

(m) The police official in charge of crowd control and traffic safety at the demolition site shall notify the blaster firing the blast prior to the final blast warning signal if the designed safety area surrounding the demolition site is not clear.

Administrative correction.
See: 29 N.J.R. 566(a).

12:190-7.25 Air blast effects

(a) This section shall apply to air blast effects on constructions that are neither owned nor leased by the person conducting or contracting for the blasting operation.

(b) The maximum allowable air blast at any inhabited building resulting from blasting operations shall not exceed 130 decibels peak when measured by an instrument having a flat frequency response (± 3 decibels) over the range of at least 6 to 200 Hertz.

(c) The maximum allowable air blast at any building not inhabited resulting from blasting operations shall not exceed 140 decibels peak when measured by an instrument having a flat response (± 3 decibels) over the range of at least 6 to 200 Hertz.

(d) When blasting is of a continuing nature, 124 to 130 decibels shall be the caution range. When air blast effects are consistently within the caution range, the blast shall be examined, and if found necessary, shall be changed so as to reduce air blast effects on subsequent blasts.

(e) For determining compliance with this section, an approved instrument that is operated by a competent person shall be used. An approved instrument shall include the concept that the instrument has been calibrated in accordance with the manufacturer's recommendations.

Administrative correction.
See: 29 N.J.R. 566(a).

12:190-7.26 Ground vibration

(a) This section shall apply to ground vibrations on constructions that are neither owned nor leased by the person conducting or contracting for the blasting operation.

(b) In planning any blast, precautions shall be taken to protect construction from damage.

(c) The limits for ground vibration when blasting shall be in accordance with (c)1 or (c)2 below. In no case shall the peak particle velocity at a construction exceed two inches per second except when permitted by N.J.A.C. 12:190-1.6.

1. Blasting near buildings shall be in accordance with (d), (e), (f) or (g) below.
2. Blasting near structures shall be in accordance with (h) below.

(d) This subsection shall apply to ground vibration limits for blasting operations near a building conducted without measuring each blast with approved seismic instrumentation, when the amount of explosives per delay does not exceed 520 pounds, and the delay period is eight milliseconds or greater.

1. The maximum amount of explosives detonated shall not exceed the limits shown in Table 7.26(d).

Table 7.26(d)

Distance Versus Weight of Explosives Method*

Distance to a Building		Weight of Explosive per delay pounds	Distance to a Building		Weight of Explosive per delay pounds
feet over	feet not over		feet over	feet not over	
0	to 5	¼	250	to 260	45
5	to 10	½	260	to 280	49
10	to 15	¾	280	to 300	55
15	to 60	**	300	to 325	61
60	to 70	6	325	to 350	69
70	to 80	7½	350	to 375	79
80	to 90	9	375	to 400	85
90	to 100	10½	400	to 450	98
100	to 110	12	450	to 500	115
110	to 120	13¾	500	to 550	135
120	to 130	15½	550	to 600	155
130	to 140	17½	600	to 650	175
140	to 150	19½	650	to 700	195
150	to 160	21½	700	to 750	220
160	to 170	23¾	750	to 800	240
170	to 180	25	800	to 850	263
180	to 190	28	850	to 900	288
190	to 200	30½	900	to 950	313
200	to 220	34	950	to 1000	340
220	to 240	39	1000	to 1100	375
240	to 250	42	1100	to 1200	435
			1200	to 1300	493

Notes to Table

* This table is based upon the formula $W = \frac{DL^5}{90}$

** One tenth of a pound of explosive per foot of distance to a building.

2. When the maximum amount of explosives to be detonated on any single delay period exceeds 520 pounds, the ground vibration limits for buildings shall comply with (e), (f) or (g) below.

3. If the ground vibrations are not within the blasting criteria of (f) below due to either blast design or geological conditions, the commissioner may require a modified vibration control method for the blast site.

(e) This subsection shall apply to ground vibration limits for blasting operations near a building when it is elected to monitor each blast with an approved peak particle velocity recorder.

1. The blasting shall be conducted so that the peak particle velocity on any one component of an instrument measuring three component motion does not exceed the limits of Table 7.26(e).

Table 7.26(e)

Distance Versus Peak Particle Velocity Method

Distance		Peak Particle Velocity of Any One Component* inches per second
feet over	feet not over	
0 to	100	2.0
100 to	200	1.75
200 to	500	1.5
500 to	1000	1.0
over	1000	0.75

Note to Table

* The instrument's transducer shall be firmly coupled to the ground.

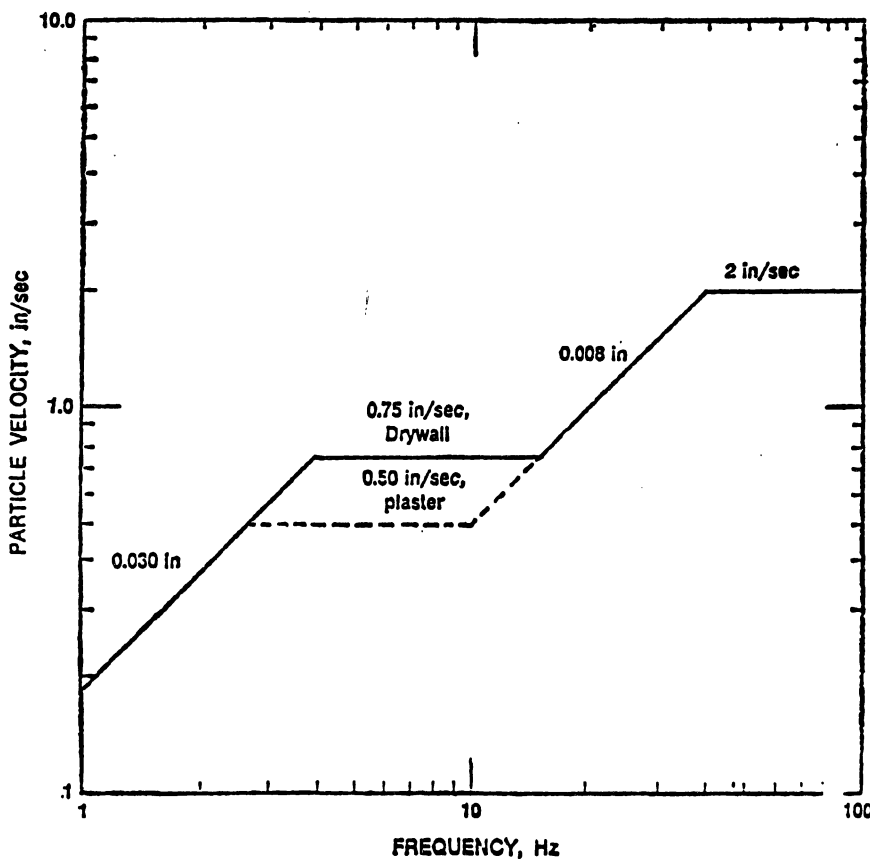
2. When starting to monitor a new blasting operation with instrumentation, the first blast design shall be close to the limits established in Table 7.26(d). From this starting point, the blast design may be increased to a point which will keep the ground vibration within the limits of Table 7.26(e).

3. If the ground vibrations are not within the blasting criteria of (f) below due to either blast design or geological conditions, the commissioner may require a modified vibration control method for the blast site.

(f) This subsection shall apply to ground vibration limits for blasting operations in the vicinity of a building that is being monitored by a seismic instrument or system of instrumentation approved by the commissioner.

1. The blasting shall be conducted so that the low frequency ground vibration does not exceed the limits of Figure 7.26(f).

Figure 7.26(d)
Safe Blasting Criteria
U.S. Bureau of Mines, Report RI 8507



(g) This subsection shall apply to ground vibration limits for blasting operations utilizing a modified scaled distance established by petition.

1. At any site where blasting is of continuing nature with the blast design unchanged and geological conditions unchanging, the commissioner may be petitioned to set a modified scaled distance equation which would be less restrictive than (d), (e) or (f) above.

2. The petition shall include:

- i. A written statement of the reasons for the request,
- ii. A map showing residences within a radius of 3,000 feet of the blast site,
- iii. A proposed method of establishing a modified scaled distance,
- iv. An outline of the test procedures including monitoring of at least three blasts with approved instrumentation,
- v. A map showing the exact placement of one instrument at the nearest building, the placement of one instrument at a distance of 2,000 feet from the blast, and the placement of a third instrument at some distance between the first two instruments,
- vi. A proposed schedule for the test runs which shall be observed by the commissioner.

3. The instrumentation data shall be interpreted by a competent person. The modified scaled distance equation shall be based on the criteria established in (f) above. The modified scaled distance equation shall be prepared by a competent person and submitted to the commissioner for approval.

4. Upon approval by the commissioner, the modified scaled distance equation may be used at the specific blast site in place of (d), (e) or (f) above provided:

- i. The conditions under which the testing was performed do not change,
- ii. The procedure established is verified every six months,
- iii. The modified scaled distance equation is not willfully disregarded.

(h) This subsection shall apply to ground vibration limits on structures.

1. The limits for ground vibration when blasting near structures shall not exceed a peak particle velocity of two inches per second.

(i) Instrumentation used in this section shall comply with (i)1, (i)2, and (i)3 below.

1. All instruments and instrumentation systems shall be approved.

2. Unless field seismic instruments have internal calibration capability, the instruments shall be calibrated according to the manufacturer's instructions at least once a year by a competent person.

3. All instruments used shall be operated by a competent person, and the recordings shall be interpreted by a competent person.

Administrative correction.

See: 29 N.J.R. 566(a).

SUBCHAPTER 8. (RESERVED)

SUBCHAPTER 9. BLASTING AGENTS

12:190-9.1 Scope of subchapter

(a) This subchapter shall apply to the storage, handling and mixing of blasting agents.

(b) Unless otherwise set forth in this chapter, blasting agents shall be stored in the same manner as other explosives.

(c) The construction and operation of motor vehicles for the bulk delivery and mixing of blasting agents in transportation off-the-highway shall comply with the applicable sections of N.J.A.C. 12:190-6.

Amended by R.1988 d.16, effective January 4, 1988.
See: 19 N.J.R. 1883(a), 20 N.J.R. 99(b).

12:190-9.2 Location of mixing facilities

(a) Buildings or other facilities used for mixing blasting agents shall be located, with respect to inhabited buildings, passenger railroads and public highways in accordance with N.J.A.C. 12:190-5.

(b) In determining the distance separating highways, railroads, and inhabited buildings from mixing facilities, the sum of all masses which may propagate from either individual or combined donor masses shall be included in the calculations. However, when ammonium nitrate must be included only 50 percent of its weight shall be used.

12:190-9.3 (Reserved)

Amended by R.1988 d.16, effective January 4, 1988.
See: 19 N.J.R. 1883(a), 20 N.J.R. 99(b).
Section was "Mixing buildings".

12:190-9.4 Equipment used in mixing

(a) Equipment used for mixing blasting agents shall conform to this section.

(b) The design of the mixer shall minimize the possibility of frictional heat, compaction, and especially confinement. All bearings and drive assemblies shall be mounted outside the mixer and be protected against accumulations of dust. All surfaces shall be accessible for cleaning.

(c) Mixing and packaging equipment shall be constructed of materials compatible with the fuel-ammonium nitrate composition.

(d) Suitable means shall be provided to prevent the flow of fuel oil to the mixer. In gravity flow systems, an automatic spring-loaded shutoff valve with fusible link shall be installed.

12:190-9.5 Compositions

(a) The provisions of this section shall be considered when determining blasting agent compositions.

(b) The sensitivity of the blasting agent shall be determined by means of a No. 8 test blasting cap at regular intervals after every change in formulation, or as may be required by the Commissioner.

(c) Oxidizers of small particle size, such as crushed ammonium nitrate prills or fines, may be more sensitive than coarser products and shall be handled with greater care.

(d) No hydrocarbon liquid fuel with flash point lower than that of No. 2 fuel oil (125 degrees F minimum or legal) shall be used.

(e) Crude oil and crankcase oil shall not be used because they may contain light ends that offer increased vapor-explosion hazards or gritty particles that tend to sensitize the resulting blasting agent.

(f) Peroxides and chlorates shall not be used.

(g) Metal powders, such as aluminum shall be kept dry and shall be stored in containers or bins which are moisture-resistant or weather-tight. Solid fuels shall be used to minimize dust explosion hazards.

(h) The provisions of (d), (e) and (f) above shall not apply to compositions made under the supervision of a qualified person engaged in research and development capable of determining the overall hazard of the resulting product in its manufacture, storage, or use.

12:190-9.6 Precautions at mixing plants

(a) Precautions at mixing plants shall include the following as provided by this section.

(b) Floors shall be constructed so as to eliminate floor drains and piping into which molten materials could flow and be confined in case of fire.

(c) The floors and equipment of the mixing and packaging room shall be cleaned regularly and thoroughly to prevent accumulation of oxidizers, fuels, or other sensitizers.

(d) The entire mixing and packaging building shall be cleaned regularly and thoroughly to prevent excessive accumulation of dust.

(e) Casual sources of ignition and firearms (except firearms carried by guards when authorized by police authorities) shall not be permitted inside of or within 50 feet of any building or facility used for the mixing of blasting agents.

(f) The land surrounding the mixing building shall be kept clear of brush, dried grass, leaves and other combustible materials for a distance of at least 25 feet.

(g) Empty ammonium nitrate bags shall be disposed of in a safe manner daily.

(h) No welding shall be permitted or open flames used in or around the mixing or storage area of the plant unless the equipment or area has been completely washed down and all oxidizing material removed.

(i) Before welding or repairs to hollow shafts, all oxidizing material shall be removed from the outside and inside of the shaft and the shaft vented with a minimum one half inch diameter opening.

(j) Explosives shall not be stored inside of or within 50 feet of any building or facility used for the mixing of blasting agents.

12:190-9.7 Pneumatic unloading from bulk mix delivery motor vehicles

(a) Pneumatic loading from bulk mix delivery motor vehicles into blast holes primed with electric blasting caps or other static-sensitive systems shall conform to this section.

(b) A positive grounding device shall be used to prevent the accumulation of static electricity.

(c) A discharge hose shall be used that has a resistance range that will prevent conducting stray currents, but that is conductive enough to bleed off static buildup.

(d) A qualified person shall evaluate all systems to determine if they will adequately dissipate static under potential field conditions.

12:190-9.8 Bulk storage bins

(a) The bin shall be a Type 4 magazine and shall be waterproof.

(b) The bin, including supports, shall be constructed of compatible materials, and adequately supported and braced to withstand the combination of all loads, including impact forces arising from product movement within the bin and accidental vehicle contact with the support legs.

(c) The bin discharge gate shall be designed to provide a closure tight enough to prevent leakage of the stored product. Provision shall also be made so that the gate can be locked.