

527 CMR: BOARD OF FIRE PREVENTION REGULATIONS

527 CMR 22.00: CANNON OR MORTAR FIRING

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22.01: Purpose and Scope

- (1) 527 CMR 22.00 governs the firing of muzzle-loading cannons during patriotic celebrations and re-enactments, including all such cannons ranging from pre-Revolutionary War vintage to present-day facsimiles.
- (2) 527 CMR 22.00 shall not apply to any cannon exhibit in which explosives are not being used.
- (3) Ammunition for any cannon shall be subject to all the applicable requirements contained in 527 CMR 13.00.

22.02: Definitions

The following terms shall have the meanings assigned to them unless the context clearly indicates otherwise:

Blank-fire. The supervised discharge of a cannon or mortar without projectile.

Cannon. Any gun designed to be fired from a carriage resting on the ground and which is loaded from the muzzle with rigid non-combustible black powder cartridge.

Competent Operator. A person at least 21 years of age who holds a current Certificate of Competency for cannon firing issued by the State Fire Marshal.

Display. The supervised discharge of cannon or mortar, whether blank-fire without projectile or live-fire with projectile.

Head of the Fire Department. As defined in M.G.L. c. 148, § 1.

Live-fire. The supervised discharge of cannon or mortar with projectile.

Marshal. The State Fire Marshal, as defined in M.G.L. c. 148, § 1.

Mortar. Any cannon whose length is less than six times its bore diameter, or any cannon fired at an elevation of 45° or more from the horizontal.

Range. An area designated for the discharge of various weapons, having a minimum unobstructed length of 100 yards, a minimum unobstructed width of 25 yards, equipped with a natural or manmade down range barrier a minimum of ten feet in height.

22.03: Permits

- (1) A permit for the supervised firing of a cannon shall be issued by the head of the fire department on permit forms furnished the fire departments by the Marshal.

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- (2) An application for permit for supervised firing shall be submitted to the head of the fire department in the municipality where the supervised firing is to take place not less than 15 days in advance of firing date, and shall state whether blank-fire or live-fire. Submission of this application is an assurance that the cannons to be fired will be inspected by the competent operator and meets all safety requirements prior to firing.
- (3) Upon receipt of application, the head of the fire department shall make an investigation of the pertinent facts set forth in application for the purpose of determining compliance with all provisions of law and of 527 CMR 22.00. Upon completion of the investigation, the head of the fire department shall transmit one copy of application to the Marshal and one copy to the applicant with his endorsement thereon in compliance with provisions of law, or his reason for withholding such endorsement.
- (4) No permit shall be issued for the supervised discharging of cannon with or without projectile unless the applicant exhibits a Certificate of Competency for Cannon Firing.
- (5) No permit granted for a specific display shall be transferable.

22.04: Certificates of Competency

- (1) The firing of any cannon, with or without projectile, shall be under the direct control of competent operator who holds a current Certificate of Competency issued by the Marshal.
- (2) Any person desiring to obtain a Certificate of Competency shall make written application to the Marshal and shall submit to such examination and test as the Marshal may prescribe. Such certificate if issued shall continue in effect for a period of five years, and may be renewed upon prior written request of the holder, provided it has not been suspended or revoked by the Marshal.
- (3) Any violation of 527 CMR 22.00 or the conditions of a permit may be cause for immediate revocation of Certificate of Competency.

22.05: Range Conditions and Other Pre-firing Requirements

- (1) No cannon shall be fired with ball, shot or projectile unless a permit for live firing has been obtained from the head of the fire department and only on ranges approved by the head of the fire department. Such ranges shall be clear and unobstructed between discharge point and target area and for a safe distance to the rear of target in event of an overshoot. The target area shall not exceed 250 yards from the point of discharge.
- (2) There shall be no permanent building, public highway, railroad, or other public way within the forward sector of a 180° arc having a radius of 100 feet from the muzzle of the cannon. A similar sector of 180° directed toward the rear 75 feet in radius shall be clear of all public ways, permanent buildings, or other obstructions.
- (3) It shall be the responsibility of the competent operator to determine that the area in which the display is to be conducted is safe and that all operations are conducted in compliance with the requirements of 527 CMR 22.00. The competent operator, head of the fire department, the Marshal, or his authorized representative may order postponement of the display for any violation of 527 CMR 22.00, or for any other reason related to public safety.
- (4) No discharging of any cannon shall be permitted during any windstorm in which the direction and velocity of the wind renders the display dangerous to the public safety and/or surrounding property.
- (5) There shall be no discharging of cannon between the hours of sunset and sunrise without prior written approval from the head of the fire department.

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- (6) The head of the fire department shall designate the location and type of fire extinguishing equipment as may be required.
- (7) No firing of any cannon may be conducted unless the crew is present in adequate numbers for the particular cannon or mortar. The competent operator shall be responsible to insure that all members of the crew have been fully trained in the safe operation of the cannon or mortar.
- (8) No member of the gun crew shall be under 18 years of age.
- (9) Smoking shall be prohibited in the discharge area.
- (10) No member of the audience shall be allowed in the forward or flank zone of the muzzle of a cannon firing a projectile within a forward sector of 180° having a radius of 150% of the estimated range of the piece.
- (11) The audience at a supervised firing of cannon shall be restrained behind lines 60 feet on the flank area back of the muzzle and 60 feet to the rear of the gun.
- (12) Unless otherwise allowed by the Marshal, no piece shall be discharged with blank ammunition unless all spectators are at a safe distance from the front of the piece and at least 60 feet to the rear or flank. Adjacent pieces shall be at a safe interval.

22.06: Magazines and Powder

- (1) All ammunition for cannon shall be transported and temporarily stored at the firing location in the finished state in a portable magazine. Such magazine shall be constructed of at least 24-gauge sheet metal lined with a minimum of $\frac{3}{4}$ inch marine plywood or other non-sparking material, and shall be of sturdy sealed construction held together with non-sparking fastenings. A suitable lock and hasp of non-sparking material shall be provided.
- (2) In the discharge area, a ready-service box constructed of wood with non-sparking fastenings and cover designed to be self-closing shall be positioned at ground level approximately 25 feet to the rear of the piece being served with the hinges toward the piece.
- (3) All magazines and ready-service boxes shall be closed prior to the loading of each cartridge of the piece being served and adjacent pieces. Ready-service boxes for each gun should contain the minimum number of cartridges required for the gun during that particular display. Magazines and ready-service boxes shall at all times be under the control of a competent member of the gun crew.
- (4) No loose or bulk powder other than priming powder in quantities not exceeding $\frac{1}{2}$ ounce shall be used in the firing of any cannon, and no loose or bulk powder shall be transported or stored in any portable magazine with cartridges.
- (5) Cartridge. Blank artillery cartridges shall be made up of Black Powder only, not to exceed 4 oz. per inch of largest bore diameter. Cartridges must have a minimum of three wraps of heavy-duty aluminum foil and be packed to a firm consistency.
Only cannon grade, 1F, or 2Fg black powder will be used. Powder grades cannot be mixed. No artillery cartridges shall be constructed at the event site. No wadding of any kind is permitted in blank firing
- (6) The amount of black powder used in each cartridge shall be such as to not present an undue hazard to persons, property, or the piece itself.
 - (a) Powder cartridges for cannons shall not exceed four ounces of powder per inch of bore diameter.
 - (b) Powder cartridges for mortars shall not exceed four ounces of powder per inch of chamber diameter.

22.07: Firing of Cannons

- (1) No torch shall be used to ignite any cartridge to be fired from a cannon.
- (2) All cannons used to fire a projectile shall be provided with an instant source of ignition such as an electrical squib or bridge wire or percussion cap or other approved instant firing device. Exception to the foregoing shall apply to the use of fuses for the firing of mortars.
- (3) No firing of any steel or iron cannon or mortar shall be conducted unless the weapon contains a seamless steel safety sleeve with breech plug, designed for such firing and have had a boroscope inspection conducted by a qualified person. Original guns and bronze guns may be used without a safety sleeve, provided that they have had a boroscope inspection conducted by a qualified person. Pits, scratches, or other defects more than 3/16 inch deep shall render the cannon unusable.
 - (a) Cannons and mortars used for live firing shall have a boroscope inspection conducted at least once every five years.
 - (b) Cannons and mortars used exclusively for blank firing shall have a boroscope inspection conducted at least once every ten years.
- (4) Projectiles shall not be so constructed as to develop any unsafe pressures; and no combustible, explosive, or pyrotechnic projectiles may be used.
- (5) Reloading shall not commence until the worming and wet sponging has been completed after firing.
- (6) The piece shall be wormed and wet sponged between shots and the vent stopped from the time the worm enters the muzzle until the rammer is removed from the bore after the cartridge is rammed in blank-firing, or the projectile is rammed in live-firing.
- (7) At no time shall any cannon be left unattended while loaded or during a misfire until the piece has been cleared.
- (8) In the event of a misfire, the competent operator shall take the following steps:
 - (a) The gunner shall give an audible warning.
 - (b) No personnel shall approach the front of the muzzle.
 - (c) A mandatory three minute cooling off period shall be observed.
 - (d) The piece shall be re-primed from a safe position and a repeated attempt made to fire the piece.
 - (e) If the attempt to re-fire the piece is unsuccessful, the piece shall be flooded with water through the vent and allowed to soak for a period of at least one hour unless the water or compressed gas can be used to flush the cartridge out of the muzzle.
 - (f) The projectile and/or cartridge shall be removed through the muzzle.
- (9) If, after a display, the competent operator has reason to believe that there are any unignited charges or remnants thereof containing explosives in the area, he shall make a thorough search of the area for such explosives. The responsibility for disposition of it shall be assumed by the competent operator.

22.08: General Provisions

Any explosion, fire, or other accident occurring in connection with the keeping, storage, manufacture, handling, transportation, supervised display or other disposition of ammunition for cannon causing loss of life or injury to any person or damage to property shall be immediately reported to the Marshal by the competent operator, giving a detailed account of same and confirmed in writing.

REGULATORY AUTHORITY

527 CMR 22.00: M.G.L. c. 22, § 14; c. 148, §§ 9 and 10.

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