

**FACTUAL AND ACTION TAKEN REPORTS IN THE MATTER OF THE HON'BLE
NATIONAL GREEN TRIBUNAL ORIGINAL APPLICATION NO. 846/2022 –
IN RE: NEWS REPORT PUBLISHED IN THE NEWSPAPER THE HINDU DATED
15.11.2022 TITLED “STONE QUARRY COLLAPSES IN MIZORAM, 12 FEARED
DEAD”**

In the light of media report titled “Stone quarry collapses in Mizoram, 12 feared dead”, a suo moto case was registered by the Hon’ble National Green Tribunal in the matter of collapse of slope in Hnahthial District, Mizoram killing 12 workers engaged by ABCI Infrastructure Private Limited.

Report on the actions required to be taken by the State Government which is contained in paragraph No. 8 of the Order dt. 28.11.2022 is being prepared and will be submitted separately.

As contained in paragraph No. 9 of the said NGT order, a Joint Committee was constituted by the Government of Mizoram vide Notification No. C. 18014/362/2022-FST/32 Dt. 06.12.2022. (Copy is enclosed as Annexure). The following is the report of the Joint Committee.

I. DETAILS ABOUT THE QUARRY:

The incident site, Maudarh Quarry is owned by Mr. C. Lalremruata s/o C. Lalneihthanga. House no - 85, Leite village, Hnahthial District. The quarry is owned under a Periodic Patta number 209802/10/26. The area is 10.70 bigha in size. The quarry is located uphill of Maudarh village at around 500 meters from NH54. The area is under the Leite Village Council. The Geographical Coordinates of the area is: N 22° 54' 51 66" and E 92° 53'35" 91" (Southern Corner) and N 22° 54' 55 22" and E 92° 53' 34 95" (Northern Corner). The Strike Direction of the bedded rock is N 10°E while dip of Rock is 2WNW (at 280°). The topographic slope is 32-35° WNW (at 280°) and length of quarry face being approximately 113m.

On 12th August 2019, Mr.C. Lalremruata made an agreement with ABCI Infrastructure Pvt Ltd for leasing out the Quarry in return for a payment of Rs 5 lakhs per year. The agreement is made for a period of 5 years. *According to Terms & Conditions of Agreement of Lease between Mining Permit & Operator in para 5 stated that “...if there is an accident, riots, strike among the workers the Lessee (ie. Company) shall be sole liabilities and the Lessor (ie. Mining Permit Holder) does not involve the liabilities.*

The mining permit was granted to the owner of the land bearing license number 002/2/20-209 of 2020 on 17.11.2022 which is valid still 31.07.2023. Terms & Conditions issued to the Mining Permit Holder by DGM restricts digging beyond 3m below surface (ground) level. It only allows clearance of over burden top soil and mining of mineral (Sandstone) and does not entail permission for possession and use of explosives in mines/stone quarry.

II. ACTION TAKEN REPORTS:

1. Inspections conducted:

The following officials/ authorities conducted inspection of the site-

- 1) District Magistrate, Hnahthial.
- 2) Joint Chief Controller of Explosives(PESO)
- 3) Geology & Mining Department and Disaster Management & Rehabilitation Department headed by Director, Geology & Mining Department, comprising of Mining Engineers and Geologists on 15.12.2022.
- 4) Mizoram Pollution Control Board.
- 5) Conservator of Forests, Northern Circle, Mizoram

2. Suspension of Mining Permission

Owing to loss of lives in the quarry accident and illegal use of explosives in Stone Quarry, Competent Authority/ Director of DGM has issued an Order of Suspension of Mining Permit No. 002/2/20-209 of 2020 on 17th November, 2022 on the gravity of offence that 'quarrying operation was done without proper Mining Plan with blast Design and possession of Explosive License'.

3. Remedial measures taken:

- 1) On November 14th 2022 at 2:40 pm a report of a massive landslide at the quarry was received. As soon as the report of the landslide was received, a detailment order was issued by the District Disaster Management Authority and two Executive Magistrates Dr. Lalramdintluanga, SDC and Smt Betty Lalrinfeli, SDC rushed to the site. A preliminary report was issued immediately from the DC Office, Hnahthial
- 2) Rescue and recovery operation was started by 3:30 pm using equipment and machinery of ABCI Company. Help arrived from Leite Village Council and members of Young Mizo Association (YMA), Leite. The YMA immediately arrange coffins in case of any casualty.
- 3) The bodies of 11 workers which have been recovered at the first hand were identified and sent for PME at District Hospital Hnahthial after the YMA, Lunglei Branch cleaned up the bodies of the victims recovered. The search was on for remaining workers. The last person was exhumed on 2nd December 2022. The body of the deceased was handed over to ABCI Company by the District Police as per protocol. The wreckage of 2 excavators was also recovered.

- 4) The State Disaster Response Force (SDRF) comprising of 12 nos rushed to the spot on the evening of 14th November. Search and rescue operation was conducted by SDRF with their equipment and are stationed at the site.
- 5) Assam Rifles (Naga Hills Battalion) arrived from Lunglei headed by their Commandant and arrived at the site by 7:30 pm on 14th November 2022. After expanding their efforts in the recovery operations, they departed permanently from site for Lunglei at 2:00 pm on 15th November 2022.
- 6) 199 Battalion BSF, Zotlang also arrived at site along with a Sniffer Dog on 15th November 2022 at 11:00 pm and had been working continuously assisting in the recovery operations. The Sniffer Dog aided in the discovery of two dead bodies.
- 7) 19 no. of NDRF squad members arrived from Aizawl on 15th November at 6:45 am. The Deputy Commandant of NDRF arrived later from Guwahati the next day. A different squad is also put on standby in Aizawl.
- 8) Medical officers from the District Hospital Hnahthial have continuously been on duty at the site. Medical officers from other districts also arrived on site. They are:
 1. Dr. Lalringmaia, State Consultant, Forensic Medicine, Civil Hospital Aizawl
 2. Dr. Lalhminghlua, MD Forensic Science, Lunglei Civil Hospital
 3. Dr. Lynda Zohlupuii, Senior Resident. Forensic Department. Aizawl
 4. Dr. George Vanlalchhuanga, Demonstrator, Forensic Department, Zoram Medical College (ZMC).

Dr. LC Liana, CMO, Lunglei District also visited the disaster site while Dr. Lalrinthangi, SMO, Lunglei had been continuously monitor the situation.

III. FACTUAL REPORT BASED ON THE INSPECTION CONDUCTED

1. Cause of the incident:

The incident happened on 14th November, 2022 at 2:40 PM at Maudarh Quarry which is around 30kms from Hnahthial Town. ABCI Infrastruture Pvt. Ltd has been using the quarry for extraction of stone and boulders for upgrading and widening of NH-54 (package 4).

According to the report of the District Magistrate, Hnahthial District, the incident happened while routine operation was being done by a number of workers. As there was no record of raining and earthquake since at least two weeks before till the time of the collapse, natural calamities may not be considered as the prime cause. The site of the quarry and surrounding land appeared dry and normal and found to be favourable for quarry work at and before the time of collapse.

Based on the reports submitted by M/s. ABCI infrastructure Pvt. Ltd., along with statements of the persons injured and photographs of the site, the Joint Chief Controller of Explosives (PESO) also remarked that the depth of the stone quarry seems deep and area seems composed of weak material resting on steep slope and overburdened. The landslide might have occurred due to the force of gravity, that is the gravitational force might have become more than the internal strength of the soil area.

It is further stated by the District Magistrate, Hnahthial District that extraction of stones and boulders has been done by using drilling and blasting method with explosives. There seemed to be an indiscriminate drilling and blasting in order to extract stone and boulder as much as possible at a time, which led to excessive vibration to the quarry and its surrounding making the stability of quarry stone more vulnerable to collapse day by day. Moreover, it has been observed that extraction of stone has not been done step by step from the superficial layer starting from the top of the quarry downward, rather the extraction has been done excessively at the base that made the upper part more unstable and eventually led to collapse of the quarry.

As per the findings of Department of Geology & Mining and Disaster Management & Rehabilitation Department, G.O.M, several points relating to the cause of the incident are listed below:

- 1) It is observed that blasting for extraction was performed at the toe (lowest portion) of the extraction face, while at the same time overburden was just above the extraction face, which was not properly pre-excavated, thus weakening the ultimate foundation for all the above strata and layers of mineral/rock and overburden. This faulty extraction plan could be another factor of the collapse.
- 2) It is evident from the video footages covering the live extraction work and the real-time collapsed of the Maudarh Quarry that non-maintenance of proper slope angle and adequate benches appears to be another triggering factor of the collapse.
- 3) The M/S ABCI Infrastructures Pvt. Ltd. nor its sub-contractor i.e. G.P. Projects Ltd approached the Dte. of Geology & Mining (DGM), Govt, of Mizoram for preparation of Blast Design nor submitted Explosive License which is pre-requisite for any blasting operation for a particular use in any respective mine/quarry. Excessive amount of explosive was charged and blasted without any authorized and well-planned blast design which then resulted in the destabilizing the overburden slope above the main extraction site due to enormous blast induced vibration. This seemed to eventually trigger the collapse.
- 4) No overburden and mineral benches were maintained on the east side of the mine/quarry and the high wall vary from 30 - 50 m which is in violation of Reg. 106 of Metalliferous Mines Regulations, 1961.

There is no Mining Plan/ Extraction Plan available for winning the mineral /stones. No such application has been submitted to the Nodal Department viz. Dte. of Geology & Mining (DGM), Govt. of Mizoram.

There is no Blast Design prepared for using explosives and blasting in this Stone Quarry.

2. Extent of damage

- 1) The total area covered by the collapse is approximately 5000 Sq.m The huge debris buried 12 people to death. All the dead bodies were recovered, the last dead body being recovered by 2nd December 2022.

As per the inquest conducted by Superintendent of Police, Hnahthial District, the deceased were identified as follows:

- (i) Buddhadeb Mondal (25) s/o Sunil Mondal, Nadia, West Bengal\
- (ii) Rakesh Biswas (21) s/o Kalu Biswas, Nadia, West Bengal
- (iii) Sorojit Roy (26) s/o Situ Roy, Cachar, Assam
- (iv) Subrata Raptan (24) s/o Shymal Raptan, Khalikhula, West Bengal
- (v) Madan Das (25) s/o Sonatai Das, Nadia, West Bengal
- (vi) Omprakash Kumar (18) s/o Dalchand Mahato, Manamat, Chalra, Jharkhand
- (vii) Mintu Mandal (22) s/o Madhusudn Mandal, Tehatla, Nadia, West Bengal
- (viii) Khemrul Kumar (22) s/o Murli Mehto, Manamat; Chatra, Jharkhan
- (ix) Ajoy Chakma (25) s/o Rangachand Chakma, Khojaisuri, Lunglei District, Mizoram
- (x) Shifiquil Islam (26) s/o Muzahar Ali, Goalpara, Assam
- (xi) Jahidur Islam (27) s/o Samsul Haque, Satrakanara, Assam
- (xii) Kahamrai (49) s/o Sobroto (L), Zawlpu, Lunglei District, Mizoram

After autopsy and other necessary protocols were done, all the deceased were taken to their respective family at their respective hometown. There was no report of any injury of the workers other than the death of 12 people.

Further, the following Plant and Machineries at site were also completely damaged by the landslide.

Such Plant and Machineries were:

- 1) Five (5) no. of Excavators,
- 2) Two (2) no. of ROC (Compressor)
- 3) One (1) Terex Crusher

The loss incurred to the machineries so far in the quarry collapse is estimated to be approximately Rs 15 Crores.

IV. DEFAULTER / PERSON RESPONSIBLE:

The Police investigation on the incident is still underway and the investigation report based on findings will include defaulter / person responsible.

V. ACTION REQUIRED /REMEDIAL ACTION ADOPTED TO PREVENT SUCH INCIDENT IN FUTURE:

1. Actions by the State Government:-

In view of the current situation, the following remedial action may be taken by the State Government:

- (1) Directorate of Geology and Mining (DGM) should prepare Standard Operating Procedure (SOP) for stone quarry for the whole State of Mizoram for strict compliance by the quarry owner, majority of who are ignorant about modern legislation or laws regarding explosive, mining method, legislation, etc. SOP will be in local language and English.
- (2) Directorate of Geology and Mining (DGM) should also prepare DO's and Don'ts to be followed in use of explosive, storage, security, etc. and while blasting quarry in local language and English.
- (3) To strengthen institutional mechanism by recruiting more Mining Engineer (from existing 2 in the Directorate office) to at least 5 and 1 Geologist Junior to be attached to the office of Deputy Commissioner to supervise and ensure compliance of extant statute. At present, the two Mining Engineer viz. Deputy Controller of Mines and Assistant Controller of Mines are given charge of Aizawl District and Saitual District only, while the other a districts are under the charge of Geologist who have no knowledge of mining engineering. There are valid 468 quarries in 2021-2022 in the State and it suspected that there are equal numbers of illegal quarry. At present, there are only 10 permanent Mining Check Gate and 13 Mobile Check Gate.

2. Proposed Standard Operating Procedure (SOP) for Quarry:

- (1) Directorate of Geology and mining is the sole authority which is competent to grant Mining Lease/Mining Permit and its renewal, levy rate of royalty, fine, etc. as per the provisions of the Mizoram Minor Minerals Concession Rules, 2000 (As amended from time to time).
- (2) For extraction of stone, there should not be any dispute on ownership of land from where stone is to be extracted. The owners should ensure that all necessary prior environmental clearance from Environment, Forest and Climate Change Department and consents from Pollution Control Board are obtained for quarrying.

- (3) No extraction of stone or its transportation will be permitted if the owner did not pay non-tax resume (Royalty, etc.) even if the period is covered by Mining 'Lease/Mining Permit.
- (4) Fine will be imposed for non-submission of Annual Return (Form-J), Quarterly Return (Form-I) and Monthly Return (Form-H).
- (5) If the area of the land where stone is to be extracted is more than 4 Ha or the quantity of stone to be extracted/quarried/mined exceeds 3000 cubic metre or in equal measure, short term Mining Permit cannot be issued instead the owner should apply for Mining Lease.
- (6) If the owner of the quarry planned to extract stone using mining lease, the owner should submit application for preparation of Mining Plan, Blasting Design, safety guidelines to DGM. The documents so issued by the competent authority should be strictly adhered to by the owner of quarry and non-compliance will result in cancellation of Mining Lease/Mining Permit. Quarrying/Mining should be executed with least damage to the environment. If 1 (one) tree is cleared due to quarrying, the owner should plant 2 (two) in lieu of the damaged tree.
- (7) If any mining/quarry owner plans to apply for explosive license, he should first obtain Mining Plan, Blast Design and safety guidelines from the office of DGM. Only after obtaining these documents he should apply for explosive license from PESO or concerned District Magistrate as per requirement under "The Explosive Act., 1884" or the Rules made there under in "the Explosives Rules, 2008" or "the Ammonium Nitrate Rules, 2012." The concerned Deputy Commissioner while considering application for issue of Explosive Licence should ensure that the applicant is in possession of the aforesaid documents and on issue of Explosive Permit, the concerned Deputy Commissioner should immediately enter the same in the PESO Portal.
- (8) Mine/Quarry owner cannot possess or use explosive if their Mining Lease Permit has lapsed.
- (9) Royalty should be deposited in Government Account before undertaking any mining/quarrying operation. Royalty and Dead Rent deposited in Government account are non-returnable. Owner of Mining Lease should comply with the lease Deed. Stone/Mineral should not be extracted outside the area of Mining Lease.
- (10) For Mine/Quarry owner any statutory clearance required under extant statute should invariably be obtained from the concerned competent authority.
- (11) Mine/Quarry owner or Quarry Operator should maintain a register recording

details of employees engaged with their detailed particulars, type, number of explosives and accessories procured and used, type and capacity of magazine, security arrangement of magazine, stone/mineral extracted and sold, etc. Exact format for maintenance of record should be prepared by Directorate of Geology & Mining Department. These documents should be kept ready for inspection by DGM or any officer authorised by him or Deputy Commissioner or any officer authorised by him. If the mine/quarry or quarry operator refused to provide these documents for inspection, the defaulter can be jailed for 3 months or made to pay fine Rs. 2,000/- or both.

- (12) If the Mine/Quarry owner filed wrong returns or falsified account or refuse to submit road challan (Form-A), a fine of Rs. 3,000/- will be charged and the mining lease/permit will be liable for cancellation as punishment. However, before levying such punishments, adequate opportunity of being heard will be given to the defaulter.
- (13) Mine/Quarry owner should maintain a safety buffer zone of at least 3m (10ñ) with the adjacent land. No extraction is allowed in these zones. If there is dispute between quarry owner and owner of the adjacent land, the buffer zone should be left untouched until the dispute is settled. However, if the adjacent land is also used for quarrying, the owner of the quarry can apply in writing to DGM for common Boundary Working Permission.
- (14) In the process of extraction/quarrying of stone, the method of toe cutting/under cutting is to be avoided to prevent accident. Extraction/quarrying should be done in such a way that there are no overhangs (hanging rocks). If such overhangs do exist for whatever reasons, trimming should be carried out immediately to avoid accident.
- (15) No haul road shall be of width less than three times plus 5m width of the largest Vehicle playing on road. No road shall have gradient more than 1 in 16.
- (16) If the quarry owner planned to use Rock Breaking Powder, he should write to DGM and apply for crackamite usage design and safety guidelines prepared Mining Engineer.
- (17) Minors, who are below 18 years, should not be engaged in mines/quarry or their presence allowed within the mine/quarry premises/complex. Only Indian citizen should be engaged and if any foreigner is found to be engaged by mine/quarry owner, he will be penalised.
- (18) In stone quarry, female workers are allowed to work between 6am and 7pm only. However, in underground mines, female workers are not allowed to work in whatever capacity.
- (19) All personnel working in stone quarry should compulsorily use Personal

Protective Equipment (PPE) — Safety helmet, mining boot, face mask, ear muffing (for jackhammer drill operator), gloves, vest of bright colour (reflector), etc as preventive measures.

- (20) No mining lease/permit should be sold on sub-let to other person without the tacit approval of Director of Geology and Mining Department, Government of Mizoram.
- (21) Mine/Quarry owner should pay minimum wages to all the workers as per the Minimum Wages Act, 1948.
- (22) Mine/Quarry owner should subscribe to insurance policy for every worker.

3. Proposed DOs & DONTs to be followed while blasting of stone at stone quarries

DOs:

- (1) Possession of Mining Lease or Short-Term Mining Permit issued by Directorate of Geology & Mining (DGM), Government of Mizoram is mandatory for any person who intends both to extract the stone as well as to blast the stone by using explosives. Also, besides paying Royalty (Non-Tax Revenue) with respect to the quantity of excavated stone/mineral, a Lessee/Permit Holder will be liable to pay Additional Royalty within the entire period of validity of the Lease Permit depending upon the quantity of extraction. Only those persons possessing valid Mining Lease/Mining Permit are eligible for applying Explosive License.
- (2) Any person intending to blast the stone using Explosive must mandatorily possess Explosive License. Application for Explosive License must be submitted to Petroleum & Safety Organization (PESO) {Formerly Department of Explosive) or to the concerned District Magistrate. Any person intending to apply for Explosive License must first possess Blast Design & Safety Guidelines duly certified and designed by Mining Engineer(s) from DGM, Government of Mizoram.
- (3) Accidents (fatality/serious bodily injury/ reportable injury) as a result of blasting in stone quarry must be immediately reported in writing to DGM, Government of Mizoram within 72 hours (3 Days) from the time of occurrence of accident.
- (4) To prevent and reduce accidents due to blasting in stone quarry, all District Magistrates within their jurisdiction may insist Blast Design & Safety Guidelines duly certified and designed by Mining Engineer(s) from DGM, Government of Mizoram before granting any Explosive License. (*Vide General Administration Department (GAD), Government of Mizoram Memo*

No. A. 60011/8/2018-GAD Dated Aizawl, the 11th August, 2022 in regard to Grant of Explosive License.)

- (5). Prior to performing blasting, Safety Buffer Zone of 3m (10 ft) from the boundary of the nearest neighbouring land must be reserved. In case of any disputed boundary & until and unless the problem is resolved by concerned authority, Safety Buffer Zone of 3m (10 ft.) will be demarcated in accordance with boundary claimed by the neighbour with dispute but not as per the boundary claimed by the Lease Permit Holder. In case the neighbouring land is being used as stone quarry, Safety Buffer Zone of 3m (10 ft.) might be exempted if the concerned authority (i.e., Director, DGM, Government of Mizoram) granted Common Boundary Working Permission.
- (6). All those persons employed in Stone Quarry (especially those performing Blasting) must mandatorily wear Personal Protective Equipment (PPE) — Safety Helmet, Mining Boot, Face Mask and for those operating blast hole drilling equipment/machines Ear Muffling, etc. must be worn mandatorily.
- (7). It is mandatory that Blaster Shelter with steel frames or RCC be constructed at least within 200 metres from the blasting face. Goat-proof-wire mesh (Kel Pal Dan) of 6 ft. high and 10 ft. long must be firmly erected towards the blasting face so that Blaster Shelter is protected from fly-rock due to blasting.
- (8). If Safety Fuse is used as the means of initiating the explosive, at least 1.2m (4 ft) long safety fuse must be used in order to provide the blaster with ample time before reaching safety distance or shelter.
- (9). Blasting should be performed only during Daylight. This period must also be in conformity with the time prescribed by the District Magistrate, DGM or Stone Quarry Cluster (Zau) Association.
- (10). All those workers engaged with blast hole drilling equipment must be provided by the owner or manager of the stone quarry with adequate face mask so that workers are prevented from an irreversible miner's disease called silicosis.
- (11). Magnetic materials must not be used for introducing blasting cap into Explosive/Booster. Instead, bamboo stick, copper or aluminum materials may be used.
- (12). After charging the explosives, the charge hole must be densely stemmed with appropriate stemming materials (preferably 70% sand & 30% clay) so that blown-out shot, air-over pressure and fly rock are prevented. The cuttings produced as a result of blast hole drilling can also be reused for the stemming purpose.
- (13). Due to variations in geophysical properties of different rock, fly-rock due to

blasting can be prevented by placing wire mesh (50mm X 50mm) overlain by numbers of 50kgs sand- bags above entire area of the charged hole.

- (14). If detonating cord (cordtex) is used for connecting between the charged holes, one end of the detonating cord must be joined with safety fuse (at least 4 ft long) which is pre-fitted with blasting cap. The detonating cord must be covered with at least 6 inches thick of mud so that noise and overpressure due to blasting is reduced.
- (15). Before performing blasting, the owner/manager must assign a person holding Red Flag at a distance of 500m Prescribed Danger Zone as per Directorate General of Mines Safety, DGMS) so that the people nearby are warned and kept alerted due to blasting. Horn/Siren must be sounded before blasting as:
 - (a) Before 5 minutes of blasting: 3 times horn/siren
 - (b) Before 1 minute of blasting : 2 times horn/siren
 - (c) Just before Blasting 1 time horn/siren
- (16). In any accident or destruction due to blasting within danger zone, the Lessee/Mining permit holder/Explosive License holder/blaster will be held responsible for any accident or damage.

The compensation liable to be paid as a result of the accident or damage will be decided by District Magistrate or Director, DGM, Government of Mizoram.
- (17). To prevent accident and other calamities, hanging rocks must never be let out. Else, they must be properly trimmed down.
- (18). The Explosive License holder or the blaster will be held responsible for any occurrence of accident and fire while charging explosive.
- (19). In addition to all the above guidelines, any Circular, Notice, etc. issue and enforced by the DGMS or by the DGM, Government of Mizoram from time to time must be strictly followed.
- (20) As per Environmental Impact Assessment Notification, 2006 issued by the MOEF & CC, Prior Environmental Clearance shall be obtained for operation of stone quarry irrespective of size from Competent Authority before taking any permission from the State Government.
- (21) There should be routine survey by experienced mining/civil/geology/ professional to ensure the stability of the mine benches and safety of the mine personnel's
- (23) Regular water spray on haul road to suppress the dust particles

- (24) Proper water drainage arrangement
- (25) Arrangement for blast induced ground vibration monitoring in regular interval
- (26) Maintain gap between vehicles while traveling in mines
- (27) Put proper sign boards at turning, entry point etc.
- (28) Formation of mine safety committee among miners and officials

DON'T's

- (1). No person with invalid Mining Lease/Mining Permit and invalid Explosive License are allowed to conduct any blasting operation. An Explosive License granted for a particular stone quarry must only be used at the same stone quarry where Explosive License is granted. Usage of Explosive License in places other than the designated stone quarry is against the law.
- (2). Explosive cartridges should not be forcibly inserted with pressure into the blast-hole. Else, they must be gently inserted one by one as prescribed.
- (3). Toe cutting/under cutting must never be done while blasting.
- (4). Safety fuse and blasting caps must be attached together with a proper Crimper device. The blasting caps must be crimped at about 3.6 mm from the end of the cap hole.
- (5). Magnetic materials or any steel or iron must never be used for sealing or piercing the holes of explosives. Else, bamboo sticks or wood-based sticks must be used for sealing or piercing holes into the explosives.
- (6). If misfire occurs while using plain detonator (caps) as initiator, at least 30 minutes time must be waited before entering into the blasting face; and if electric detonator is used as initiator at least 5 minutes must be waited before entering into the blasting face. This is for safety as well as to prevent workers from dangerous *Nitrous fumes* thus produced due to blasting.
- (7). Electric circuit and wire connections for initiating detonators and explosives must be thoroughly checked. Lightning, radio- wave and high electric voltage can trigger explosion/initiation of electric detonators. So, electric detonators must be kept away from exposure of such conditions.
- (8). Safety fuse and blasting cap must be properly attached together. Never bite with the teeth in order to attach them together. Instead, proper Crimper Device must be used.

- (9). Big Boulders obtained as a result of primary blasting must never be defragmented using rock breaker. In case when requirement of secondary blasting is necessary, the big boulders must be blasted with proper blast design. Secondary blasting needs to be avoided, boulder should be broken by rock breaker
- (10). Any person below the age of 18 years is neither allowed to be employed in the stone quarry nor enter the premises of the stone quarry. Such persons must never be employed for transporting and blasting explosives in the stone quarry.

4. Strengthening of Institutional Mechanism:

The Directorate of Geology and mining was established as a ‘Wing’ under Department of Industries on 7th April, 1980 and was upgraded to full-fledged Directorate on 1st September, 2010. The Department does not have district officer and all works undertaken from the directorate. The Department has the following sanctioned posts.

Sl. No.	Name of post	No of sanctioned post
1	Director	1
2	Joint Director	2
3	Geologist Senior	4
4	Deputy Controller of Mines	1
5	Deputy Director (tech)	1
6	Geologist Junior	5
7	Asst. Controller of Minis	2
8	Asst. Director (Drilling / Lab)	2
9	Office Superintendent	1
10	Finance & Accounts Officer	1
11	Senior Technical Assistant	4
12	Technical Assistant	7
13	Junior Engineer	1
14	Office Assistant	4
15	Upper Division Clerk”	4
16	Lower Division Clerk	3
17	Stenographer-III	2
18	Mechanic-II	2
19	Junior Technical Assistant	13
20	Driver	5
21	Group D/Grade-IV	8
TOTAL		73

At present, the department has 10 posts of Geologist, out of which 2 posts of Geologist Jr. are under recruitment by MPSC. There are 2 posts of Mining Engineers and 2 Mining Diploma holders to undertake the work specified in the 4th Schedule: Commerce and Industries Department under the Mizoram (Allocation of Business) Rules, 2019. As mentioned, aforesaid there are 468 valid quarries in 2021 — 2022 in Mizoram and it is suspected there are equal members of illegal stone quarry operated by small time operator due to deficient enforcement due to dearth of manpower. In the present dispensation, Deputy Controller of Mines and 1 (One) Assistant Controller of Mines is given charge of Aizawl District and Saitual District while the other 9 (Nine) districts are under the charge of Geologist who have no knowledge of Mining Engineering. The Quarry at Hnahtial District including the one at Maudarh wherethe accident took place is also under the Charge of Geologist, Director Geology and Mining cannot be blamed for this arrangement as additional creation of post of Mining Engineer cannot be done due to financial constraint.

Maudarh incident is the clarion call to strengthen and reconstruct the department of Geology and Mining. To enable the department to effectively and efficiently discharge its mandate, Mizoram may be divided into 4 (four) Divisions.

1. Central Division : Aizawl, Saitual, Serchhip District
2. Eastern Division : Champhai, Hnahthid, Khawzawl District
3. North-Eastern Division : Kolasib and Mamit District
4. Southern Zone : Lunglei, Lawngtlai and Saiha District.

One (1) mining Engineer and one (1) Geologist Junior may be given charge of each Division for supervising mining/quarrying work and also for disaster related work. In the present arrangement all disaster related requisitions made by District Disaster Management Agencies (DDMAs) of the district are catered by the Directorate of Geology and Mining (DGM) which has its office at Aizawl, which is time consuming and prohibitive. If the envisaged Mining Engineer and Geologist Jr. can be attached to the office of the Deputy Commissioner on the analogy of Disaster Management personnel who are already attached, it will not only result in effective supervision of quarrying but also will enhance the Deputy Commissioner capability to dealt with natural disaster such as subsidence, slope stability, landslide, etc.

To make such dispensation fruitful, 1 post of Deputy Controller of Mines, 4 (four) posts of Assistant Controller of Mines along with 1 post of Geologist Junior becreated to man the proposed 4 (four) Zones. The envisaged manpower will be deployed in the district which has more mining (quarrying to supervise or highly prone to natural disaster such as landslide, earthquake, slope instability, etc.

5. Training:

Directorate of Geology & Mining should conduct annual training on quarrying method, use of explosive, safety methods, environment preservation, issue of Explosive Licence

by Deputy Commissioner, PESO Portal, Mining Legislations, etc. in coordination with PESO, Environment, Forest & Climate Change Department, Deputy Commissioners, etc.

ANNEXURE

No.C.18014/362/2022-FST/32
GOVERNMENT OF MIZORAM
ENVIRONMENT, FORESTS & CLIMATE CHANGE DEPARTMENT

Dated Aizawl, the 6th of December, 2022

NOTIFICATION

In pursuance of the Hon'ble NGT's Order dated 28.11.2022, a Joint Committee, as per para 9 of the Order, is hereby constituted to present a factual and action taken report in the matter with recommendations to prevent such disasters in future. The composition of the Committee will be as under:

- | | |
|--|--------------------|
| 1. Chief Secretary, Govt. of Mizoram | : Chairman |
| 2. Principal Secretary, Commerce & Industries Department,
Govt. of Mizoram | : Member |
| 3. Secretary, General Administration Department,
Govt. Of Mizoram | : Member |
| 4. Secretary, Disaster Management & Rehabilitation
Department, Govt. of Mizoram | : Member |
| 5. Secretary, Labour, Employment, Skill Development
& Entrepreneurship Department, Govt. of Mizoram | : Member |
| 6. District Magistrate, Hnahthial District, Mizoram | : Member |
| 7. Regional Officer, Integrated Regional Office, MoEF&CC,
Shillong | : Member |
| 8. Regional Officer, Central Pollution Control Board,
Shillong | : Member |
| 9. Representative of Petroleum, Explosives Safety
Organization (PESO) | : Member |
| 10. Representative of Chief Controller of Explosive, Nagpur | : Member |
| 11. Representative of IIT Dhanbad | : Member |
| 12. Member Secretary, Mizoram Pollution Control Board | : Member Secretary |

The committee will be free to take assistance from any other expert/institutions and also co-opt any other person as special invitee. It may interact with the stake holders. It may particularly mention the cause of the incident, extent of damage, person responsible, remedial measures taken and measures required to be adopted to prevent such incidents. It will be free to conduct proceedings online except for the visit by some of the concerned Members to the site, as may be decided by the Committee. It may meet within one week and prepare action plan for preparing its report. A copy of the report be placed on website of the Mizoram Pollution Control Board for response of the PP or any other stake holder before the next date.

Encls: NGT Order dt.28.11.2022

Sd/- NAVIN KUMAR CHOUDHARY
Principal Secretary to the Govt. of Mizoram,
Environment, Forests & Climate Change Department.

Contd..2/-

No. No.C.18014/362/2022-FST/32 : Dated Aizawl, the 6th of December, 2022

Copy to:

- 1) The Secretary to the Chief Minister, Mizoram.
- 2) P.S to the Minister, EF&CC Department, Govt. of Mizoram.
- 3) OSD to the Chief Secretary, Mizoram.
- 4) All members concerned.
- 5) The Secretary to the Govt.of Mizoram, Law & Judicial Department for information.
- 6) The Standing Counsel for the State of Mizoram for information and necessary action.
- 7) Principal Chief Conservator of Forests, Mizoram.
- 8) The State Informatics Officer, NIC, Mizoram Unit with a request to arrange booking.


(LALNEIHLIMI)

Deputy Secretary to the Govt. of Mizoram,
Environment, Forests & Climate Change Department.