

## CHAPTER 7

### EXPLOSIVES AND BLASTING REGULATIONS

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7.01 PURPOSE OF CHAPTER. The purpose of this Chapter is to regulate the use of explosive materials and to establish uniform limits on permissible levels of blasting resultants to reasonably assure that blasting resultants do not cause injury, damage or a nuisance to persons or property within the Town.

7.02 DEFINITIONS. The following definitions shall apply in this Chapter. Terms not herein defined shall be understood to have their usual and ordinary dictionary meaning:

- (1) “*Airblast*” shall mean an airborne shock wave resulting from the detonation of explosives.
- (2) “*Approved*” means approval granted by the Town of Chase.
- (3) “*Blaster*” means any individual holding a valid blaster’s license issued by the Wisconsin Department of Industry, Labor and Human Relations.
- (4) “*Blasting Business*” means any individual, corporation, company, association, firm, partnership, society or joint stock company engaged in a blasting operation.
- (5) “*Blasting*” means any method of loosening, moving or shattering masses of solid matter by use of an explosive.
- (6) “*Blasting Operation*” shall mean any operation, enterprise or activity involving the use of blasting.
- (7) “*Blasting Resultants*” means the physical manifestations of forces released by blasting, including, but not limited to, projectile matter, vibration and concussion, which might cause injury, damage or unreasonable annoyance to persons or property located outside the controlled blasting site area.
- (8) “*Community*” means a built-up inhabited area.
- (9) “*Permitted Explosives Use Area*” means the area that surrounds a blasting site and:
  - (a) Is owned by the operator; or
  - (b) With respect to which, because of property ownership, employment

relationship or agreement with the property owner, the operator can take reasonably adequate measures to exclude or to assure the safety of persons and property.

- (10) *“Detonator”* means any device containing a detonating charge that is used for initiating detonation in an explosive. The term includes, but is not limited to, electric blasting caps of instantaneous and delay types, blasting caps for use with safety fuses, detonating cord delay connectors, and non-electric instantaneous and delay blasting caps.
- (11) *“Department”* means the Wisconsin Department of Industry, Labor and Human Relations.
- (12) *“Electric Blasting Cap”* means a blasting cap designed for, and capable of, initiation by means of an electric current.
- (13) *“Explosion”* means the substantially instantaneous release of both gas and heat.
- (14) *“Explosive”* means any chemical compound, mixture or device, the primary or common purpose of which is to function by explosion unless the compound, mixture or device is otherwise classified by the Department by rule.
- (15) *“Explosive Materials”* means explosives, blasting agents and detonators. The term includes, but is not limited to, dynamite and other high explosives, slurries, emulsions, water gels, blasting agents, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters.
- (16) *“Flyrock”* means rock that is propelled through the air from a blast.
- (17) *“Ground Vibration”* means a shaking of the ground caused by the elastic wave emanating from a blast.
- (18) *“Highway”* means any public street, public alley or public road.
- (19) *“Inhabited Building”* means a building regularly occupied in whole or in part as a habitation for human beings, or any church, schoolhouse, railroad station, store or other structure where people are accustomed to assemble, except any building or structure occupied in connection with the manufacture, transportation, storage or use of explosive materials.
- (20) *“Nuisance”* means an excessive, repeated noise, action or other disturbance that would cause an unreasonable annoyance.
- (21) *“Particle Velocity”* means any measure of ground vibration describing the velocity at which a particle of ground vibrates when excited by a seismic wave.
- (22) *“Person”* means any individual, corporation, company, association, firm, partnership, society or joint stock company.
- (23) *“Powder Factor”* means any ratio between the amount of powder loaded and the amount rock broken.
- (24) *“Primer”* means a capped fuse, electric detonator or any other detonating device inserted in or attached to a cartridge of detonator sensitive explosive.
- (25) *“Stemming”* means the inert material, such as drill cutting, used in the collar portion or elsewhere of a blast hole to confine the gaseous products of detonation.

7.03 REGULATION OF EXPLOSIVE MATERIALS AND BLASTING.

- (1) General. No person shall handle or use explosive materials in the Town of Chase unless he:
  - (a) Possesses all necessary state permits and complies with all applicable local, state and federal regulations, including, but not limited to, the requirements of this Chapter and Chapter ILHR 7, Explosive Materials, Wisconsin Administrative Code.
  - (b) Possesses all necessary state permits and complies with all applicable local, state and federal regulations, including, but not limited to, the requirements of this Chapter and Chapter ILHR 7, Explosive Materials, Wisconsin Administrative Code.
- (2) Permit. No person shall handle, use or cause explosives to be detonated within the Town of Chase without an explosives use permit issued by the Town of Chase as hereafter set forth, to such person, his supervisor or employer.
  - (a) **Applications.** Applications for an explosives use permit shall be in writing upon forms provided by the Town Clerk. Applications shall be accompanied by a permit fee in an amount set from time to time by resolution of the Town Board. Permits shall be issued on an annual basis commencing January 1 and ending on December 31. All explosives use permits applied for after January 1 shall be pro-rated from the date of the issuance of the permit through the end of the year. Applications may be made by and permits issued to the blasting business, provided that the person doing the blasting or responsible for such blasting shall hold a valid Wisconsin blaster's license with proper classification. The applicant will identify the licensed blasters operating under the permit and the blasting locations within the Town of Chase. In the discretion of the Board, the permit fee may be waived upon showing of acceptable hardship by the applicant. All applications for reissuance and renewal for an explosives use permit shall be filed by the permittee with the Town Clerk of the Town of Chase within sixty (60) days before the expiration date of the previous permit along with the annual permit fee, which fee will be set by resolution of the Town Board.
  - (b) **Certificate of Insurance.** Each application for an explosives use permit as herein stated, or renewal thereof, shall be accompanied by a Certificate of Insurance for a Commercial General Liability Policy. Said Policy of Insurance shall have limits of coverage of not less than One Million (\$1,000,000.00) Dollars in the aggregate and Five Hundred Thousand (\$500,000.00) Dollars per occurrence. The Town shall be named as an additional insured on applicant's Policy of Liability Insurance.
  - (c) **Explosives Use Plan.** Each application for an explosives use permit, or a renewal thereof, shall include a written description of the total area within which explosives are proposed to be used, blasting procedures to be employed, including types of explosives, initiating systems, and an aerial photograph or drawing acceptable to the Town Board with a scale of not less than one (1) inches equals four hundred (400) feet and having an overlaying grid of fifty (50) feet by fifty (50) feet which accurately includes all areas and

inhabited buildings within one thousand (1000) feet of all proposed blasting areas.

- (d) **Blasting Notification.** Before any blasting operation may be conducted within the Town of Chase, the blaster shall give notice thereof by the conspicuous display of a fluorescent flag and legible sign giving notice of the blasting operation. The flag and sign shall be displayed at least 24 hours prior to and during all blasting operations. In addition, verbal or written notice of the blasting operation shall be given to the Town Clerk of the Town of Chase at least 24 hours prior to commencement of blasting operations.
- (e) **Hours of Operation.** Blasting shall only be conducted between 9:00 a.m. and 4:00 p.m. on Monday through Friday; provided, however, that in the event an emergency has delayed a blast beyond 4:00 p.m., loaded holes may be blasted within a reasonable time thereafter. Blasting shall not be conducted at other times or on Sundays or legal holidays without written permission from the Town Board, which shall only be granted upon a showing of extreme need.
- (f) **Blasting Log.** An accurate blasting log shall be prepared and maintained for each blast fired, and a true and complete copy of said log shall be supplied to the Town Clerk within seven (7) working days of the initiation of the blast. The Town may require that the permittee furnish to the Town an analysis of any particular blasting log to be prepared by the permittee. In the event the permittee cannot or will not prepare a reliable analysis, the Town may obtain such analysis from an independent expert. The permittee shall be liable for the reasonable cost of such analysis if it is determined, after an opportunity to be heard, that this ordinance was violated by the permittee. Each blasting log shall include, but not be restricted to, the following information:
  - 1. Name and license number of blaster in charge of blast;
  - 2. Blast location with grid coordinate reference to the supplied aerial photograph or a drawing of the explosives use area;
  - 3. Date and time of blast;
  - 4. Weather conditions at time of blast;
  - 5. Diagram and cross-section of blast hole layout;
  - 6. Number of blast holes;
  - 7. Blast hole depth and diameter;
  - 8. Spacing and burden of blast holes;
  - 9. Maximum holes per delay;
  - 10. Maximum pounds of explosives per delay;
  - 11. Depth and type of stemming used;
  - 12. Total pounds of explosives used, including primers and initiating cord;
  - 13. Distance to nearest inhabited building not owned by permittee;
  - 14. Type of initiation system used;
  - 15. Seismographic and airblast information, which shall include:
    - a. Type of instrument and last calibration date;
    - b. Exact location of instrument and date, time and distance

- from the blast;
    - c. Name and company affiliation of person taking reading;
    - d. Name of the person and firm analyzing the seismographic and airblast data when required; and
    - e. Vibrations and airblast levels recorded.
    - f. Copy of the seismograph printout.
- (3) No permittee shall be required to obtain more than one (1) permit annually for its operations within the Town of Chase.

7.04 TEMPORARY PERMITS. The Town Clerk, upon receipt of a properly completed temporary permit application form, may issue a temporary permit to allow for special construction or demolition activities requiring the use of explosives. Temporary permits shall be issued for duration of fourteen (14) consecutive working days. The temporary permit fee shall be Two Hundred Dollars (\$200.00) and shall be submitted with the completed temporary permit application form. Only one (1) temporary permit can be issued for any given site within the year of permit issuance. Temporary blasting for basements, sewer and water laterals for single family residential construction will not require a temporary permit under this section.

7.05 REGULATION OF BLASTING RESULTANTS.

- (1) Purpose of Sections. It is the purpose of this Section to provide for the establishment of uniform limits on permissible levels of blasting resultants to reasonably assure that blasting within the Town of Chase does not cause injury, damage or a nuisance to persons or property outside and beyond the permitted explosives use area.
- (2) Instrumentation. All blast-monitoring instruments used to produce data to support compliance with this Subsection shall meet the following minimum specifications:
  - (a) Seismic frequency range: 2 to 200 Hz ( $\pm 3$  Hz)
  - (b) Acoustic frequency range: 2 to 200 Hz ( $\pm 1$  dB)
  - (c) Velocity range: 0.02 to 4.0 inches per second
  - (d) Sound range: 100 to 140 dB linear
  - (e) Transducers: Three (3) mutually perpendicular axes
  - (f) Recording: Provide time-history of wave form
  - (g) Printout: Direct printout showing time, date, peak air pressure, peak particle velocity and frequency in three (3) directions and a printed waveform graph of the event depicting measured air blast and particle velocity in the three (3) directions
  - (h) Calibration: At least once every twelve (12) months according to manufacturer's recommendations
- (3) Control of Adverse Effects.
  - (a) **General Requirements.** Blasting shall be conducted so as to prevent injury or a nuisance to persons and damage to public or private property outside the permitted explosives use area.
  - (b) **Airblast.**
    - 1. Limits – Airblast shall not exceed the following limits:

<u>Lower Frequency Limit of Measuring System in Hz</u>	<u>Maximum Level in db</u>
2 Hz or lower – Flat response	133 peak
6 Hz or lower – Flat response	129 peak

at the location of the dwelling, public building, place of employment, school, church or community or institutional building outside and beyond the permitted explosives use area.

(4) Ground Vibration – General.

- (a) The maximum ground vibration at the location of any dwelling, public building, place of employment, school, church, or community or institutional building outside the controlled blasting site area shall be established in accordance with either the maximum peak-particle-velocity limit (See Table 7.64-2), the scaled distance of par. G, the blasting-level charge of par. H.
- (b) All structures in the vicinity of the blasting area, not listed in sub. (a), such as water towers, pipelines and other utilities, tunnels, dams, impoundments and underground mines shall be protected from damage by establishment by the operator of a maximum allowable limit on the ground vibration. The operator shall establish the limit after consulting with the owner of the structure.
- (c) **Maximum Peak Particle Velocity** – An operator may use the maximum ground vibration limits listed in Table 7.64-2

Table 7.64-2 – PEAK PARTICLE VELOCITY LIMITS		
Type of Structure	Maximum in allowable peak particle velocity for ground vibration, in/sec	
	At frequencies below 40 Hz*	At frequencies 40 Hz and greater
Modern homes and structures with drywall interiors	0.75	2.0
Older homes and structures with plaster on wood lath construction for interior walls	0.50	2.0

\*All spectral peaks within 6 dB (50 pct) amplitude of the predominant frequency must be analyzed.

- (5) Ground vibration shall be measured as the particle velocity. Particle velocity shall be recorded in 3 mutually perpendicular directions. The maximum allowable peak particle velocity shall apply to each of the 3 measurements and the vector sum of the 3 measurements.
- (6) A seismographic record shall be provided for each blast.
- (7) Scaled-distance equation:
  - (a) An operator may use the scaled-distance equation,  $W = (D/D_s)^2$ , to determine the allowable charge-weight of explosives to be detonated in any 8-millisecond period, without seismic monitoring; where  $W$  = the maximum weight per delay of explosives, in pounds;  $D$  = the distance, in feet, from the blasting site to the nearest structure listed in par. (D)(1) and (2); and  $D_s$  = the scaled-distance factor listed in Table 7.64-3.
  - (b) The development of a modified scaled-distance factor may be authorized by the Town on receipt of a written request by the operator, supported by seismographic records of blasting at the site. The modified called-distance factor shall be determined such that the particle velocity of the predicted ground vibration will not exceed the prescribed maximum allowable peak particle velocity of par. D(3) at a 95% confidence level.

Table 7.64-3  
**SCALED-DISTANCE FACTOR LIMITS**

Distance (D) from the blasting	Scaled-distance factor ( $D_s$ ) to be applied without seismic monitoring
0-300.....	50
301 to 5,000.....	55
5,001 and beyond.....	65

Figure 7.64  
**BLASTING LEVEL CHART**

- (8) Blasting Level Chart.
- (a) An operator may use the ground vibration limits found in Figure 7.64 to determine the maximum allowable ground vibration.
  - (b) If the Figure 7.64 limits are used, a seismographic record, including both particle-velocity and vibration frequency levels, shall be provided for each blast. The method of analysis shall be subject to reasonable discretionary review by the Town.

7.06 MONITORING.

- (1) Monitoring.
- (a) The permittee shall monitor all blasts at the closest location to the blast of any dwelling, public building, place of employment, school, church or community or institutional building outside and beyond the permittee explosives use area; provided, however, that the permittee may monitor at another location approximately the same distance from the blast site if the permittee is unable to obtain permission to conduct the monitoring from the owner of the preferred location. The Town Board, or its designee, may, at its discretion, require the relocation of monitoring equipment to a more suitable site and/or may conduct independent air-blast monitoring to spot check data supplied by the permittee. If independent monitoring by the Town is conducted, then in that event, the permittee shall pay the reasonable costs incurred by the Town of the independent monitoring.
  - (b) The measuring equipment used shall have an upper end flat frequency response of at least two hundred (200) Hz.
  - (c) All measuring equipment during monitoring shall be spiked to the ground or sandbagged.
- (2) Flyrock. Flyrock produced as a result of explosives use shall be totally contained within the permitted explosives use area.
- (3) Seismic Monitoring. The Town Board, in its discretion, may conduct independent seismic blast monitoring or air blast monitoring to spot-check data supplied by the permit holder. If the independent monitoring discloses after hearing that the ordinance was violated by the permittee, then, in that event, the permittee shall pay the reasonable costs incurred by the Town for the independent monitoring.

7.07 PREBLAST SURVEY AND NOTIFICATION

- (1) Preblasting Notification. Each explosives use permit application and all re-applications shall include the names and addresses of all residents or owners of dwellings or other structures located within one thousand (1,000) feet of the boundaries of the blasting site, as described in the Explosives Use Plan.
- (2) At the time of permit application, the applicant shall have notified, in writing, all residents or owners of dwellings or other structures located within the previously defined area (1,000 feet), who may request a preblast survey and a water quality test for existing wells. This request shall be in writing. The applicant shall cause a preblast survey to be conducted as to such dwelling or structures, and water quality testing for existing wells; provided, however, that the applicant shall not be required

to conduct a preblast survey or well water quality testing more than once every six (6) years as to any dwelling, structure or well.

- (3) The owner of a dwelling or structure that is within one thousand (1,000) feet of the blasting site, which, subsequent to the conducting of a preblast survey, has been substantially modified or improved by more than fifty percent (50%) of the property's fair market value, may request a preblast survey. If it is found that a preblast survey for such improved or modified structure is appropriate, the applicant/permittee may conduct such surveys within a reasonable period of time, but in no case exceeding twice a year for all such requests by all owners.
- (4) The preblast survey and water quality testing shall be promptly conducted in a manner and form and by an independent survey company, a laboratory approved by the State of Wisconsin or organization selected by the applicant and acceptable to the owner or resident and the Town Board. The survey shall determine the condition of the dwelling or structure and shall document any preblasting damage or other physical factors that could reasonably be expected to be affected by the use of explosives. The testing of wells shall determine the condition of the water as to be safe for human use. The Board may consider accepting a blasting survey or well water test that was prepared prior to the effective date of this ordinance if the blasting survey and well water test meets the requirements outlined herein.
- (5) The survey shall include a written report signed by the person who conducted the survey. Copies of the survey report shall be promptly provided to the Town of Chase, the owner or resident and the applicant/permittee. The owner, resident or applicant/permittee shall promptly submit, in writing, to the Town of Chase any objections to the survey report, setting forth in detail such objections.
- (6) The water quality test for existing wells shall include a written report signed by the person who conducted the test. Copies of the test shall be promptly provided to the Town of Chase, the owner or resident and the applicant/permittee. The owner, resident or applicant/permittee shall promptly submit, in writing, to the Town of Chase objections to the test, setting forth in detail such objections.
- (7) Reasonable and reasonably related expenses incurred as a result of such independent surveys shall be the responsibility of the applicant/permittee.

7.08 ENFORCEMENT AND PENALTY PROVISIONS.

- (1) Enforcement. The following are criteria that the Town Board may consider for issuance, re-issuance, suspension or revocation of a blasting permit:
  - (a) Compliance with the blasting standards established by the Town of Chase as noted herein by this ordinance.
  - (b) Development and submittal to the Town Board of the Town of Chase of the explosives use plan and compliance with the explosives use plan.
  - (c) Development and submittal to the Town Board of the Town of Chase the blasting log and compliance with the operation plan with the information called for by the blasting log.
  - (d) Maintaining the financial assurance requested by the Town Board of the Town of Chase.

- (e) Compliance with the operational hours for blasting as noted herein by this ordinance.
  - (f) Compliance with airblast and ground vibration standards established by the Town of Chase as noted herein by this ordinance.
  - (g) Compliance with the pre-blasting notification requirements to residents and the Town Board as noted herein by this ordinance.
  - (h) Attempts made by the permittee or party in interest to comply with the provisions of this ordinance.
  - (i) Consideration of atmospheric, unknown conditions including geophysical conditions, and other matters beyond the control of the permittees or party in interest.
- (2) Suspension/Revocation. Unless expressly provided herein or by other Town of Chase Ordinance provisions, the explosive use permit may be suspended or revoked for cause for substantial noncompliance with the ordinance after the proper Town of Chase hearing noted below, unless in an emergency condition determined by the Town Board of the Town of Chase wherein the license, registration or permit can be suspended temporarily for a set time period. Prior to any action for suspension or revocation, the Town Board of the Town of Chase must, by the Town Clerk of the Town of Chase, receive a verified complaint concerning the licensee, registrant or permittee.
- (a) **Complaint.** The following persons may file a verified complaint with the Town Board of the Town of Chase:
    1. Town Chairman
    2. Town Clerk
    3. Town Supervisors
    4. Planning Commission
    5. Town Building Inspector
    6. Any Town of Chase resident
    7. A Landowner within one thousand (1,000) feet of the blasting site
  - (b) **Hearing.**
    1. The Town Board will make a determination if the allegations of the complaint are of sufficient magnitude, importance or otherwise of such a nature as to require a formal evidentiary hearing.
    2. The person subject to charges for violation of any Town of Chase Ordinance or any violation of a condition of the explosives use permit shall be provided a copy of the verified complaint and notice of hearing before the Town Board of the Town of Chase. The hearing shall be required to be not less than ten (10) days nor more than thirty (30) days after receipt of notice, unless stipulated in writing by the Town Board of the Town of Chase and the person subject to charges.
    3. The person subject to charges for violation of any Town of Chase Ordinance, or any violation of a condition of the explosive use permit shall be entitled to the following:

- a. Representation by legal counsel
  - b. Right to present and cross-examine witnesses
  - c. Right to subpoena witnesses by the Town Chair of the Town of Chase issuing subpoenas to compel attendance of witnesses.
4. The Town Board of the Town of Chase may, after the hearing for any person previously issued an explosive use permit by the Town Board of the Town of Chase, act as follows:
- a. Revoke the permit as a final decision.
  - b. Suspend the permit for a date certain as a final decision.
  - c. Request additional information as an interim decision prior to taking future action.
  - d. Take no action on the permit as a final decision.
- (c) **Appeals.** The final decision of the Town Board of the Town of Chase to revoke or suspend the explosives use permit shall be subject to appeal to the Circuit Court, which appeal must be filed with the Circuit Court not later than 45 days from the mailing of the Town Board's Decision to the permit holder.
- (3) **Penalty.** In addition to the denial, suspension or revocation of a permit issued under this Chapter, any person who shall violate any provision of this chapter, or who shall fail to obtain a permit as required hereunder, shall, upon conviction of such violation, be subject to a penalty of a civil forfeiture of not less than twenty (\$20.00) dollars nor more than five hundred (\$500.00) dollars, together with the costs of prosecution. Any default of such forfeiture determined by a court of competent jurisdiction shall be subject to any penalties as provided by Section 66.115, 66.117, 66.119 and 66.12, Wis. Stats, as may be amended. Each violation and each day a violation continues or occurs shall constitute a separate offense. Nothing in this Chapter shall preclude the Town from taking any appropriate action to prevent or remove a violation of any provision of this Chapter.