

WAC 296-52-67090 Initiation systems. (1) General initiation rules.

(a) Training and supervision.

(i) The blaster in charge must provide adequate on-the-job training and supervision in the safe use of initiation systems.

(ii) All members of the blasting crew must be instructed, by the blaster in charge, in the safe use of the initiation system to be used and its system components.

(b) Manufacturer recommendations. All initiation systems and system components must be used in accordance with manufacturer recommendations and instructions.

(c) Vehicle use precautions.

(i) Explosives bulk trucks or other vehicles operated on a blast site cannot tread on:

(A) Tubing;

(B) Connectors; or

(C) Any surface delay component.

(ii) If a vehicle must pass over loaded blast holes. Precautions must be made to consolidate tubing, connectors, or any surface delay component at the collar of the hole to prevent vehicle contact.

(d) Connecting the firing line. Firing lines cannot be connected to the blast initiating device until all personnel are:

(i) Accounted for;

(ii) Removed from the blast danger area; or

(iii) In a blast shelter or other location that provides equivalent protection.

(e) Visual inspection. The blaster in charge must visually inspect the initiation system to make sure it is assembled according to the manufacturer's recommendations, before firing the shot.

(f) Explosives not used:

(i) Unused detonators or short capped fuses cannot be placed in holes that may be used for blasting.

(ii) Unused detonators must be removed from the work area and disposed of or stored in a licensed magazine.

(iii) Loose cartridges of explosives, detonators, primers, and capped fuses that are not used by the end of the work shift must be returned to and locked in their magazines.

(2) Nonelectric initiation systems.

(a) Shock tube lines. When a nonelectric shock tube initiation system is used:

(i) Spools of shock tube lines cannot be spooled from trucks or equipment.

(ii) The shock tube line must:

(A) Be free of knots and tight kinks;

(B) Be free of cuts or abrasions that could expose the core to moisture;

(C) Not be stretched;

(D) Be neat and orderly.

(iii) Tie ins must be kept neat and clean.

(iv) Unused lead line must be sealed to prevent moisture and dirt from entering the tube.

(v) Care must be taken to avoid hitting the tube with a shovel when the shock tube is being covered.

(vi) The end of the detonator must be pointed toward the front of the shot to minimize the chance of shrapnel flying to the rear of the blast where the shock tube will be lit.

(b) Surface connector blocks. Nonelectrical tubes must:

(i) Be secured properly in surface connector blocks.
(ii) Never exceed the rated capacity of tubes in surface connector blocks.

(c) **Splicing line.** A knot must be tied in the tubes to take the strain off of the splice.

(d) **Detonator cord.** If a detonator cord is used for surface tie in:

(i) All lines must be kept taut.
(ii) Connections to nonelectrical units must be at ninety degree angles.

(e) **Equipment and personnel.**

(i) Equipment cannot roll over shock tubes.
(ii) All unnecessary equipment and personnel must be removed from the blast area during loading.

(3) **Electric initiating systems.**

(a) **Survey of extraneous currents.** A survey to evaluate extraneous currents must be conducted:

(i) By the blaster in charge before adopting any system of electrical firing.

(ii) To eliminate all currents before holes are loaded.

(b) **Detonator compatibility, style, function, and manufacture.** In any single blast using electric detonators, all detonators must be:

(i) Compatible with each other.
(ii) Of the same style or function.
(iii) From the same manufacturer.

(c) **Wire capacity and gauge.**

(i) Connecting wires and lead wires must:
(A) Be insulated single solid wires with sufficient current carrying capacity.

(B) Not be less than twenty gauge (American wire gauge) solid core insulated wire.

(ii) Firing line or lead wires must:

(A) Be made of solid single wires with sufficient current carrying capacity.

(B) Not be less than fourteen gauge (American wire gauge) solid core insulated wire.

Note: Bus wires, depends on the size of the blast, fourteen gauge (American wire gauge) copper is recommended.

(d) **Lead wires.**

(i) **Shunting.** You must shunt the ends of lead wires that will be connected to a firing device by twisting them together before they are connected to leg or connecting wires.

(ii) **Control.** The blaster in charge must keep control of shunted lead wires until loading is completed and the leg wires are attached.

(iii) **Attachment.** Lead wires must be attached by the blaster in charge when it is time to fire the shot.

(e) **Detonator leg wires.** Electric detonator leg wires must:

(i) Be kept shunted (short circuited) until they are connected into the circuit for firing.

(ii) Not be separated (except for testing) until all holes are loaded and the loader is ready to connect the leg wires to the connecting or lead wires.

(f) **Circuits.**

(i) Blasting circuits or power circuits must be used in electric blasting and according to the electric detonator manufacturer's recommendations.

(ii) Care must be taken to make sure an adequate quantity of delivered current is available according to the manufacturer's recommendations, when firing a circuit of electric detonators.

(iii) A power circuit used for firing electric detonators cannot be grounded.

(iv) The firing switch must be designed so the firing lines to the detonator circuit automatically short circuit when the switch is in the "off" position.

(v) The firing switch must be locked in the "open" or "off" position at all times, except when firing from a power circuit.

(g) **Firing line insulation.** The insulation on all firing lines must be adequate and in good condition when firing electrically.

(h) **Testing.**

(i) The firing line must be checked at the terminals with an approved testing device before being connected to the blasting machine or other power sources.

(ii) The circuit, including all detonators, must be tested with an approved testing device before being connected to the firing line.

(i) **Switch keys.** The blaster in charge is the only person who is allowed to have firing switch keys in their possession.

(j) **Blasting machines.** A nonelectric system must be used if these requirements cannot be satisfied:

(i) Blasting machines must be in good condition.

(ii) The efficiency of the blasting machine must be tested periodically to make sure it delivers power at its rated capacity.

(iii) **Responsible person.**

(A) The blaster in charge must be in charge of blasting machines.

(B) The blaster in charge must connect the lead wires to the blasting machine and must fire the shot.

(iv) **Connections.**

(A) When firing with blasting machines, connections must be made according to the manufacturer of the electric detonator's recommendations.

(B) All connections must be made from the drill hole back to the source of the firing current.

(C) Lead wires must remain shunted and not connected to the blasting machine or other source of current until the charge is ready to fire.

(D) The number of electric detonators connected to a blasting machine cannot exceed the blasting machine's rated capacity.

(v) **Series circuit.** In primary blasting, a series circuit cannot contain more detonators than the manufacturer's recommended limits for electric detonators.

(vi) **Circuit testing.** A blaster in charge must use blasting testers specifically designed to test circuits to charged holes.

(vii) **Blasting near power lines.** Whenever lead or blasting wires could be thrown over live overhead powerlines, communication lines, utility services, or other services or structures by the force of an explosion, care must be taken to make sure:

(A) The total length of wires are short enough so they will not hit the lines.

(B) The wires are securely anchored to the ground.

(C) The owners or operators of the utilities in the blast area are notified.

(viii) **Disconnecting lead wires.** After firing an electric blast from a blasting machine, lead wires must be immediately disconnected from the machine and short-circuited.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 17-16-132, § 296-52-67090, filed 8/1/17, effective 9/1/17; WSR 06-19-074, § 296-52-67090, filed 9/19/06, effective 12/1/06. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 02-03-125, § 296-52-67090, filed 1/23/02, effective 3/1/02.]