

Frequently Asked Questions Concerning Blasting Operations

Why do Quarries and Contractors have to blast?

In order to construct new roads, bridges, utility lines, and associated drainage, typically a large amount of earth and rock must be excavated. Blasting operations move the rock that cannot be removed by other means. The blasting operations break the rock into smaller pieces that can then be handled by construction equipment and hauled away. Blasting operations create ground and air vibrations that can be felt in surrounding areas. Some of the most common questions regarding blasting are addressed below.

Are blasting operations allowed in Unincorporated Johnson County?

Any blasting operations conducted in Unincorporated Johnson County have to be approved by the Johnson County Building Codes department. In addition, contractors must apply for a blasting permit and gain approval. The blasting permit provides several operational requirements to provide adequate safety for the blasters, contractors, and surrounding citizens.

What qualifications do the blasters have?

Blasters are licensed by the Kansas State Fire Marshal's Office and U.S. Department of Alcohol, Tobacco, and Firearms for the authorization to use explosives. They have to obtain initial training as well as continuing education in the use of explosives.

What regulations does Unincorporated Johnson County enforce in regards to blasting?

A complete set of blasting regulations may be requested by the building codes department at any time. A summary of the blasting regulations are as follows. Blasting will not be permitted within eighty feet of any building structure unless given special approval by the building codes department. All blasters must be licensed and trained to perform their duties. The blaster must provide pre-blast surveys for structures within 600' of the blasting operations. The blaster must also notify all occupants within 1,500 feet of the blasting operations. Warning signs, signals, and access control must be provided prior to any blasts. Maximum airblast (dB) levels vary depending on the type of seismograph used, but generally the maximum limit is 134 d(B). The maximum allowable ground vibration (PPV) is 1.0 in/s for blasts occurring between 0 ft. and 5,000 ft. Blasts farther than 5,001 ft. away must be below 0.75 in/s PPV.

Violation of any provision of the blasting regulations shall be a public offense, punishable as a Class I Infraction.

Are there any other regulations blasters must follow?

Blasters must follow a variety of regulations. Johnson County has set forth the local requirements but other regulatory agencies include: Mining Safety and Health Administration, Occupational Safety and

Health Administration, National Fire Protection Association, Kansas State Fire Marshal, and U.S. Department of Alcohol, Tobacco, and Firearms.

How are the blasts measured and recorded?

Ground vibrations and airblasts are measured with a device called a seismometer or seismograph. These results are then recorded on the seismograph and the highest value of ground vibration (PPV) and airblast overpressure (dB) are obtained. These results are then compared to the limits set forth by Johnson County. It is the blaster's responsibility to ensure that they are operating within the allowable limits for ground vibration and airblast. The seismographs are set up within the distance of the closest occupied structure. As it relates to quarries, the seismograph is to be set up at an approved location on the quarry property. Seismograph units are required to be calibrated annually as a condition of Johnson County issuing a blasting permit.

Does somebody monitor the blasting being performed in Unincorporated Johnson County?

Yes. The Johnson County Building Codes department continuously monitors the blasting that is being conducted in unincorporated Johnson County. As part of issuing a blasting permit it is understood by the Blasting Contractor that their seismograph readings must be submitted monthly for quarries. At any time the Building Codes department may require that the contractor submit their seismograph readings. These records must be maintained for 3 years and available within 24 hours of the request.

Why does my house shake?

When explosives are detonated the rock is fractured by the release of large amounts of energy. Unfortunately, not all of the energy is used and some will be transmitted to the surrounding environment. Blasting can account for approximately 25% of the operating cost of a quarry. Any ground vibration that is transmitted to surrounding areas, homes, etc. is essentially wasted energy and, in the eyes of the quarry, wasted money.

During blasting, energy waves are transmitted through the ground as vibrations, and through the air as air blast.

As the ground vibration affects a house, the structure will begin to respond or shake. Unless a person inside a house is expecting a blast to occur, it is usually startling when the vibration reaches the structure. How a person perceives a blast will vary. Humans are more sensitive to blasts than structural components. The perception a person has as to the intensity of the blast cannot be directly translated to the sensitivity of any structural components.

In reference to airblast, Johnson County enforces a maximum decibel (dB) level of 134, depending on the type of seismograph used to record the blasts. Airblast is usually what a person hears and feels. Although an individual might find a blast to be intrusive or loud once again, it cannot be directly translated to the sensitivity of any structural components. Based on studies conducted by the U.S. Bureau of Mines, windows would be one of the first things to break as a result of blasting damage. Studies have found as a general rule it takes approximately 171 dB for windows to break. Other

structural damage is possible at 180 dB. Once again the maximum limit for airblast enforced by Johnson County is 134 dB.

If I can feel the blast doesn't that mean my house is being damaged?

As a general rule of thumb, a person will begin to feel blast vibrations at levels as low as 0.02 in/s. Johnson County enforces a maximum ground vibration (PPV) of 1.0 in/s from 0 ft. – 5,000 ft. from the blast and 0.75 in/s for property greater than 5,001 ft. from the blast. Blasters have to keep their shots below those maximum ground vibration levels. As a comparison, slamming a door may send ground vibration up to 1.9 in/s and a 50 mph wind will apply vibration anywhere from 1.1 in/s up to 6.7 in/s. This is a significantly higher force than that of a blast from a quarry or blasting contractor.

Does continuous blasting cause damage to my home, even if the blasts are within the allowable limits?

No. The federal government, specifically the U.S. Bureau of Mines, have conducted studies where they have vibrated entire houses for several days. Their conclusions have shown that repetitive blasting kept below 0.75 in/s will not cause damage.

Who is responsible if I believe my property has been damaged from blasting?

Johnson County Building Codes does not have any jurisdiction over monetary reparation for damages occurred from blasting operations. This is a civil matter to be settled between the mine operator and the citizen in civil court.

If you have any questions feel free to contact Johnson County Building Codes department at 913-715-2200 or online at <http://buildingcodes.jocogov.org>.