CITY OF RAYMORE, MISSOURI
ENGINEERING DEPARTMENT

BLASTING REGULATIONS

ARTICLE 1. ENABLING CLAUSE

Pursuant to authority granted in Raymore Code of General Ordinances, Chapter 525, the City Engineer is hereby authorized to make and publish, from time to time, Rules and Regulations in conformity with and for carrying out the provisions of Code of General Ordinances, Chapter 525, entitled "Blasting," respecting the conditions for issuing blasting permits, including the acquisition, daily recording, storage, transportation, disposition of explosives and method and manner of blasting. In making such rules and regulations the City Engineer shall be guided by the recommendation of United Association of Fire Underwriters.

ARTICLE 2. GENERAL

Blasting operations are generally divided into three classes. Construction, mining and special purpose. The regulations apply to all operations except through approved variance.

ARTICLE 3. DEFINITIONS

For the purposes of this article, the following terms, phrases, words and their derivations shall have the meaning given herein.

1. **Explosive:** Any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion.
2. **Permitting Officer:** The City Engineer is designated to perform the duties provided for in this regulation.
3. **Particle velocity:** A unit of measure in inches per second commonly used in mining and quarrying operations to measure by instrumentation the ground vibration caused by blasting.
4. **Permit area:** The land upon which blasting is to be done, as indicated on the engineering drawings or maps submitted.
5. **Permittee:** Any entity who shall apply for and obtain a permit under the terms of this regulation and in accordance therewith.
6. **Charge Weight:** The total weight of explosives and explosive agents detonated in any single eight millisecond interval.
7. **Delay:** Commonly used term to denote an initiation device for blasting.

8. Scaled distance: The actual distance in feet from the blast to the point of concern divided by square root of the total charge weight of explosives in pounds per interval of eight milliseconds or more.

9. Structure: Any building, whether used as a dwelling or for institutional or commercial purposes or whether occupied or vacant.

10. Underground mine: An area of land, which lies beneath the earth's surface from which minerals are extracted.

11. Surface mine: An area of land, which lays on the earth's surface from which minerals are extracted.

12. Construction activity: Any activity associated with the construction of buildings, public works projects, trenching, tunneling (including shafts), earthmoving demolition of structures.

13. Initiation Site: Location of an individual blast site.

ARTICLE 4. BLASTING PRACTICES.

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

B. If blasting is conducted in accordance with Paragraph 1 of this Section; the maximum ground vibration and air blast standards of Section D and E shall not apply at the following locations.

1. At structures owned by the permittee and lot leased to another person.

2. At structures owned by the permittee and leased to another person, if a written waiver by the affected party is submitted with the permit application.

3. At structures owned by other entities, which are located within the permitted area provided a written waiver signed by the affected party is submitted with the permit application.

C. GENERAL VIBRATION

1. In all blasting operations, except as otherwise authorized in this section, the maximum ground vibrations shall not exceed the maximum peak particle velocity limits of Section D or the scaled-distance equation of Section E.

D. MAXIMUM PEAK PARTICLE VELOCITY

1. The maximum peak particle velocity shall not exceed the following limits at the location of any dwelling, public building, school, church or community, or institutional building outside the permit area. (Table 1).

TABLE 1

BLASTING LEVEL TABLE

Distance from the blast site (D) (feet)	Max. Allowable Peak Particle Velocity (in/sec)	(D) Scaled Distance (Factor)
0 to 300	1.25	50
301 to 5,000	1.00	55
5,001 and beyond	.75	65

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

b. A seismograph record shall be provided for each blast.

E. SCALED DISTANCE EQUATION

1. An operator may use the scaled-distance equation, W = (D/D) to determine the allowable charge - weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; while W = the maximum weight of explosives, in pounds; D = the distance, in feet, from the blast site to the nearest protected structure; and D = the scaled distance factor, which are listed in Table 1. All construction blasting shall be seismic monitoring daily. All non-construction blasting shall be seismic monitoring quarterly.

F. AIR BLAST

1. Air blast shall not exceed the limits listed below at the location of any dwelling, public building, school, church, or community, or institutional building outside the permit area. (Table 2).

TABLE 2

Lower frequency limit of measuring system in Hertz	Permissible in dB (+3dB)
1 HZ or lower - flat response (1)	134 Peak
2 HZ or lower - flat response	133 Peak
3 HZ or lower - flat response	129 Peak
C-weight - slow response (1)	105 Peak & BC

a. May be used only with prior approval of the City Engineer. Every effort shall be made to keep air blast at or below 120 dBL (0.0029) psi.

G. FLYROCK

1. Flyrock traveling in the air or along the ground shall not be cast from the blast site:

a. More than one-half the distance to the nearest dwelling or other occupied structure.

b. Beyond the area owned or leased by the permittee.

c. Beyond the permit boundary.

ARTICLE 5. RECORDS OF BLASTING OPERATIONS

A. A record of each blast, including monitoring reports, shall be prepared by the permittee. The permittee shall retain these records for a period of not less than three years. The permittee shall allow the City Engineer, or his representative, to inspect these records, upon demand, at any time during the retaining period. The blasting record shall contain, as minimum, the following information. (Figure 1).

FIGURE 1

BLASTING OPERATION RECORD

1. Permittee Name _____
2. Permit # _____
3. Blaster's Name _____
4. Date & Time of Blast _____
5. Location of Blast _____
6. Number of separate initiation sites for this blast _____
7. Number of delays used per site _____
8. Maximum weight of explosives detonated in any single period of eight MS or more _____
9. Total weight of explosives per initiation site _____
10. Total weight of explosives per blast _____

Monitoring Record

1. Was blast monitored by seismograph? Yes _____ No _____
2. Name of company monitoring blast _____
3. Purpose of monitoring blast? _____
4. Direction & distance in feet from the nearest initiation site to the monitoring device _____
5. Peak particle velocity recorded at the monitoring device in three mutually perpendicular directions (longitudinal, vertical, transverse) _____

ARTICLE 6 VARIANCES.

A. Upon application, the City Engineer may allow an increase in the maximum peak particle velocity. If he determines that the permittee has taken the necessary precautions to protect property from damage and persons from injury, and has otherwise compiled with the provisions of this section.

B. The permittee shall submit a pre-blast design to the City Engineer at least thirty (30) days prior to conducting any blast with the probability of exceeding the allowable maximum peak particle velocity of this article. Such pre-blast design shall include sketches of the type of blast, direction, drill patterns, delays, type and amount of explosives to be used, critical dimensions and the location and general condition of structures to be protected. Such pre-blast design shall also include:

1. The intended maximum peak particle velocity or minimum scaled distance, where applicable, for such blast, and;

2. The date and time of such proposed blast.

3. Variance may be granted by the City Engineer after notice and after taking in consideration the extent to which the following facts favorable to the applicant have been established by the evidence:

   a. The applicant has taken the necessary precautions to protect property from damage and persons from injury;

   b. The granting of the variance will not be detrimental to the public welfare or injurious to other property or improvements in the area to be affected by the proposed blast;

   c. The application will suffer unusual hardship unless the variance is granted.

4. All demolition and special propose blasting shall be governed by this section.

C. **PERMITS - RAYMORE CODE CHAPTER 525**

1. No person shall do or cause to be done any blasting within the City limits, or outside of such limits, or outside of such limits, but no property owned or operated by the City, without first obtaining a permit therefor from the City Engineer. The procedure for obtaining a permit shall be as follows:

   a. Application: All applicants for a blasting permit shall submit to the City Engineer a fully executed Blasting Permit Application as shown in figure 2 below.

FIGURE 2

CITY OF RAYMORE, MISSOURI

BLASTING PERMIT APPLICATION

1. Company Name:	_____
2. Company Address:	_____
3. Company Telephone #	_____
4. Name of Individual(s) responsible for blasting	_____

5. Previous experience in type of blasting described herein: _____

6. Occupation License? _____

7. Location of proposed blasting _____

8. Purpose of proposed blasting _____

9. Duration of proposed blasting _____

10. Insurance Co. name _____ Policy Number: _____

11. Address: _____

12. Will insurance company monitor blasting? Periodic _____ Continuous _____ No _____

13. Bonding company name: _____

14. Address: _____

15. Bond Number: _____

16. Will bonding company monitor blasting? Periodic ____ Continuous ___ No ____

RAYMORE, MISSOURI
BLASTING PLAN

18. Type of explosive to be used? _____

19. Type of blasting agents to be used? _____

20. Type of initiation to be used? _____

21. Quantity of explosive to be used per cubic yard of material: _____

22. Maximum proposed quantity to be used per cubic yard of material: _____

23. Maximum number of delays to be used per shot _____

24. Maximum quantity of explosives to be used per shot _____

25. Provide general description of proposed blasting operation to include safety precautions:

_____

26. General amount of cover material available _____

27. Will blasting mats be used? _____

28. Distance to nearest permanent structure: _____

29. Scale Distance = Line 28+ Line 22= _____

30. Distance to nearest roadway: _____

31. Name of third party company other than insurance or bonding agencies who will monitor blasting:
City of Raymore

32. Address: 104 N. Madison Telephone # 3331-0488

33. Will blasting record be kept? _____ Location of Records: _____

35. Records will bill: Periodic _____ Continuous _____

36. For how long? _____

37. By: _____ Date: _____

b. All applicants for a blasting permit shall submit a suitable engineering drawing or map indicating the following:

1.) The boundaries of the proposed permit area.

2.) All public facilities and easements within the proposed permit area and within a distance of 300 feet of the exterior boundaries of the permit area.

3.) All structures within the permit area and within a distance of 300 feet of the exterior boundaries of the permit area.

a.) All structures owned by the permittee shall be indicated on the drawings.

b.) All exempted structures shall be indicated on the drawings.

c. All applicants for a blasting permit shall submit statements indicating the permittee's legal right to enter the area and to conduct blasting operations.

d. All applicants for a blasting permit shall first obtain a permit from the South Metro Fire Protection District for transportation, disposition and storage of explosives.

e. Upon granting of any blasting permit, all individuals must operate under these regulations and the current provisions of the Raymore City Code, and applicable provisions of State and Federal Law.

Done on the _____ day of _____, 20_____.

_____
City Engineer