

INFORMATION ABOUT MODERN BLASTING METHODS AND CONTROLS

WHAT YOU SHOULD KNOW ABOUT MODERN BLASTING WORK

When blasting operations are planned in a new area it is natural for residents and property owners to have concerns and questions about the safety and potential impacts of this work. Due to special-effects scenes in movies showing wild and violent explosions, people usually have many false perceptions about commercial rock blasting operations. Unlike the wild blasts shown in movies, commercial blasts are very controlled and carefully regulated.

Modern blasters are well-trained and use state-of-the-art equipment and techniques to ensure precise and safe blasting with minimum disruption to surrounding property. Blasting practices and blast-effects, like vibration and noise, are also controlled by stringent Federal and State Regulations, and further restricted by project-specific regulations. Regulated levels of blast vibration and noise are typically more than three times lower than levels known to cause cosmetic damage in the form of hairline cracks in plaster and drywall. More importantly, vibration occurring below regulated levels will not cause any structural damage.

From a practical standpoint, there are a number of things you can do to get your questions answered and ease your fears concerning nearby blasting operations.

First, learn all you can about blasting by reading publications like this one and talking directly to people involved in the blasting work.

Second, learn the time periods of the day in which blasting might occur. Often, the unpleasantness of being startled by unexpected vibration or noise can make the effects of the blast seem worse than they actually are.

Third, vibration or air waves from a blast may slightly rattle dishes and disturb pictures, in much the same way as a sonic boom or thunderclap would. To prevent problems, fragile china, collectibles or knickknacks should be positioned well away from the edge of your shelves. Also ensure that pictures are hung securely and fragile dishes are stored flat.

By being cautious, alert and well-informed, you can help minimize your fears and concerns about the effects of blasting.



BLAST WARNING HORN SIGNALS

FIVE MINUTE WARNING:

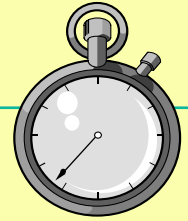
A series of long horn blasts.

ONE MINUTE WARNING:

Short horn blasts, separated by short pauses.

ALL CLEAR SIGNAL:

A prolonged horn blast following inspection of the blast



Monitoring to Protect Nearby Property

Seismographs are used to measure actual blasting effects near adjacent property. These sophisticated instruments measure ground vibration and blast-noise or airwaves.

Ground vibration is measured in inches per second, while noise is measured in decibels or pounds-per-square-inch (psi). After each blast, seismograph readings are examined to ensure blast-induced vibration and noise are within regulatory limits.

Blasters modify blast designs as needed to ensure that the levels of vibration and noise stay within proper limits. Seismographs capture very specific graphic signatures of blast vibration and air-noise that are printed out and kept in files.

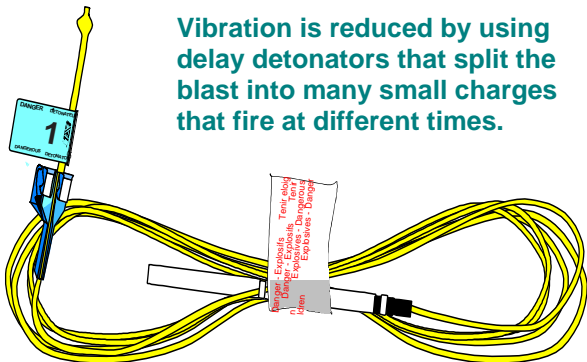
Questions and Answers About Blasting

Q. Why is blasting necessary?

A. When excavating hard rock for mining or construction work, blasting is the only practical way to break the rock so it can be excavated. Blasting makes it possible for all of us to build and improve roads, transportation systems, utilities, and mined products that are crucial to our Country's water, sewer, communications, energy and material-production needs. Blasting allows for residential development to provide housing and supports commercial development that provides jobs. Blasting also results in more affordable consumer prices for energy produced from mined-coal and virtually all consumer products ranging from cosmetics to computers, which are invariably made materials refined from rocks and minerals.

Q. What prevents a Blaster from using too much explosives?

A. Blasters and supporting professionals strive to design blasts that produce vibration at levels well below the government's mandated or project-specified limits. We also attempt to notify nearby occupants about blasting times and schedule blasting so it does not startle people during quiet times of the day or evening. To ensure our continuing success in the blasting business we must be committed to safety, regulatory compliance and strong community relations.



Vibration is reduced by using delay detonators that split the blast into many small charges that fire at different times.

Q. How much vibration will I feel if my house or business is near the blast site?

A. Surprisingly, normal household or office activity like heavy footsteps or a slamming door will generally produce higher vibration readings on a seismograph than a nearby blasting operation will. You should be aware, however; that the human body does detect extremely low levels of motion. You may feel vibration from blasts and hear some noise. Sometimes, minor vibration is caused by airwaves, which may rattle doors and windows. These forms of vibration and noise are normally as harmless as comparable vibration generated by routine activity occurring in your home or office. It is also important to understand that thunderclaps, wind-gusts, and normal environmental conditions like temperature and humidity changes create stresses in building materials that are typically much greater than those caused by blast-effects.

Q. Who's to say that the seismograph used to measure the vibration levels is accurate?

A. The accuracy of seismographic instruments is extremely important. Having accurate and complete records protects everyone's interests. Reliable data provides proof that blasting is being done legally and responsibly. Seismographs are thoroughly tested by the supplier before they are approved for use in the field and each year they are returned to the manufacturer for re-calibration and certification. In addition, each time seismographs are used they perform an automatic self-test that verifies the instrument is working properly.

Q. Does a blaster really have control over how much vibration and noise is generated by the explosives?

A. Certain factors are outside the blaster's control, including the weather, the slope of the land, and certain geological conditions. These can affect noise and vibration levels so blasters and engineers are trained to anticipate their effects and adjust the blasting controls accordingly. The primary factors affecting vibration and noise are within the blaster's control. These factors include the size of the explosive charges, their confinement in the rock, and the timing sequence used to delay them.

NOISE LEVEL COMPARISONS

Decibels	Noise Source
30	Soft Whisper
40	Refrigerator
50	Light traffic
60	Air Conditioning
70	Vacuum Cleaner
80	Average City Traffic
90	Lawn Mower
100	Garbage Truck
130	20 Mile per Hour Wind
133	Blast Noise Limit
140	Jet Plane or Thunderclap
180	Rocket Launch

If you have any more questions concerning blasting at _____ please contact _____ Phone: _____ E-mail: _____