

ARTICLE 15
BLASTING REGULATIONS

SECTION 1. GENERAL

- a) Use of explosives for blasting shall be permitted after all appropriate applications and permits have been approved. Blasting shall be done only by those experienced in the handling of explosives, and in accordance with the recommendations of the Associated General Blaster's Manual of Accident Prevention (AGCMAP) in Construction and OSHA regulations. In locations where flying rock may be present, additional overburden shall be ready for use and/or in place before denotation. All trenching operations utilizing explosives shall be suitably backfilled to prevent any fly rock endangerment to persons or property. The use of these procedures does not relieve the blaster of responsibility for damage to life and property.
- b) The Johnson County Department of Planning, Development, and Codes will be known as the "authority having jurisdiction" regarding the storage, handling, use, and control of explosives used in construction projects. The Building Code Official will issue all blasting permits. Control of the public road right-of-way remains with Public Works.

Requirements of the International Fire Code, Chapter 33, regarding explosives and blasting agents shall be considered part of these regulations. The Building Code Official may enforce other national standards such as Explosives and Blasting Procedures, Explosives Training Manual, Blasters Handbook, and the Safety Practices Manual. All explosives and related material shall be in conformity with the requirements of the authority having jurisdiction, and the specifications contained herewith, whichever is more stringent. Blasting will not be permitted within eighty feet (80') of any building structure.

All blasting operations shall be conducted under the direction of a Kansas certified blaster. Evidence of blaster certification shall be carried by blasters or shall be on file at the Department of Planning, Development and Codes during blasting operations. A blaster and at least one other person shall be present at the firing of a blast. Persons responsible for blasting operations at a blasting site shall, as a minimum, conform to the criteria as outlined. The blaster shall be responsible for all damage caused by blasting operations and shall be responsible for responding to all complaints. Suitable methods shall be employed to confine all materials lifted by blasting within the limits of the excavation or trench. All rock which cannot be handled and compacted as earth, shall be kept separate from other excavated materials and shall not be mixed with backfill or embankment materials except as specified or directed by the Building Code Official.

All blasting shall be in conformity with the requirements having jurisdiction over the right-of-way, and the specifications contained herewith, under the International Fire Code or Codes office, whichever is more stringent.

A blast design shall be submitted to the Building Code Official for review prior to any blasting operations. The blast design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used, critical dimensions, and the location and general description of structures to be protected, as well as an outline of design factors to be used, which protect the public and meet the

applicable air blast and ground vibration standards, as set forth in Section 9. The blast design shall be prepared and signed by a certified blaster. The Building Code Official may request changes to the design submitted.

SECTION 2. PREBLASTING SURVEY. At least ten (10) days before any blasting, the surveyor shall notify, in writing, all residents or owners of dwellings and other structures located within six-hundred (600) feet of the blasting area of the intent to conduct a preblasting survey. The Building Code Official may modify the 600 feet distance for good cause. Notification shall be by certified mail with a copy by regular mail.

The surveyor shall conduct a preblasting survey of dwellings and structures and prepare a written report of the survey. The surveyor, if requested by the Building Code Official, shall perform an updated survey of any additions, modifications, or renovations to dwellings or structures.

The surveyor shall determine the condition of the dwelling or structure and shall document any existing damage or other physical factors that could be affected by the blasting. Unless prevented by the owner or occupant of the property, the surveyor shall examine the interior as well as the exterior structure and shall document any damage by means of photographic or video-recording methods. Structures such as pipelines, cables, transmission lines, cisterns, wells and other water systems, may warrant special attention; however, the assessment of these structures can be limited to surface conditions and other readily available data. Upon written request to the Building Code Official by Johnson County Wastewater, the interior of any existing sanitary sewer-line shall be surveyed by means of a permanently recorded closed-circuit video camera prior to blasting operations and after blasting has been concluded in the area of the existing sewer-line.

The person who conducted the survey shall sign the written report of the survey. Copies of the report shall be promptly provided to the Building Code Official. The surveyor shall complete all surveys before any blasting. A disinterested third party, regularly engaged in performing preblast surveys, shall conduct all surveys.

The preblast survey shall not commence until the survey method has been reviewed and approved by the Building Code Official.

SECTION 3. PUBLIC NOTIFICATION. Before blasting is started, the blaster shall inform all residents within a radius of 1500 feet of the blasting location by means of printed information sheets. The notification shall be delivered by registered mail, with a copy by regular mail or by hand delivery with a signature from the owner or occupant to evidence receipt. At a minimum, the information sheets shall include the blaster's name and contact information, approximate dates and times of blasting, source and scope of blast monitoring, explanation of warnings, and control area parameters.

SECTION 4. WARNING SYSTEM The blaster shall provide suitable warning by siren or whistle prior to all blasts.

SECTION 5. OVER-BLASTING. The requirements presented herein shall not relieve the blaster from responsibility to avoid disturbing earth or rock beyond indicated and specified lines and levels.

SECTION 6. NOTIFICATION. The blaster shall notify the owner or operator of all gas, water, and petroleum pipelines in any area where blasting will occur. A representative of the pipeline owner shall be allowed to be present to observe preparations and blasting.

SECTION 7. BLASTING SCHEDULE. The blaster shall conduct blasting operations between 8:30 a.m. and 4:30 p.m. as approved by the Building Code Official and announced in the blasting schedule. The Building Code Official may direct that blasting only occur during a certain hour or hours.

SECTION 8. BLASTING SIGNS, WARNINGS, AND ACCESS CONTROL. Blasting signs shall meet the specifications of this section. The blaster shall:

- a) Conspicuously place signs reading "*Blasting Area*" along the edge of any blasting area that comes within 100 feet of any public or private road and at the point where any other road provides access to the blasting area; also, conspicuously place signs reading "*Blasting Area - Turn Off Two-Way Radios*" along the edge of any blasting area that comes within five-hundred (500) feet of any road and one-thousand (1000) feet on either end of the blasting area; and,
- b) Place conspicuous signs that state "*Warning! Explosives In Use*" at all entrances to the permit area from any road. The signs must clearly list and describe the meaning of the audible blast warning and "all-clear" signals that are in use, and must explain the marking of blasting areas and charged holes awaiting firing within the permit area; and, shall give warnings and "all-clear" signals of different character or pattern that are audible within a range of one thousand (1000) feet from the point of the blast. Each person within the permit area and each person who resides or regularly works within one-thousand (1000) feet of the permit area shall be notified of the meaning of the signals. Access within the blasting area shall be controlled to prevent presence of livestock or unauthorized persons during blasting. Access to and travel within the blasting area shall not be resumed until the blaster has reasonably determined that no hazards, such as imminent slides or un-detonated charges, exist.

SECTION 9. CONTROL OF ADVERSE EFFECTS. Blasting shall be conducted in a manner to prevent injury to persons, damage to public or private property, adverse impacts on any underground mine, and change in the course, channel, or availability of surface or ground water outside the permit area.

- a) Air blast. Air blast shall not exceed the maximum limits listed below at the location of any building outside the permit area, except as provided in this section.

Lower frequency limit of measuring system, in Hz (+3 dB)	Maximum level, in dB
0.1 Hz or lower--flat response ¹	134 peak.
2 Hz or lower--flat response	133 peak.

6 Hz or lower--flat response	129 peak.
C-weighted--slow response ¹	105 peak dBC.

¹ Only when approved by the Building Code Official.

If necessary to prevent damage, the Building Code Official can specify lower maximum allowable air blast levels than those of listed in this section for use in the vicinity of a specific blasting operation.

The blaster shall conduct monitoring to ensure compliance with the air blast standards. The measuring systems shall have an upper-end flat frequency response of at least 200 Hz.

- b) Ground Vibration. The maximum ground vibration for protected structures listed in this section shall be established in accordance with the maximum peak-particle-velocity limits, the scaled-distance equation, the blasting level chart, or by the Building Code Official. All structures in the vicinity of the blasting area, such as water towers, pipelines and other utilities, tunnels, dams, impoundments, and underground mines, shall be protected from damage by the establishment of a maximum allowable limit on the ground vibration, 1.0 inches per second. The Building Code Official may specify a more restrictive limit in the interest of the public safety, or the Building Code Official may approve a higher limit if the blaster can demonstrate that damage will not occur to buildings or structures. The maximum ground vibration shall not exceed the following limits at the location of any building.

DISTANCE	MAXIMUM ALLOWABLE	SCALED PEAK
Distance (D) from the blasting site in feet.	Particle velocity (Vmax) for ground vibration in inches/second ¹	Factor to be applied without seismic monitoring ²
0 to 300	1.00	50
301 to 5,000	1.00	55
5,001 and beyond	0.75	6

¹ Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in three mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the three measurements.

² Applicable to the scaled-distance equation.

A seismographic record shall be provided for each blast at locations designated by the Building Code Official. A blaster may use the scaled-distance equation, $W = (D/D_s)$, to determine the allowable charge weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; where W=the maximum weight of explosives, in pounds; D=the distance, in feet, from the blasting site to the nearest protected structure; and D_s =the scaled-distance factor, which may initially be approved by a licensed engineer using the values for scaled-distance factor listed. The blaster may use the ground-vibration limits in Figure I of this section to determine the maximum allowable ground vibration.

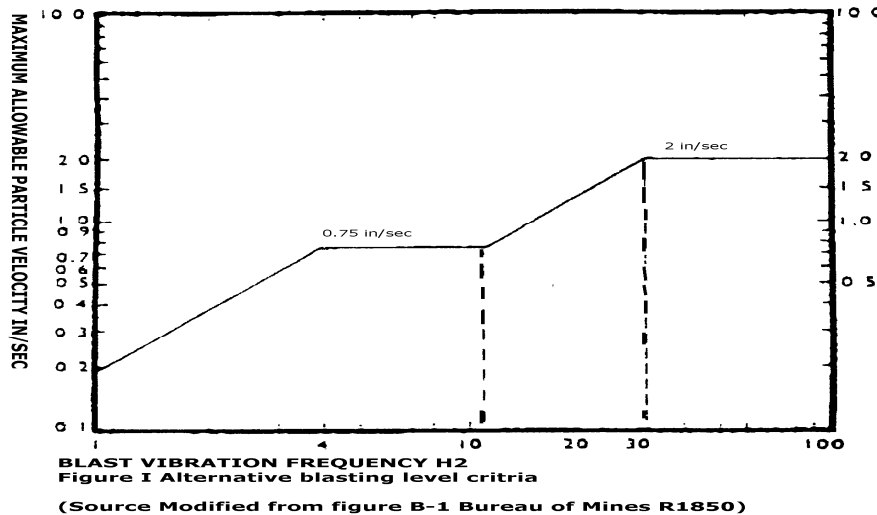


FIGURE 1

If the Figure 1 limits are used, a seismographic record including both particle velocity and vibration-frequency levels shall be provided for each blast. The Building Code Official shall approve the method for the analysis of the predominant frequency contained in the blasting records before application of this alternative-blasting criterion. The Building Code Official can reduce the maximum allowable ground vibration beyond the limits otherwise provided for in this section, if determined necessary to provide damage protection. The blaster shall conduct seismic monitoring of all blasts at locations approved by the Building Code Official.

SECTION 10. RECORDS OF BLASTING OPERATIONS. The blaster shall retain a record of all blasts for at least three (3) years. Upon request, copies of these records shall be made available to the Building Code Official and/or public for inspection within twenty-four (24) hours. Such records shall contain the following data:

- a) Name of the blaster conducting the blast;
- b) Location, date, and time of the blast;
- c) Name, signature, and certification number of the blaster conducting the blast;
- d) Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the permit area, except those described herein;
- e) Whether conditions, including those which may cause possible adverse blasting effects;
- f) Type of material blasted;
- g) Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern;

- h) Diameter and depth of holes;
- i) Types of explosives used;
- j) Total weight of explosives used per hole;
- k) The maximum weight of explosives detonated in an 8-millisecond period;
- l) Initiation system;
- m) Type and length of stemming;
- n) Mats or other protections used;
- o) Seismographic and air blast records, shall include:
 1. Type of instrument, sensitivity, and calibration signal or certification of annual calibration;
 2. Exact location of instrument and the date, time and distance from the blast;
 3. Name of the person and firm taking the reading;
 4. Name of the person and firm analyzing the seismographic record; and
 5. The vibration and/or air blast level recorded.

SECTION 11. BLASTER. The blaster shall be trained and be knowledgeable in the applications of all sections of the adopted blasting codes.

The blaster shall be responsible for:

- a) Explosives, including:
 1. Selection of the type of explosive to be used;
 2. Determination of the properties of explosives that will produce desired results at an acceptable level of risk;
 3. Handling, transportation, and storage.
- b) Blast designs, including:
 1. Geologic and topographic considerations;
 2. Design of a blast hole, with critical dimensions;
 3. Pattern design, field layout, and timing of blast holes;
 4. Field applications.
- c) Loading blast holes, including priming and boosting;
- d) Initiation systems and blasting machines;
- e) Blasting vibrations, air blast, and flyrock, including:
 1. Monitoring techniques;
 2. Methods to control adverse effects;
- f) Secondary blasting applications;
- g) Current federal and state rules applicable to the use of explosives;

- h) Blast records;
- i) Schedules;
- j) Preblasting surveys, including:
 - 1. Availability;
 - 2. Coverage;
 - 3. Use of in blast design.
- k) Blast-plan requirements;
- l) Certification and training;
- m) Signs, warning signals, and site control;
- n) Unpredictable hazards, including:
 - 1. Lightning;
 - 2. Stray currents;
 - 3. Radio waves; and,
 - 4. Misfires

The appropriate licensing authority shall license the blaster. The blaster shall be responsible for obtaining all necessary permits required for blasting operations.

SECTION 12. ENFORCEMENT, VIOLATIONS, AND PENALTIES Violation of any provision of this regulation shall be a public offense, punishable as a Class I Infraction, upon conviction as provided in Article 20, of the Johnson County Code of Regulations For Buildings and Construction, 2012 Edition. Each separate day or any portion thereof, during which any violation of this Regulation occurs or continues, shall also be deemed to constitute a separate offense, and shall be punishable as provided in Article 20 designated above.