From

Mining Officer,
Deptt. Of Mines & Geology,
Bhiwani.

To

M/s MSK-"JV",
S-571, Greater Kailash Part-2,
New Delhi.

Memo No. Mining/ Lease/ Jhoju Kalan/ 308 Dated : 10/05/2016

Subject :- **Status of other mining area within 500m radius of Stone Block Jhoju Kalan Distt. Bhiwani.**

****

In the the reference of your letter dated 05.04.2016 it is infromed that as per record & physical verification of the site there is no mining lease/contract in the radius of 500 mts of others Stone Mines of Distt. Bhiwani.

Mining Officer,
Deptt. Of Mines & Geology,
Bhiwani.

S N SHARMA, BE (MINING), FCC (R), M.Sc. (Eco. & Env.) PGDM
RQP (IBM) Reg. No. RQP/ DDN/135/2001/A
Valid up to – 29th March, 2021

To

Date: 26th April, 2016

Director General

Department of Mines & Geology, Govt. of Haryana

30, Bays Building, Sector-17 Chandigarh

Received
28/4

Subject: Submission of Draft Mining Plan & Progressive Mine Closure Plan for Jhojhu Kalan Stone Mine along with Associated Minor Minerals (Minor Mineral) for District: Bhiwani (Haryana) comprising an area of 6.00 Hectares for 10 years, of M/S *MSK-JV, S-571, Greater Kailash-II, New Delhi-110048*

Dear Sir,

Please find enclosed here with Draft Mining Plan & Progressive Mine Closure Plan (Two Nos of copies) for Jhojhu Kalan Mine for extraction of "Stone along with associated minor minerals" for your consideration and approval. It is submitted under Rule 66, Chapter-10 of Haryana Minor Mineral Concession, Stocking, Transportation and Prevention of Illegal Mining Rules 2012.

Submitted for approval please.

Thanking You,

Yours Faithfully

Recognized Qualified Person (RQP)

S.N. SHARMA
RECOGNISED QUALIFIED PERSON (RQP)
INDIAN BUREAU OF MINES (IBM)
RQP No. RQP/DDN/135/2001/A
VALID UPTO : 29TH MARCH 2021

SN Sharma DD-No. 500844 dt. 21.04.16 for Rs.5000/-

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MINING PLAN AND PROGRESSIVE MINE CLOSURE PLAN

OF

STONE ALONG WITH ASSOCIATED MINOR MINERALS
IN VILLAGE: JOJHU KALAN
Area-6.00 Hectares)
DISTRICT: BHIWANI.
STATE: HARYANA.

APPLICANT-

M/s MSK JV, S-571, Greater Kailash-II, New Delh-110048

PREPARED BY

S.N. Sharma
RQP/DDN/0135/2001-A.
House No. 282; Sector 11-D Faridabad (Haryana)

Certificate.

The Mining plan and Progressive Mine Closure Plan complies all Statutory Rules, Regulations, orders made by the Central or State Government, statutory organizations, court etc. have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities. It is also undertaken that all the measures proposed in the Progressive Mine Closure Plan will be implemented in a time bound manner as proposed.

S.N. Sharma

RQP/DDN/0135/2001-A.

Annexure -3

CONSENT LETTER FROM APPLICANT

The Mining Plan in respect of Building stone mine Jojhu Kalan of M/s MSK JV, S-571,Greater Kailash-II, New Delh-110048 in village Jojhu Kalan , 6.00 Hectares ; District- Bhiwani State –Haryana is being prepared by S.N. Sharma RQP/DDN/0135/2001-A.

I request The Director Mines and Geology, Haryana to make further correspondence regarding modification of the mining plan with the said RQP on the following address:-

S.N. Sharma
282, First Floor, Sector-11D, Faridabad (Haryana)
09560848579
(RQP/DDN/0135/2001-A.)

I also authorize S.N. Sharma to make correspondence with your office.
I hereby undertake that the mining plan in respect of the area prepared by RQP be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Place:
Date: Signature of the applicant
M/s MSK JV, S-571,Greater Kailash-II, New Delh-110048

INDEX

List of Annexure

LIST OF PLATES

Sr.no.	Description	Plate no.
1	Location plan	1
2	Key Plan	2
3	Surface Geological plan	3
4	Geological cross sections	4
5	Plan showing the position of mine Working and dump at the end of 1st Year	5
6	Plan showing the position of mine Working and dump at the end of 2nd Year	6
7	Plan showing the position of mine Working and dump at the end of 3rd Year	7
8	Plan showing the position of mine Working and dump at the end of 4th Year	8
9	Plan showing the position of mine Working and dump at the end of 5th Year	9
10	Sections showing the position of mine Working and dump at the end of 1st to 5th Year	10
11	Progressive mine closure plan	11
12	Conceptual mining plan	12
13	Section showing the conceptual pit limit	13
14	Environmental Plan	14

CHAPTER -1

INTRODUCTION

1.0 Introduction

M/s MSK JV, S-571,Greater Kailash-II, New Delh-110048 stood the highest bidder for the auction of the Jojhu Kalan mine held on 16-03-2016 & 17-03-2016 for Stone along with Associated minor minerals(Minor Minerals) of Dadri Tehsil, District : Bhiwani (Haryana)

The Letter of intent has been issued to M/s MSK JV, S-571, Greater Kailash-II, New Delhi by Director of Mines & Geology, State Govt. of Haryana, Chandigarh vide Memo No. DMG/HY/ML/Jojhu Kalan /2016/2008 dated 11-04- 2016 for Mining of " Stone along with Associated minor minerals in Jojhu Kalan over an area of 6.00 hectares in Tehsil Dadri district Bhiwani,Haryana for a period of 10 years (Annexure - I).

The applicant is involved in the mining business for last many years. The applicant can invest necessary funds for the scientific and systematic development of mines including land rejuvenation and progressive reclamation programme and other measures necessary to protect the quality of the environment and human health etc. The objective of preparation of this Mining Plan and Progressive Mine Closure Plan is to fulfill the conditions stipulated by the Department of Mines & Geology, Haryana required under Haryana Minor Mineral Concession Rules, 2012.

Furthermore, mining of mineral is no doubt essential for industrial growth and for providing better standard of living. But, in order to maintain the balance in the eco-system and sustainability of the mining area and the nearby areas a scientific mining scheme and progressive mine closure plan is required. Therefore, the same is prepared as per the guidelines for the mining plan/mining scheme covering all-important aspects required in respect of minor minerals.

CHAPTER -2

GENERAL DETAILS

1.0. General:

1.1 Name of the Applicant: M/s MSK JV, S-571,Greater Kailash-II, New Delh-110048

1.2 Status of the Applicant:- It is a Private Limited Company and copy of company registration is attached as Annexure-2

1.3 Mineral or Minerals for which the Applicant has a mining lease:

"Stone along with Associated Minor Minerals"

1.4 Details of the land covered in the 'M.L. Area' is as under: -

District: Bhiwani

State: Haryana.

Taluka: Dadri.

Village	Khasra no.	Area in hect.
Jojhu Kalan	305 Min	6.00

Latitudes N 28' 30' 44.41" to N 28' 30' 43.92"
Longitudes 76' 09' 14.19" E to E 76' 09' 33.87"

Pillar no	latitudes	longitudes
A	28' 30' 44.41" N	76' 09' 14.19" E
B	28' 30' 49.62" N	76' 09' 30.66" E
C	28' 30' 43.92" N	76' 09' 33.87" E
D	28' 30' 42.58" N	76' 09' 15.37" E

These co-ordinates have been indicated on Plate No. 2.

1.5 Period for which mining lease is granted: 10 years w.e.f the date of grant of Environmental Clearance by competent authority or on expiry of a period of 12 months from date of issuance of LOI(Annexure-1)

1.6. Name, Address and registration number of the person who Prepared this plan.-

The applicant assigned the work of preparation of Mining Plan to

S.N.Sharma(Consent letter enclosed as Annexure -3)
(Registration. No RQP/DDN/0135/2001/A.)
House No. 282 Sector 11-D Faridabad (Haryana)
Phone no. 09560848579
E mail : sn_sharma1959@ rediffmail.com

2.0. Location and accessibility

The mine is located in the revenue estates of Villages Jojhu Kalan Khasra No. 305 Min in Distt. Bhiwani, Haryana and is about 25 Kms from Charkhi Dadri ,District Bhiwani, The lease area lies between the latitudinal parallel falling in the survey of India Topo Sheet No. 53-D/2. The lease area is located on the katcha road and then a metalled road upto village Jojhu Kalan and is easily approachable from Charkhi Dadri, Bhiwani and other important towns.

A general location and vicinity map are attached as Plate no.1

Key plan: key plan on 1: 50,000 scale covering an area in a radius of 5 km showing salient features as per Rule 28(5) (a)of MCDR, 1988 has been prepared on Toposheet no.53 D/2 (Plate no. 2)the area is marked on the enclosed key map. The deposit lies between

Latitudes N 28' 30' 44.41" to N 28' 30' 43.92"
Longitudes 76' 09' 14.19" E to E 76' 09' 33.87"

(Plate no. 2)

Infrastructure facilitiesare as detailed below

Nearest railway station	CharkhiDadri (25 km)
Police station	CharkhiDadri
Post office	Pichopa Kalan
Medical facilities	Jhojhu Kalan,CharkhiDadri and Bhiwani
Electricity	Electrical supply is available in all nearby villages.
Education facilities	Most of the nearby villages have secondary schools and for higher education institutes are available at CharkiDadri, Bhiwani, Rohtak& other nearby towns
Mode of transportation	Mineral stone will be transported by tippers/ trucks.

of mineral	Loaded trucks will travel on Kuccha road made for plying of trucks up to the crushers in the nearby area. Village Jojhu Kalanis connected with metaled road which further joins the Dadri and nearby villages.

PART-A

CHAPTER -3

GEOLOGY & RESERVES

3.0 GEOLOGY, LITHOLOGY& RESERVES:

3.1.1 Physiographic, Drainage and Climate

There is no perennial river passing through the district. Physiographical the district consists of flat and level plain interrupted from place to place by clusters of sand dunes, isolated hillocks and rocky ridges. A few isolated rocky ridges elevated sharply from the plain occur in the south central portion of the district. The lease area is consists of Hilly terrain.

The lease area does not have any water body. There are dry nalahas in which water flows during rains for a short duration, otherwise they remain dry for the rest of the months. The rain water from these nalas drains either into local Johars or in agriculture fields.

Highest level in the lease area is 255m amsL and ground level /surface level is 250m amsl.

3.1.2 Hydrogeology

The geological formation met within the district are ferruginouschiastolite schist associated argillaceous rocks of Aravalli group, Alwarquartzite of Delhi system, malani suite of volcanics of lower Vindhyanage, Older alluvial deposits of Quaternary age and Aeolian sands of recent age the out crops are, however, limited to small parts of the district , Older aluvium occurs extensively in the area consisting of interbedded , lenticular, interfingering deposits of gravel sand ,soil , clay andKanker mixed in various proportions. The youngest formations are Aeolian deposits, which are unconsolidated surface sands covering large area in the western part of the district, these deposits occur as sand dunes at the surface and consist of sands. Ground

water occurs in alluvium and Aeolian sands and under lying jointed and fractured hard rock formations also form the aquifers, in alluvium, sands, silt, kankar and gravel form the water bearing zones. In-shallow aquifers zones, ground water occurs underwater table conditions whereas in the deeper zones, confined/semi -confined condition exist, hard rocks comprising of Aravalli group of rocks, Malani suite of volcanic and Alwar Quartzite of Delhi system are water bearing but have yet not been explored thoroughly.

3.1.3 CLIMATE& RAINFAL:

The climate of Bhiwani district can be classified as tropical steppe, semi -arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid-March to last week of the June followed by the south- west monsoon which lasts up to September. The transit ion period from September to October forms the post –monsoon season. The winter season starts late in November and remains up to first week of March. The normal annual rainfall of the district is 420 mm which is unevenly distributed over the area 22 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 85% of annual rainfall. July and August are the wet test months. Rest 15% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms. Generally rainfall in the district increases from southwest to northeast.

Normal Annual Rainfall:	420 mm
Normal monsoon Rainfall:	355 mm
Temperature	
Mean Maximum:	41oC (May & June)
Normal Rain days:	22

3.2 REGIONALGEOLOGYOFTHEAREA

Regionally the area belongs to the Alwar Series of Delhi Super Group. The regional stratigraphic sequence in Mohindergarh and Bhiwani District is as follows:

	Ajabgarh series	Biotite-schist, phyllites, quartzite and impure biotitic limestones and calciphyres.
Delhi System	*Alwar series*	Quartzites, arkose, conglomerates and mica-schists with bedded lavas.
	Rialo series	Rialo limestone and Rialo marble, quartzite

3.3 LOCAL GEOLOGY: The areas were surveyed geologically. A Geological plan (Plate no.3) and sections (Plate no.4) are prepared on 1:1000 scale.

DESCRIPTION OF FORMATION

The different formations of the area belong to Alwar Series of Delhi Super Group. The following sequences have been observed in the area.

- Alluvium
- Quartzite (Stone along with Associated minor minerals)

The description of different formation found in the area is as under

QUARTZITE (BUILDING STONE)

This type of formation covers the major part of the hills in the area.

It is reddish, bluish and gray in color, semi friable to hard and fine grained in nature. Quartzite occurs mostly as building stone extending over the entire length and width of the lease area.

STRUCTURE

The general strike of quartzite is N 20^0-25^0 E to S 20^0-25^0 W with dips of 45^0 to 60^0 due East.

The strike and dip of the quartzite bands is not uniform since there are structural disturbances.

ORIGIN AND CONTROL OF MINERALISATION

Quartzite is a metamorphosed product of sand stone, which have undergone low degree metamorphism.

EXPLORATION & METHOD OF RESERVE ESTIMATION

The entire lease area is prominently marked by outcrops of building stone. Moreover, the area has undergone quartzite (building stone) mining in the past; therefore, no fresh exploration to prove the geological reserves was required as abundant pits of quartzite have prominently exposed across the formation.

3.4 RESERVES

Methods of estimation of reserves of quartzite:-

1) The total mineral resources and reserves have been calculated by cross-sectional area method. In this method the cross-sectional area of section line is multiplied by the influence of the section line to arrive at volume.
2) The reserves are calculated on the basis of established width, thickness and strike length/influence of the mineralized formation in the area where good pits are available such area in put under proved category.
3) The entire reserves of quartzite are put under proved category (above round + 40m below ground). Next 20 meters are considered as probable and further 10 metersi as possible.
4) The bulk density of Stone along with Associated minor minerals(quartzite) is considered 2.5 which is further multiplied by volume to arrive at the tonnage

1. The Section wise reserves for road metal and masonry stone(quartzite) are summarized here below: -

Geological reserves (proved) =86,25,000 M.T(above ground level+40 mtr below ground level)

Geological reserves (probable) =30,00,000 M.T (further 20 mtr)

Geological reserves (possible) =15,00,000 M.T(further 10mtr)

Total Geological reserves =1,31,25,000 M.T

Mineable reserves = 1,18,12,500 M.T(90% of geological reserves)

CHPATER 4

MINING

4.1 Site Appreciation

Our experts (Geologist, Mining Engineer) visited the mine site and found that the allotted area comprised of long and narrow hill range. Shallow excavated old pits exist in the allotted area revealing that the area has been worked for building stone in the past. Existing road length is about 500 m. The shape of the pit shows that no systematic mining has been done. Now it is proposed to undertake systematic and scientific mining for excavation of road metal and masonry stone/building stone during the lease period. Pre-production Activities

4.2 Pre-production Activities:

As a pre-production activity, roads from crusher to top most entry to the initial mining area, from mining faces to the proposed dump area, from ground level to the mining area, to the mines office complex, and to the garage / workshop will be developed. Access roads / haul roads from topmost bench to benches at lower levels shall be developed gradually. As mining operations advance to lower levels, larger face lengths and width shall be available. Face management, which is a continuous process, shall be taken into account to secure shortest (average) lead distance up to crusher / dump yard as also to prevent clustering of dumpers. Following activities shall be undertaken during quarry development phase:

- Removal of vegetation and top soil to expose quartzite beds
- To make the access road to the mine working area.
- Provision and construction of access roads from ground level to mines office complex, workshop, entrance to mine faces

- Development of haulage road from proposed crusher location to the floor of initial mining areas at a slope of 1 in 20 is proposed (not exceeding 1 in 16 except for ramps)
- Making of parapet wall/retaining walls along gradient of haul road.
- Construction of mine office, first aid station, crèche, canteen, workshop and other ancillary infrastructural facilities shall also be undertaken during first and second year of developmental activities.

4.3 MINING OPERATIONS:

The mining operations will comprise of following activities for excavation of mineral.

a) Drilling of "Down-the-Hole" holes as per specified pattern.

b) Blasting of holes

I) Primary Blasting

II) Secondary Blasting

c) Loading of blasted material by deploying hydraulic excavators

d) Transportation of material to Crusher

Thus, these mining operations shall be carried out by fully mechanized opencast method utilizing Heavy Earth Moving Equipment (HEMM) in conjunction with deep hole drilling by crawler mounted DTH drills and blasting. To start with benches shall be kept narrow and then gradually widened. To the extent possible, benches shall be kept along dip and advanced along the strike to give a fairly well blended material in each bench. The direction may be varied in due course based on experience gained, to give wider benches, longer faces and proper alignment along haul roads / ramps.

It is proposed to adopt mechanized opencast mining method for exploitation of the mineral. Drilling and blasting shall be required to dislodge the mineral. The mining method involves breaking the rocks with explosives, loading the material with excavators and haulage with dumpers.

4.1 Pit Design Parameters:-

In view of the geological setting of the deposit it is proposed to work the mine by mechanized open cast method using shovel and dumper combination. The rate of production is proposed 11,80,000 MT/year (3933 T per day) by the following mentioned parameters so that not only the production is achieved but mine also takes a proper / regular shape and size .

Sr.no	Particulars	Dimensions with unit
1	Final Bench Height and width	9mx6.5m (with intermediate safety berm of 8 m)
2	Working Bench Width	15-20m
3	Overall Ultimate pit slope	49^{O}
4	Bench Alignment and bench slope	Parallel to each other; 80^{0}
5	Face length	All along the strike length
6	Depth of pit (Below General Ground)	40 m
7	Blast hole diameter	100-110mm
8	Inclination of blast hole	Vertical
9	Width of Haul Road	12m
10	Gradient of haul Road	1 in 16

I) Ultimate Pit slope

II) Bench Height and width

III) Face length

IV) Bench Alignment

V) Direction of face advance

VI) Depth of pit.

4.1.i Ultimate pit slope: -

Quartzite rock is hard and compact. Once the pit reaches the ultimate limit, it is necessary that it does not start collapsing due to weathering and other effects. This can be achieved by planning ultimate pit slope at a maximum of 49 degree to avoid collapse of the pit sides. There is no overburden except a thin sol cover. Entire mineral produced will be useful.

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4.1.ii Bench height and width

Since the host rock quartzite is hard and compact, the same parameters are considered for making benches. In view of mechanized method of mining to be adopted, the bench height is proposed 9.0mtrs. Operating bench width will be 15-20 mtrs which will finally reduce to 6.5 mtrs while working bench below with intermediate safety berm of 8 m. Formation of benches in this manner will result in an overall safe slope of 49^0 or less in the ultimate pit position.

4.1.iii Face length :-

The following parameters have been followed to arrive at the face length to facilitate the required production of 11,80,000 MT mineral

Since one pit is planned to develop in the area to obtain targeted production, the optimum face length available along the strike length is sufficient to cater to the optimum production required. The face length will attain the maximum length at the end of 1 st year.

4.1. iv Bench alignment: -

The benches are gradually aligned to give a regular shape. In general the benches will advance in all directions parallel to each other. Since geological formation in the area is of simple nature, there will not be difficulty in maintaining the proposed bench alignment.

4.1.V Depth of pit:

The reserves up to 40m below the valley level are proposed to be worked. The surface level reserves will not be depleted during the next 10 years. The workings will start at 255 MRL and will reach up to 210 MRL (Ground Level) at the end of 5th year as detailed in the year wise plans Plate no.5-9 and Sections plate no.10.

The elevation of the hill top is 255 MRL, the ground level is 250 MRL and working is proposed 40 mts below ground level i.e. upto 210 MRL.

4.3 Development during the First five years:

As the area has been worked in the past un-systematically, certain pre-production development work is required to align the mine road and to reach the top of the hill for mining. The construction of garland parapet, wire fencing etc, shall be provided year wise and will be shifted along with the development of pit. A mineral, soil and dump stack yard (1.20 hectares) area Is ear marked. Soil stack yard (100mx80m) is proposed to stack the soil generated during the mining.

For making stacking yard, ground is almost level. A boundary wall around soil stack yard shall be made. The position of fencing, drain, toe wall, dump yard size and soil stack yard size, plantation etc at the end of 5th year is as detailed below and shown in the Year wise Plans at Plate no.5-9 and Sections Plate no.10.

Dump yard size =	100mx80 m
Temporary Mineral Stack Yard=	140x100
Working area occupied at the end of5th year will be=	6.0 Hectares

Approach road from mine to mineral stack yard, soil stack yard and dump yard and site services shall also be made.

4.4 Year wise Production &Development for the first five years

It is proposed to work the mine from top down ward for which a mine road is proposed .About 800mtr length will be developed during first year. The position of benches and the production from individual benches year wise is as follows:-

Year	Total Production during year in lakh Tones
1t	10,00,000
2nd	11,00,000
3rd	11,80,000
4th	11,80,000
5th	11,80,000

During the plan period the benches will be advanced as shown in plat No. 5-9 and sections plate no.10 to achieve the targeted production.

4.4.2 Proposed rate of production when the mine fully developed

The proposed rate of production of 11,80,000 MT/year shall be achieved by the end of 3rd year. The rate of production shall be maintained up to the end of lease period.

4.4.3 Mine able Reserves and Anticipated Life of the mines

As discussed in the chapter of geology, the insitu geological reserves are calculated 1,31,25,000 MT.As per the proposed method of mining and occurrence of mineral 90 % geological reserves (1,18,12,000 MT) are mineable. The life of the mine is therefore assessed as 10 years at the proposed rate of 11,80,000 tons of mineral / year.

4.4.4 Proposed Method of Mining

The present mining operations are designed to be carried out by mechanized open cast mining method. The entire mining operations proposed are mechanized. Apart of mining, the loading and transportation up to stack yard shall be done mechanically. It is proposed to load in the trucks/dumpers directly to the destinations and mineral is not usually put up in this stack yard to avoid the double handling. In the present operation the bench height shall be 9mtrs. Each bench will advance one by one. While carrying out the mining operations in accordance with the above provision the overall pit slope shall be maintained the 49^0 the mineral bearing rocks being hard and compact.

4.5 Conceptual Mine Plan Parameter

The detailed mining plan has been prepared with a project life of 10 years. The mining is conceived as one long open mine pit. The opencast mechanized mining method has been considered feasible for exploitation of the deposit.

The aspects of geotechnical behavior of quarry rocks have also been taken into consideration to ascertain the suitable mine pit slopes. The major rock of the quarry is quartzite with clay intercalations and could be classified in the category of harder rock strata. The conceptualized mine pits are based on appropriate overall slope angle broadly confirming to prevailing norms of mine safety department for harder rock strata. The broad configurations of mine pit slope are shown in the enclosed drawing (Plate2) and the broad details are as follows –

- Overall Slope – 49 degree
- Bench Height – 9 meters
- Bench Width – Operating width 15-20 mtrs which will finally reduce to 6.5 meters with intermediate safety berm of 8 mtrs width.
- Individual Bench Slope – 80 degree
- Burden of Holes - 4 meters
- Spacing of Holes - 5 meters

The breakup of present land use and at the end of 5th year and conceptual stage is detailed as under

4.5.0 Extent of Mechanization:

Description for the calculation of adequacy and type of machinery and equipment proposed to be used in different mining operations are enumerated below:-

Targeted Production= 11,80,000 MT per Annum

Working days per annum = 300

Production per day = 3933 MT

4.5.1 Drilling

a) Tonnage of mineral excavated per hole = 9m x 4m x 5m x 2.5= 450 T

b) No. of holes required per day= 3933 T/450 T = 9

c) Total meterage of drilling/day= 9 holes x 9m = 81 m

d) Capacity of each drill machine= 10 m per hour or 70 m per shift or 140 m per day

e) Hence no of drill machines= Drilling required per day/capacity of drilling per day = 81/140 =0.58 or say 1 Nos of drill machine

Thus, It is proposed to use drill machines of 100 - 110mm dia. As per the production target of about 3933 MT (1573 M^3per day) it is estimated that about 9 holes of 9 m depth per day (81 m per day) will be required to maintain the proposed production targets. Therefore at least 1 drill machine of higher drilling rate (10 m/hour) with availability of 75% of time as well and 80 % utilization hours will be required.

The details of machinery and performance will be as under

Sr.no	Details	
1	A machine can drill total of meters in a shift	100-110m
2	Total drill meters required per day	81 m
3	Total no of machines required per day	1.00
4	20% consideration for maintenance and spare capacity	0.40
5	Total no of machines required (2.40 say 3)	2

4.5.2 Loading Equipment, Haulage and Other Mining Machinery

Hydraulic Excavator:-

The productivity of excavator is decided based on the following consideration i.e. two shifts per day working and 300 days in a year

	Excavator Category	Capacity
A	Diesel Hydraulic shovel	3.2 m^3
B	Fill Factor	90 %
C	Tonnage Factor	2.50
D	Availability of excavator	80 %
E	Utilization of excavator	80%

For arriving at the rate of production per hour in case of the mine under reference, the following formula is applicable:

Q= C x F x T x BD x BF/Tc

Where Q= Per hour handling of excavator in T

C= Bucket Capacity in cubic metres = 3.2 cum

F = 0.90

T = Time in seconds = 3600

Bf = Operating efficiency = 0.90

BD = Blasted Mass = 1.4

Tc = Time cycle per pass at 90 degree swing = 45 seconds

Thus Q = 3.2 x 0.9 x 3600 x 1.4 x 0.90/45 = 290 T per Hour

Per Excavator Per Day Output = Hourly capacity of excavator x effective hour per day = 290 x 12 = 3480 T

Therefore No of Excavators required = Total Handling per day/Handling by excavator per day = 3933 / 3480 = 1.13 or say 1 Nos + 1 excavators will be ready standby. Therefore total 2 nos of excavators are required for this project.

Hauling Equipment:

For calculation of number of dumpers, it is the lead from the mine to the destination which will determine the no of dumpers. Based on calculations, it is established that total 6 Nos of 25 MT capacity dumpers would be sufficient to execute the rated production at an average lead of 1.5 Km (one way with average speed of dumper 20 Kmph) However, including the standby equipment; total requirement of dumper works out to be 8 Nos. of 25 MT capacities.

Hydraulic Rock Breaker:

To minimize the secondary blasting and to contain the accidents due to fly rocks, it is proposed to deploy Hydraulic rock breakers for breaking of big boulders generated consequently upon primary blasting,at working face site.

Thus, the total population of the equipment and other ancillaries as per above assumptions and calculations, are summarized in below table:-

S.No.	Equipment	Size	Nos
1	Hydraulic Excavator for Loading of mineral	3.2cu.m	1
2	Rock breaker (Hydraulic Excavator) as substitute to secondary blasting	1.6 cum	1
3	Rear dumpers for transportation of mineral from mine to destination	25T	8
4	Drill Machine with compressor of 365 cfm capacity.	100-110mm	1
5	Track chain Dozer	350 HP	1
6	Pay loader (General Purpose, loading etc.)	145 HP	1
7	Crane	40T	1
8	Tyre handler	-	1
9	Water sprinkler	10 KL	1
10	Mobile Maintenance van		1
11	Tractor	50hp	1
12	Tractor mounted compressor		1

Requirement of Diesel for operations of Heavy Earth Moving Machines and ancillary equipment :

Quantity of Diesel / Energy fuel Consumption per day: -

S. No.	Machine	Details of Diesel requirements	Consumption of Diesel (in ltr.)
1.	Dumper	(Considering diesel consumption by the dumper is 3 km / ltr.) Total Diesel consumption / 8 Dumper = 60 x 8 =480 ltr.	480
2.	Excavator	Hourly Consumption = 20 ltr / Shovel/ excavator 10hour diesel consumption = 20x 10x 2=	400

		400ltr.	
3.	Dozer& Payloader	Diesel consumption 12ltr / hr 10 hrs diesel consumption = 12 x10 = 120ltr x1= 120	120
4.	Wagon Drill/ Air Compressor	No. of Compressor- 1 compressors Diesel consumption by 1 compressors in 10 hour working = 1 x15 x 10 = 150 ltr.	150.
6.	Explosive Van		40
7.	Maintenance Van		60
8.	Water Tanker		30
9.	Light Vehicles		30
		TotalDiesel requirements	**1310**

CHAPTER 5

BLASTING

5.1 Drilling and blasting Parameters:-

5.1 Blasting Parameters:-

Following parameters were considered for proper and adequate blast design.

- Drilling
- Selection of Hole Diameter
- Required Production
- Terrain
- Material Characteristics
- Type and Size of Excavating and Hauling Equipment
- Bench Height
- Explosives Type and Size
- Burden and Spacing
- Stemming
- Timing/Delays
- Scaled Distance (Peak Particle Velocity)
- Weather and Atmospheric Conditions
- Time of Day

For mining of building stone drilling and blasting is required. The job of drilling and blasting is of continues nature

Considering the time frame of mining and total requirement of material, the daily mineral production works out to be 3933 MT (1573 cum). The above target will be utilized to frame the pattern and size of blast. The blasting parameters are described as below.

Item	Values
Bench height (m)	09
Hole depth (m) (including sub-grade drilling)	10
Burden (m)	4.0
Spacing (m)	5.0
Volume (m^3)	4x5x9=
Tonnage yield (t)	180x2.5=450 T
Powder Factor (assumed)	8t/kg of explosive
Charge per hole (kg)	450 T/8 = 56.25 Kg
Total quantity of rock to be Broken per day (ton)	11,80,000 t/ 300 days = 3933 TPD
Explosive required for blasting per day	3933/8 =492 kg
Blasting Frequency (Every day)	1
Explosive required per blast per day	492 kg
No. of holes per day	3933 t (Production/day)/450 t (Tonnage per hole)=9 Holes
No of holes per blast	9

5.2 Type of Explosives

Emulsion Primer charge (20% of charge per hole)

ANFO column charge 80 % of charge per hole

5.2.1 Initiation System and minimum charge per delay

Delay milliseconds delay detonators

Drilling pattern staggered

Firing pattern V pattern

5.3 Secondary Blasting

Large sized fragments should be reduced to acceptable size by drilling shallow holes (0.75-1.2m). The pattern will be as follows

Depth of hole 0.75 -1.2m

Diameter of holes	38 mm
Diameter of explosive	25 mm
Quantity of explosive	65 gms
Firing pattern	Instantaneous

Secondary blasting is proposed but it will be minimized by deploying hydraulic rock breaker for breaking large size stone/boulders.

5.4 Storage of explosive

Both primary / mass blast and secondary blasting will be carried out in the mines. Keeping in view the consumption of explosive, one permanent magazine for storage of explosives (10 T capacities)and storage of initiation system will be arranged. All statutory provisions as under the Explosive Act - 1888 and modifications thereof are proposed to be followed.

Or Alternatively

Tie up with a explosive supplier maintaining an explosive magazine with License to Purchase, Sell and Use. This agency can bring explosives (sell) as per requirement and use in the project premises. This system will avoid construction of explosive magazine in mine premises

Relevant Provisions under MMR-1961 regarding blasting

Regulation160. Blasters –

1. The preparation of charges and the charging and stemming of holesshall be carried out by or under the personal supervision of a competent person, in these regulations referred to as a ‘blaster’. The blaster shall fire the shots himself.
2. No person shall be appointed to be a blaster unless he is the holder of Manager’s, Foreman’s Mate’s or Blaster’s certificate.

3. The manger shall fix, from time to time, the maximum number of shots that a blaster may fire in any one shift; and such number shall not unless the Regional Inspector by an order in writing and subject to such conditions as he may specify therein otherwise permits, exceed 80 in case they are fired electrically or by means of an igniter cord and 50 in other cases, and shall be based upon –
    - the time normally require to prepare and fire a shot in accordance with the provisions of these regulations;
    - the time required for that blaster to move between places where shots are fired;
    - the assistance, if any, available to him in the performance of his said duties; and
    - any other duties assigned to him, whether statutory or otherwise :

    Provided that the Director General of Mine Safety may, by an order in writing ansubject to such conditions as he may specify, permit the manager to fixthe maximum number of shots to be fired by a blaster differently fromthe limits specified in this sub-regulation.

4 The number of detonators issued to, and in the possession of, a blaster during his shift shall not exceed the maximum number of shots that he is permitted tofire under sub -regulation (5).

Regulation: 161Shotfiring tools –

1 Every blaster on duty shall be provided with –

a suitable electric lamp or torch ;

b a tool, made entirely of wood, suitable for charging and stemming shot holes;

c a scraper made of brass or wood suitable for cleaning out shot holes;

d where fuses are used, a knife for cutting off fuses an, unless machine capped fuses are provided, also a pair of suitable crimpers for crimping detonators; and

e where detonators are used, a pricker made of wood or a non-ferrous metal for priming cartridges.

2 No tool or appliance other than that provided as above shall be used by a blaster.

Regulation 162. Drilling, charging, stemming and firing of shot holes –

1 No drill shall be used for boring a shot hole unless it allows a clearance of at least 0.3 centimeter over the diameter of the cartridge of explosive which it is intended to use.

2 No shot hole shall be charged before it is thoroughly cleaned.

3 Before any shot hole is charged, the direction of the hole shall, where practicable, be distinctly marked on the roof or other convenient place.

4 No detonator shall be inserted into a priming cartridge until immediately before it is to be use. Detonators once inserted into a priming cartridge shall not be taken out.

5 Unless otherwise permitted by the Chief Inspector by an order in writing and subject to such conditions as he may specify therein, the charge in any shot hole shall consist of one or more complete cartridges of the same diameter and the same type of explosive.

6 The blaster shall, to the best of his judgment, ensure that no charge in a shot hole is over-charged of under-charged, having regard to the task to be performed.

7 No shot hole shall be fired by a fuse less than 1.2 meters in length.

8 Every shot hole shall be stemmed with sufficient an suitable non-inflammable stemming so as to prevent the shot from blowing out. Only sand loosely filled in, or soft clay lightly pressed home, or a compact but not hard mixture of sand and clay or water shall be used as stemming.

9 In charging or stemming a shot hole, no metallic tool, scraper or rod shall be used; an no explosive shall be forcibly pressed into a hole of insufficient size.

10 No shot shall be fired except in a properly drilled, charged and stemmed shot hole.

12 All surplus explosives shall be removed from the vicinity of a shot hole before a light is brought near it for the purpose of lighting the fuse.

13 As far as practicable, a shot shall be fired by the same blaster who charged it.

14 In any mine in which explosives other than gunpowder are used, every shot shall, if so required by the Regional Inspector, be fired electrically.

15 No more than 10 holes shall be fired in one round unless they are fired electrically or by means of an igniter cord.

16 No shot hole shall be charged except those which are to be fired in that round; and all shot holes which have be charged shall be fired in one round.

17 Where a large number of shots has to be fired, a shot firing shall, as far as practicable, be carried out between shifts.

18 No person shall remove any stemming otherwise than by means of water or an approved device, or pull out nay detonator lead or remove any explosive from any charged shot hole.

Regulation 163 Electric Shot firing.– Where shots are fired electrically, the following provisions shall have effect, namely :-

1

A No shot shall be fired except by means of a suitable shot firing apparatus; and the number of shots fired at any one time by the apparatus shall not exceed the number for which it is designed.

B Every electrical shot firing apparatus shall be so constructed and used that –

i it can only be operated by a removable handle or plug. This handle or plug shall not be placed in position until a shot is about to be fired and shall be removed as soon as a shot has-been fired; and

ii the firing circuit is made an broken either automatically or by means of a push-button switch.

C

(i) No apparatus shall be used which is defective; an every apparatus shall m once at least in every three months, be cleaned an thoroughly overhauled by a competent person.

2 No current from a signaling, lighting or power circuit shall be used for firing shots.

3 The blaster shall –

(a) retain the key of the firing apparatus in his possession throughout his shift;

(b) use a well- insulated cable of sufficient length to permit him to take proper shelter, and in no case, shall this cable be less than 20 meters in length;

(c) Before coupling the cable to the firing apparatus, couple up the cable himself to the detonator leads;

(d) Take care to prevent the cable from coming into contact with any power or lighting cable or other electrical apparatus;

(e) Take adequate precautions to protect electrical conductors and apparatus from injury;

(f) Himself couple the cable to the firing apparatus; an before doing so, see that all persons in the vicinity have taken proper shelter as provided under regulation 164; and

(g) After firing the shots and before entering the place of firing, disconnect the cable from the firing apparatus.

4 Where more than one shot are to be fire at the same time:-

(a) care shall be taken that all connections are properly made;

(b) all shots if fired belowground shall be connected in series;

(c) the circuit shall be tested either for electrical resistance or for continuity before connecting it to the firing apparatus. Such a test shall be made within apparatus specifically designed for the purpose and after the provisions of regulation 164 have been complied with; and

(d) the cable to the shot firing apparatus shall be connected last.

CHAPTER 6

MINE DRAINAGE

6.1 GENERAL:

Open cast mining projects requires effective arrangements for drainage and provision of adequate dewatering capacity in the pits under mining. In the area under mining water can reach the workings from surface drainage, rainwater and due to seepage through joints and fissures. Therefore, the problem can be solved by preventing drainage water from entering the pits on one hand and pumping out the percolated and direct rain water from the pits on the other hand . The general water table around the lease area is at 63 meters below ground.

6.2 Drainage Around and Within Mine:

The hill is mainly sloping both east and west direction. Initial mining shall be mainly above the general ground level with only one side of the pit having slope along hill and other side will remain open. Such situation do not warrant any water accumulation as natural drainage will be available from the other open side of the pit.

However, as the mine progresses and mining continue below the general ground level as envisaged during later part of lease period, the mining area will become a depression, which may warrant accumulation of water during rainy season. A scheme is proposed to prevent the accumulation of such water.

1) Garland drainage as shown in the mine plan (Plate no 5-9) shall be made all round the pit to prevent the entry of surface/ rain water inside the pits.

2) All the benches will be provided with mild inward slope to keep the benches in drained condition. Provision of sumps is provided as shown in Plate No 5-9.

The lowest bench shall be slightly sloped towards the sump so that the entire drain water goes to the sump.

3) The working faces will be advanced with a mild upward gradient to facilitate the drainage. The water shall be gradually drained from the upper most bench to the lowest bench and then ultimately to the sump.

4) Similarly in the ultimate pit position, large sump will be provided at the pit bottom to accumulate drained water as well as direct rain water.

5) Following measures shall be taken to prevent fall of side as per mine statute.

Provisions under MMR 1961 regarding Mine Workings (Slope angle, fall of sides, overhangs etc)

Regulation 106. Opencast workings –

In opencast workings, the following precautions shall be observed, namely: -

1 In alluvial soil, morum gravel, clay, debris or other similar ground -

(a)

(i) the sides shall be sloped at an angle of safety not exceeding 45 degrees from the horizontal or such other angle as the Regional Inspector may permit by an order in writing and subject to such conditions as he may specify therein; or

(ii) the sides shall be kept benched and the height of any bench shall not exceed 1.5 metres and the breadth thereof shall not be less than the height:

Provided that the Regional Inspector may, by an order in writing and subject to such conditions as he may specify therein, exempt from the operation of this clause any working in the case of which special difficulties exist, which in his opinion make compliance with the provisions thereof not reasonably practicable; and

(2)

(a) Where 'float' or other similar deposit is worked by manual means on a sloping face, the face shall be benched and the sides shall be sloped at an angle of not more than 60 degrees from the horizontal. The height of any bench shall not exceed six metres and the breadth thereof shall not be less than the height: Provided that where the ore-body consists of comparatively hard and compact rock, the Regional Inspector may, by an order in writing an subject to such conditions as he may specify therein, permit the height of the bench to be increased up to 7.5 metres while its width is not less than six meters provided further that in case of a mine or part where special difficulties exist, the Chief Inspector may, by an order in writing an subject to such conditions as he may specify therein, relax the provisions of this sub-regulation.

(b) Where in any mine or part it is proposed to work by a system of deep-hole blasting and/or with the help of heavy machinery for its digging, excavation and removal in such manner as would not permit ofcompliance with the requirement of sub-regulation (1) the owner, agent or manager shall, not less than 60days before starting such work, give notice in writing of the method of working to the Chief Inspector andthe Regional Inspector; and no such work shall be commenced o carried out except in accordance with suchconditions as the Chief Inspector may specify by an order in writing. Every such notice shall be induplicate, and shall give the details of the method of working including the precautions that are proposed totaken against the anger from falls of sides and material.

3 In an excavation in any hard and compact ground or in prospecting trenches or pits, the sides shall be adequately benched, slopped or secured so as to prevent danger from fall of sides.

4 No tree, loose stone or debris shall unless otherwise permitted in writing by the Chief Inspector be allowed to remain within a distance of three metres from the edge or side of the excavation.

5 No person shall undercut any face or side or cause or permit such undercutting as to cause any overhanging.

6.3 DEWATERING:

Since the depth of mining proposed is well above the valley level and water table, there will be no chance of encountering the ground water table during the mining operations. Hence normal-pumping operations will be required during the monsoon season only. The water accumulates within the pits will be due to direct rainfall over the pit and seepage from adjoining areas, if any.

6.4. The average rainfall of the district during all these years is 420 mm only.

6.4.1 An examination of the above reveals that the rainy season extends from June to September. Although in the above period under consideration there has been rainfall in other months also, but it can be considered as stray occurrence and will not after all proposed pumping scheme.

6.4.2 The water to be pumped out from the open pits will be contributed both by direct precipitation over the open pits and seepage. The water due to direct precipitation will depend upon the rainfall and the area of the pit.

6.4.3 Based on the rainfall records, the sumps of the sizes as shown plates No. 5-9 shall be provided at the bottom most bench. During the monsoon period a continuous process of dewatering the sumps shall be there to facilitate the mining at the lower benches.

6.4.5 Based on the Rainfall data it is proposed to have a diesel engine operated water pump of 10H.P which may dewater 30m^3/hour from the pit. The water will be sent to the drain of 0.5mtr depth as shown in the year wise plans Plate No. 5-9. This water will finally go into the natural nallah.

CHAPTER 7

STACKING OF MINEAL REJECTS AND DISPOSAL OF WASTE

7.1 Disposal of Waste

Soil: There is a thin soil cover 10 – 20 cms at places. In little amount of soil is also generated from joints and cracks.

Soil and powder of quartzite will be stacked separately

Rejects: - Entire mineral produced is usable.

7.2 Maximum Height and Slope of Dumps

The area ear - marked for the stacking the soil mixed finer material of stone is 2000 M2 Plate no 5-9 which can accommodate at least 20000 MT of material. In the present case soil generated contains fine powder of quartzite; the same shall be sorted out and stacked in separate dump yards. Yearly generation of soil/ fines which only 1000 tones shall be used for plantation and as a upper layer on the dumps. The dump may attain a maximum height of 6 mtr. With gentle slopes of 30^0. Tow walls and drains around dumps are proposed to safeguard the dumps

7.3 Dump Yard for mineral

Mineral will be supplied to near bye crushers those are in the close vicinity of the lease hold area.

Thus whole material excavated shall be crushed but still it is proposed to have a dump yard for mineral (Size 50 m x 40 m), which will be used in the event of less demand or any other emergent reasons to stack the mineral in the dump yard.

The height of the dump yard may attain a maximum of 8 mtrs with moderate slope of 39 degrees. This can accommodate about 40,000 MT mineral.

The location of the soil and mineral dump yard is shown in plate no.5-9.

The annual quantum for construction of retaining walls/ dump yards for soil and mineral will be done during plan period. The length of the soil stack yard and dumping yard walls will be 360m and 480mtr. all along with height of one meter. Rest of the height will be made in the coming years as per the requirements of dumps. The thickness of the wall will be half meter.

As already described the optimum height of dumps shall be kept 8 mtr with gentle slope of 30^0 for soil stack and with moderate slope of 39^0 for rejects/ inter burden stacks.

CHAPTER 8

USE OF MINERAL

Road metal and masonry stone

The entire mineral produced will be used in the building industry as road metal, crushed metal and dust etc after crushing by the crushers. The mineral will be sold to buyers in and around Haryana, Delhi and other states of north India.

CHAPTER 9

MINERAL BENEFICIATION& PROCESSING

In view of the availability of direct market for building stone R.O.M., presently there is no proposal of beneficiation. R.O.M. Mineral will be sold to various crushers located in the area. Part of the building stone product will be sold in the form of lumps to the crusher owners.

CHAPTER 10

SURFACE TRANSPORT

The transportation of mineral from pit head / stock yard to the consumer end crushers / traders will be carried out by the trucks deployed by the customer/purchaser and will be generally of 25 MT Capacity. There is all weather metalled road and then a katcha road right up to mines to dispatch the material from mines to the market. Material is proposed to be sold to the customers/ at mine site and transported by them through their own arrangement of trucks. The practice is quite sound in the area and ensure continuous lifting of the material. Customers/purchasers come with transport arrangement of their own. However necessary arrangement of trucks can be done from the nearby truck operators union available at Charkhi Dadri. However, we propose to build kacha road with the increase of production from the mine (around 157 trucks per day of 25 T capacity) which will bypass the village and there bye will not create any sort of problem to the near bye villagers.

CHAPTER -11

SITE SERVICE

11.0 Site Services:-

11.1 Manager's Office:-

As detailed in the preceding chapter the mines are designed to produce some 11,80,000 tons of building stone. The activities shall be supervised by one competent person as overall manager. In addition one mining mate cum blaster is proposed to supervise the drilling and blasting operation. Main administrative office is proposed to be set up in nearby locality on rental accommodation. However, at site one office of Manager is proposed of about 5 x 3 mtrs Size which shall also provide accommodation for key supervisory staff as well.

11.2 Canteen -cum-rest shelter:-

In order to provide the rest shelter for the personnel working in the mine and also to provide tea/refreshment etc.as per the Mines Act, 1952. The arrangement shall be made to install a rest shelter-cum-canteen as shown in plate no.4 and shall be utilized by the workers. The rest shelter will be for having rest during the lunch hours by the operators/ labour. The size of rest shelter shall be about 15 x 3 meter to accommodate the working labours.

11.3 Store

Since the mining operation will involve heavy earth moving machinery, a small storeroom will be provided for day to day operations. No provisions for a separate workshop are being made as the heavy repairs will be carried out elsewhere.

11.4 First Aid Room:

To provide the first aid for any sort of injuries encountered during the mining operation, one small first aid room shall be provided. First aid kit and

sufficient stock of material / medicines needed for first aid shall be provided as per requirement. As the mining engineer / Manager and mining mates are qualified first aiders they can provide first aid to the labor on the spot. More ever the Govt. Hospitals is there at the CharkhiDadri which is just 25 km. From the mine and necessary medical aid can be provided from there.

11.5 Crèche :

At present,provision of crèche is not provided, however in future if women workers are employed, arrangement for a small crèche shall be made as per the requirement.

11.6 V.T. Centre

Necessary arrangement shall be made for conducting refresher course as laid down in Mines vocational training rules.

11.7 Magazine:

Magazine of the required sizes (for 10 T capacity) will be provided to fulfil the requirement of blasting of mineral as detailed in the chapter of Blasting. The Magazine shall be erected as shown in the enclosed plate no 5-9 . The design of the magazine shall be as per approval of the chief controller of Explosives, Govt. of India. The magazine shall be properly fenced and provided with as security guard round the clock. If explosive is purchased from authorized agency for use in mine than there will not be need of construction of magazine.

11.8 Electricity Supply:

Presently there is no arrangement for supply, at the mine but it is proposed to take an extension of the electricity line from the nearby point which is jus 0.5 Km from mines site.

11.9 Water Supply

The water supply for drinking& dust suppression purpose will be made available by hired tractor tanker. The water will be taken from the village Public water supply which is just 0.5 km. away from the mine site and is controlled by the public health department of the state Govt . The water form supply tube well is used for the entire village Jojhu Kalan. Therefore the same arrangement shall continue for the mines as well. The water shall be transported by the tractor and stored in syntax tanks of 1000 liters capacity.

CHAPTER 12

EMPLOYMENT POTENTIAL

12.1 General Consideration

In this project the mechanized mining is proposed for production of building stone. The proposed organizational structure for the project is worked out in view of the type of mining system adopted and the need of effective environment Management Plan. The requirement of various technical and non-technical personnel is determined while adopting the following norms:-

1. The mine will be worked in two shifts.

2. In estimating the requirement of magazine attendants, and provision of competent person, mates, blaster etc. due consideration has been given to the statutory provisions.

12.2 Man power requirement and its distribution.

The mine shall be worked in two shifts with following manpower deployment.

S.No.	Designation	Category	Nos
1	Mines manager	Highly skilled	1
2	Assistant Managers/Foreman	Highly skilled	2
3	Mining Mate cum Blaster	Highly skilled	2
4	Clerical and other staff	Skilled	3
5	Security Guard & Water man	Semi-skilled	3
6	Environment Assistance	Skilled	1
7	Diesel hydraulic shovel operator& back hoe operator	Highly skilled	3
9	Rear dumpers operators	Highly skilled	10

10	Drill operators	Highly skilled	2
11	Track chain Dozer operators	Highly skilled	1
12	Grader	Highly skilled	1
13	Crane	Highly skilled	1
14	Heavy duty tow truck	Highly skilled	1
15	Tyre handler	Highly skilled	1
16	Water sprinkler	Skilled	1
17	Maintenance van driver	Skilled	1
18	Tractor operator/driver	Skilled	1
19	Tractor compressor operator	Skilled	1
20	Helpers/labour	Semi skilled	10
	Total		**46**

In addition to the above mentioned staff rest of the function i.e. supply of explosives, preparation and amendment of plans etc. shall proposed to be performed from the professional on contract basis.

CHAPTER- 13

ENVIRONMENT IMPACT ASSESSMENTAND ENVIRONMENT MANAGEMENT PLAN

13.1 Base line information

13.1.i Existing& at the end of 5th Year Land Use Pattern :- The area is almost barren.

Road Metal and masonry stone/Quartzite are covered by weathered surface of the geological formation or by a thin cover of soil.

13.1.ii Water Regime

There is no perennial water drainage on the ground. As the surface is undulated only seasonal Nallahs(rivulets) developed in the area.

13.1.iii Human Settlement :

Area covered under mining plan is uninhabited. The nearest villages:

Located 2 to 5 km.

Name of villages	Total Households	Population	Males	Females
DadhiChhilar(178)	197	1170	627	543
DadhiBana(73)	294	1814	940	874
Balali(72)	304	1712	896	816
JhojhuKalan(71)	1431	7831	4126	3705
Chandeni(65)	446	2337	1220	1117
Ramalwas(66)	363	2227	1159	1068
Gokal(67)	156	863	450	413
JhojhuKhurd(70)	444	2470	1313	1157
Gudana(69)	462	2474	1283	1191
Badal(84)	305	1740	977	763
Asawari(83)	110	627	320	307
Kalali(82)	241	1380	718	662
Abidpura(81)	184	1110	593	517
Mandola(74)	393	2311	1201	1110
Balkra(79)	454	2600	1319	1281
Mandoli(80)	344	1959	1047	912
Pichopa Kalan(145)	742	4018	2077	1941
Bhervi(146)	58	313	167	146
Dadri(147)	191	950	512	438
Charkhi(143)	1172	6481	3453	3028
KheriBura(144)	481	2727	1477	1250
KheriBattar(92)	359	2021	1084	937
Mahra(91)	381	2260	1196	1064
Tiwala(90)	451	2683	1476	1207

13.1.iv Public Building , Places and Monuments :

There are no permanent public buildings within the lease area. The permanent human settlement is about 0.5 to 5 kms. From the lease area. There are no other public places or monuments within or around the lease area.

Infrastructure Facilities

The following facilities already exist in the village mentioned above

(A) Roads :

All the village are well connected by public roads with nearby town of CharkhiDadri . Buses of Haryana Road ways ply regularly in these village.

(B) Power supply

All the villages have got power supply from the State Electricity Board.

(C) Water Supply

Water is supplied by the Public Health Department Haryana through water supply scheme to the entire village.

(D) Medical, educational, Post & Telegraphs Facilities:

A Govt. Hospital is available at CharkhiDadri which is Just 25 Km from the Mine site. All the nearby villages have Middle schools & Sub Post Office. College, I.T.I and other facilities are available at CharkhiDadri.

13.1.v Quality of water

There are no water sources in the lease area excepts dry nallahs (rivulets). The precipitated water flows along the slope of quartzite. The water table in the area is about 60mtr. below the 250mtr RL. No

water samples could be collected in absence of any well/tube well in the lease area.

13.1.vi Number and Type of Trees :

The area under reference has natural growth of vegetation . These trees generally grown in the area are mainly JungliKikar, The height of these trees are generally smaller then 3mtrs. In the neighboring villages and nearby fields tress of Neem, KikarJund trees, Kanji (peganiceclabra) etc. are observed. No rare species exist in the area. There are a number of small plants. The Av. density of vegetation is 50/hect, which are mainly xerophytes.

13.2 Environment Impact Assessment Statement

13.2A Land Environment :

13.2.A.i Land Scape

Major part of the area is virgin with only 37.28 hectares covered by old working pits . The dwelling houses of the nearby villages are about 1 to 5km away from the lease area.

13.2.A.ii Aesthetic Environment

The panoramic view of the lease hold area reveals that the area has only one ridge. Since the present mining plan envisages the proper and systematic development of working and future alignment of the pits, the area will look nice.

13.2.A.iiii Soil and Land Use Pattern

The area under reference has thin soil cover or a very thin cover, with soil embodied in the joints. The soil has to be excavated first and properly stacked. This Mining Plan envisages remarkable change in the present land use pattern, which will be more uniform and

systematic at the end of 5th year due to proper mining and stocking the dumps at the earmarked places.

13.2.A.iv Agriculture.

There is no involvement of agriculture land where, mining is proposed. Therefore no impact on agriculture is envisaged in this mine plan.

13.2.A.v Forest :

There is no forest land in the lease hold area . Therefore, there is no impact of mining on the forestation except the proposal for additional plantation program which will enrich the aesthetic beauty of the area.

13.2.A.vi Vegetation and Wild life :

There is vegetation in the area as already explained. The mining activities has no adverse impact on the vegetation as the same shall be taken care of by growing additional vegetation, which is suspected to be destroyed due to mining. The same shall be compensated by planned plantation over dumping places. Since the present vegetation is of very poor quality the adverse impact will be negligible. However the proposed plantation will ameliorate the vegetation.

The area is not inhabitant by any significant wild life except stray existence of animals like Jungle rat, mangoes jackals etc. reptiles like snakes, lizard and birds like pigeon, bet etc and insects like scorpion spider etc. Due to stray population of wild life there will be no significant effect on the wild life due to mining. Moreover, the growth of vegetation of dumps etc. shall provide additional home for these stray animals.

By adopting the proposed reclamation plan, envisaging liberal plantation of vegetation of mixed species,it is expected to provide congenial habitant to promote wild life. After abandoning the mining

operations the area can be converted into a bird sanctuary or a fish farm by having the close liaison with the state Govt. authorities.

13.2.A.vii Public Buildings, places and Monuments.

As already described at 13.1.IV. There are no permanent buildings, places or monuments in the lease area

13.2.B Water Environment :

13.2.B.i Surface Water and Ground Water.

There is no perennial drainage system in the mining area and while planning due care for drainage has been given. No significant effect on surface water regime is expected. The water table in this area occurs below 60-65m below general surface.Hence there will be no effect on the hydrology of the area as the working will not reach the water table. However, there may be some affect on the seasonal nallahs, which drain the precipitated water flowing from the area.

Further it is proposed to make necessary arrangements for developing rainwater harvesting of the mine water during rainy season. It is proposed to develop necessary bores and pits for this purpose. Thus rain water harvesting will ameliorate the ground water of the area.

13.2.B.ii Water quality

There is no water courses in the area except dry nallahs .The precipitated water also flows along the depressions formed in between the outcrop of country rocks. The water table in the area is about 60-65mtrs below the ground surface.

13.2.C. Air Environment

13.2.C.i Noise :

No test has been carried out to determine the present noise level. However, since this is an isolated area without any habitation industry

the existing noise level in this area is well below the level at which normal speech communication may be interfered .The creation of vegetation barrier around the workings on both the sides of the roads and office buildings will also out sound barriers.

13.2.C.ii Air

Since the area is not worked at present. There are about 10 nos of crushers which are in operative at present; the area is basically unpolluted and fresh. Therefore, no air sampling and analysis is carried out.

Since mechanized mining is proposed for removal of over burden as well as for winning of mineral there are chances of environment Pollution in due to mechanized mining. The quartzite/ building stone mining will be done by drilling with the help of Jack Hammer drills and blasting by using explosives like ANFO, ordinary detonators &substitutes. The proposed mining will not deteriorate the air quality except generation of dust .The dust with air borne may affect the quality of air

Dust

The dust generation during drilling will be reduced by wet drilling. The dust generated during blasting will be minimized by water spay at the working faces before and after the blasting. The dust generated by excavation will also be controlled by spraying of water at the working faces. Dust generated due to plying of vehicles on mine roads will be dealt with by regular sprinkling of water on the roads . The sprinkling water will be done at short intervals using only a small quantity of water at each time. just sufficient to wet the surface. Further the vehicles used for transportation of the mineral will not be overloaded to prevent generation of airborne dust during their movement.

The speed of the movement of the vehicles will also be controlled to minimize generation of excess dust. Further as far as possible transport of mineral from the mines will not be done during the evening hours of summer season when the relative humidity is low and wind speed is high. The volume of airborne dust raised from the waste dumps will be kept under control by growing grass and vegetation.

13.2.C.iii Climate Condition

The climate of Bhiwani district can be classified as tropical steppe, semi -arid and hot which is mainly dry with very hot summer and cold winter except during monsoon season when moist air of oceanic origin penetrates into the district. There are four seasons in a year. The hot weather season starts from mid-March to last week of the June followed by the south- west monsoon which lasts up to September. The transit ion period from September to October forms the post –monsoon season. The winter season starts late in November and remains up to first week of March. The normal annual rainfall of the district is 420 mm which is unevenly distributed over the area 22 days. The south west monsoon sets in from last week of June and withdraws in end of September, contributed about 85% of annual rainfall. July and August are the wet test months. Rest 15% rainfall is received during non-monsoon period in the wake of western disturbances and thunder storms. Generally rainfall in the district increases from southwest to northeast.

Normal Annual Rainfall:	420 mm
Normal monsoon Rainfall:	355 mm
Temperature	
Mean Maximum:	41oC (May & June0
Normal Rain days:	22

The general direction of wind in summer season is west to east and in winter it is northwest to southeast (Plate no.14)

13.2.D Socio Economic Environment

13.2.D.i DEMOGRAPHIC STRUCTURE

Details of the Bhiwani District primary census Abstract has been given in table.

PRIMARY CENSUS ABSTRACT DISTRICT BHIWANI At A GLANCE

Sr. No.	Item	Value			Rank in the Districts in Haryana
		Total	Rural	Urban	
1.	Population	1425022	1154629	270393	4
2.	No. Of households	246742	197505	49237	3
3.	Share in total population (%) (Haryana)	6.74	7.68	4.42	4
4	Decadal growth rate (5)	22.49	19.42	37.56	14
5	Child population age (0-6) % to total district population	15.73	16.11	14.13	7
6	Sex ratio (female per 1000 males)	879	884	859	5
7	Child sex ratio (0-6)	841	844	827	7
8	Urban population (%)	18.97			16
9	Literacy rate (%)	67.45	65.25	76.62	13
10	Female literacy rate (%)	53.00	49.72	66.90	13
11	Mate female gap in literacy (%)	20.64	29.38	18.12	
12	Share of SC population (%) to total population in district.	90.61	19.54	19.90	10
13	Workers to total population	42.76	45.65	30.39	7
14	Main workers to total workers	69.78	67.27	85.88	16
15	SC literacy	56.26	55.59	59.05	12
16	Density of population	298	244	5256	18
17	Permanent houses (%) of total census houses.	70.53	68.1	8.67	8
18	Condition of houses good (%)	43.95	41.69	53.36	16
19	Households having no exclusive room or one room (% of total households).	19.5	18.09	25.70	5
20	Household with availability of	83.19	18.76	93.24	12

	electricity (% of total household)				
21	Household having tap water (% of total households)	55.4	48.55	84.01	6
22	Households having bathroom with houses (%)	55.05	45.0	70.93	13
23	Household having kitchen within houses (%)	62.33	60.18	71.37	5
24	Household having television	42.19	34.26	69.94	17
25	Household having telephone (%)	6.92	3.85	19.69	18
26	Household having bank accounts (%)	44.44	44.21	45.41	11
27	Household having radio (%)	42.63	42.35	43.79	5
28	Household having car, jeep (%)	2.34	1.90	4.14	17
29	Household having scooter, motorcycle (%)	10.35	7.38	22.65	19
30	Household having bicycle (%)	34.41	27.68	62.31	19
31	Household having no drainage of Wastewater (%)	36.3	41.54	14.55	6
32	Household having no Lateran (%)	64.52	73.93	25.51	6
33	Household having none of assets (%)	33.8	38.21	15.58	18
34	Electricity available, latrine no available (%)	50.19	57.28	20.81	5
35	Electricity not available, latrine available (%)	2.48	2.59	2.05	11

Due to mining activities significant changes are expected in the daily life of the inhabitants as mining activities will open new avenues of employment generation for local people. The favorable changes are expected in the terms of more employment opportunities, better Infrastructure facilities like power linkage, medical facilities, water supply etc.

13.2.D.ii Occupational health and safety :-

The people/labour those are associated with mining activities are generally exposed for pollution related diseases which on prolonged exposure to the same environment become chronic. In order to check the above, regular check up of the labour and other persons working in the same environment shall be made.Preventive measures viz. Use of respiratory masks, helmets etc. shall be adjusted to avoid the adverse impact of mining / pollution on the health of the labour.

13.2.D.iii Recreational Facilities:

After eight hours of hard work the labour/workers/operators badly need some kind of entertainment to ease them. It is therefore proposed, to organize a cultural and educative program at least once in month. Some additional programs shall be organized,especially on the family welfare and other fields to entertain them as well as to educate them. This will include program on alcohol addiction etc.

13.3 Environment Management Plan:

To check the adverse effect likely to be caused to the proposed mining on the environment and ecology of the area environmental control measures are to be followed. Based on the environmental impact assessment made the following measures shall be taken into account for the betterment of the environment and ecology.

13.3.i Temporary storage and Utilization of top soil :

The topsoil will be removed separately in advance of the mining of other overburden and will be stocked separately. The locations of the soil stack yard are shown in year wise plans. To prevent erosion of the stacked top soil the height of the stacks will be restricted to 6mtrs above ground level. The retaining wall will also be erected along the lower edges of the topsoil of stacks, as they will be prone to erosion. The width of these walls will be 0.5 mtrs. at top and 1 meter at the bottom with a height of about 6 mtrs. Further plantation of grass is

proposed on the surface of the dump slopes to improve its quality and to restrict soil erosion.

13.3.ii Proposal for reclamation of land affected by mining activities during and at the end of mining lease period.

Land reclamation is the single broad environmental protection system which will provide protection and control of most of the adverse environmental impacts of mining and also have improvement of aesthetic beauty of the area which will be denuded due to mining activity. As a result of mining of this deposit the original ground profile will be lowered and deep depressions will be created. Further at some selected places the ground will be covered as waste dumps. Besides this the hydrographic system may be affected due to wash-off. Based on these conditions it is proposed to improve the effected land wherever possible for better land use, so as to support forestry and creation of water reservoir etc. Accordingly, the land reclamation portion shall be done by planting trees on the dumps along the roads surroundings the office building on the waste barren land and in the open pits when they reach their ultimate stage.

Plantation Along the roads.

In order to barricade the dust generated during the movement of the trucks and also to restrict noise level a forestation is proposed along the approach roads to pits . This will improve the aesthetic beauty of the area by a screening visual intrusion of the quarry workings. For this purpose the soil produced from the mine will be brought and spread in the layer of 2mtr. thick and 6 meters. Wide along both sides of the roads.

Surrounding the office buildings :

A vegetation barrier will be provided around the office buildings and on the waste barren land.

In open pits :

As the mineral is not going to be depleted during lease period no plantation is proposed in the mineral bearing area/ pits. Only foot hill side and barren land will be planted.About 4.0 hectare area will be planted in the extreme south end pit which will be closed and reclaimed during the plan period

Afforestation/ Green belt

The lease area is hilly terrain devoid of any vegetation. Mining activities will not cause any harm to riparian vegetation cover as the working will not extend beyond the lease area. Land out side is the private agriculture land. Link road from the crusher zone pass through the areas. It is proposed to have plantation on both sides of the roads as greenbelt to provide cover against dust dissemination. Plantation will also be carried out as social forestry programme in villages, school and the areas allocated by the Panchayat/ State authorities.

Native plants like Neem, Pipal, Khejri, Ber and other local species will be planted. A suitable combination of trees that can grow fast and also have good leaf cover shall be adopted to develop the greenbelt. It is proposed to plant 3500 no's of native species along with some fruit bearing and medicinal trees during the plan period.

Table: Greenbelt Programme

Year	Saplings to be planted	Survival 70 %	Species	Place of Plantation
I	200	140	Neem, Peepal, Ber, Shisham, Sirish, Babool,	Along the roads, in barren area, surrounding office & rest shelter and other social forestry
II	200	140		
III	200	140		
IV	200	140		
V	200	140		

Total	**1000**	**700**	Gulmohar	programme.

The tree plantation is proposed at spacing of 3m x3 mtr. The size of the pits will be 40cm x 40 cm .filled with manures . The intervening space between the trees will be covered with bush varieties. Taking a survival rate of 70% , about 200 no. of trees will be planted year wise during plan period:-

Post plantation care :

This will include the following measures :-

a) Protection from grazing and fires.

b) Watering at least once a week during dry spells.

c) Manu ring

d) Weeding and soil working.

e) Mulching

f) Replacement of causalities.

g) Protection form pests.

The maintainance system will include:-

a) Examination of signs of slopes failure and excess erosion.

b) Collection of water samples.

c) Keeping and effective track of vegetation established.

d) Checking the quality of air near mine site by air sampling and getting it analyzed.

e) Collection and analysis of regular soil samples from reclaimed areas to monitor the improvement in soil characteristics.

Equipment for Environmental Restoration Plan :

i Water tankers will be used for the sprinkling of water on the mining faces regularly .

ii A tractor with trolley will be used to transport the seeds, saplings, fertilizers and other agricultural tools. The same tractor will be used for water spray, work also. Other miscellaneous agricultural tools will be required for seedbed preparation, terracing of dumps, mulching, plantation and roast post plantation care.

Manpower and Organization:

Regular man power will be required to be deployed for supervision, sample collection, assistance in reclamation works, monitoring system of post plantation care. For carrying out the actual work of a forestation, sapling plantation,mulching, construction of drains and tanks and other maintenance work, casual labor will be deployed as and when necessary.

13.3.iii Program of A Forestation

The a forestation will be done proposed earlier. Plant saplings will be obtained from private/ Govt nurseries. During the forestation work the combination of different type of species will be done on the area ear marked for plantation in green belt & in the surrounding areas.

The area is demarcated on the plan plat No 5-9. The tree plantation will be made all along the mine approach roads surrounding the site services. This will cover about 1.0 ha land. About 200 trees per year will be planted on the above area. The annual area covered will be 0.20hectares. The survival rate is expected 70% therefore the saplings / plats which dies will be replace in addition to the plants proposed above.

13.3.iv Stabilization and Vegetation of Dumps :-

The same is already described in chapter 7 at para no. 7.3

13.3.v Treatment and Disposal of water from Mine :-

There is no regular disposal of water form mines except during rainy season. The water pumped out from the mines during rainy season shall be disposed through water garland ditches where settlement tanks are provided at regular interval to settle down the UN-dissolved matter/ sediments before finally depositing of the purposed out water through the natural nallah which is situated within the lease hold area.

Since the rainy water and the ground water do not contain any toxic material, this does not need any chemical treatment before disposal.

13.3.vi Measure for minimizing adverse effects on water regime:

It is proposed to make necessary arrangements for developing rainwater harvesting of the mine water during rainy season. It is proposed to develop necessary bores and pits for this purpose. This will help in recharging th ground water at a faster rate.

13.3.vii Socio Economic benefits arising out of mining: -

The socio economic benefits in the form of labour employment for mining transportation and other ancillary activities pertaining to mining shall benefit the local people also in the activities like milk supply and sharpening of tools, maintenance of tools etc. will also better the socio-economic status of the local inhabitants.

13.4 MEASURES TAKEN AND TO BE TAKEN FOR THE CONTROL OF WATER, NOISE AND AIR POLLUTION

Air Pollution:

Emission of gases and dust takes place due to movement of vehicles. Spraying of water and plantation along the road side prevents the spread of dust. Plantation also acts as barrier for restricting pollution. Impact on air environment has been assessed taking in to consideration the proposed production and increase emissions. The sources of air pollution are given below:

- Operation of mining machinery/ loading operations
- Transportation of mineral
- Wind erosion from barren area and nearby area

Air pollutants released during production can be checked by:

- Dust suppression system/ water spraying would be adopted at mine working and loading points
- Excavation operations to be suspended during very strong wind conditions
- Afforestation will be carried out for control of dust
- Plantation with wide canopy trees along approach road will help in dust suppression
- Persons to be provided with dust mask and other personal protective equipment, particularly during summer months and dust storm periods.

The following table indicates the concentration of Ambient Air as per the CPCB guidelines. (For reference purpose)

National Ambient Air Quality Standards

S. No.	Pollutants	Time weighted Average	Concentration of Ambient Air	
			Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (notified by central Government)
1.	**2.**	**3.**	**4.**	**5.**
1	Sulphur Dioxide (SO^2), µg/m^3	Annual*	50	20
		24 hours**	80	80
2	Nitrogen Dioxide (NO_x), µg/m^3	Annual*	40	30
		24 hours**	80	80
3	Particulate Matter (Size less than 10 ìm) or PM_{10}, µg/m^3	Annual*	60	60
		24 hours**	100	100
4	Particulate Matter (Size less than 2.5 ìm) or $PM_{2.5}$, µg/m^3	Annual*	40	40
		24 hours**	60	60
5	Ozone (O_3), µg/m^3	8 hours**	100	100
		1 hours**	180	180
6	Lead (Pb), µg/m^3	Annual*	0.50	0.50
		24 hours**	1.0	1.0
7	Carbon Monoxide (CO), mg/ m^3	8 hours**	02	02
		1 hours**	04	04
8	Ammonia (NH_3), µg/m^{3-}	Annual*	100	100
		24 hours**	400	400
9	Benzene (C_6H_6), µg/m^3	Annual*	05	05
10	Benzo(O) Pyerene Particulate Phae only ng/ m^3	Annual*	01	01
11	Arsenic (As), ng/ m^3	Annual*	06	06
12	Nickel (Ni), ng/ m^3	Annual*	20	20

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be compiled with 98% of the time in a year. 2% of the time, they may exceed the limits but not on to two consecutive days of monitoring.

(Source: CPCB notification Dated 18th November 2009)

Transportation

- Regular water spraying on haulage roads during mineral transportation by water sprinklers,
- Avoid over loading of tippers & consequent spillage on the roads,
- Mineral carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to atmosphere,
- Air quality shall be regularly monitored both in the core zone and the buffer zone.

Controlling of NOx level

The source of NOx is due to vehicular emission. This can be controlled by proper maintenance and servicing of vehicles. Only P.U.C. certificated vehicles will be permitted

Noise Pollution

There is drilling and blasting for mineral extraction. Noise pollution due to drilling, blasting &transportation will cause some problem to the inhabitants of this area because there is human settlement in close proximity to the link roads in lease area. Effective steps will be taken to keep the noise level well below the DGMS prescribed limit of 85 dBA.

Noise control is achieved by the following:

- Proper care and maintenance of the equipment will be carried out.
- Personal protective equipment will be provided to the workers.

13.5 DETAILS OF HEALTH CHECKUP AND INSURANCE OF ALL THE EMPLOYED PERSONS (FOR EXISTING LEASE)

All workers will be subjected to medical examination as per Mines Rule 1955 both at times of appointment and at least once in five years. Medical camps will be organized for this activity. Insurance of all employees as per the rules will be carried out.

13.6 Corporate Social Responsibility

As a corporate responsibility following measures along with budget provision is proposed for improving the conditions of persons in and around the project area:

Sr. No.	Description	Amount (in lacs)
1	Health check up camps	2.0
2	Surveillance programme of the workers	1.0
3	Insurance cover of workers	3.0
4	Assistance to local schools, scholarship to students	1.5
5	Sanitations and drinking water facilities	.0
6	Vocational training to persons for income generation	2.5
7	Assistance to self help groups	2.0
Total		**12.00**

13.7 Fund Provision for Environmental Management

It is proposed to create an Environment Management Fund. The contractor shall deposit/pay an amount equal to 10% of the due contract money along with instalments towards the 'Mines and Minerals Development, Restoration and Rehabilitation fund.

13.8 Fund Provision for EMP Measures

Following provisions are proposed to be taken for improving, control and monitoring of environment protection measures

Sr. No.	Particulars	Amount (in lacs)
1	Pollution monitoring – Air, Water, Noise	2.0
2	Pollution abatement – Water sprinkling	2.0
3	Wire fencing at plantation sites	1.0
4	Plantation including maintenance	1.0
5	Rainwater harvesting	1.0

6	Haul road and other roads repair and maintenance	1.5
	Total	8.50

The protection measures will be dynamic and subject to periodic review so that measures remain effective and appropriate.

PART –II

PROGRESSIVE MINE CLOSURE PLAN

1.0 Introduction:-

Vide notification GSR 330(E) date 10-04-2003, MCDR, 1988 has been amended incorporating preparation of Mine Closure Plan. Corresponding amendments has been made in MCDR, 1960. Accordingly Haryana Government has also amended the mineral concession rules which requires the Mine Closure Plan (Progressive & Final) as per chapter 10 of the "Haryana Minor Mineral Concession, Stocking, Transportation of Minerals and Prevention of Illegal Mining Rules, 2012".In the present case as it is a new mine a progressive mine closure plan, as a component of the mining plan is required. The present position of the deposit does not permit to close any part of the pits. At the proposed pace of work in the next coming years it will not be possible to close down any part except doing protective works like fencing and making of a drain, plantation etc.

(A) Name & address of the lessee

M/s MSK JV, S-571,Greater Kailash-II, New Delh-110048

(B) LOCATION OF THE LEASE AREA

District: Bhiwani

State: Haryana.

Taluka: Dadri.

Village: Jojhu Kalan

(C) EXTENT OF THE LEASE AREA

The mine is located in the revenue estates of Villages Jojhu Kalan inDistt. Bhiwani, Haryana and is about 25 Kms from CharkhiDadri ,District Bhiwani. The lease area lies between the latitudinal parallel falling in the survey of India Topo Sheet No. 53-D/2. The total lease area granted is 6.00 hectares (valid for 10 years from date of Environmental Clearance or One Year from

the date of issue of LOI, whichever is earlier). The details of extent of area is as follows –

Village	Khasra no.	Area in hect.
Jojhu Kalan	305 Min	6.00hectares

The lease area is located on the katcha road and then a metalled road upto village Jojhu Kalan and is easily approachable from CharkhiDadri, Bhiwani and other important towns.

(**E) METHOD OF MINING**:

(Details are given in Chapter 4 of the main Mining plan)

The present mining operations are designed to be carried out by open cast mining means. The entire mining operations proposed are mechanized. A part of mining, the loading and transportation up to stack yard shall be done mechanically. It is proposed to load in the trucks/dumpers directly to the destinations and mineral is not put up in this stack yard to avoid the double handling. In the present operation the bench height shall be 9mtrs. Each bench will advance one by one. While carrying out the mining operations in accordance with the above provision the overall pit slope shall be maintained the 49^0as the mineral bearing rocks being hard and compact.

(F) MINERAL PROCESSING OPERATION:

Entire building stone products proposed to be sold in the form of lumps to the crusher owners.

1.1 Reasons for closure:

The progressive mine closure plan has been prepared in compliance of Rule 70 (1) of Haryana Minor Mineral Concession Rules 2012 under MMCR 1986.This is reproduced as under:

Rule 70.(1) Every mineral concession holder shall prepare a Mining Plan along with theMine Closure Plan (Progressive & Final) and shall not commence mining operations in anyarea except in accordance with such Mining Plan duly approved by an officer authorized bythe Director in this behalf.

As the mineral is not going to be depleted during the plan period no immediate closure is planned as sufficient reserves are available to carry on the activities. Also there is good market potential in domestic market.

1.2 Statutory Obligations:

The lessee is bound to submit the ProgressiveMine Closure Plan either with Miningplanor Schemeof MiningLesseeisboundtofollowthetermsandconditions as will be stipulatedin thelease deed /LOI.

In addition to it the rules pertainingtothe ProtectionofEnvironmenti.eEnvironmentAct.EnvironmentRulesandotherasso ciated rules for the protectionofenvironment will havetobefollowed duringthecourseofmining.TherulesstipulatedinMinesAct, MinesrulesMetalliferousMinesRegulation1961 and Haryana Mines Rules, 2012 will be followed.

1.3 Closure plan preparations

Name, address and registration number of the recognised persons who prepared the progressive closure plan and name and address of the executing agency who is involved in the preparation of progressive mine closure plan.

S.N.Sharma

RQP/DDN/135/2001-A (**Annexure-III)**

Lessee will himself implement the closure plan; no outside agency will be involved.

2.0 MINE DESCRIPTION

2.1 General Geology and Local Geology

2.1.1 Regional Geology

(Details are given in the Chapter 3 of main mining plan**)**

2.1.2 Local Geology

(Details are given in the Chapter 3 of main mining plan)

2.2 Reserves

(Details are given in the Chapter 3 of main mining plan

2.3

2.4 Mining Method:

Mining method to be followed is described in Chapter 4 of mining plan

2.4 Mineral Beneficiation

(Details are given in the Chapter 9 of main mining plan)

3 Review of implementation of mining plan including five years progressive closure plan upto the final closure plan

Mining Plan and Progressive mine closure plan are being submitted for the first time. It will be reviewed after five years and review of implementation will be given with next mining scheme.

4.0 CLOSURE PLAN

4.1 Mined - out land

At the end of mining plan period, about 6.00 ha area will be mined out.

4.2 Water quality management

There are no water courses in the area except dry nallahs .The precipitated water also flows along the depressions formed in between the outcrop of country rocks. The water table in the area is about 55-65mtrs. below the ground surface .There is no flow of water in the lease in post monsoon period.Area is having 420 mm rainfall in a year. During rainy season, water will be accumulated the pit which will be drained out and finally it will be sent in to natural drain. A settling tank will be provided so that the finer sediments are settled down. These finer sediments will be collected after rain is over. There will be no intersection of water table as working will be carried above the the water level which is 55-65 m below the general surface of area. Some wells are located in the agriculture fields where water table was recorded 55-65m.

4.3 Air Quality Management:

The proposed mining methodis not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like facemask, ear plug/ muffs.

For air pollution management at the progressive mine closure of mine, greenbelt will be developed to prevent and control air pollution.

4.4 Waste Management:

As stated in mining method, soil dump yard shall be maintained for stacking the top soil. It is also proposed a stack yard for mineral in case of emergency or downfall in sales.

4.5 Top Soil Management

There is a very thin soil/ top soil which will be scraped and used for plantation.

4.6 Tailing dam management

Thereisnoproposal ofbeneficiation of mineralNotailing damisenvisaged.

4.7 Infrastructure:

The infrastructurefacilities like site office,first–aidstation,rest shelter/ store, drinking water etc. will be established.

4.8 Disposal of mining machinery:

It is propose to deploy heavy earth moving machineries in the mine and a crusher is to installed in lease hold area for in-house crushing of mineral. As this plan is for 5 years period and hence during plan period no disposal or decommissioning of machineries is proposed. But at the end of the lease period, the crusher will be de-commissioned. Small set up of office complex shall be maintained even after expiry of lease, to look after the plantation and other proposed reclamation measures.

4.9 Safety & Security:

Safety measures will be implemented to prevent access to excavation area by un-authorized persons as per Mine Act 1952, MMR 1961.

i. SafetymeasureswillbeimplementedasperMineAct1952,MMR1961,MinesRules 1955.
ii. ProvisionsofMMR1961shallbefollowedstrictlyandallroadsshallbe12 mwideandhave agradientofnot more than 1 in 16.
iii. The bench height will be 9.0m.
iv. Width of working bench will be kept around 20.0 m for ease of operations and provide sufficient room for the movement of equipment.
v. Protectiveequipmentlikedustmasks,earplugs/ muffsandother equipmentshall beprovidedforusebythework persons.
vi. Notices givingwarning to preventinadvertent entry of persons shall be displayed at all conspicuousplacesand inparticular near mineentries.
vii. Dangersignsshallbedisplayednearthe excavations.
viii. Security guards will be posted.
ix. In the event of temporary closer, approaches will be fenced off and notice

displayed.

4.10 Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, inundation in underground mines, fire, seismic activities, tailing dam failures 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 authorities should be described.

- The mechanized mining activities in the hilly area may involve any high risk accident due to side falls/collapse , flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, Haryana Mines Rules, 2012 and other laws applicable to mine will strictly be complied with.
- During heavy rainfall the mining activities will be suspended
- All persons in supervisory capacity will be provided with proper communication facilities.

  Competent persons will be provided FIRST AID kits which they will always carry.

4.11 Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.

- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:

  Mine roads and approach roads,

  Fencing on approach roads,

  Checking and maintenance of machines and equipment,

  Drinking water arrangements,

  Mine office, first aid stations etc.

- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

5.0 ECONOMIC REPERCUSSION OF CLOSURE OF MINE AND MANPOWER RETRENCHMENTS

Lease area will be granted for a period of 10 years only. As per the production programme envisaged, at the end of lease period, still sufficient reserves would be left available for continuing production activities further. Hence, no closure is planned. There will be no effect on the man power as the persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

6.0 TIME SCHEDULING FOR ABANDONMENT

The lease area has enormous potential for continuance of operations even after the expiry of the awarded period. The details of time schedule of all abandonment will be given at the time of final closer plan.

7.0 ABANDONMENT COST

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive mine closure activities during the plan period, cost is assessed as given below:

Table: Abandonment Cost

ACTIVITY	YEAR					Rate	Amount (inRs.)
	First	Second	Third	Fourth	Fifth		
Plantation (in no.)	200	200	200	200	200	@100 Rs per sapling Including maintenance	1,00,000
Plantation cost	20,000	20,000	20,000	20,000	20,000		
Wire fencing (meter)	60,000	60,000	60,000	60,000	60,000	@ of 120Rs per meter	3,00,000
Toe walls (m)300m	3,00,000	-	-	-	-	@ Rs 1000/m	3,00,000
Drain(m) 300m	3,00,000	-	-	-	-	@ Rs 1000/m	3,00,000
	Total						10,00,000

8.0 FINANCIAL ASSURANCE

Total 6.00 ha area will be put in use up to the end of the plan period. Details of area put in use as given below (As per circular No.4/2006 issued by CCOM, Nagpur.

Total 6.00 ha area is considered for calculation. The total financial assurance (@15000/- per ha.) will be of Rs 90,000/. This will be given by lessee as per rule no 70 (1) (6) amended in 2012 as surety bond / bank guarantee.

9.0 CERTIFICATE

It is enclosed with the report.

10.0 PLAN AND SECTION

Plan and section are prepared and enclosed with the mining plan.