



L. G. EVERIST, INC.

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Drilling and Blasting Safety Plan

BLASTING OPERATIONS & SAFETY PLAN

**East Sioux Quarry (ESQ)
Sioux Falls, South Dakota
January 2021**

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1.0 INTRODUCTION

East Sioux Quarry (ESQ) near Sioux Falls, SD is committed to providing a safe workplace for its employees and all others at or near our work sites. Our goal is to conduct blasting operations in the safest manner possible while minimizing the risk of injuries and damage to property's both onsite in the mine and offsite. This blasting safety plan defines our company policy regarding all work in relation to safety, drilling, and how explosives are stored, transported, and used. This safety policy will be communicated to all required personnel, our employees, contractors, and suppliers through on-site meetings, Email and regular safety meetings. These policies do not supersede any federal, state, or local regulations regarding explosives and blasting work. Compliance with these policies and all applicable federal, state, and local regulations will be strictly enforced.

Many policy guidelines refer to the "blast site." For the purposes of this safety plan, and federal regulations, the blast site is defined as:

The area where explosive material is handled during loading including an area extending 50 feet in all directions from loaded blast holes or explosive materials.

2.0 SITE PERSONNEL & RESPONSIBILITIES

2.1 SOUTH DAKOTA LICENSED PERMITEE

L. G. Everist, Inc. (LGE) is the owner of ESQ and will be contracting out the blasting operations to a blast service provider. The blast service provider will be responsible for obtaining all applicable federal, state, and local licensing required for blasting at the ESQ site.

2.2 BLAST SERVICE PROVIDER AT EAST SIOUX QUARRY

The blast operations at ESQ will be contracted out to a blast service provider as determined by LGE and the site managers. The responsibilities of the blast service provider will include, but not be limited to:

2.2.1 Providing a blaster-in-charge for each shot. The blaster-in-charge has complete authority over all personnel within the blast site and is responsible for blasting activities that occur on the ESQ site. The blaster-in-charge shall hold all required state blasting licenses, have appropriate experience and training, and be responsible for:

2.2.1.1 Maintaining an explosives storage and transportation system that is safe and in compliance with all applicable regulations. Compliance to Federal DOT & ATF standards will be kept at all times per 49 CFR 172

2.2.1.2 Implementing the specific blast plans that have been approved for the ESQ.

2.2.1.3 Overseeing that all blasting work is done in a safe and efficient manner.

2.2.1.4 Daily inspections of the equipment to ensure their safety readiness.

2.2.1.5 Blast clearing and guarding operations.

2.2.1.6 Continuously monitoring the work habits of the blasting crew and providing corrective actions when necessary.

2.2.1.7 Ensuring that all appropriate blasting plans, reports, and explosive storage records are kept for 5 years as required by State law & ATF.

2.2.2 Providing basic blast vibration monitoring services, as detailed in Section 2.4

2.2.3 Working with ESQ and any additional personnel (i.e. contractors, consultants, etc.) in providing accurate and up-to-date blast designs and plans for mitigating risks associated with blasting and for optimizing blast performance.

2.2.4 Any additional work as required and specified in ESQ's contract with the blast service provider.

2.3 PRE-BLAST & POST-BLAST SURVEYS

2.3.1 ESQ will convey an offer for pre-blast surveys, performed by independent consultants, as requested by the property owners within one half mile. Such offers shall consist, at a minimum, of the following:

2.3.1.1 Notification letter on each attempt and affidavit after two attempts stating that we were unable to contact the owner and had

no response from the letters that we left. Letters will be hand delivered to each homeowner's residence or business.

2.3.1.2 There will be a total of two attempts made for each structure unless the homeowner refuses the pre-blast inspection and refuses to sign a waiver then we will fill out an affidavit on whatever attempt that they refuse the inspection and no further attempts will be made unless the homeowner contacts us and at that time we will come back and complete the inspection per their request.

2.3.1.3 The owners have the option of accepting or declining the pre-blast survey. After two attempts, if the homeowner won't respond/or won't sign a waiver declining the pre-blast inspection, the affidavit will be filled out by ESQ's independent consultant and submitted for file.

2.3.1.4 Pre-blast surveys shall include documentation of interior subgrade and above grade accessible walls, ceilings, floors, roof and exterior as viewed from the grade level.

2.3.1.5 Where significant cracks or damage exists, or for defects too complicated to describe in words, photographs shall be taken. A good quality videotape survey with appropriate audio description of the locations, conditions, and defects may be used. Notes and sketches may be made to highlight or enhance the video documentation.

2.3.1.6 The condition report shall present notes and photographic or video records. The report shall also summarize the condition of each building and define areas of concern, including deteriorated structures or utilities; structures housing sensitive equipment, and/or manufacturing processes that are sensitive to vibrations.

2.3.1.7 A copy of pre-blast surveys will be submitted to LGE, ESQ and home or business owners upon request.

2.3.2 ESQ will provide a post-blast survey upon request by the property owner and if ESQ determines there is a reasonable basis for the property owner's request. If a nearby property owner with an existing pre-blast survey submits a request for a post-blast survey, regarding potential blast damage or a similar issue, the previously contracted consultant or otherwise approved personnel will meet with the property owner within 48

hours of receiving the request to discuss the basis for the request, review applicable blasting records and pre-blast inspections, and evaluate the reasonableness of the request. If a reasonable basis for the complaint is verified, ESQ will contract an independent consultant to conduct a second condition survey of the property to identify any changes in property conditions. A condition survey report summary shall be submitted to the property owner and copied to ESQ within two weeks after the condition survey is conducted.

2.4 BLAST VIBRATION MONITORING

The blast service provider will be responsible for monitoring the blast vibration for each shot at the ESQ site. Their responsibilities will include:

2.4.1 Ensure a minimum of three seismographs are placed at the required monitoring stations as specified by the ESQ. Seismographs should be placed adjacent to the residential structures or commercial buildings closest to the blast site. Seismographs will always be placed in line of the shot and the concerned structures. The seismographs will be placed closer to the shot if they cannot be placed directly adjacent to the concerned structures.

2.4.2 The geophones for the blast will be buried and sandbagged for best results. Geophones will either be secured to concrete or spiked to the ground and sandbagged if they cannot be buried at the monitoring location.

2.4.3 Ensure blast vibration reports include the seismograph calibration information, GPS coordinates of the shot and monitoring location, blast vibration predictions, and resultant peak particle velocity (PPV).

2.4.4 Working with ESQ and any additional personnel (i.e., contractors, consultants, etc.) in ensuring and/or providing additional seismograph monitoring and blast vibration prediction services.

2.4.5 All seismographs will be calibrated with certification of calibration within an 11-month period prior to the date of use. All certificates will be available upon request.

2.4.6 A seismograph report will be generated by the blast service provider or party otherwise responsible for the blast monitoring services. Seismograph reports will include the triaxial PPV, overall PPV, frequency,

and air overpressure. Reports will be delivered to ESQ management within 24 hours of the blast.

2.4.7 Blast vibrations readings will meet the following limitations set by ESQ:

2.4.7.1 Blast vibrations shall meet the USBM RI 8507 for PPV, as shown in Table 01 for all structures.

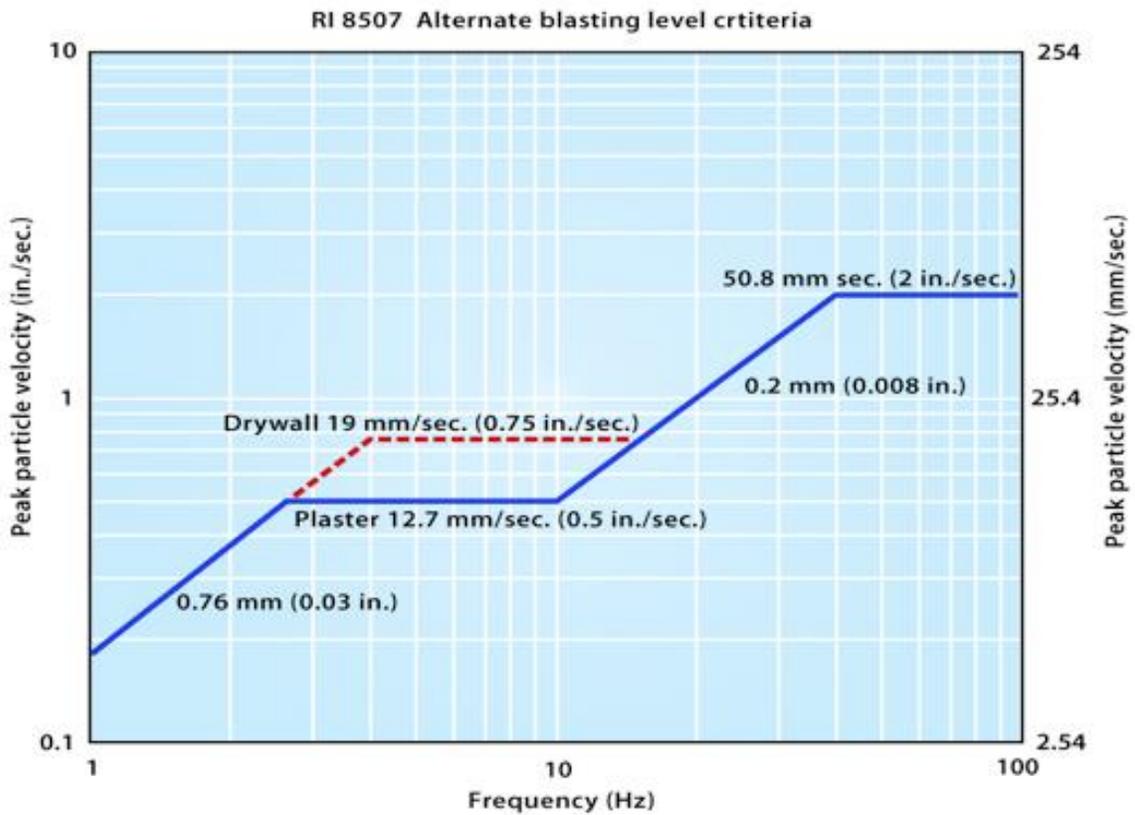


Table 01 USBM RI 8507 Residential Blasting Level Criteria

2.4.7.2 Blast vibrations may be limited further when considering potential human reactions to blasting due to the fact that vibration levels can be felt that may be considerably lower than those required to produce damage.

2.4.7.3 PPV will be predicted using a regression analysis for each blast, utilizing data from previous blasts. The explosives weight per delay used for calculation will be the max weight of explosives initiated in any 8 millisecond time frame.

2.4.8 Shot records with seismograph reports will be filled out each day for each blast & kept on record for up to 5 years from blast date.

2.4.9 Seismograph records will be reviewed after each shot to make sure blasts vibrations are within the maximum predicted PPV before beginning loading next blast in sequence.

2.4.10 See APPENDIX A for “ISEE Field Practice Guidelines for Blasting Seismographs 2020” for industry standards in relation to the installation and use of seismographs.

2.4.11 See APPENDIX B for a Site Map of Blast Monitoring Locations, including temporary and permanent locations. A combination of permanent seismographs provided by a third-party consultant and the blast service provider may be used to monitor a combination of these location as approved by ESQ site management.

2.5 AIRBLAST OVERPRESSURE

Excessive airblast is controlled by ensuring that all charges are properly confined. Excessive airblast is generated by the same poor confinement conditions that may cause flyrock. The following limitations concerning airblast overpressure will be followed at the ESQ site:

2.5.1 Vibrations and air over pressure will be held within OSMRE/USBM compliance for peak particle velocity and air over pressure limits. If these levels are exceeded, blasting will be halted to assess problems & remediation action taken to remedy present and future incidents.

2.5.2 Where specific complaints are received in relation to blast overpressure and/or vibration at a particular residence, portable attended monitoring units may be deployed in consultation with the complainant to monitor blast impacts at the relevant location.

2.5.3 Determine blast design parameter limitations based on air overpressure limits when blasting in a new area or when deemed necessary by ESQ site management. Air overpressure limits shall not to exceed 133 dBL at nearest residential or commercial structure. Air blast can be predicted using the standard calculation from the ISEE Handbook [$dBL = SD^{(1/3)}$, where SD equals scaled distance] for each blast.

2.6 BLAST DRILLING AT EAST SIOUX QUARRY

Blasthole drilling for the site will be performed by ESQ. Drill patterns will be drilled out based off the blast designs provided by the blast service provider and any blast consultants as contracted and determined by ESQ. Concerning drilling at ESQ, the site will ensure:

2.6.1 All drillers are properly trained and have adequate experience and operating knowledge about each drill prior to operating the specific equipment.

2.6.2 Drillers perform daily safety inspections on the equipment prior to operating the equipment. Any conditions that might cause unsafe operation shall be corrected before drill is put into service.

2.6.3 Drills are routinely serviced and lubricated as specified by the manufacturer. All Drill fluids will be checked & properly greased daily.

2.6.4 All safety equipment (i.e. back up alarms, fire extinguishers, etc.) is installed & operating properly.

2.6.5 Drillers will collar holes as close as possible to the designed collar location. These holes are to be monitored for accurate depth, as marked by Blaster, in addition to voids, soft seams, and general rock conditions. Descriptions are to be marked, written down on drill log reports, and communicated to the appropriate personnel.

2.6.6 The driller's primary goal is to drill properly aligned and clean holes. Driller should vary hole-flushing rates and determine which drill settings are producing the cleanest and most accurately placed holes.

2.6.7 Holes shall never be drilled in any positions where there is any chance of intersecting a loaded blast hole. Unless a specific variance is granted, the minimum collar distance from a loaded hole must be greater than the planned depth of the new hole.

2.6.8 Drillers shall note any unusual conditions or adjustments to the original plan. Any voids or soft seams will be identified, marked on the ground & written down on the drill log as well as general drilling conditions, including description of the rock hardness. Drill log information shall be submitted to the appropriate personnel at the end of each drilling shift and shall be passed on to the blaster-in-charge for that shot.

3.0 HAZARD AND RISK ASSESSMENT FOR EAST SIOUX QUARRY

Site specific blasting hazards and environmental impacts will be defined for each blasting Area at the East Sioux Quarry site. Blasting plans and procedures will incorporate all reasonable measures necessary to eliminate negative impacts on persons and minimize negative impacts on property and the environment. The following general hazard areas shall be reviewed to help identify potential site-specific hazards and controls for different blast areas at the ESQ site.

- 3.1 Determine public and commercial access, and traffic volumes. Blasting times will be scheduled during low traffic flow. All roads in 800' vicinity of blast site, determined by Blaster-in-Charge will be stopped prior to each blast & allowed to resume after all clear.
- 3.2 Determine the relative location and condition of nearby structures. Structures within a minimum of 1000 ft will have a pre-blast inspection, which will be used to verify existing conditions of these structures.
- 3.3 Determine public and regulatory notification requirements. At a minimum, all property owners with structures within designated range will be notified prior to executing the blast. Date and time of blasts will also be posted on www.eastsiouxquarry.com.
- 3.4 Know the location and condition of all nearby utilities that are above and below the ground prior to moving into a new blasting area.
- 3.5 Follow all guidelines for airblast and blast vibration limits set forth in this document.
- 3.6 Define who is responsible for any damage, or claims of damage, to any nearby property
- 3.7 Determine specific environmental impacts that might require special blasting control measures in areas to be blasted.
- 3.8 Hazardous material notification requirements for employees handling explosives will be on SDS sheets provided by the blast service provider.

4.0 EXPLOSIVES HANDLING

4.1 EXPLOSIVE STORAGE FOR EAST SIOUX QUARRY

Explosive storage magazines are currently maintained off site by the blast service provider for blasting at ESQ. The blast service provider will ensure that full compliance with federal, state, and local regulations governing explosive storage is maintained. Should the decision be made to store explosives on site, ESQ will ensure full compliance with federal, state and local regulations.

4.2 ON-SITE EXPLOSIVE TRANSPORTATION

Explosive transportation to the ESQ site will be managed by the blast service provider for blasting at ESQ. The blast service provider will ensure that full compliance with federal, state, and local regulations governing explosive handling and transportation is maintained. In addition, the blast service provider shall maintain but not be limited to the following standards while on the ESQ site:

4.2.1 All vehicles hauling explosives will be properly loaded and display adequate explosives warning signs as specified by MSHA, ATF, and/or SDDOT — whichever is applicable.

4.2.2 All vehicles transporting explosives will have necessary hazardous materials equipment, as required by state and federal regulations under **49 CFR, Parts 107, 171-178, and 180**

4.2.3 Equipment or other materials must never share the same cargo space with explosives.

4.2.4 Vehicles transporting explosives will be inspected daily by federal regulation standards. **49 CFR, Parts 107, 171-178, and 180**

4.2.5 All explosives, and any traces of explosives, must be removed from transportation equipment before it is serviced.

4.2.6 Explosives day boxes shall be properly built and marked as required by Federal DOT regulations. When detonators and explosives are transported in a day box, they shall be separated by a four-inch hardwood, or equivalent, partition.

4.2.7 Only vehicles that are needed to perform blasting operations shall be allowed on the blast site.

4.2.8 Proper shipping papers shall accompany explosives when they are delivered to and from the job site.

4.2.9 Explosive transportation driver will be licensed Federal DOT CDL with Haz Mat licensed operator.

5.0 BLAST DESIGN, PLAN, & RECORDS

5.1 BLAST DESIGN

In many blast applications, it is often impossible to fully satisfy all of the design objectives. Therefore, some sort of trade-off analysis is needed to balance design sacrifices based on priority. In blast design work, there are two general types of goals: 1) safety goals and 2) operational goals. Whenever safety goals conflict with operational goals, the safety concerns shall have the highest priority. Since the safety goals must have the highest priority, the blast plan might specify the use of conservative design measures to improve the safety and control of the blast, thus sacrificing some of the shot optimization in relation to the operational goals. The following general guidelines shall be used to evaluate all blast design choices:

Blast Design Guidelines:

5.1.1 Blast designs shall never compromise safety, and safety goals shall have the highest design priority. Safety priorities are people first, structures and equipment second.

5.1.2 The blast designer(s) must have thorough knowledge and understanding of the blast requirements and constraints for each individual application. If the blaster-in-charge is unfamiliar with a particular application, design, or product, outside help shall be obtained from additional experienced personnel with the blast service provider or an independent blast consultant who is familiar with the application or product.

5.1.3 Blast design geometry shall be appropriate for the application. The geology of the blast site and area control requirements must be considered when selecting design dimensions and parameters. The blaster-in-charge will use experience from numerous previous blasts and recommendations from any involved blasting consultants.

Initiation System Guidelines:

5.1.4 Initiation systems must provide adequate protection against stray current hazards. Electronic detonators will be used unless an approved and signed variance is provided by ESQ site management

5.1.5 Delay timing schemes shall be as simple as possible, while providing adequate burden relief and sufficiently advanced in-hole energization to prevent surface cut-off failures.

5.2 BLAST PLANNING

Good advance planning and preparation work will improve blasting productivity and safety. An individual blast plan shall be provided for each blast at the ESQ site. Individual blast plans shall:

5.1.6 Identify the blast service provider.

5.1.7 Determine the drilling requirements for each individual shot.

5.1.8 Include a schedule detailing the drilling and blasting timing.

5.1.9 Ensure clean crushed stone for stemming will be used on all blasts throughout this project to ensure control of flyrock & airblast pressure.

5.1.10 Ensure the equipment required for the blast is available and operational in preparation of the scheduled blast in addition to back-up units available to replace instruments critical to the blasting procedure.

5.3 BLAST REPORTS

Blast reports will be filled out for each separate blast and kept up to five years from date of blast on record.

Individual blast reports shall be prepared for each blast. Blast reports shall include the following:

5.3.1 Blast date, number, time, and location.

5.3.2 Blast geometry and design parameters including, but not limited to, blast pattern, hole size(s), hole depths, drill pattern, number of holes, bench height, and sub-drilling.

5.3.3 Blast hole loading summaries, including typical hole loads, explosive types, primers, detonator delays, stemming type and quantity, and total explosive consumption by product.

5.3.4 Shot volume by CYD.

5.3.5 Powder factor calculated from the explosives weight and shot volume or shot weight.

5.3.6 Initiation timing scheme, including in-hole delays, surface delays, and planned hole firing times.

5.3.7 GPS coordinates of the shot location

5.3.8 Description of seismograph locations, distance to structures and distance to the blast.

5.3.9 Blast monitoring data, such as ground vibrations and airblast overpressure. Seismograph reports will be attached to shot record showing the actual airblast, three vector components of particle velocity, peak particle velocity, frequency, and date and time. It will also show the name and serial number of unit and the unit's last calibration date.

5.3.10 Notes about blast results, unusual conditions, occurrences, or special precautions, flyrock incidents and/or misfires.

5.3.11 Name and signature of the blaster-in-charge.

Resultant blast vibration data will be utilized to perform a regression analysis and develop a site-specific blast vibration prediction equation. The regression analysis will be updated with blast data from every shot and a blast vibration prediction equation will be developed based on the location of the blasts.

6.0 BLAST SAFETY & PROCEDURES

6.1 GENERAL BLAST SAFETY & PROCEDURES

The following safety operations and blast loading procedures will be used on the ESQ site:

6.1.1 PPE requirements for the charging of blast rounds include the use of MSHA approved protective head gear, footwear, and eyewear.

6.1.2 Additional PPE required under certain conditions or at the requirement of supervisors or ESQ management may include, but not be limited to, gloves, ear protection, and protective clothing.

6.1.3 The blaster-in-charge shall assemble all blast crew personnel to conduct a safety review meeting prior to explosive loading work begins at the start of each workday. The following issues shall be addressed at each safety review meeting.

6.1.3.1 Identify the blaster-in-charge

6.1.3.2 Review personal safety responsibilities

6.1.3.3 Review site specific hazards

6.1.3.4 Review loading plans and procedures

6.1.3.5 Assign work responsibilities

6.1.3.6 Review equipment requirements and safe operation procedures

6.1.3.7 Review emergency and site security procedures

6.1.3.8 Review requirement that open flames or sparks must not occur on the blast site, and that smoking is absolutely prohibited within 50ft of any Explosives.

6.1.3.9 Confirm that the crew has the proper tools to safely perform loading and site security tasks. Equipment not specifically approved for blasting work shall not be used.

6.1.4 Blasting will be limited to take between 9:00 AM and 3:00 PM on Monday through Friday, except in an emergency situation.

6.1.5 The blaster-in-charge and loading crew shall inspect the blast site before loading begins. Hazards or conditions that might expose explosives to excessive pressure, heat, or friction shall be corrected prior to loading. If the inspection reveals that blast hole re-drilling is required, the re-drilling shall be done prior to the loading of any drill holes within a horizontal distance equal to the depth being drilled.

6.1.6 All needed explosives, stemming material and other supplies shall be brought to the blast site before commencing hole-charging operations.

6.1.7 All equipment and all non-essential equipment and people shall be removed from blast sites once hole charging operations begin.

6.1.8 Blast holes will be inspected before holes are charged.

6.1.9 Primers shall be prepared just before they are loaded into the borehole.

6.1.10 When column separation is suspected, a second primer using the same delay detonator as the first primer shall be loaded into the separated portion of the column.

6.1.11 If damage to an initiator lead is suspected, the hole shall be re-primed with a similar primer.

6.1.12 When it is necessary to operate mobile equipment on the blast site, the blaster-in-charge shall closely monitor every movement and setup. Extreme care must be taken to ensure that detonators, initiator leads, and explosives are not run over, snagged, or otherwise damaged by mobile equipment. No non-essential vehicles shall be allowed on the blast site.

6.1.13 No sparking materials or loose rocks shall be allowed to enter blast holes after they contain explosives.

6.1.14 Crew members shall immediately report any dangerous conditions, such as overloaded holes, cut leads, blocked powder columns to the blaster-in-charge.

6.1.15 Records detailing the quantities of explosives brought to the site and used each day shall be accurately kept.

6.1.16 Crew members shall immediately report any dangerous conditions, such as improperly stemmed holes, to the blaster-in-charge.

6.1.17 GPS coordinates will be obtained for each blast and recorded in the blast reports.

6.1.18 GPS coordinates will be used to get distance to seismographs and structures in closest proximity to blast site.

6.1.19 Conditions that cause high over-pressure levels included Any such conditions should be reported to the blaster-in-charge with adequate time to appropriately address any associated concerns and ensure a safe blast.

6.1.19.1 Inadequate stemming

6.1.19.2 Mud or weak seam venting

6.1.19.3 Inadequate burden confinement

6.1.19.4 Poor blasting timing

6.1.19.5 Improper use or not using scale distances to project Vibrations

6.1.19.6 Overloading

6.1.19.7 Improper use or not using seismographs for monitoring of blasts

6.1.20 Particle velocity will be projected using a regression analysis and vibration prediction equation to determine if blast design will stay within vibration limits. Air blast predictions will be calculated when designing a new type of shot and will not be required for typical and repetitive types of shots. Air blast in dBL will be calculated to equal to the cube root of the scaled distance [$SD^{(1/3)}$] to determine if the blast design will exceed air blast compliance.

6.1.21 The reduction of fly rock is managed by incorporating appropriate controls in blast designs. These measures are used to ensure there is no damage to people, structures, equipment, rock formations, or commercial buildings from flyrock. The Blaster-in-Charge will determine a safe distance required for the exclusion zone based on the level of risk associated with fly rock, which may increase the exclusion zone area.

6.1.22 Blasting times will be addressed and coordinated with proper personnel to avoid issues with heavy traffic times. (i.e. lunch or break time in the quarry so that all non-essential personnel are clear of the exclusion zone and accounted for).

6.1.23 Weather patterns will be regularly monitored to avoid getting caught loading in lightning storms.

6.1.24 If sudden storms arise, the blaster-in-charge has full responsibility of blast site. The blaster-in-charge can adjust the blast time to avoid lightning regardless of blast plan requirements, as long as all federal, state, and local regulations are followed, and they effectively coordinate with ESQ management. Safety First.

6.1.24.1 In the event of a lightning storm that would affect the blast site: The area will be cleared and blocked as if it were a scheduled blast. Blocks will be held until the shot can be safely detonated or the lightning hazard is no longer present.

6.2 INITIATION SYSTEM HOOK-UP PROCEDURES

6.2.1 Only persons designated by the blaster-in-charge shall participate in blast hookups. All other persons shall vacate the blast site.

6.2.2 Blast crews shall only use connections and hookups that are approved by the product manufacturer.

6.2.3 Blast hookup shall not begin until all holes have been loaded and stemmed, the blast site is clear of all vehicles and unnecessary people, and no hazards that might delay the blast exist in the blast site.

6.2.4 The blaster-in-charge, and one other crew member, shall each independently inspect and double-check all hookups.

6.2.5 To prevent hook-up mistakes caused by rushing to meet a blasting time limit; blasting work schedules shall allow adequate time for careful blast hook-up work.

6.3 PRE-BLAST MEETING

The Blaster-In-Charge shall coordinate blasts, with all concerned parties, in accordance with the approved blasting schedule for ESQ. Before blasting, the blaster-in-charge shall assemble all blasting and clearing personnel to review clearing and guarding procedures and the blast emergency plan. The blaster-in-charge shall cover the following issues and responsibilities at each pre-blast meeting.

6.3.1 Acknowledge the shot is properly loaded, hooked up, secured, and ready for detonation.

6.3.2 Review the blasting firing time schedule.

6.3.3 Specify who shall fire the shot and define the safe shot initiation location.

6.3.4 Review the communication system that shall be used between the blaster-in-charge and all blasting and clearing personnel. Check radios & go over horn sounds sequence each time before putting them in position to guard blast site.

6.3.5 Specify the clearing and guarding responsibilities for all blast and clearing personnel to ensure the exclusion zone (i.e. the area to be cleared and blocked for the blast as determined by the blaster-in-charge) is clear and guarded.

6.3.6 Specify the blasting signal warnings shall be used to announce the blast.

6.3.6.1 The 5-Minute Warning is an announcement over the ESQ operations radio prior to a 1-minute series of long horn blasts five minutes prior to the initiation of the blast.

6.3.6.2 The Blasting Signal is an announcement over the ESQ operations radio prior to a series of three short air horn blasts one minute prior to the blast initiation.

6.3.6.3 The All Clear Signal is 1 prolonged air horn signal after inspection of the blast with a verification announcement over the ESQ operations radio.

6.4 CLEARING AND GUARDING PROCEDURES

After the pre-blast meeting, the blaster-in-charge initiate the blast clearing and guarding procedures, as defined in the pre-blast meeting, at their discretion. Blast clearing and guarding procedures will consist of the following.

6.4.1 A primary initiating device shall be connected to the shot once the exclusion zone is confirmed to be cleared and guarded.

6.4.2 The blaster-in-charge shall then give the 5-minute blast warning after the primary initiating device is connected, tested, and verified.

6.4.3 The blaster-in-charge will clear and confirm clearing the exclusion zone.

6.4.4 The 1-minute blast warning shall be given if all persons, including the shot-initiator, are in a safe location and all guards confirm that the exclusion zone is still secure.

6.4.5 If the exclusion zone is confirmed to still be secure at the time of the blast, the blaster-in-charge shall fire or instruct the designated shot firer to fire the blast.

6.4.6 The exclusion zone will be guarded until the blaster-in-charge or personnel designated by the blaster-in-charge clear the shot area.

6.4.7 Nobody, including the blaster-in-charge, can access the exclusion zone until an allotted amount of time passed on the blasting products used and the associated regulations and manufacturer recommendations. This is to help ensure the safety of personnel on site by mitigating hazards associated with the blast, such as blast fumes and misfires.

6.4.8 The shot shall be cleared of the following hazards by the blaster-in-charge. If any hazards cannot be cleared, then the blaster-in-charge will communicate and/or coordinate with ESQ site management to effectively mitigate the hazards.

6.4.8.1 Dangerous rock conditions

6.4.8.2 The presence of undetonated explosives and/or initiators/misfires

6.4.8.3 Abnormal blast conditions and any other hazards

6.4.9 If misfires or other hazards are present, the blaster-in-charge shall supervise the removal of the hazard by the most appropriate means available.

6.4.10 When the area is clear of hazards the blaster-in-charge shall give the all clear signal allowing work to resume in the area. No work may resume until each blast is cleared.

6.5 MISFIRE PROCEDURES

When blasting misfires occur, or are suspected, their existence and extent must be carefully established under the direction of the blaster-in-charge. Under these circumstances, the blaster-in-charge shall:

6.5.1 Ensure that no one enters the exclusion zone, and that the exclusion zone remains secured until the misfire has been resolved.

6.5.2 Coordinate a secondary blast plan involving the minimum personnel required to safely re-fire, wash out, or recover un-shot explosives, before any other normal work resumes near the blast site.

6.5.3 Record the location of any potentially un-detonated explosives on the blast report.

6.5.4 Expand the blast security area if flyrock potential is increased when misfires are re-blasted.

6.6 EMERGENCY ACTION PLAN FOR EAST SIOUX QUARRY

The specific emergency action plans for this site will be to notify all ESQ personnel in addition to any local public that may be affected by a potential blast or blast hazard. All potentially effected personnel will be cleared out of the hazard/exclusion zone and the area guarded by qualified personnel. All affected personnel and/or public will work together to develop an effective blast or mitigation plan which will ensure the personal safety of all involved parties.

6.7 ALLEGED BLASTING COMPLAINTS PLAN

Complaints shall be submitted to ESQ. If a nearby property owner submits a complaint regarding alleged blasting damages during quarry operations, ESQ will contact a consultant or otherwise approved personnel to meet with the property owner within 48 hours of receiving the complaint to discuss the basis for the complaint, review applicable blasting records and pre-blast inspections, and evaluate the reasonableness of the complaint. If a reasonable basis for the complaint is verified, ESQ shall contract an independent consultant to conduct a second condition survey of the property to identify any changes in property conditions. A condition survey report summary shall be submitted to the property owner and copied to ESQ within two weeks after the condition survey is conducted.

**APPENDIX A: ISEE FIELD PRACTICE GUIDELINES FOR BLASTING
SEISMOGRAPHS 2020**

APPENDIX B: SITE MAP OF BLAST MONITORING LOCATIONS