **D.G.M.S.** Further, standards prescribed by **D.G.M.S.** in respect of **minerals health** will be strictly implemented".

Signature

Ramchandra Mehta

Name of the Mine owner

Place: Ranchi

Date: 09.06.2015

Office :Village - Bigha, P.O- Phulberia, P.S. - Nawalsahi, Dist - Koderma, Jharkhand - 825418
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B. B. LAL
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Mob- +91-8969461947, 9835113341
Fax No.:0651-2410763

Ref. .....

CERTIFICATE FROM RQP

Date. 09.06.2015

The provisions of the **Mineral Conservation and Development Rules 1988** have been observed in the preparation of the Mining Plan for **Partango Stone Mine** over an area of **10.12 Ha/25 Acre**, of Ram chandra Mehta Manoj Kumar Mehta Amitabh Kumar, in village: Partango (Gaithbad), P.O. Domchanch & District: Koderma of Jharkhand State and whenever specific permissions are required, the applicant will approach the concerned authorities of Indian Bureau of Mines.

The information furnished in the Mining Plan is true and correct to the best of our knowledge.

Place: Ranchi

Date: 09.06.2015

Shri B. B. Lall
REG. NO. - RQP/RNC/140/2009/A
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APPROVED
VIJAY KUMAR OJHA
DEPUTY DIRECTOR, GEOLOGY
DEPARTMENT OF MINES AND GEOLOGY
DRILLING WORKS, HQR
HAZARIBAG