Part I. General Administrative Provisions—Surface and Underground


The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Abandoned mine" means a mine in which all work has stopped on the mine premises and where an office with a responsible person in charge is no longer maintained at the mine.

"Abandoned workings" means deserted mine areas in which further work is not intended.

"Acceptable" means tested and found to be appropriate for a specific purpose by a nationally recognized agency.

"ACGIH" means the American Conference of Governmental Industrial Hygienists.

"Angle of repose" means the maximum slope or angle at which material remains stable.

"Auxiliary fan" means a fan used to deliver air to a working place off the main airstream, generally used with ventilation tubing.

"Barricaded" means physically obstructed to hinder or prevent the passage of persons or vehicles.

"Blast area" means the area of the mine in which concussion or flying material can reasonably be expected to cause injury during detonation.

"Blast site" means the 50-foot perimeter around boreholes being loaded, or 30 feet if demarcated by a barricade, and the 180° free-face area for a distance of at least four times the average depth of the boreholes being loaded.

"Bridle" means a cable or chain used to support a work platform in a raised position with more than three connection points.

"Burden" means the distance in feet between rows of boreholes or between the open face and boreholes.

"Company official" means a member of the company supervisory or technical staff.

"Competent person" means a person having abilities and experience that fully qualify him to perform the duty to which he is assigned.

"Confined space" means an enclosed area that is large enough for an employee to enter fully and perform his assigned work but is not designed for continuous occupancy by the employee and has a limited or restricted means of entry or exit. These spaces may include storage bins, hoppers, silos, tanks, vaults, and other similar areas.
“Department” means the Department of Mines, Minerals and Energy.

“Director” means the Director of the Division of Mineral Mining.

“Distribution box” means an apparatus with an enclosure through which an electric circuit is carried to one or more cables from a single incoming feedline, each cable circuit being connected through individual overcurrent protective devices.

“Division” means the Division of Mineral Mining.

“Escapeway” means a passageway by which persons may leave if the ordinary exit is obstructed.

“Face” or “bank” means that part of any mine where excavating is progressing or was last done.

“Flash point” means the minimum temperature at which sufficient vapor is released to form a flammable vapor-air mixture.

“Free-face” means the face area of a quarry bench to be blasted.

“Flyrock” means any uncontrolled material generated by the effect of a blast that was hazardous to persons, or to property not owned or controlled by the operator.

“Heavy duty mobile equipment” means any equipment used for loading, hauling, or grading and not normally intended for highway use.

“Hoist” means a power-driven windlass or drum used for raising ore, rock, or other material from a mine, and for lowering or raising persons and material.

“Lay” means the distance parallel to the axis of the rope in which a strand makes one complete turn about the axis of the rope.

“Loaded” means containing explosives, blasting agents, or detonators.

“Main fan” means a fan that controls the entire airflow of the mine or the airflow of one of the major air circuits.

“Major electrical installation” means an assemblage of stationary electrical equipment for the generation, transmission, distribution, or conversion of electrical power.

“Mine opening” means any opening or entrance from the surface into a mine.

“Mine vehicle” means any vehicle on the mine site that is utilized by the mine operator or contractors performing excavation, maintenance, or construction at the mine.

“Misfire” means the partial or complete failure of a blast to detonate as planned.

“MSHA” means the Mine Safety and Health Administration.

“Occupational injury” means any injury to a miner which occurs at a mine for which medical treatment is administered, or which results in death or loss of consciousness, inability to perform all job duties on any day after an injury, temporary assignment to other duties, or transfer to another job as specified in the 30 CFR Part 50.2.

“Overburden” means material of any nature, consolidated or unconsolidated, that overlies a
deposit of useful materials or ores that are to be mined.

"Potable" means fit for human consumption and, where required by the Code of Virginia, approved by the Virginia Department of Health.

"Powder chest" means a substantial, nonconductive portable container equipped with a lid and used at blasting sites for explosives other than blasting agents.

"Primer" means a cartridge or package of explosives which contains a detonator or detonating cord.

"Refuse" means mineral processing waste, tailings, silts, sediments, or slimes.

"Rollover protection" means a framework, safety canopy or similar protection for the operator when equipment overturns and which is acceptable for use on that particular type of equipment.

"Safety fuse" means a train of powder enclosed in cotton, jute yarn, and water-proofing compounds, which burns at a uniform rate, used for firing a cap containing the detonating compound which in turn sets off the explosive charge.

"Safety hazard" means any condition, function, or circumstance which may reasonably be expected to cause or assist an accident.

"Scaled distance (Ds)" means the actual distance (D) in feet divided by the square root of the maximum explosive weight (W) in pounds that is detonated per delay period for delay intervals of eight milliseconds or greater; or the total weight of explosive in pounds that is detonated within an interval less than eight milliseconds.

"Scaling" means removal of insecure material from a face or highwall.

"Shaft" means a vertical or inclined shaft, slope, incline, or winze.

"Stemming" means that inert material placed in a borehole after the explosive charge for the purpose of confining the explosion gases in the borehole or that inert material used to separate the explosive charges (decks) in decked holes.

"Substantial construction" means construction of such strength, material, and workmanship that the object will withstand all reasonable shock, wear, and usage to which it will be subjected.

"Suitable" means that which fits and has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

"Switch" means a device used to complete or disconnect an electrical circuit.

"Travelway" means a passage, walk or way regularly used and designated for persons to go from one place to another.

"Wet drilling" means the continuous application of water through the control hole of hollow drill steel to the bottom of the drill hole.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.
4VAC25-40-20. (Repealed.)

Historical Notes

The purpose of this chapter is to provide for the protection of persons and property on and around mineral mines. The chapter works with the Virginia Mineral Mine Safety Act (§ 45.1-161.292:1 et seq.) of the Code of Virginia (as shown in Mineral Mine Safety Laws of Virginia, 2005 edition). Refer to the Act for other definitions and requirements related to this chapter.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-30. (Repealed.)

Historical Notes

Statutory Authority

Historical Notes

Any person who is responsible for mining or blasting activities shall be certified by the department and governed by the Certification Requirements for Mineral Mining, 4VAC25-35.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 1.2 C, eff. July 19, 1989; amended, Virginia Register Volume 14,
4VAC25-40-50. Reporting of accidents and injuries by the operator.

A. Operators shall report any accident involving serious personal injury or death to any person on the mine property to the division by the quickest available means, and the scene of the accident shall not be disturbed until an investigation is conducted by the division. For accidents where the injured person is transported to a hospital, but confinement is not expected, the operator may either preserve the scene or collect relevant physical data and photographs as specified by the division. The division shall be notified immediately upon learning that the injured person has been admitted to the hospital for medical treatment. Head injuries that result in loss of consciousness at the site shall be reported immediately.

B. Operators shall report all other accidents and occupational injuries to the division within 10 days of their occurrence. Operators shall keep on file a report of all accidents and occupational injuries occurring on the mine property for review by the division mine inspector. Such records shall be kept for three years.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-60. (Repealed.)

Historical Notes

Derived from VR480-05-1.2 § 1.2 E, eff. July 19, 1989; repealed, Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

Statutory Authority

Historical Notes

4VAC25-40-70. Approval procedure.

A. When approval by the Director of the Division of Mineral Mining is required, the mine operator shall submit written proposed standards for the person, equipment, material, or practice required by the regulation to the Division of Mineral Mining office.

B. The director will review the submittal, request additional material or corrections as required and notify the mine operator in writing of his determination within 30 days.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-80. (Repealed.)

Historical Notes


Statutory Authority

Historical Notes

4VAC25-40-90. (Repealed.)

Statutory Authority

Historical Notes


Part II. General Safety Provisions—Surface and Underground

4VAC25-40-100. Employee training.

New or reassigned employees shall be trained in state and company safety regulations and be task trained prior to being assigned a task or duty. Records of training shall be kept in writing at the mine site for the duration of the miner’s employment and for 60 days after termination of employment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-110. Inexperienced employees.

Employees with less than six months of mining experience shall work with or under the direction of an experienced miner.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-115. Persons younger than 18 years of age working in a mine.
Operators shall ensure no person younger than 18 years of age works in any mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 37, Issue 4, eff. November 12, 2020.

4VAC25-40-116. Persons younger than 18 years of age working around a mine.
Operators shall comply with 29 CFR 570.60 regarding persons between 16 and 18 years of age working around any mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 37, Issue 4, eff. November 12, 2020.

4VAC25-40-120. When foreman required.
When three or more persons are working in a mine, a certified mine foreman shall be employed who shall ensure that all activities under the foreman’s supervision are conducted in a safe manner in compliance with applicable laws and regulations adopted by the department. The director may designate an approved competent person to perform the duties of a certified mine foreman except for the examination made at the beginning of each shift.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-130. Examination by foreman.
The certified mine foreman shall examine active workings at the beginning of each shift. Any hazardous or unsafe condition shall be corrected prior to personnel starting work in the affected area. If the hazardous or unsafe condition cannot be corrected immediately, the affected area shall be barricaded and posted with warning signs. A documented record of the examination shall be made and shall include the date, areas examined, time work began in the area, and time of examination. A documented record of hazards found and corrective actions taken shall also be made. The records shall be signed or certified by the certified mine foreman making the
examination. Records of the examinations made at the beginning of each shift shall be kept for one year.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-140. First aid training for foreman.

The certified mine foreman shall be trained in first aid and possess a valid first aid certificate issued by an approved agency or organization.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-145. Inspection of mobile and stationary equipment.

Mobile and stationary equipment that is to be used during a shift shall be inspected by the equipment operator. Equipment safety defects shall be reported to the certified mine foreman. Defects that affect the safety or health of persons shall be corrected before the equipment is used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-150. Assignment of persons to hazardous areas.

No person shall be assigned, allowed, or required to work alone in a hazardous area unless they can be seen or heard by another person in attendance.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 2.6, eff. July 19, 1989.
Prior arrangements shall be made for emergency medical assistance and transportation of injured personnel.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Emergency telephone numbers, including fire, rescue, and state mining officials shall be posted at appropriate telephones at the mine.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 2.8, eff. July 19, 1989.

4VAC25-40-180. Emergency communication systems.
An approved operational communication system acceptable to the director shall be provided and maintained at the mine for obtaining assistance in the event of an emergency.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-190. Compliance with regulations.
Miners shall comply with all state safety and health regulations applicable to their task or duties.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-200. Illumination requirements.
Illumination sufficient to provide safe working conditions shall be provided at all active workings, structures, and travelways.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


All active workings, structures, and travelways shall be kept clean and orderly.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Potable water with a sanitary dispensing method shall be provided at all active workings.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Suitable, sanitary toilet facilities shall be provided for employees at readily available points in and around the mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Receptacles with covers shall be provided at locations where waste food is disposed. Receptacles shall be emptied frequently and kept in a clean sanitary condition.

Employees shall not use intoxicating beverages, narcotics or other substances that will impair their ability to perform their assigned task. Employees using substances, whether prescription or over-the-counter, that may impair their ability to perform their assigned task shall notify the person in charge of the mining site prior to starting their shift.


Areas containing safety or health hazards that are not immediately obvious to personnel shall be barricaded or posted with warning signs specifying the hazard and proper safety procedures.

4VAC25-40-270. Refuse piles, water and silt retaining dams.

A. Refuse piles, water and silt retaining dams that meet the size criteria of § 45.1-225.2 of the Code of Virginia shall be designed, constructed, maintained, inspected and abandoned in accordance with §§ 45.1-225.2 through 45.1-225.5 of the Code of Virginia.

B. Water and silt retaining dams that do not meet the size criteria of § 45.1-225.1 of the Code of Virginia shall be designed, constructed and abandoned in accordance with the Minerals Other Than Coal Surface Mining Law (§ 45.1-180 et seq. of the Code of Virginia).

C. Refuse shall be placed only in locations approved by the director.
Historical Notes

No person shall engage in horseplay at mines.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-290. Restricted access.
Access to unattended mine roads or mine openings shall be restricted by use of gates, doors, or fences and warning signs shall be posted.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-300. Closure of roads or openings.
Upon abandonment of a mine, the operator shall effectively close or fence all roads, mine openings, and surface excavations where hazardous conditions exist and warning signs shall be posted. Upon temporary cessation of mining activities as provided for in § 45.1-181 of the Code of Virginia, the operator shall effectively close or barricade access roads and hazardous areas.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-310. Starting machinery.
Machinery or equipment shall not be started prior to ensuring that affected persons are in the clear. If the machinery or equipment is not visible from the starting switch, an audible warning signal shall be given.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-320. (Repealed.)

Historical Notes


Machinery and equipment shall be used only for the purpose and within the capacity for which they were intended and designed.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Machinery shall not be lubricated while in motion where a hazard exists, unless equipped with extended fittings or cups.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments. Energy sources, other than those related to electricity (which are covered under 4VAC25-40-2140 and 4VAC25-40-2150) or internal combustion (which are covered under 4VAC25-40-1685), which pose a hazard to miners, shall be tagged out and marked by a means that identifies the individuals doing the work, and locked out if practical, by each authorized person exposed to the hazard. Tags or locks shall be removed only by the persons who installed
them or by an authorized person, after ensuring that affected persons are in the clear.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Machinery and equipment shall be maintained in accordance with manufacturer’s specifications; defective equipment or machinery shall be removed from service immediately.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 2.27, eff. July 19, 1989.


Structures shall be of substantial construction and maintained in safe condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Grinding wheels shall be operated within the specifications of the manufacturer of the wheel.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 2.28, eff. July 19, 1989.


Stationary grinding machines other than special bit grinders shall be equipped with:

1. Peripheral hoods (less than 90° throat openings) capable of withstanding the force of a bursting wheel;

2. Adjustable tool rests set no further than 1/8 inch from the wheel; and

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-385. Mobile crane requirements for personnel hoisting.

A. The rated capacity of the crane at the radius at which the lift will be made shall be divided by four and this limit shall not be exceeded.

B. A full-cycle operational test lift shall be made prior to lifting of employees. The platform shall carry twice the intended load during the test lift.

C. All lifts shall be made in accordance with the manufacturer’s lifting recommendations.

D. The stability of the footing shall be verified during the full-cycle operational test.

E. The load line on which the platform is suspended will have controlled load lowering. The free-fall option shall not be used with suspended work platforms.

F. The operating mechanism of the clutch of every man-hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake, to prevent accidental withdrawal of the clutch.

G. Any boom crane used to hoist personnel shall be equipped with a brake or brakes which shall be capable of holding the work platform at any point.

H. Lifting bridles on working platforms suspended from cranes shall consist of four legs so attached that the stability of the platform is ensured. The lifting bridle on working platforms suspended from cranes shall be secured by a shackle or attached by a closed hook which cannot open due to load position in the hook.

I. Platform requirements.

1. The platform and its components must be capable of supporting, without failure, at least four times the maximum intended load.

2. The platform shall be enclosed with a guardrail system including a top guardrail of approximately 42 inches, a midrail, and a toe-board capable of keeping personnel and materials secured.

   a. The number of employees to be hoisted shall be kept to a minimum and in no case shall the number exceed four.

   b. Employees using the platform shall be considered to weigh 250 pounds each.

   c. The platform shall not be used during high winds and electrical storms or other adverse
weather conditions which could endanger employees on the platform.

d. A safety cable shall be attached from the hook to the work platform which would be capable of supporting the suspended load in an upright position in the event of a failure of the main lifting bridle.

e. Personnel shall not ride on the work platform with supplies, materials, or tools other than small hand tools.

f. A standard code of hoisting signals shall be used; one person shall be designated to give hoisting signals.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-388. Rope requirements.

A. Unless damage or deterioration is removed by cut-off, wire ropes shall be removed from service when any of the following conditions exist:

1. The number of broken wires exceeds either:
   a. Five percent of the total number of wires; or
   b. Fifteen percent of the total number of wires within any strand;

2. On a regular lay rope, more than one broken wire in the valley between strands in one rope lay length;

3. A loss of more than one-third of the original diameter of the outer wire;

4. Rope deterioration from corrosion;

5. Distortion of the rope structure;

6. Heat damage from any source; or

7. Diameter reduction due to wear that exceeds 6.0% of the baseline diameter measurement;

B. Load end attachments.

1. Wire rope shall be attached to the load by a method that develops at least 80% of the nominal strength of the rope;

2. Except for terminations where use of other materials is a design feature, zinc (spelter) shall be used for socketing wire ropes. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer; and

3. Load end attachment methods using splices are prohibited.
C. Drum end attachment. For drum end attachment, wire rope shall be replaced when there is:
   1. More than one broken wire at an attachment;
   2. Improper installation of an attachment;
   3. Slippage at an attachment; or
   4. Evidence of deterioration from corrosion at an attachment.

D. Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

E. Safety devices attached to hoist ropes shall be selected, installed, and maintained according to manufacturers’ specifications to minimize internal corrosion, weakening and breaking of the hoist rope.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

Part III. Ground Control—Surface and Underground

4VAC25-40-390. Stability requirements.

The operator shall use a mining method which will ensure ground, wall, bench and bank stability, including benching and sloping at the angle of repose as necessary.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-400. Open pit mine rims.

Rims of open pits shall be stripped back of loose, unconsolidated material and trees for at least 10 feet, and unconsolidated material beyond 10 feet shall be sloped to the angle of repose. Areas that were developed prior to the effective date of this chapter may be barricaded and posted with warning signs in lieu of meeting this requirement.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 3.2, eff. July 19, 1989; amended, Virginia Register Volume 14, Issue

Benches shall be wide enough to allow safe operation and passage of equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-420. Scaling of hazardous areas.

Safe means for scaling walls, benches, banks and roofs shall be provided; hazardous areas shall be scaled before other work is performed in the area.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 3.4, eff. July 19, 1989.

4VAC25-40-430. Hazardous conditions.

No person shall work under or near hazardous walls, benches, bank or roofs. Hazardous conditions shall be corrected promptly, or the area shall be barricaded and posted with warning signs.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 3.5, eff. July 19, 1989.


When mechanical measures, such as rock bolts, must be used to stabilize ground movement, they shall be installed in accordance with a plan approved by the director.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 3.6, eff. July 19, 1989; amended, Virginia Register Volume 14, Issue 17, eff. July 1, 1998.
4VAC25-40-450. Correction of unsafe conditions.
The certified mine foreman designated by the mine operator shall examine active workings for unsafe conditions at least at the beginning of the shift and after blasting. Any unsafe condition found shall be corrected prior to employees starting or resuming work in the area.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-460. Examination for unsafe conditions.
All personnel shall examine their active workings for unsafe conditions prior to starting work and frequently thereafter. Any unsafe condition found shall be corrected or reported to the designated certified mine foreman, or when a certified foreman is not required, a competent person.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

No person shall work between equipment and walls, benches, or banks if the equipment may hinder their escape from falling or sliding material.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 3.9, eff. July 19, 1989.

Stockpile and muckpile faces shall be trimmed to prevent hazards to personnel.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

No person shall smoke or use an open flame within 25 feet of locations used to store or handle flammable or combustible liquids.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-500. Warning and evacuation procedures.

Operators shall establish acceptable procedures for fire warning, emergency evacuation, and firefighting.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Areas surrounding flammable and combustible liquid storage tanks shall be kept free of combustible materials for at least 25 feet in all directions and posted with readily visible fire hazard warning signs.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-520. Storage of flammable materials.

Flammable and combustible materials shall be stored in acceptable containers approved by the National Fire Protection Association or other approved rating agency.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-530. Distance of storage tanks from mine opening.

Flammable and combustible liquid or gas storage tanks shall not be located within 100 feet of any underground mine opening.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-540. Storage buildings or areas.

Buildings or areas used for storage of flammable or combustible materials shall be:

1. Of fire resistant construction;
2. Well-ventilated;
3. Kept clean and orderly;
4. Posted with fire hazard warning signs; and
5. Provided with means to confine or contain accidental spills.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Fuel lines shall be equipped with shut-off valves at the source. Such valves shall be readily accessible and maintained in operating condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Solvents and combustibles shall not be used near an open flame, heat source or other ignition source.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 4.8, eff. July 19, 1989.


Waste materials which could create a fire hazard shall not be allowed to accumulate; such materials shall be disposed of in a safe manner.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 4.9, eff. July 19, 1989.

4VAC25-40-580. Use of flammable liquids for cleaning.

Flammable liquids shall not be used for cleaning.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-590. Battery charging areas.

Battery charging areas shall be well-ventilated and posted with warning signs prohibiting smoking or open flames within 25 feet.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-600. Refueling engines.

Internal combustion engines, except diesels, shall be shut off prior to refueling.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-610. Fire equipment.

Equipment and devices used for detection, warning, and extinguishing of fires shall be:

1. Suitable for the type of fire hazard that may be encountered;
2. Maintained in fire-ready condition as specified by manufacturer;
3. Strategically located, readily accessible, and plainly identified;
4. Of the type, size, and quantity that can extinguish fires of any class that may occur at the mine; and
5. Inspected at least monthly to ensure fire-ready condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


When welding or cutting, precautions shall be taken to ensure that sparks or other hot materials do not result in a fire.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-630. Training and practice drills.

All employees assigned to firefighting responsibilities by the operator shall be trained in firefighting, and practice drills shall be conducted at least every six months.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Prior arrangements shall be made for obtaining assistance in firefighting.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Conveyor belts in locations where belt slippage may result in a fire shall be equipped with automatic detection and stoppage devices when the conveyor belt is unattended.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-660. Removing flammable and combustible gases from containers.
Prior to applying heat, cutting, or welding on any pipe or container that has contained a flammable or combustible material:

1. The pipe or container shall be drained, thoroughly cleaned and ventilated; and
2. The pipe or container shall be filled with an inert gas or material.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

A. Whenever a fire or its effects could impede escape from self-propelled equipment, a fire extinguisher shall be on the equipment.

B. Whenever a fire or its effects would not impede escape from the equipment but could affect the escape of other persons in the area, a fire extinguisher shall be on the equipment or within
100 feet of the equipment.

C. All fire extinguishers required by this chapter shall meet the current standards established by the National Fire Prevention Association.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-680. Exits or escapeways.

At least two exits or escapeways shall be provided in surface buildings and structures where personnel work or congregate.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Buildings and other structures within 100 feet of underground mine openings shall be fire resistant.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Areas surrounding main fan installations and other mine openings shall be kept free from grass, weeds, underbrush and other combustible materials for a safe distance in all directions.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-710. Dust or gases.
Dust or gases which may be explosive or combustible shall be tested and controlled in an acceptable manner.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Part V. Air Quality and Physical Agents—Surface and Underground

4VAC25-40-720. Employee exposure limits to airborne contaminants.

With respect to airborne contaminants, the following shall apply:

1. Employees shall be withdrawn from areas where airborne contaminants given a "C" designation in Threshold Limit Values and Biological Exposure Indices are present in concentrations that exceed specified TLVs.

2. Control of employee exposure to harmful airborne contaminants shall be by feasible engineering control methods. If such control measures are not available, an approved program of controlling employee exposure to airborne contaminants shall be implemented by the operator. Miners exposed for short periods to gas, dust, fumes and mist-inhalation hazards shall wear acceptable respiratory equipment appropriate for the hazard. When the exposure is for prolonged periods, other measures to protect workers or to reduce the hazard shall be taken.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-730. (Repealed.)

Historical Notes


Statutory Authority

Historical Notes


Sources of dust shall be wetted down unless controlled by dry collection measures.
Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-750. (Repealed.)

Historical Notes


Statutory Authority

Historical Notes

4VAC25-40-760. Silica compounds.

Silica sand or other materials containing more than 1.0% free silica shall not be used in abrasive cleaning equipment unless exposed persons are provided with self-contained respiratory equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 5.5, eff. July 19, 1989.


Except for surface mines which are inspected by MSHA, employee exposure to noise shall not exceed the federal limit adopted for mineral mines. If exposure exceeds the federal limit, the director may require the mine operator to employ feasible engineering and administrative control measures. Operators shall provide hearing protection upon request.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Part VI. Explosives—Surface and Underground

4VAC25-40-780. Storage of explosive materials.

A. Detonators and explosives, other than blasting agents, shall be stored in magazines accepted
by the Institute of Makers of Explosives or other approved agency.

B. Detonators shall not be stored in the same magazine with explosives.

C. Explosives magazines shall be:
   1. Located in accordance with the American Table of Distances;
   2. Detached structures located away from power lines, fuel storage areas, and other possible sources of fire;
   3. Of substantial construction and constructed of noncombustible material or covered with fire-resistant material;
   4. Reasonably bullet resistant;
   5. Electrically bonded and grounded if constructed of metal;
   6. Made of nonsparking material on the inside, including floors;
   7. Provided with adequate and effectively screened ventilation openings near the floor and ceiling;
   8. Kept locked securely when unattended;
   9. Posted with suitable danger signs so located that a bullet passing through the sign will not strike the magazine;
   10. Used exclusively for storage of explosives or detonators and blasting-related materials;
   11. Kept clean and dry in the interior and in good repair;
   12. Unheated, unless heated in a manner that does not create a fire or explosion hazard. Electrical heating devices shall not be used inside a magazine; and
   13. Located at least 300 feet away from any underground mine opening, occupied building, public road, or private road not used in connection with the mine.

D. An accurate inventory log of explosives stored in the magazine shall be maintained on site.

E. Any theft or unaccounted loss of explosives shall be reported immediately by telephone to local police, state police, the U.S. Department of Justice, The Bureau of Alcohol, Tobacco, Firearms and Explosives and the Division of Mineral Mining.

F. Smoking or open flames shall be prohibited within 50 feet of explosives magazines or blasting agents storage facilities.

G. Areas surrounding magazines and facilities for the storage of blasting agents shall be kept clear of combustible materials, except live trees over 10 feet tall, for a distance of 50 feet in all directions.

H. Prior to repairs of a magazine which may cause a fire or explosion, the contents shall be removed to a safe location and guarded.
I. Explosives stored in magazines shall be:

   1. Arranged so that the oldest stock is used first;
   2. Separated by brand and type;
   3. Stored with their top sides up; and
   4. Stacked in a stable manner not over eight feet high.

J. When stored with other explosives, ammonium nitrate fuel oil blasting agents shall be physically separated to prevent contamination.

K. Damaged or deteriorated explosives and blasting agents shall be destroyed in a safe manner by a certified blaster.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-790. Transportation.

A. Vehicles used to transport explosives shall be:

   1. In good mechanical condition;
   2. Posted with warning signs;
   3. Provided with suitable fire extinguishers;
   4. Provided with a nonsparking cargo area equipped with sides and tailgate;
   5. Kept free of extraneous materials in the cargo area;
   6. Operated at safe speeds over routes that expose the minimum number of personnel; and
   7. Operated with the minimum number of persons required to safely transport the explosives.

B. Explosives and detonators shall be transported in separate vehicles unless they are separated by four inches of hardwood or the equivalent.

C. When explosives or detonators are transported by an electrically-powered vehicle, the cargo area shall be electrically insulated and covered.

D. Vehicles containing explosives shall not be left unattended or taken into a shop or building for any reason.

E. No person shall smoke while transporting explosives.

F. Explosives, detonators, or blasting agents shall not be transported on mantrips.
G. Explosives and detonators shall be transported in substantial, nonconductive, closed containers. Containers shall not be stacked higher than the sides or tailgate of the vehicle.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-800. Use of explosives.

A. A certified blaster shall be in direct charge of blasting activities.

B. Persons who assist in blasting activities shall be under the direct supervision of the certified blaster in charge and shall be alerted to the hazards involved.

C. Black powder or safety fuse shall not be used without approval from the director. Special approvals shall specify use restrictions and procedures necessary for safe storage, transportation, and use.

D. The design and loading of a blast shall provide sufficient burden, spacing, and stemming to prevent flyrock or other dangerous effects. Flyrock incidents shall be reported to the division immediately and details noted in the blast record.

E. Boreholes shall not be drilled where there is a danger of intersecting a loaded or misfired hole.

F. No person shall smoke or use an open flame within 50 feet of explosives or detonators.

G. Prior to bringing explosives and detonators to the blast site, the certified blaster in charge shall:

1. Monitor weather conditions to ensure safe loading and firing;
2. Inspect the blast site for hazards;
3. Inspect and clear the boreholes of obstructions; and
4. Remove personnel and equipment, except those used in loading the shot, from the blast site.

H. The certified blaster in charge shall review the drill logs to determine specific downhole conditions prior to loading the shot.

I. Boreholes to be blasted shall be loaded as near to the blasting time as practical. Loaded shots shall be blasted as soon as possible upon completion of loading and connection to the initiation device. Surface blasting shall be conducted during daylight hours only.

J. Explosives shall be kept a safe distance from detonators until they are made into a primer.

K. Primers shall not be made up or assembled in advance of the borehole being loaded.

L. Only wooden or other nonsparking implements shall be used to punch holes in an explosive
M. Detonators shall be inserted completely and securely into explosive cartridges used as primers. Priming shall be sufficient to detonate the explosive column in the borehole.

N. Primers shall be inserted into the borehole slowly to prevent accidental detonation from impact, and tamping shall not be done directly on the primer.

O. Tamping poles shall be constructed of wood or nonsparking materials.

P. Unused explosives, detonators, and blasting agents shall be returned to the magazine or storage facility upon completion of loading activities and prior to firing the blast.

Q. Equipment and machinery used to load or stem boreholes shall not be operated over loaded boreholes for any reason. Areas containing loaded boreholes shall be guarded or barricaded and posted to prevent unauthorized entry.

R. Blast warning signals shall be established and posted at the mine. Audible warning signals shall be given prior to firing a blast and shall be loud enough to be heard within the entire blast area.

S. All personnel shall be removed from the blast area prior to connection to the initiation device and the firing of a blast.

T. Blasting personnel shall fire shots from a safe location.

U. A post-blast examination of the blast area shall be made by the certified blaster in charge. Other personnel shall not return to the blasting area until an all clear signal is received from the certified blaster in charge.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-810. Recordkeeping.

A detailed record of each surface blast shall be prepared immediately by the certified blaster. Records shall be maintained at the mine site for three years and subject to inspection by the division mine inspectors. Records shall contain the following information:

1. Name of company or contractor;
2. Location, date, and time of blast;
3. Name, signature, and certification number of the certified blaster in charge;
4. Type of material blasted;
5. Number of holes, and burden and spacing for each hole;
6. Drill logs of boreholes as required by 4VAC25-40-1095;
7. Types of explosives used;
8. Total amount of explosives used;
9. Maximum amount of explosives per delay period of eight milliseconds or greater;
10. Method of firing and type of circuit;
11. Direction and distance in feet to nearest dwelling house, public building, school, church, commercial or institutional building neither owned nor leased by the person conducting the blasting;
12. Weather conditions (including such factors as wind directions, etc.);
13. Height or length of stemming for each hole;
14. Whether mats or other protections were used;
15. Type of detonators used and timing of detonation for each detonator used;
16. The person taking the seismograph reading shall accurately indicate exact location of seismograph, if used, and shall also show the distance of seismograph from blast;
17. Seismograph records, including:
   a. Name and signature of the person operating the seismograph;
   b. Name of the person analyzing the seismograph record; and
   c. Seismograph readings;
18. When a permanently installed seismograph is used to prove compliance, the record shall indicate the:
   a. Name of the person and company that installed the seismograph; and
   b. Name, signature, and company affiliation of the person validating the authenticity of the seismic data collected and transmitted by the permanent unit.

The information should be attached to the blast record as soon as it is available, but in no instance later than five working days after the shot; and
19. All anomalies or abnormalities occurring during the execution of the blast and actions taken to correct or address them.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-820. Procedure where a misfire occurs during a blast.
A. No person shall enter the blasting area for at least 15 minutes except in the case of safety fuse where special approvals apply.
B. Misfires shall be disposed of in a safe manner by the certified blaster.
C. The blast area shall be guarded or barricaded and posted with warning signs until the misfire has been cleared.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-830. When traffic to be stopped.
Prior to blasting near a mine haul road or public highway, traffic shall be stopped at a safe distance.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Mudcapping in blasting operations shall be permitted only where the driller would be in a hazardous position in attempting to drill the rock or material to be blasted.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

When conducting surface blasting activities near an underground mine, advance notice of blasting shall be given to the underground mine operator by the certified blaster.
4VAC25-40-860. Blasting near pipelines or electrical lines.
When conducting surface blasting activities within 300 feet of private pipelines or electrical transmission lines, advance notice of blasting shall be given to the owners of the pipeline or transmission lines by the certified blaster.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 6.8, eff. July 19, 1989.

4VAC25-40-870. Streams and watercourses.
Surface blasting shall be prohibited if effects are liable to change the course or channel of any stream without a variance issued by the director.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-880. Ground vibration from blasting.
A. Ground vibration, measured as peak particle velocity resulting from blasting, shall not exceed the limits set forth in Figure 1 at any inhabited building not owned or leased by the operator, without approval of the director. A seismographic record shall be provided for each blast.
B. Seismic monitoring of each blast shall be conducted, unless the blast contains no more than 500 pounds of explosives and the scaled distance, $D_s$, is 90 feet or more, as calculated with the following scaled distance formulas:

$$W = \left( \frac{D}{D_s} \right)^2$$

$$D_s = \frac{D}{\sqrt{W}}$$

Where:

$W =$ Maximum charge weight of explosives in pounds per delay period of 8.0 milliseconds or more.

$D =$ Distance in feet from the blast site to the nearest inhabited building not owned or leased by the mine operator.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


Air overpressure resulting from surface blasting shall not exceed 133 decibels, as measured with a 2Hz or lower flat response microphone, at any inhabited building not owned or leased by the operator.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Each operator shall maintain a plan to control the effects of blasting on areas adjacent to the operation. In the event of a blasting complaint, accident, or flyrock incident, the plan will be subject to review and approval of the division.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-895. Lower vibration and airblast levels.

If necessary to prevent damage, the director may specify lower allowable ground vibration and airblast levels than those provided by 4VAC25-40-880 and 4VAC25-40-890.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-900. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-910. Seismic testing and evaluation.

Seismic testing and evaluation to determine compliance with blasting regulations shall:

1. Utilize acceptable instrumentation that measures ground vibration, air overpressure, and vibration frequency;

2. Be conducted and analyzed by a qualified person; and

3. Be conducted whenever directed by the division.

A. When electric detonators are used, an acceptable blaster's galvanometer or blaster's multimeter shall be used to test detonators, firing lines, series circuits, and total circuit resistance prior to firing.

B. Electric detonators of different brands shall not be used in the same blast.

C. Except when being tested with an acceptable instrument:
   1. Electric detonators shall be kept shunted until they are connected into the series circuit;
   2. Series circuits shall be kept shunted until they are connected onto the firing line; and
   3. Firing lines shall be kept shunted until immediately before blasting.

D. Blasting machines or other acceptable power sources shall be suitable for the number of electric detonators to be fired and for the type of circuits to be used.

E. When electric detonators are used, sources of stray current to the blasting area shall be de-energized. Blasting activities shall be stopped immediately if stray current or static electricity in amounts sufficient to cause a premature detonation are encountered.


Electronic detonation systems shall be approved by the director as providing performance equivalent to that required in 4VAC25-40-920, and shall be used in accordance with the manufacturer's instructions.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


A. When detonating cord manufactured with more than three grains per foot is used within 800 feet of inhabited buildings, not owned or leased by the operator, trunk lines shall be covered with at least six inches of loose earth or other acceptable material.

B. All detonating cord knots shall be tight and all connections kept at right angles to the trunk lines.

C. Detonators and delay connectors shall not be attached to exposed detonating cord by the certified blaster until the blast area is cleared.

D. Detonating cord blasting shall use a double trunk line or loop system to ensure complete detonation.

E. Detonating cord trunk lines, in multiple row blasts, shall make one or more complete loops, with crossties between loops at intervals not more than 200 feet.

F. When using a gas-charged initiation system, the certified blaster shall ensure that all components are fully charged prior to firing the blast. The blast area shall be cleared of personnel prior to charging the components.

G. Shock tube and other nonelectric detonation systems shall be used in accordance with manufacturers' recommendations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


In the event of a blasting complaint, accident, or flyrock investigation, all available data on the blast, including videos, shall be made available to the division.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-940. (Repealed.)

Historical Notes

4VAC25-40-950. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-960. (Repealed.)

Historical Notes


4VAC25-40-970. (Repealed.)

Historical Notes


Part VII. Drilling--Surface and Underground

4VAC25-40-980. Drilling of boreholes.

Boreholes shall not be drilled where there is a chance of intersecting a loaded or misfired hole.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-990. Drills to be attended.

While in operation, drills shall be attended at all times.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-1000. Storage of steel and tools.
Receptacles or racks shall be provided for drill steel and tools stored on drills.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1010. Moving vehicle-mounted drills.
When moving a track-mounted or truck-mounted drill from one drilling location to another:
   1. The mast shall be lowered to a safe position;
   2. Tools and other equipment shall be secured in a safe location; and
   3. The drill helper, when used, shall remain in sight of the drill operator.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

In the event of a power failure, drill controls shall be placed in the neutral position until power is restored.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1030. Hands to be kept clear.
Drillers shall not hold or rest their hands on any rotating part of a drill.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-1040. (Repealed.)

Statutory Authority

Historical Notes


Boreholes large enough to create a hazard shall be covered or guarded.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Prior to moving handheld pneumatic drills from one working area to another, the air shall be turned off and bled from the hose.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1070. Handling of boulders.

Prior to drilling large boulders, drills shall be moved to a safe location and positioned securely in place.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1080. Walls or benches.
When drilling next to a wall or bench, drillers shall:

1. Remove any loose, unconsolidated material from the bench or wall above the work area;
2. Position the drill in such a manner that the controls are on the side of the drill away from the bench or wall; and
3. Never work between the drill and the bench or wall if their escape from the work area may be hindered by falling material.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1090. Rotary jet piercing equipment.

Prior to using rotary jet piercing equipment, the operator shall obtain approval from the director who shall specify safety procedures to be used in operating this equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


For each borehole intended for blasting, the driller shall produce a drill log as each hole is being drilled. The drill log shall include, at minimum, the name of the driller, borehole diameter, borehole depth, depth of broken material at the collar, and other geological conditions (for example, cracks, seams, voids, mud, or any other anomalies that could affect the blast) encountered during drilling. A signed copy of the drill log shall be provided to the mine operator and a copy shall be included in the record of the blast.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Part VIII. Compressed Air, Gases, and Boilers—Surface and Underground

4VAC25-40-1100. Boilers and pressure vessels.

Boilers and pressure vessels shall be constructed, installed, and maintained in accordance with
the Boiler and Pressure Vessel Regulations (16VAC25-50-10 et seq.). Operators shall, upon request, provide proof that the boiler or pressure vessel meets the Boiler and Pressure Vessel Regulations. Boilers and pressure vessels shall be inspected by an inspector certified by the Virginia Department of Labor and Industry at the time periods specified in the Boiler and Pressure Vessel Regulations. Records of such inspections shall be kept.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1110. Air compressors.

Air compressors shall be equipped with automatic temperature activated shutoff mechanisms set for 400°F or with fusible plugs installed in the compressor discharge lines as near the compressors as possible. Fusible plugs shall melt at temperatures 50° less than the flash points of the lubricating oils.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Compressors and compressed-air receivers shall be equipped with automatic pressure-release valves, pressure gauges, and drain valves.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1130. Compressor-air intakes.

Compressor-air intakes shall be installed to ensure that only clean, uncontaminated air enters the compressors.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-1140. Draining compressed-air receivers.
Compressed-air receivers shall be drained of moisture, oil, or carbon buildup in accordance with manufacturers' recommendations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-1150. Inspection openings in compressed-air receivers.
Compressed-air receivers shall have inspection openings which, when the tanks are over 36 inches in diameter, shall be manholes.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Compressors shall be operated and lubricated in accordance with the manufacturers' recommendations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 8.6, eff. July 19, 1989.

Compressor discharge pipes shall be cleaned periodically.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 8.8, eff. July 19, 1989.
4VAC25-40-1180. (Repealed.)

Statutory Authority

Historical Notes


Repairs involving the pressure system of compressors, receivers, or compressed-air-powered equipment, shall not be attempted until the pressure has been bled off.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1200. Improper uses.

At no time shall compressed air be directed towards a person unless a diffuser limiting pressure to no more than 30 pounds per square inch is used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Safety chains or suitable safety devices shall be used at connections to machines of high pressure hose lines of 3/4 inch inside diameter or larger, and between high pressure hose lines of 3/4 inch inside diameter or larger, where a connection failure would create a hazard.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Oxygen cylinders shall not be stored near oil or grease.
Gauges and regulators used with oxygen or acetylene cylinders shall be kept clean and free of oil and grease.

4VAC25-40-1240. Tank valves to be kept closed.
Valves on oxygen and acetylene tanks shall be kept closed when the contents are not being used.

Compressed gas or liquid gas cylinders shall be safely secured in an upright position.

4VAC25-40-1260. Valves and gauges to be protected.
Valves and gauges on compressed gas cylinders shall be protected by covers when being transported and stored, or if a hazard from falling material exists when used.
4VAC25-40-1270. Use of gauges, regulators and valves.
Pressure gauges, regulators, and reverse flow check valves shall be used on all compressed air and gas cylinders and shall be maintained in safe working condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1280. Boiler equipment and maintenance.

Boilers shall be equipped and maintained as follows:

1. Boilers shall be equipped with guarded, well-maintained water gauges and pressure gauges placed so that they can be observed easily. Water gauges and pipe passages to the gauges shall be kept clean and free of scale and rust;

2. Boilers shall be equipped with automatic pressure-relief valves; valves shall be opened manually at least once a week to determine that they will function properly;

3. Boiler installations shall be provided with acceptable safety devices to protect against hazards of flame outs, fuel interruptions, and low water level; and

4. Blowoff valves shall be piped outside the building and shall have outlets so located or protected that persons passing by, near, or under them will not be scalded.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.


Welding operations shall be shielded and well-ventilated.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Part IX. Mobile Equipment—Surface and Underground

4VAC25-40-1320. Brakes on mobile equipment.

Powered mobile equipment shall be provided with adequate service brakes capable of stopping and holding the equipment with its typical load on the maximum grade it travels.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.


Mobile equipment shall be equipped with emergency brakes separate and independent of the regular braking system when generally available for a particular class of equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1340. Requirements for starting or moving equipment.

Equipment operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Cabs shall be maintained to provide visibility for safe operation.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Cab windows shall be of safety glass or equivalent, in good condition, and shall be kept clean.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1370. Safety equipment.
Heavy duty mobile equipment manufactured after June 30, 1969, shall be equipped with acceptable roll-over protection structures and seat belts. Equipment operators shall use the seat belts provided.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Cabs of mobile equipment shall be kept free of extraneous materials.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1390. Operating speeds.
Equipment operating speeds shall be consistent with conditions of roadways, grades, clearance, visibility, traffic, and the type of equipment used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1400. Dust control measures.

Dust control measures shall be taken where dust significantly reduces visibility of equipment operators.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1410. Restraining berms or guards.

Berms or guards capable of restraining the largest vehicle used in the area shall be provided on the outer bank of elevated roadways.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1420. Operation under power control.

Mobile equipment shall be operated under power control at all times.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mobile equipment operators shall have full control of the equipment while it is in motion.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-1440. Suspending loads over cabs.

Dippers, buckets, loading booms, or heavy suspended loads shall not be swung over the cabs of haulage vehicles until the drivers are out of the cabs and in safe locations unless the trucks are designed specifically to protect the drivers from falling material.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Persons shall not get on or off moving equipment, except that trainmen may get on or off slowly moving trains.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Persons shall not be transported:

1. In or on dippers, forks, clamshells, or the bed of trucks, unless special provisions are made for their safety;

2. In or on buckets except shaft buckets;

3. On top of loaded haulage equipment;

4. Outside the cabs and beds of mobile equipment, except trains;

5. Between cars of trains; or

6. In conveyances equipped with unloading devices unless means are provided to prevent accidental starting of the unloading mechanism.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
When traveling between work areas, the equipment shall be secured in the travel position.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Dippers, buckets, scraper blades, and similar movable parts shall be secured or lowered to the ground when not in use.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-1490. (Repealed.)

Historical Notes

Statutory Authority
Historical Notes

Electrically-powered mobile equipment shall not be left unattended unless the master switch is in the off position, all operating controls are in the neutral position, and the brakes are set or other equivalent precautions are taken against rolling.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-1510. Setting brakes.
Mobile equipment shall not be left unattended unless the brakes are set. Mobile equipment with
wheels or tracks, when parked on a grade, shall be either blocked or turned into a bank or rib
unless the bucket or blade lowered to the ground prevents movement.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

When in the dark or under conditions of limited visibility, all vehicles carrying loads which
project beyond the sides or more than four feet beyond the rear of the vehicles shall display a
warning light at the end of the projection. In the light, a warning flag not less than 12 inches
square shall be displayed at the end of the projection.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Water, debris, or spilled material which creates hazards to moving equipment shall be removed.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Traffic rules, including speed, signals, and warning signs, shall be posted at each mine.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 9.25, eff. July 19, 1989; amended, Virginia Register Volume 14,
Issue 17, eff. July 1, 1998.

Heavy duty mobile equipment with cabs being operated in extreme weather conditions shall use
control measures to limit exposure of the equipment operator to extreme heat and cold.
4VAC25-40-1560. Getting on or off equipment.
When an operator is present, persons shall notify him before getting on or off heavy duty mobile equipment.

Heavy duty mobile equipment shall be provided with audible warning devices.

A. An automatic backup alarm that is audible above surrounding noise levels shall be provided on heavy duty mobile equipment and mine vehicles with an obstructed view to the rear.

B. An automatic reverse-activated strobe light may be used at night in lieu of an audible reverse alarm.

Railroad equipment shall be installed or maintained by the operator as follows:
1. Public and permanent railroad crossing shall be posted with warning signs or signals or shall be guarded when trains are passing and shall be planked or otherwise filled between the rails;

2. Operators shall sound a warning before starting trains and when trains approach crossing, other trains on adjacent tracks, persons, and any place where vision is obscured;

3. Persons shall not go over, under, or between cars unless the train is stopped and the motorman has been notified and the notice acknowledged;

4. Only authorized persons shall be permitted to ride on trains or locomotives and they shall ride in a safe position;

5. Movement of two or more pieces of rail equipment operating independently on the same track shall be regulated by an efficient signal block, telephone, or radio system; movements on complex haulage systems shall be adequately controlled if not under the supervision of a dispatcher;

6. Positive-acting stop blocks, derail devices, track skates, or other adequate means shall be installed wherever necessary to protect persons from runaway or moving railroad equipment;

7. Whenever a locomotive on one track is used to move equipment on a different track, a suitable chain, cable, or drawbar shall be used;

8. Persons in charge of trains shall ensure that tracks are clear and personnel are in safe locations prior to moving trains;

9. Cars shall not be coupled or uncoupled manually from the inside of curves unless the railroad and cars are so designed to eliminate any hazard from manual coupling;

10. Rocker-bottom or bottom-dump rail cars shall be equipped with locking devices;

11. Roadbeds, rails, joints, switches, frogs, and other elements on railroads shall be designed, installed, and maintained in a safe manner consistent with the speed and type of haulage;

12. Switch throws shall be installed so as to provide adequate clearance for switchmen;

13. Track guardrails, lead rails, and frogs shall be protected or blocked so as to prevent a person’s foot from becoming wedged;

14. Railcars shall not be left on side tracks unless ample clearance is provided for traffic on adjacent tracks;

15. Parked railcars, unless held effectively by brakes, shall be blocked securely;

16. Railroad cars with braking systems shall be equipped with effective brake shoes when in use;

17. Where necessary, bumper blocks, or the equivalent, shall be provided at all track dead ends; and

18. At least 30 inches continuous clearance from the farthest projection of moving railroad equipment shall be provided on at least one side of the tracks; all places where it is not
possible to provide 30-inch clearance shall be marked conspicuously.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1600. Avoiding mobile equipment in operation.

Persons shall remain clear of mobile equipment in operation and shall not work or pass under the buckets or booms of equipment in operation.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Chute-loading installations shall be designed so that the persons pulling chutes are not required to be in a hazardous position while loading cars or trucks.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1620. Berms or bumper blocks.

Berms, bumper blocks, or similar means shall be provided to prevent overtravel and overturning at dumping locations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Grizzlies, grates, and other sizing devices at dump and transfer points shall be anchored securely in place.
4VAC25-40-1640. Truck spotters.

If truck spotters are used, they shall be well in the clear while trucks are backing into dumping position and dumping; lights shall be used at night to direct trucks.

4VAC25-40-1650. Warning devices where clearance is restricted.

Where clearance is restricted, warning devices shall be installed and the restricted area shall be conspicuously marked.

4VAC25-40-1660. Tire repairs.

Tires shall be deflated before repairs on them are started and adequate means shall be provided to prevent wheel locking rims from creating a hazard during tire inflation.

4VAC25-40-1670. Towing equipment.

A tow bar and safety chain shall be used to tow heavy equipment that is not being operated under its own power.
4VAC25-40-1680. Working on equipment in raised position.

Persons shall not work on or from a piece of mobile equipment in a raised position unless the equipment is specifically designed to lift persons.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1685. Repairs or maintenance.

Repairs or maintenance shall not be performed on mobile equipment until tagged out. The power shall be off and the mobile equipment shall be blocked against hazardous motion, except where power or motion is necessary to make adjustments.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.


Suitable first aid materials shall be provided. First aid materials shall be adequate for the number of employees and accessible to all work areas.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1700. Life jackets or belts.

Life jackets or belts shall be worn where there is danger of falling into water.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


All persons shall wear suitable hard hats when in or around a mine or plant where falling objects may create a hazard.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


All persons shall wear suitable protective footwear when in or around an area of a mine or plant where a hazard exists which could cause an injury to the feet.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 10.4, eff. July 19, 1989.

4VAC25-40-1730. Safety glasses or goggles.

All persons shall wear safety glasses, goggles, or face shields or other suitable protective devices when in or around an area of a mine or plant where a hazard exists which could cause injury to unprotected eyes.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 10.5, eff. July 19, 1989.

4VAC25-40-1740. Safety harnesses.

A safety harness with a line shall be worn when persons work where there is danger of falling. Also see 4VAC25-40-2550.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-1750. Requirements for welding or cutting.
Protective clothing or equipment and face shields or goggles shall be worn when welding, cutting, or working with molten metal.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1760. Loose fitting clothing.
Loose fitting clothing or gloves shall not be worn where they could create a hazard by becoming entwined or caught in moving parts of machinery.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1770. When gloves to be worn.
Protective gloves shall be worn by employees handling materials which may cause injury.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Finger rings shall not be worn while operating or working on equipment or tools.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-1785. Light reflecting personal protection material.
Reflective tape or material shall be worn on the hats or clothing of persons working underground or during hours of darkness.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-1790. Requirements for grinding wheels.
Face shields or goggles, in good condition, shall be worn when operating a grinding wheel.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 10.11, eff. July 19, 1989.

Adequate protection shall be provided at dumping locations when persons may be endangered by falling material.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 10.12, eff. July 19, 1989.

Part XI. Travelways—Surface and Underground

4VAC25-40-1810. Safe access.
Safe means of access shall be provided and maintained to all work locations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-1820. Requirements for walkways and stairways.
Crossovers, elevated walkways, elevated ramps, and stairways shall be of substantial construction, provided with handrails, and maintained in good condition. Where necessary, toeboards shall be provided.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Ladders shall be of substantial construction and maintained in good condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Portable straight ladders shall be provided with nonslip bases, shall be placed against safe backing, and set on secure footing.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1850. Anchoring fixed ladders.

Fixed ladders shall be anchored securely and installed to provide at least three inches of toe clearance.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1860. Fixed ladders to project above landings.

Fixed ladders shall project at least three feet above landings, or substantial handholds shall be provided above the landings.
Wooden members of ladders shall not be painted.

4VAC25-40-1880. Debris to be cleared.
Ladders, stairways, walkways, and ramps shall be kept free of loose rock and extraneous materials.

4VAC25-40-1890. Railings and walkway surfaces.
Railed walkways shall be provided wherever persons are regularly required to walk alongside elevated conveyor belts. Inclined railed walkways shall be nonskid or provided with cleats.

Vertical clearance above travelways shall be a minimum of seven feet or adequate warning shall be provided to indicate an impaired clearance.
Persons climbing or descending ladders shall face the ladders and have both hands free for climbing.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Openings above, below, or near travelways through which persons or materials may fall shall be protected by railings, barriers, or covers. Where it is impractical to install such protective devices, adequate warning signals shall be installed.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Crossovers shall be provided and used where it is necessary to cross moving conveyors.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-1940. (Repealed.)
Historical Notes

Statutory Authority

Slippery walkways shall be provided with cleats and handrails.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Regularly used walkways and travelways shall be sanded, salted, or cleared of snow and ice as soon as practicable.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Fixed ladders shall not incline backward at any point unless provided with backguards.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-1980. (Repealed.)

Statutory Authority

Historical Notes


Fixed ladders shall be offset and have substantial railed landings at least every 30 feet unless backguards are provided.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Steep fixed ladders (70° to 90° from the horizontal), 30 feet more in length, shall be provided with backguards, cages, or equivalent protection, starting at a point not more than seven feet from the bottom of the ladder.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2010. Scaffolds and working platforms.

Scaffolds and working platforms shall be of substantial construction and provided with handrails and maintained in good condition. Floorboards shall be laid properly and the scaffolds and working platform shall not be overloaded. Working platforms shall be provided with toe-boards when necessary.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Part XII. Electricity—Surface and Underground

4VAC25-40-2015. Installation of electrical circuits; supervision of electrical work.

A. Electrical equipment and circuits shall be installed in accordance with the standards in the National Electrical Code, unless provided for in this part.

B. All work on new electric systems or modifications to existing electric systems performed in accordance with the National Electrical Code and this part shall be done by, or under the direct supervision of, a certified electrical repairman or other appropriately licensed electrical repairman. Routine maintenance of electrical systems and equipment where no changes are being made to the system or the equipment may be performed by a competent person who has received task training in the work from an appropriately licensed or certified electrical repairman.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-2020. Fuses or circuit breakers to be used.

Circuits shall be protected against excessive overloads or short circuits by fuses or circuit breakers of the correct type and capacity.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2030. Switches to be provided.

Electric equipment and circuits shall be provided with switches or other controls. Such switches or controls shall be of acceptable design and construction and shall be properly installed.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2040. Trailing cables of mobile equipment.

Individual overload protection and short circuit protection shall be provided for the trailing cables of mobile equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Power wires and cables shall have adequate current carrying capacity and shall be protected from mechanical injury.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-2060. Running over cables.
Mobile equipment shall not run over trailing cables, unless the cables are properly bridged or protected.
Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Historical Notes

Distribution boxes shall be provided with disconnect switches.
Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Historical Notes
Derived from VR480-05-1.2 § 12.6, eff. July 19, 1989.

Trailing cable and power cable connections to junction boxes shall not be made or broken under load.
Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Historical Notes

4VAC25-40-2090. Insulating wires and cables.
Power wires and cables shall be adequately insulated where they pass into or out of electrical compartments.
Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Historical Notes

4VAC25-40-2100. Avoiding power lines.
Telephone and electric signal wires shall be protected from contacting energized power lines.
**4VAC25-40-2110. Electrical transmission wires.**

Electrical transmission wires shall be covered, insulated, or placed to prevent contact with low-potential conductors.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


**4VAC25-40-2120. Splices in cables.**

Splices in power cables, including ground conductor, where provided, shall be:

1. Mechanically strong with adequate electrical conductivity;
2. Effectively insulated and sealed to exclude moisture; and
3. Provided with mechanical protection and electrical conductivity as near as possible to that of the original.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


**4VAC25-40-2130. Shovel trailing cables.**

Shovel trailing cables shall not be moved with the shovel dipper unless cable slings or sleds are used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


**4VAC25-40-2140. De-energizing electrical equipment.**
Electrically-powered equipment shall be de-energized before mechanical work is done on such equipment. Power switches shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individual working on it. Suitable warning notices shall be posted at the power switch and signed by the individuals doing the work. Such locks, tags or other devices, shall be removed only by the person who installed them or by authorized personnel after ensuring that affected persons are in the clear.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Power circuits shall be de-energized before work is done on such circuits unless hot-line tools are used. Suitable warning signs shall be posted by the individuals who are to do the work. Switches shall be locked out or other measures taken which shall prevent the power circuits from being energized without the knowledge of the individuals working on them. Such locks, signs, or preventative devices shall be removed only by the person who installed them or by an authorized person.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Principal power switches shall be labeled to show which units they control, unless identification can be made readily by location.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2170. Clearance around equipment.

At least three feet of clearance shall be provided around all parts of stationary electric equipment or switch gear where access or travel is necessary.

Statutory Authority

Dry, wooden platforms, insulating mats, or other electrically nonconductive material shall be kept in place at all switchboards and power-control switches where shock hazards exist. However, metal plates on which a person normally would stand and which are kept at the same potential as the grounded, metal, noncurrent-carrying parts of the power switches to be operated may be used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Suitable danger signs shall be posted at all major electrical installations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Areas containing major electrical installations shall be entered only by authorized persons.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 12.18, eff. July 19, 1989.


Electrical connections and resistor grids that are difficult or impractical to insulate shall be guarded, unless protection is provided by location.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


All metal enclosed, electrically-operated circuits or equipment shall be grounded back to the on-site source from which the electric circuit originates, and which is effectively connected to the earth or provided with equivalent protection.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Metal fencing and metal buildings enclosing transformers and switchgear shall be grounded.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2240. Frame grounding.

Frame grounding or equivalent protection shall be provided for mobile equipment powered through trailing cables.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2250. Testing after installation or repair.

Continuity and resistance of grounding systems shall be tested immediately after installation, repair, and modification; and annually thereafter. A record of the resistance measured in each equipment ground conductor, grounding electrode conductor, and the earth around the grounding electrode shall be made, and the most recent test record shall be available upon request by the director or division mine inspector.
4VAC25-40-2260. (Repealed.)


Electric equipment and wiring shall be inspected by a competent person as often as necessary to ensure safe operating conditions. When a potentially dangerous condition is found, it shall be corrected before equipment or wiring is energized.


Electric motors, switches, and controls exposed to damaging dust or water shall be of dust tight or watertight construction.

4VAC25-40-2290. Inspection and cover plates to be kept in place.

Inspection and cover plates on electrical equipment and junction boxes shall be kept in place at all times except during testing or repairs.
Handheld electric tools shall not be operated in excess of 130 volts.

Portable extension lights and other lights that may present a shock or burn hazard shall be guarded.

Lamp sockets exposed to the weather shall be of weatherproof type.

Fuses shall not be removed or replaced by hand in an energized circuit, and they shall not otherwise be removed or replaced in an energized circuit unless equipment and techniques especially designed to prevent electrical shock are provided and used for such purpose.
4VAC25-40-2340. Fuse replacement tools.

Fuse tongs or hot line tools shall be used when fuses are removed or replaced in electrical circuits.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-2350. Trailing cables to be clamped.

Trailing cables shall be clamped to machines in a manner to protect the cables from damage and to prevent strain on the electrical connections.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-2360. Storing surplus trailing cables.

Surplus trailing cables to shovels, cranes, and similar equipment shall be stored in cable boots or on reels mounted on the equipment or otherwise protected from mechanical damage.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.


Operating controls shall be installed so that they can be operated without danger of contact with energized conductors.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-2380. Design of switches and boxes.
Switches and starting boxes shall be of safe design and capacity.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2390. Lightning grounds.
Lightning-arrester grounds on trolley tracks shall be connected to earth at least 25 feet from the underground mine opening.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2400. Overhead power lines.
Surface overhead power lines shall be installed and maintained as specified by the National Electrical Code.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2410. Incompatible line installations.
Telegraph, telephone, or signal wires shall not be installed on the same crossarm with power conductors. When carried on poles supporting power lines, they shall be installed as specified by the National Electrical Code.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 12.40, eff. July 19, 1989; amended, Virginia Register Volume 14,
4VAC25-40-2420. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-2430. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-2440. Protecting power lines.

Power lines, including trolley wires, and telephone circuits, shall be protected against short circuits and lightning.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2450. Bare power line precautions.

Where metallic tools or equipment can come in contact with bare power lines, the lines shall be guarded or de-energized.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2460. Transformer requirements.

Transformers shall either be totally enclosed, placed at least eight feet above the ground, installed in a transformer house, or surrounded by the substantial fence at least six feet high and
at least three feet from any energized parts, casings, or wiring.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2470. Transformer enclosures to be locked.
Transformer enclosures shall be kept locked against unauthorized entry.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


A lightning arrester shall be provided where telephone circuits enter a mine; mine telephone extensions in surface buildings shall be provided with a lightning arrester for each circuit entering the building.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2490. Lightning arrester for power circuits.
Each exposed power circuit that leads underground shall be equipped with a lightning arrester of an acceptable type at or near the point where the circuit enters the mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2500. Moving equipment near power lines.
Electric wiring shall be installed in a manner to prevent fire and contact hazards. When equipment must be moved or operated near energized power lines and the clearance is less than
10 feet, the lines shall be de-energized or a warning sign posted or other precautionary measures shall be taken. Also see 4VAC25-40-3890.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2510. (Repealed.)

Historical Notes


Statutory Authority

Historical Notes

Part XIII. Materials Handling—Surface and Underground

4VAC25-40-2520. Water or neutralizing agents.

Water or neutralizing agents shall be available where corrosive chemicals or other harmful substances are stored, handled or used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2530. Personal protection equipment.

Acceptable protective clothing, respiratory protection, gloves, and goggles or face shields, accepted by the National Institute for Occupational Safety and Health (NIOSH) or other approved agency, shall be worn by persons exposed to chemical substances that are corrosive, flammable, reactive, or toxic.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Materials shall be stored and stacked in a manner which minimizes stumbling or fall of material hazards.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2550. Confined space hazard.

A safety harness attached to an attended life line shall be worn by persons before they enter confined spaces. No person shall enter any confined space until the supply and discharge of materials has ceased and the supply and discharge equipment has been locked out and tagged out. No person shall enter an area where they are exposed to entrapment by the caving or sliding of loose, unconsolidated material. No person shall enter a confined space unless the area is provided with adequate ventilation.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2560. Safe storage of hazardous materials.

Material that can create hazards if accidentally liberated from their containers shall be stored in a manner that minimizes the dangers.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Corrosive, flammable, reactive, and toxic materials shall be stored in acceptable containers and shall be labeled appropriately.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Hitches and slings used to hoist materials shall be of safe design, maintained in a safe condition so as to avoid safety hazards, and used in a safe manner.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 13.6, eff. July 19, 1989.

4VAC25-40-2590. Tag lines.
Tag lines shall be attached to suspended loads that require steadying or guidance.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Persons shall stay clear of suspended loads. Suspended loads shall be handled or secured in a manner to prevent their unintentional release.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


Materials shall not be dropped from an excessive height unless the drop area is guarded or sufficient warning is given.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-2620. Riding loads or hooks.

Personnel shall not ride on loads being moved by cranes or derricks, nor shall they ride the hoisting hooks unless such method eliminates a greater hazard.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Substances that react violently or liberate dangerous fumes when mixed shall be stored in such a manner that they cannot come in contact with each other.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2640. Handling of molten material.

Only personnel wearing protective equipment shall stand near pots or ladles when molten material is being handled; warning shall be given before a pour is made or the pot is moved.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Overhead cranes with operator cabs shall be provided with:

1. Bumpers at each end of each rail;

2. Automatic switches to halt uptravel of the blocks before they strike the hoist;

3. Effective audible warning signals within easy reach of the operator; and

4. A means to lock out the disconnect switch.

Statutory Authority
No person shall work from or travel on the bridge of an overhead crane unless the bridge is provided with substantial foot-walks with toe-boards and railing the length of the bridge.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-2670. Lift trucks.
Fork and other similar types of lift trucks shall be moved with the load in a low position and shall descend grades with the load behind.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Part XIV. Guards
4VAC25-40-2680. Accessible moving parts.
Gears, sprockets, chain drives, flywheels, couplings, shafts, saw and fan blades, and other similar exposed moving machine parts which are within seven feet reach by persons shall be guarded to prevent accidental contact.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Overhead belts shall be guarded if the whipping action from a broken belt would be hazardous to
persons below.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2700. Conveyor guarding; conveyor belts and idlers.

A. Equipment guarding on conveyor drives, head pulleys, tail pulleys, and take-up pulleys that are within seven feet reach shall extend a sufficient distance to prevent a person from reaching behind, over, or under the guard and becoming caught in the moving parts. Other accessible, moving parts on the conveyor shall be guarded to prevent accidental contact.

B. Conveyor belts and idlers that are accessible from walkways shall be guarded or provided with emergency stop cords or railings positioned to prevent a person from falling on or against the moving belts or idlers.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Openings where conveyors pass through wall or floors shall be guarded.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2720. Use of stop cords.

When emergency stop cords are used on conveyors with walkways, the cord shall extend along the full length of the conveyor.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 14.5, eff. July 19, 1989; amended, Virginia Register Volume 14,
Protruding setscrews on revolving parts shall be guarded.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 14.6, eff. July 19, 1989.

4VAC25-40-2740. When guards to be in place.
Except when testing the machinery, guards shall be securely in place while machinery is being operated.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Guards shall be sufficiently strong and maintained to prevent contact with moving parts. Guards shall not be required where the exposed moving parts are at least seven feet away from walking or working surfaces.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2760. Flying or falling material protection.
Guards or shields shall be provided in areas where flying or falling materials present a hazard.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Part XV. Safety and Health Regulations—Underground Only

Article 1. Ground Control

4VAC25-40-2770. Ground support.

A. Upon encountering suspected hazardous geological conditions, the operator shall suspend mining activities in the area until a ground control plan has been approved by the director.

B. Ground support shall be used if the operating experience of the mine, or any particular area of the mine, indicates that it is required. If it is required, support, including timbering, rock bolting, or other methods shall be consistent with the nature of the ground and the mining method used. Also see 4VAC25-40-440.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2780. Loose ground.

Persons shall be trained in the proper methods of testing for, taking down, and supporting loose ground.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-2790. Inspection of work area.

Miners shall examine and test, where possible, the back, face, and ribs of their working areas, visually and by sounding, at the beginning of each shift and frequently thereafter. Competent persons shall examine the ground conditions during daily visits to ensure that proper testing and ground control practices are being followed. Loose ground shall be taken down or adequately supported before any other work is done. Ground conditions along haulageways and travelways shall be examined periodically and scaled or supported as necessary.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.3, eff. July 19, 1989; amended, Virginia Register Volume 14,
4VAC25-40-2800. Scaling bar to be provided.
A scaling bar of proper length and design shall be provided where manual scaling may be required. Picks or other short tools shall not be used for scaling when this use places the user in danger from falling material.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-2810. Timbers to be blocked or wedged.
Timbers used for support of ground in active working areas shall be blocked or wedged tightly. Loosened or dislodged timbers shall be promptly repaired or replaced.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-2820. Installation of ground support in shafts.
When necessary, permanent or temporary ground support shall be installed near enough to the bottom of the shaft during shaft sinking to prevent falls of rocks from the sides of the shaft.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Shaft pillars shall have sufficient strength to protect operating shafts.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Rock-bolt installations, where needed, shall be installed in a manner to provide safe and effective ground support as soon as possible after an area is exposed.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Only rock-bolting materials acceptable to the MSHA or other approved agency shall be used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Rock-bolt hole drill bits shall be easily identifiable by sight or feel and diameters shall be within a tolerance of 0.030 inches of the manufacturer’s recommended hole diameter for the anchor used.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.10, eff. July 19, 1989.


Rock bolts used as a means of ground support and which require torquing shall be torqued to a value within the range determined from information obtained by tests in the strata in which the rock-bolt assembly is used. In no case shall the applied torque cause a bolt tension that would exceed the yield point or anchorage capacity of the rock-bolt assembly being used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.11, eff. July 19, 1989; amended, Virginia Register Volume 14,

When rock bolts are used as a means of ground support, anchorage test procedures shall be established and tests shall be conducted to determine the anchorage capacity of rock-bolt installations. The results shall be in writing and made available to the director or his duly authorized representative.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2890. Torque test requirements.

When installing point-anchor rock bolts:

1. A torque test shall be conducted on at least every fourth installed bolt;
2. Torque testing shall be conducted immediately after bolt installation;
3. If the recommended torque has not been achieved, the equipment used to install the bolt shall be adjusted and the next bolt installed shall then be tested; and
4. If the recommended torque has not been achieved on the majority of bolts installed in a working place through equipment adjustment, supplemental support equivalent to longer roof bolts with adequate anchorage, steel or wood sets, or cribs shall be installed.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Article 2. Fire Prevention and Control

4VAC25-40-2900. Accumulation of flammable materials.

All flammable and combustible waste materials, grease, lubricants or flammable liquids shall not be allowed to accumulate where they can create a fire hazard.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
4VAC25-40-2910. Fire alarm systems.
Fire alarm systems adequate to warn all employees shall be provided and maintained in operating condition.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2915. No smoking near flammable materials.
Signs shall be posted which prohibit smoking or an open flame within 25 feet of places where flammable materials are stored.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-2920. Use of flammable materials underground.
No gasoline, benzene, kerosene, or other flammable petroleum products shall be used in powering machinery underground without prior approval of the director.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-2930. Use of liquefied petroleum gases.
The use of liquefied petroleum gases shall be limited to maintenance work.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Oil, grease, or diesel fuel stored underground shall be kept in suitable tightly sealed containers in fire-resistant areas, at safe distances from explosives, magazines, electrical installations, and shaft stations.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.18, eff. July 19, 1989.

4VAC25-40-2950. Where transformer stations and other rooms to be placed.
Transformer stations, pump rooms, compressor rooms, and similar installations shall be in fire-resistant areas.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-2960. Oil or fuel storage areas.
Oil or fuel storage areas shall not be located in main ventilation airways.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.20, eff. July 19, 1989.

4VAC25-40-2970. Trailing cables.
Trailing cables shall be fire-resistant.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.21, eff. July 19, 1989.

4VAC25-40-2980. Open flame restrictions.
Fires shall not be built underground; open flame torches shall be attended at all times while lit.
4VAC25-40-2990. When power circuits to be de-energized.

Power circuits shall be de-energized in all areas on idle shifts or idle days, except where power is required. Circuits which remain energized shall be protected by fuses or circuit breakers of the correct type and capacity consistent with the power load on such idle shifts or idle days.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3000. Fire doors to be provided.

A. Fire doors shall be provided at shaft stations or other appropriate locations where necessary to prevent the spread of smoke or gas; the doors shall be equipped with latches operable from both sides. To confine or prevent the spread of toxic gases from a fire originating in an underground shop where maintenance work is routinely done on mobile equipment, one of the following measures shall be taken:

1. Use of control doors or bulkheads;
2. Routing of the mine shop air directly to an exhaust system;
3. Reversal of mechanical ventilation; or
4. Use of an automatic fire suppression system in conjunction with an alternate escape route.

The alternative used shall at all times provide at least the same degree of safety as control doors or bulkheads.

B. If used as an alternative, control doors and bulkheads shall:

1. Be constructed to serve as a barrier to fire, the effects of fire, and air leakage at each opening to the shop; and
2. Be constructed and maintained as follows:
   
   a. So that, once closed, it will not reopen as a result of a differential in air pressure;
   b. So that it can be opened from either side by one person or be provided with a personnel door that can be opened from either side;
c. To be clear of obstruction;

d. Provided with a means of remote or automatic closure unless a person specifically designated to close the door in the event of a fire can reach the door within three minutes;

e. If located 20 feet or more from exposed timber or other combustible material, the control doors or bulkheads shall provide protection at least equivalent to a door constructed of no less than one-quarter inch of plate steel with channel or angle-iron reinforcement to minimize warpage. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance and in physical strength; and

f. If located less than 20 feet from exposed timber or other combustibles, the control door or bulkhead shall provide protection at least equivalent to a door constructed of two layers of wood, each a minimum of three quarters of an inch in thickness. The wood grain of one layer shall be perpendicular to the wood grain of the other layer. The wood construction shall be covered on all sides and edges with no less than 24-gauge sheet steel. The framework assembly of the door and the surrounding bulkhead, if any, shall be at least equivalent to the door in fire and air-leakage resistance and in physical strength. Roll down steel doors with a fire resistance rating of 1-1/2 hours or greater, but without an insulation core, are acceptable, provided that an automatic sprinkler or deluge system is installed that provides even coverage of the door on both sides.

C. If routing of mine shop air to exhaust system is used as an alternative, routing the mine shop exhaust air directly to an exhaust system shall be done so that no person would be exposed to toxic gases in the event of a shop fire.

D. If mechanical ventilation is used as an alternative, reversal of mechanical ventilation shall be accomplished by a main fan. If the main fan is located underground:

1. The cable or conductors supplying power to the fan shall be routed through areas free of fire hazards; or

2. The main fan shall be equipped with a second, independent power cable or set of conductors from the surface. The power cable or conductors shall be located so that an underground fire disrupting power in one cable or set of conductors will not affect the other; or

3. A second fan capable of accomplishing ventilation reversal shall be available for use in the event of failure of the main fan; and

4. The mechanical ventilation shall provide rapid air reversal that allows persons underground time to exit in fresh air by the second escapeway or find a place of refuge and be done according to predetermined conditions and procedures.

E. If automatic fire suppression system and escape route is used as an alternative, the automatic fire suppression system and alternate escape route shall:

1. Be located in the shop area;

2. Be of the appropriate size and type for the particular fire hazards involved;
3. Be inspected at weekly intervals and properly maintained; and

4. In the case of the escape route, bypass the shop area so that the route will not be affected by a fire in the shop area.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3010. Timbered mine entrances.

Timbered mine entrances shall be fire resistant for at least 200 feet inside the mine portal or collar or provided with fire protection adequate to control a fire for at least 200 feet inside the mine portal or collar.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Waterline outlets, if required, shall be located so as to be accessible if a fire is at stations or storage areas.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3030. Welding or cutting near combustible materials.

When welding or cutting near combustible material, the surrounding area shall, if practical, be wet down thoroughly before and after work is done. A fire patrol of the area shall be maintained afterward for so long as necessary to ensure that no danger of fire exists as determined by a responsible supervisor. In addition, when welding or cutting in shafts, winzes or raises, barriers, bulkheads or other protective measures shall be used to prevent injury to anyone working or traveling below.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-3040. Fire protection at conveyor pulleys.

Adequate fire extinguishers or equivalent fire protection shall be provided at the head, tail, and drive pulleys of belt conveyors and at suitable intervals along the belt line.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3050. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-3060. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-3070. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-3080. (Repealed.)

Statutory Authority

Historical Notes

4VAC25-40-3090. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-3100. Firefighting personnel.

Only trained mine rescue persons shall participate in firefighting operations in advance of the fresh air base.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.34, eff. July 19, 1989.

4VAC25-40-3110. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-3120. (Repealed.)

Statutory Authority

Historical Notes


Belt conveyors shall be equipped with slippage and sequence switches.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.37, eff. July 19, 1989.


Stationary diesel equipment shall not be supported on a combustible base.
4VAC25-40-3150. Stationary diesel equipment sensors.
Stationary diesel equipment shall be provided with a thermal sensor which automatically stops the diesel engine should overheating occur.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Article 3. Air Quality, Radiation and Physical Agents

4VAC25-40-3160. Oxygen content in mines.
Air in all active areas shall contain at least 19.5% volume oxygen as measured by an acceptable oxygen analyzer.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Main fans shall be installed on the surface; if it is necessary to locate them underground, they shall be in fire-resistant areas and shall be provided with remote controls.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Fan housings and air ducts connecting main fans to underground openings shall be fire resistant.
4VAC25-40-3190. Air intakes and returns.
Separate mine openings shall be provided for main intake and return air currents except during early stages of development. A multiple compartment shaft is a single opening for the purpose of this standard.

The air current passing through the mine shall have a sufficient volume and velocity to dilute or remove dangerous amounts of noxious impurities and explosive gases.

Main fans shall be inspected and maintained properly.

Instruments shall be provided to test the mine atmosphere quantitatively for carbon monoxide, nitrogen dioxide, and other gases that occur in the mine. Tests shall be conducted as frequently as necessary by the operator to ensure that the required quality of air is maintained.
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3230. (Repealed.)

Historical Notes


Statutory Authority

Historical Notes

4VAC25-40-3240. Access to inadequately ventilated areas.

Access to inadequately ventilated areas shall be sealed, or barricaded and posted against entry.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


When used, ventilation tubing shall be installed so that the air current sweeps the face areas effectively. Maximum distance of the end of the tubing from the face generally shall be 30 feet for blowing and six feet for exhausting.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.49, eff. July 19, 1989.


Ventilation doors not operated mechanically shall be designed and installed so that they are self-closing and will remain closed regardless of the direction of the air movement.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
4VAC25-40-3270. Requirements for ventilation doors.

Ventilation doors shall be:

1. Substantially constructed;
2. Covered with fire-retardant material, if constructed of wood;
3. Maintained in good condition;
4. Self-closing, if manually operated; and
5. Equipped with audible or visual warning devices, if mechanically operated.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.50, eff. July 19, 1989.


When ventilation control doors are opened as a part of the normal mining cycle, they shall be closed as soon as possible to reestablish normal ventilation to active areas.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mine atmospheres shall be sampled to determine if hazardous concentrations of radon gas are present. Where potentially hazardous concentrations are found, or known sources of radon exist, each active area shall be sampled as often as necessary by a competent person.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


No person shall be permitted to receive an exposure to radon gas in excess of four working level months in any calendar year.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Persons shall not be exposed to air containing concentrations of radon gas exceeding 1.0 working level in active areas.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


If levels of permissible exposures to concentrations of radon gas differ from those prescribed in this chapter are recommended by the Environmental Protection Agency and approved by the President of the United States, no employee shall be permitted to receive exposures in excess of those levels after the effective dates established by the director.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Article 4. Explosives


See 4VAC25-40-3475 on gassy mines for blasting requirements.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-3328. Certified underground blaster.

A certified underground blaster shall be in direct charge of all blasting activities and shall fire all shots.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294, and 45.1-161.305 of the Code of Virginia.

Historical Notes


Main storage magazines used to store explosives or detonators near working faces shall be constructed with only nonsparking material inside and equipped with covers or doors and shall be located out of the line of blasts, 25 feet from roadways, power lines and in a reasonably dry place protected from roof and rib falls.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3340. Use of storage magazines.

Box-type, main storage magazines shall be used to store detonators or explosives other than blasting agents near working faces and shall be located not less than 50 feet from the face.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


A. Day boxes shall be suitably labeled.

B. Contents not used during the shift shall be returned to the main magazine at the end of each shift.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Detonator-storage magazines shall be of the same construction as explosive-storage magazines and shall be separated by at least 25 feet from explosive-storage magazines.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Persons assigned to and responsible for hoisting shall be notified whenever explosives or detonators are being transported in a shaft conveyance.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.60, eff. July 19, 1989.

4VAC25-40-3380. When hoisting to be stopped.

Hoisting in adjacent shaft compartments shall be stopped when explosives or detonators are being handled.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.61, eff. July 19, 1989.


Vehicles shall be attended, whenever practical and possible, while loaded with explosives or detonators.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
4VAC25-40-3400. Cars containing explosives to be pulled.

Cars containing explosives or detonators shall be pulled, except when hand-trammed.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3410. Warning of blasting.

Ample warning shall be given before blasts are fired. All persons shall be cleared and removed from areas endangered by the blast. Clear access to exits shall be provided for personnel firing the rounds.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.64, eff. July 19, 1989.

4VAC25-40-3420. Leaving blasting area; reentering blasting area.

A. In areas where dangerous accumulations of water, gas or mud could be encountered, persons shall be removed to safe places before blasting.

B. Blasting areas shall not be reentered after firing for a minimum time limit of 30 minutes and not until the concentration of smoke, dust, and fumes has been reduced to safe limits.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3430. Misfires to be reported.

Misfires shall be reported to the certified foreman. The blast area shall be barricaded and posted with warning signs until the misfire has been disposed of by a certified underground blaster.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

In secondary blasting, if more than one shot is to be fired at one time, blasting shall be done electrically or with detonating cord.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3450. Isolating explosives from static electricity.

Explosives, detonators, and blasting lines shall be isolated from sources of static electricity and stray currents and from extraneous sources.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.68, eff. July 19, 1989.


Where electric blasting is to be performed, electric circuits and equipment in the immediate area to be blasted shall be de-energized before explosives or detonators are brought into the area; the power shall not be turned on again until after the shots are fired.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3470. Initiating blasts from safe location.

Blasts in shafts or winzes shall be initiated from a safe location outside the shaft or winze.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
Derive from VR480-05-1.2 § 15.71, eff. July 19, 1989.


Blasts in gassy mines shall be initiated electrically, and multiple shot blasts shall be initiated with millisecond delay detonators. Permissible blasting units of capacity suitable for the number of holes in a round to be blasted shall be used unless the round is fired from the surface when all persons are out of the mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-3478. Stemming.

Boreholes shall be stemmed as prescribed for the explosives used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

Article 5. Drilling


Persons operating or working near drilling machines shall position themselves so that they will not be struck or lose their balance if the steel breaks or sticks.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.72, eff. July 19, 1989.


Persons shall not attempt to operate drills from positions that hinder their access to the control levers.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
Drilling shall not be attempted from insecure footing or staging or from atop equipment not designed for this purpose.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Persons shall not hold the drill steel while collaring holes, rest their hands on the chuck or centralizer while drilling.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Air shall be turned off before moving portable drills from one face to another.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-3530. Receptacles or racks.
Receptacles or racks shall be provided for drill steel stored on jumbos.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-3540. Warning to persons below jumbo decks.
Before drilling cycle is started, warning shall be given to persons working below jumbo decks.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.78, eff. July 19, 1989.

4VAC25-40-3550. Anchoring of drills on columns.

Drills on columns shall be anchored firmly before drilling is started and shall be retightened frequently thereafter.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.79, eff. July 19, 1989.

Article 6. Loading, Hauling, and Dumping

4VAC25-40-3560. Carrying tools or materials on top of locomotives.

Tools or materials, except properly located and secured rerailing devices, shall not be carried on top of locomotives. Tools or materials shall not be carried in the cab if they would interfere with the operation of the locomotive.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.80, eff. July 19, 1989.

4VAC25-40-3570. Coupling or uncoupling cars.

Trains shall be brought to a complete stop, then moved very slowly when coupling or uncoupling cars manually.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.81, eff. July 19, 1989.


Makeshift couplings shall not be used.
4VAC25-40-3590. Mantrip cars.

Supplies, materials, and tools other than small hand tools shall not be transported with persons in mantrip cars. Mantrip cars shall be operated independently of ore and supply trips.

4VAC25-40-3595. Transportation of miners.

A. Each mantrip shall be operated independently of any loaded trip of minerals or other material.
B. All miners, except the motorman and trip rider, shall ride inside the cars.
C. Miners shall remain seated while in moving mantrip cars, shall not board or leave moving mantrip cars, and shall proceed to and from mantrips in an orderly manner.


When a signalman is used during slushing operations, he shall positioned in a safe place.

4VAC25-40-3610. Open dry hole collars.

Collars of open dry holes shall be kept free of muck and material.
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.85, eff. July 19, 1989.


Warning devices, barricades or conspicuous markings shall be installed when chute lips create a hazard to personnel.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3630. Empty chutes.

Empty chutes shall be properly guarded prior to filling or sufficient material shall be left in the chute bottom to prevent rock from flying out when broken material is dumped into the chute.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.87, eff. July 19, 1989.

4VAC25-40-3640. Danger from chute-pulling operations.

Ample warning shall be given to persons who may be affected by the draw or otherwise exposed to danger from chute-pulling operations.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3650. Safety lines to be provided.

Persons shall not stand on broken rock or ore over draw points if there is danger that the chute will be pulled. Suitable platforms or safety lines shall be provided when work must be done in such areas.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Persons attempting to loosen hang-ups shall wear and use safety belts with tag lines or ropes to prevent their falling into the chute; if working near the chute opening, a bar sufficient in length to protect the person from dislodged material shall be used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-3670. Shelter holes to be provided.

Shelter holes shall be provided to ensure the safety of persons along haulageways where continuous clearance of at least 30 inches from the farthest projection of moving equipment on at least one side of the haulageway cannot be maintained.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.


Shelter holes shall be at least four feet wide; marked conspicuously with lights, reflective signs, reflective tape, reflectors or luminous paint; provide a minimum of 40 inches clearance from the farthest projection of moving equipment; and shall not be used for storage of timber, tools, or other materials unless a 40-inch clearance is maintained.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

4VAC25-40-3690. Trip lights.

Trip lights or approved reflectors shall be used on the rear of pulled trips and on the front of pushed trips.

Mantrip cars shall be operated at speeds consistent with the condition of tracks and equipment used.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3710. Discharge and boarding points.

Where mantrip cars are used, discharge and boarding points shall be designated. Persons shall not board or leave moving mantrip cars.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mantrip passengers shall ride on the side of the car opposite the trolley wire when the trolley wire is not centrally located unless covered mantrip cars are provided.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3730. Movement of rock or material trains.

During shift changes, the movement of rock or material trains shall be limited to areas where
such trains could not present a hazard to persons coming on or going off shift.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.97, eff. July 19, 1989.

4VAC25-40-3740. Use of flexible ladders.
Flexible ladders shall be used only where rigid ladders may be impractical.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.98, eff. July 19, 1989.

4VAC25-40-3750. Trap doors in ladderways.
Trap doors or adequate guarding shall be provided in ladderways at each level. Doors shall be kept operable.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3760. Size of openings in ladderways.
The minimum, unobstructed cross-sectional opening in ladderways shall be 24 inches by 24 inches.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.100, eff. July 19, 1989.

Warning shall be given and acknowledged before entering a manway above or below where persons are working.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Working floors in square-set stopes shall be lagged closely and securely, and open sets shall be equipped with guardrails.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Travelways steeper than 30° from the horizontal shall provided with ladders or stairways.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.102, eff. July 19, 1989.

4VAC25-40-3800. (Repealed.)

Statutory Authority

Historical Notes

Derived from VR480-05-1.2 § 15.103, eff. July 19, 1989.


Every mine shall have two separate properly maintained escapeways to the surface which are so positioned that damage to one shall not lessen the effectiveness of the other, or a method of refuge shall be provided when only one opening to the surface is possible.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Escape routes shall be:

1. Inspected at regular intervals and maintained in safe, travelable condition; and
2. Marked with conspicuous and easily read direction signs that clearly indicate the ways of escape.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3830. Refuge areas.

Refuge areas shall be:

1. Of fire-resistant construction, preferably in untimbered areas of the mine;
2. Large enough to accommodate readily the normal number of persons in the particular area of the mine;
3. Constructed so they can be made gas-tight; and
4. Provided with telephones, adequate air and water supplies, suitable hand tools, and stopping materials.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


A specific escape and evacuation plan, and revisions thereof, suitable to the conditions and mining system of the mine and showing assigned responsibilities of all key personnel in the event of an emergency shall be developed by the operator and set out in written form. A copy of the plan and revisions thereof shall be available to the director or an authorized representative, and any affiliated mine rescue teams. Also copies of the plans and revisions thereof shall be posted at locations convenient to all persons on the surface and underground. Such a plan shall be updated as necessary and shall be reviewed jointly by the operator and the director or his authorized representative at least once every six months from the date of the last review. The plan shall include:

1. Mine maps or diagrams showing all underground workings, locations of surface and underground ventilation fans and ventilation controls, directions of principal air flow, locations of refuge chambers, locations of first aid supplies and firefighting equipment,
locations of main electrical installations and disconnects, locations of surface and underground fuel storage, locations of surface and underground facilities to store explosives and detonators, location of escape routes and locations of existing telephones or other voice communication devices (see 4VAC25-40-3120 and 4VAC25-40-3850);

2. A plan for fire prevention, warning, emergency evacuation, firefighting and emergency medical assistance;

3. Surface procedure to follow in an emergency, including the notification of proper authorities;

4. A statement of the location and availability of mine rescue personnel and equipment;

5. A plan for instruction of mine workers and rescue personnel; and

6. A statement of the availability of emergency communications, transportation, power and ventilation equipment.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3850. Telephone or voice communications.

Telephone or other voice communication shall be provided between the surface and refuge chambers and such systems shall be independent of the mine power supply.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.109, eff. July 19, 1989.


Telephone service or equivalent two-way communication facilities shall be provided from underground working areas to the surface.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 14, Issue 17, eff. July 1, 1998.

4VAC25-40-3860. Inclined escapeways.
Designated escapeways inclined more than 30° from the horizontal shall be equipped with stairways, ladders, cleated walkways, or emergency hoisting facilities.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.110, eff. July 19, 1989.


Emergency hoisting facilities shall conform to the extent possible to safety requirements for other man hoists, shall be adequate to remove the persons from the mine with a minimum of delay, be maintained in ready condition, and be tested at least every 30 days; records shall be kept of these tests.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3880. Check-in and check-out system.

Each operator of an underground mine shall establish a check-in and check-out system which shall provide an accurate record of persons in the mine. These records shall be kept on the surface in a place chosen to minimize the danger of destruction by fire or other hazards. Every person underground shall carry a positive means of being identified.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Article 7. Electricity

4VAC25-40-3890. Bare wires and cables.

Wires and cables not encased in armor shall be supported by well-installed insulators and shall not touch combustible materials, roof, or ribs; however, this requirement shall not apply to ground wires, grounded power conductors, and trailing cables.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-3900. Metal pipelines.

Metal pipelines 1,000 feet or more in length along haulage roads where grounded return circuits are used shall be bonded to the return at the ends and at intervals not exceeding 500 feet.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3910. Insulation of power lines.

Power lines shall be well separated or insulated from waterlines, telephone lines, and air lines.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-3920. Fastening power cables.

Power cables in shafts and boreholes shall be fastened securely in such manner as to prevent undue strain on the sheath, insulation, or conductors.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Disconnecting switches that can be opened safely under load shall be provided underground at all primary power circuits near shafts, levels, and boreholes. Disconnecting switches shall be installed underground in all main power circuits within approximately 500 feet of the bottoms of shafts and boreholes, and at other places where main power circuits enter the mine.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.117, eff. July 19, 1989; amended, Virginia Register Volume 14,
Transformer stations shall be enclosed to prevent persons from unintentionally or inadvertently contacting energized parts.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-3950. Trolley feeder wires.
Trolley and trolley feeder wires shall be installed opposite the clearance side of haulageways.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-3955. Fire precautions in transportation of mining equipment.
A. Prior to moving or transporting any unit of off-track mining equipment in areas of the active workings where energized trolley wires or trolley feeder wires are present:
   1. The unit of equipment shall be examined by a certified person to ensure that accumulation of oil, grease, and other combustible materials have been removed from such unit of equipment; and
   2. A qualified person shall examine the trolley wires, trolley feeder wires, and the associated automatic circuit interrupting devices to ensure that proper short circuit protection exists.
B. A record shall be kept of the examinations and shall be made available, upon request, to the director.
C. Off-track mining equipment shall be moved or transported in areas of the active workings where energized trolley wires or trolley feeder wires are present only under the direct supervision of a certified person who shall be physically present at all times during moving or transporting such equipment.
D. The frames of off-track mining equipment being moved or transported in accordance with this section shall be covered on the top and on the trolley wire side with fire-resistant material, where appropriate, as determined by the director.
E. Electrical contact shall be maintained between the mine track and the frames of off-track mining equipment being moved in-track and trolley entries, except that rubber-tired equipment
need not be grounded to a transporting vehicle if no metal part of such rubber-tired equipment can come into contact with the transporting vehicle.

F. To avoid accidental contact with power lines, the equipment being transported or trammed shall be insulated or assemblage removed, if necessary, if the clearance to the power lines is six inches or less.

G. Sufficient prior notice shall be given the department so that a mine inspector may travel the route of the move before the actual move is made, if he deems it necessary.

H. A minimum vertical clearance of 12 inches shall be maintained between the farthest projection of the unit of equipment which is being moved and the energized trolley wires or trolley feeder wires at all times during the movement or transportation of such equipment. If the height of the seam of minerals does not permit 12 inches of vertical clearance to be so maintained, the following additional precautions shall be taken:

1. Electric power shall be supplied to the trolley wires or trolley feeder wires only from out by the unit of equipment being moved or transported. Where direct current electric power is used and such electric power can be supplied only from the equipment being moved or transported, power may be supplied from such equipment if a miner with the means to cut off the power, and in direct communication with persons actually engaged in the moving or transporting operation, is stationed out by the equipment being moved;

2. The settings of automatic circuit interrupting devices used to provide short circuit protection for the trolley circuit shall be reduced to not more than one-half of the maximum current that could flow if the equipment being moved or transported were to come into contact with the trolley wire or trolley feeder wire;

3. At all times the unit of equipment is being moved or transported, a miner shall be stationed at the first automatic circuit breaker out by the equipment being moved. Such miner shall be in direct communication with persons actually engaged in the moving or transporting operation and capable of communicating with the authorized person on the surface required to be on duty;

4. Where trolley phones are utilized to satisfy the requirements of subsection C of this section, telephones or other equivalent two-way communication devices that can readily be connected with the mine communication system shall be carried by the miner stationed at the first automatic circuit breaker out by the equipment being moved and by a miner actually engaged in the moving or transporting operation; and

5. No person shall be permitted to be in by the unit of equipment being moved or transported, in the ventilating current of air that is passing over such equipment, except those persons directly engaged in moving such equipment. The provisions of this section shall not apply to units of mining equipment that are transported in mine cars, provided that no part of the equipment extends above or over the sides of the mine car.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
4VAC25-40-3958. Use of track as electrical power conductor.

The following standards shall apply where track is used as a power conductor:

1. Both rails of main line tracks shall be welded or bonded at every joint, and cross bonds shall be installed at intervals of not more than 200 feet. If the rails are paralleled with a feeder circuit of like polarity, such paralleled feeder shall be bonded to the track rails at intervals of not more than 1,000 feet.

2. At least one rail on secondary track haulage roads shall be welded or bonded at every joint, and cross bonds shall be installed at intervals of not more than 200 feet.

3. Track switches on entries shall be well-bonded.

4. Rails shall not be used as power conductors in rooms.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.


Not more than five splices shall be made in any trailing cable unless they are vulcanized.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.


On machines not using cable reels, no splices shall be present in the first 25 feet of trailing cable adjacent to the equipment.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Article 8. Personal Protection
4VAC25-40-3980. Welding operations.

Welding operations shall be shielded and well-ventilated.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-3990. Self-rescue requirements.

Each mine having underground workings shall submit to the division a plan for the number, type, and location(s) of self-rescue devices sufficient for the number of persons working underground and the hazards particular to the underground workings of the mine. At a minimum, a one hour filter self-rescue device approved by the MSHA shall be made available by the operator to all personnel underground. The filter self-rescue devices shall be maintained in good condition by a daily visual check and weighing of the devices every six months, with maintenance records kept.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4000. Requirements for self-rescue devices.

Use of self-rescue devices shall meet the following standards:

1. Except as otherwise provided in this section, self-rescue devices meeting the requirements of 4VAC25-40-3990 shall be worn or carried by all persons underground;

2. Where the wearing or carrying of self-rescue devices meeting the requirements of 4VAC25-40-3990 is hazardous to a person, such self-rescue devices shall be located at a distance no greater than 25 feet from such person; and

3. Where a person works on or around mobile equipment, self-rescue devices may be placed in a readily accessible location on such equipment.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.124, eff. July 19, 1989.

Chairs should be used to land shaft conveyances when heavy supplies or equipment are being handled.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.125, eff. July 19, 1989.

4VAC25-40-4020. Individual lamps to be carried.

Individual electric lamps shall be carried for illumination by all persons underground.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.126, eff. July 19, 1989.

4VAC25-40-4030. (Repealed.)

Statutory Authority

Historical Notes


4VAC25-40-4040. Inspections to follow fire or explosion.

In the event of a mine fire or an explosion, operations shall not be resumed until such mine or portion of such mine has been inspected and pronounced safe by a state mine inspector.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4050. (Repealed.)

Statutory Authority

Historical Notes

Article 9. Safety Program


A. On an annual basis all persons who are required to go underground shall be instructed in applicable sections of the Bureau of Mines Instruction Guide 19, Mine Emergency Training.

B. On an annual basis all persons who are required to go underground shall be instructed in the use of the individual self-rescue device provided to them. The instruction shall be given by a competent person using a training model of the same type as the self-rescue device provided to the employee.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mines employing 75 or more persons underground shall either:

1. Maintain a mine rescue station equipped with at least 10 self-contained oxygen breathing apparatus, each with a minimum of two hours capacity, along with adequate supplies and spare parts; or

2. Affiliate with central or cooperative mine rescue stations that can provide two fully equipped mine rescue teams in the event of an emergency. Such affiliations shall be in writing and must be approved annually by the director.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mine rescue apparatus shall be acceptable to the MSHA or other approved agency and shall be properly maintained for immediate use. The equipment shall be tested at least once a month and records kept of the tests for at least one year.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-4063. Rescue crews to be provided.

At any mine employing 75 or more persons underground, at least two rescue crews of five persons each shall be trained at least annually in the use, care, and limitations of self-contained oxygen breathing and firefighting apparatus and in mine rescue procedures. The training shall be given by division personnel or by persons approved to give such instruction. Rescue crews shall include supervisory and key personnel familiar with all mine installations that could prove vital to firefighting and rescue operations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mines employing fewer than 75 persons underground shall maintain mine rescue capabilities as described in 4VAC25-40-4061 through 4VAC25-40-4063, or the operator may request in writing and obtain approval from the director for an alternative mine rescue capability. Such alternative mine rescue plans shall be subject to annual review and approval.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Mine evacuation drills shall be held for each shift once every six months. These evacuation drills shall involve all employees each shift and shall include:

1. Activation of the fire alarm system; and

2. Evacuation of all persons from their work areas to the surface or to designated central evacuation points at some time other than a shift change.

Records of such drills, showing the time and date, shall be kept for at least two years after each drill.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes
4VAC25-40-4066. Instruction in escape plans.

All persons who work underground shall be instructed at least once each calendar year on current escape and evacuation plans, fire alarm signals, and applicable procedures to be followed in case of fire or other emergency. New employees shall receive such instructions before going underground. Whenever an employee is assigned to work in another area of the mine, he shall be instructed on the escapeway for that area at the time of such assignment. However, employees who normally work in more than one area of the mine shall be instructed at least once each calendar year in the location of escapeways for all areas of the mine in which they normally work or travel. Whenever a change is made in escape and evacuation plans and procedures for any area of the mine, all affected employees shall be instructed of such change. Records of instruction shall be kept for two years.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Article 10. Personnel Hoisting


Hoists shall have rated capacities consistent with the loads handled and the recommended safety factors of the ropes used.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4080. Anchoring hoists.

Hoists shall be anchored securely.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4090. Connecting driving mechanisms to personnel hoists.

Belts, ropes, or chains shall not be used to connect driving mechanisms to personnel hoists.
Any hoist used to hoist persons shall be equipped with a brake or brakes which shall be capable of holding its fully loaded cage, skip, or bucket at any point in the shaft.

The operating mechanism of the clutch of every personnel hoist drum shall be provided with a locking mechanism, or interlocked electrically or mechanically with the brake, to prevent accidental withdrawal of the clutch.

Automatic hoists shall be provided with devices that automatically apply the brakes in the event of power failure.

4VAC25-40-4130. Friction hoist overtravel protection.
In a friction hoist installation, tapered guides or other acceptable devices shall be installed above
and below the limits of regular travel of the conveyance and arranged to prevent overtravel in the event of failure of other devices.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4140. Overtravel prevention on personnel hoists.

All personnel hoists shall be provided with devices to prevent overtravel. When utilized in shafts exceeding 100 feet in depth, such hoists shall also be provided with over-speed devices.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Friction hoists shall be provided with synchronizing mechanisms that recalibrate the overtravel devices and position indicators to correct for rope creep or stretch.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.139, eff. July 19, 1989.


When an overtravel bypass switch is installed, the switch shall function so as to allow the conveyance to be moved through the overtravel position when the switch is held in the closed position by the hoist person. The overtravel bypass switch shall return automatically to the open position when released by the hoist person.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Each electric hoist shall be equipped with a manually operable switch that will initiate emergency braking action to bring the conveyance and the counterbalance safely to rest. This switch shall be located within reach of the hoist person in case the manual controls of the hoist fail.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


An accurate and reliable indicator of the position of the cage skip, bucket, or cars in the shaft shall be provided.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.142, eff. July 19, 1989.


Hoist controls shall be placed or housed so that the noise from machinery or other sources will not prevent hoist persons from hearing signals.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Flanges on drums shall extend radially a minimum of two rope diameters and not less than four inches beyond the last wrap.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.144, eff. July 19, 1989.

Where grooved drums are used, the grooves shall be of the proper size and pitch for the ropes used.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Where any diesel or similar fuel injection engine is used to power a hoist, the engine shall be equipped with a damper or other cutoff in its air intake system. The control handle shall be clearly labeled to indicate that its intended function is for emergency stopping only.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


The American National Standard for Wire Rope for Miners shall be used as a guide in the selection, installation, and maintenance of wire ropes used for hoisting, except in those instances where the recommendations cited herein are more stringent.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4240. Installation of wire ropes.

At installation, the nominal strength (manufacturer’s published catalog strength) of wire ropes used for hoisting shall meet the minimum rope strength values obtained by the following formulas in which “L” equals the maximum suspended rope length in feet:

1. Winding drum ropes (all constructions, including rotation resistant):

   For rope lengths less than 3,000 feet:

   Minimum Value = Static Load X (7.0 - 0.001L)

   For rope lengths 3,000 feet or greater:
Minimum Value = Static Load X 4.0

2. Friction drum ropes:
   For rope lengths less than 4,000 feet:
   Minimum Value = Static Load X (7.0 - 0.0005L)
   For rope lengths 4,000 feet or greater:
   Minimum Value = Static Load X 5.0

3. Tail ropes (balance ropes):
   Minimum Value = Weight of Rope X 7.0

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

If guide ropes are used in shafts for personnel hoisting applications other than shaft development, the nominal strength (manufacturer’s published catalog strength) of the guide rope at installation shall meet the minimum value calculated as follows:
   Minimum Value = Static Load X 5.0.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 15.149, eff. July 19, 1989.

A. Wire rope attachments shall be replaced when cracked, deformed, or excessively worn.

B. At least once every 14 calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum crossovers, and at change of layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be examined on a daily basis.

C. Before any person is hoisted with a newly installed wire rope or any wire rope that has not
been examined in the previous 14 calendar days, the wire rope shall be examined in accordance with subsection B of this section.

D. At least once every six months, nondestructive tests shall be conducted of the active length of the rope, or rope diameter measurements shall be made:

1. Wherever wear is evident;

2. Where the hoist rope rests on sheaves at regular stopping points; and

3. Where the hoist rope leaves the drum at regular stopping points and at drum crossover and change of layer regions.

E. At the completion of each examination required by subsections B, C and D of this section, the person making the examination shall certify by signature and date that the examination has been made. If any condition listed in subsection B of this section is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one year.

F. The person making the measurements or nondestructive tests as required by subsection D of this section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4270. Requirements for rope ends.

The end of the rope at the drum shall make at least one full turn on the drum shaft, or a spoke of the drum in the case of a free drum, and shall be fastened securely by means of rope clips or clamps. There shall be three full turns of cable or rope on the hoisting drum when the cable or rope is extended to its maximum working length. This standard does not apply to friction hoists.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.151, eff. July 19, 1989.

4VAC25-40-4280. Load end attachment.

The rope shall be attached to the load by the thimble and clip method, the socketing method, or other approved method. If the socketing method is employed, zinc or its equivalent shall be used. The use of Babbitt metal or lead for socketing wire ropes is prohibited. If the thimble and clip
method is used, the following shall be observed:

1. The rope shall be attached to the load by passing one end around an oval thimble that is attached to the load bending the end back so that it is parallel to the long or "live" end of the rope and fastening the two parts of the rope together with clips.

2. The u-bolt of each clip shall encircle the short or "dead" end of the rope and the distance between clips shall not be less than the figures given in the accompanying table.

3. As a minimum, the following number of clips or equivalent shall be used for various diameters of six-strand 19-wire plow steel ropes:

<table>
<thead>
<tr>
<th>Diameter of rope, inches</th>
<th>Number of clips</th>
<th>Center to center spacing of clips, inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>4</td>
<td>4-1/2</td>
</tr>
<tr>
<td>7/8</td>
<td>4</td>
<td>5-1/4</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1-1/8</td>
<td>5</td>
<td>6-3/4</td>
</tr>
<tr>
<td>1-1/4</td>
<td>5</td>
<td>7-1/2</td>
</tr>
<tr>
<td>1-3/8</td>
<td>6</td>
<td>8-1/4</td>
</tr>
<tr>
<td>1-1/2</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>1-5/8</td>
<td>6</td>
<td>9-3/4</td>
</tr>
<tr>
<td>1-3/4</td>
<td>7</td>
<td>10-1/2</td>
</tr>
<tr>
<td>1-7/8</td>
<td>8</td>
<td>11-1/4</td>
</tr>
<tr>
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<td>8</td>
<td>12</td>
</tr>
<tr>
<td>2-1/8</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>2-1/4</td>
<td>8</td>
<td>14</td>
</tr>
</tbody>
</table>

Follow manufacturer's recommendations for other kinds of wire, rope and clips.

4. For all ropes less than 3/4 inch in diameter, at least four clips or equivalent shall be used.

5. When special conditions require the attachment of a sling to the hoisting cable to handle equipment in the shaft, the sling shall be attached by clips or equivalent in accordance with the table in subdivision 3 of this section.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


New ropes shall be broken in according to the manufacturer's recommendations.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4300. Safety device attachments.

Safety device attachments to hoist ropes shall be selected, installed and maintained according to manufacturer's specifications to minimize internal corrosion and weakening of the hoist rope.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Where possible, conveyances attached to single ropes used to hoist persons shall be provided with secondary safety connections.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Headframes and sheaves shall be designed and constructed to withstand pulls by the hoists greater than the breaking strengths of the hoist ropes.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4330. Clearance requirements.

Headframes shall be high enough to provide at least 15 feet of clearance between the bottom of the sheave or drum and the uppermost part of the highest rope connection of the conveyance
when the conveyance is at its uppermost person-landing area.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4340. Fleet angles.

Fleet angles shall not exceed 1 ½°.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Platforms with toe-boards and handrails shall be provided around elevated head sheaves.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Diameters of head sheaves and hoist drums shall conform to the following specifications:

<table>
<thead>
<tr>
<th>Rope construction</th>
<th>Diameter of sheave and drum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recommended Times rope</td>
</tr>
<tr>
<td></td>
<td>diameter</td>
</tr>
<tr>
<td>6 x 7 classification</td>
<td>72</td>
</tr>
<tr>
<td>6 x 19</td>
<td>45</td>
</tr>
<tr>
<td>6 x 37</td>
<td>20</td>
</tr>
<tr>
<td>6 x 25 type B, flattened strand</td>
<td>45</td>
</tr>
<tr>
<td>6 x 27 type H, flattened strand</td>
<td>45</td>
</tr>
<tr>
<td>6 x 30 type G, flattened</td>
<td>45</td>
</tr>
</tbody>
</table>

Head, idler, knuckle, and curve sheaves shall have grooves that support the ropes properly. Before installing new ropes, the grooves shall be inspected and, where necessary, machined to the proper contour and the proper groove diameter.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4380. Metal bonnets.

Man cages and skips used for hoisting or lowering employees or other persons in any vertical shaft or any incline shaft with an angle of inclination of 45° from the horizontal, shall be covered with a metal bonnet.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4390. Use of buckets to hoist persons.

Buckets shall not be used to hoist persons except during shaft sinking operations, inspection, maintenance, and repairs.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4400. Specifications for buckets used to hoist persons.

Buckets used to hoist persons during shaft sinking operations shall be provided with adequate...
guide ropes and shall have crossheads equipped with safety catches and protective bonnets when the shaft depth exceeds 50 feet.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


**4VAC25-40-4410. Ratings for ropes suspending platforms.**

In shaft sinking where a platform is suspended by wire ropes, such ropes shall have an approved rating for the suspended load.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


**4VAC25-40-4420. Rope guides.**

Where rope guides are used in shafts, they shall be of locked coil construction.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.166, eff. July 19, 1989.

**4VAC25-40-4430. Use of manually-operated hoists.**

When a manually-operated hoist is used, a hoist person approved by the director shall remain within hearing of the telephone or signal device at all times while any person is underground.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


**4VAC25-40-4440. Use of automatic hoists.**

When automatic hoisting is used, a hoist person approved by the director shall be in attendance on the premises while any person is underground.
4VAC25-40-4450. Fitness requirements for hoist persons.
Hoist persons shall be physically fit and shall undergo yearly examinations to determine their continued fitness; certification to this effect shall be available at the mine.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-4460. Competency of hoist persons.
Only hoist persons approved by the director shall operate the hoist except in cases of emergency and in the training of new hoist persons.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes

4VAC25-40-4470. Use of extreme caution.
Hoist persons shall use extreme caution when hoisting or lowering persons.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-4480. Speed for hoisting persons.
The safe speed for hoisting persons in a cage shall be determined for each shaft, and this speed shall not be exceeded. Persons shall not be hoisted at a speed faster than 2,500 feet per minute, except in an emergency.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
Maximum acceleration and deceleration shall not exceed six feet per second.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 15.172, eff. July 19, 1989.

Only authorized persons shall be in hoist rooms.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Balancing of cages shall not be done while persons are on cages.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-4520. Lowering conveyances by brakes.
Conveyances shall not be lowered by the brakes alone except during emergencies.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 15.175, eff. July 19, 1989.

4VAC25-40-4530. Maximum number of persons to ride.
The director shall designate the maximum number of persons permitted to ride on a trip at one time; this limit shall be posted on each landing.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.177, eff. July 19, 1989.


Authorized persons shall be in charge of all mantrips.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4550. Conduct on conveyances.

Persons shall enter, ride, and leave conveyances in an orderly manner.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Persons shall not enter or leave conveyances which are in motion or after a signal to move the conveyance has been given to the hoist person.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4570. Doors to be closed.

Cage doors or gates shall be closed while persons are being hoisted; they shall not be opened until the cage has come to a stop.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Persons shall not ride in skips, or buckets with muck, supplies, materials, or tools other than small hand tools.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.182, eff. July 19, 1989.

4VAC25-40-4590. When skips shall be empty.

When combinations of cages and skips are used, the skips shall be empty while persons are being transported.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4600. Hoisting rock or supplies.

Rock or supplies shall not be hoisted in the same shaft as persons during shift changes, unless the compartments and dumping bins are partitioned to prevent spillage into the cage compartment.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.184, eff. July 19, 1989.

4VAC25-40-4610. Limitations on riding shaft conveyance.

Persons shall not ride the bail, rim, or bonnet of any shaft conveyance, except where necessary for the inspection and maintenance of the shaft and lining.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
4VAC25-40-4620. Open hooks.

Open hooks shall not be used to hoist buckets or other conveyances.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.


When persons are hoisted in an open bucket, speeds shall not exceed 500 feet a minute and shall not exceed 200 feet a minute when within 100 feet of a landing.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-4640. Where buckets to be stopped on lowering.

Buckets shall be stopped about 15 feet from the shaft bottom to await a signal from one of the crew on the bottom for further lowering.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-4650. Where buckets to be stopped on raising.

Buckets shall be stopped after being raised three feet when persons are hoisted from the bottom; a second hoisting signal shall be given after the bucket has been stabilized. Hoisting shall be at a minimum speed and the bell cord shall be attended constantly until the crosshead has been engaged.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Where mine cars are hoisted by cage or skip, means for blocking cars shall be provided at all landings and also on the cage.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


When tools, timbers, or other materials are being lowered or raised in a shaft by means of a bucket, skip, or cage, they shall be secured or so placed that they will not strike the sides of the shaft.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Conveyances not in use shall be released and raised or lowered at least 10 feet from the floor of the landing.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4690. Signaling between stations and hoist room.

There shall be at least two effective approved methods of signaling between each of the shaft stations and the hoist room, one of which shall be a telephone or speaking tube.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-4700. When telephone instructions are acceptable.
Hoist persons shall not accept hoisting instructions by telephone unless the regular signaling systems are out of order. During such an emergency, one person shall be designated to direct movement of the conveyance.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4710. Signals to hoist operator.
A method shall be provided to signal the hoist operator from cages or other conveyances at any point in the shaft.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


A standard code of hoisting signals shall be adopted and used each mine.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


A legible signal code shall be posted prominently in the hoist house within easy view of the hoist persons and at each place where signals are given or received.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.197, eff. July 19, 1989.

Hoisting signal devices shall be positioned within easy reach of persons on the shaft bottom or
constantly attended by a person stationed on the lower deck of the sinking platform.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4750. Qualifications of persons giving signals.

Any person responsible for receiving or giving signals for cages, skips, and mantrips when persons or materials are being transported shall be familiar with the posted signaling code.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


Shaft landings shall be equipped with substantial safety gates so constructed that materials will not go through or under them; gates shall be closed except when loading or unloading shaft conveyances.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4770. Stop blocks or derail switches.

Positive stop blocks or a derail switch shall be installed on all tracks leading to a shaft collar or landing.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4780. Where guides to be provided.

Guides shall be provided in each hoisting compartment in shafts inclined more than 45° from the
Dumping facilities and loading pockets shall be constructed so as to minimize spillage into the shaft.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-4800. Shaft station clearance requirements.
Adequate clearance shall be maintained at shaft stations to allow persons to pass safely and to allow materials to be handled safely.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 15.203, eff. July 19, 1989.

4VAC25-40-4810. Safe passage around compartments.
A safe means of passage around open shaft compartments shall provided on landings with more than one entrance to the shaft.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes
Derived from VR480-05-1.2 § 15.204, eff. July 19, 1989.

Shaft sets shall be kept in good repair and clean of hazardous material.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
4VAC25-40-4830. Persons working in shafts.
Hoist personnel shall be informed when persons are working in a compartment affected by that hoisting operation and a "Persons Working in Shaft" sign shall be posted at the hoist.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


When persons are working in a shaft, "Persons Working in Shaft" signs shall be posted at all devices controlling hoisting operations that may endanger such persons.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4850. Performing inspections and repairs.
Shaft inspection and repair work in vertical shafts shall be performed from substantial platforms equipped with bonnets or equivalent overhead protection.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4860. Bulkheads or equivalent protection.
A substantial bulkhead or equivalent protection shall be provided above persons at work deepening a shaft.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

4VAC25-40-4870. Ladders in shafts.

Substantial fixed ladders shall be maintained as near the shaft bottom as practical during shaft sinking operations. Chain, wire rope, or other extension ladders shall be used from the fixed ladder to the shaft bottom, unless other suitable means are approved.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes

Derived from VR480-05-1.2 § 15.211, eff. July 19, 1989.

4VAC25-40-4880. Inspection and testing procedures.

A systematic procedure of inspection, testing, and maintenance of shaft and hoisting equipment shall be developed and followed. If it is found or suspected that any part is not functioning properly, the hoist shall not be used until the malfunction has been located and repaired or adjustments have been made.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4890. Records to be kept.

Complete records shall be kept of installation, lubrication, inspection, tests, and maintenance of shafts and hoisting equipment.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4900. Replacement parts.

Parts used to repair hoists shall have properties equal to or better than the original parts; replacement parts shall be designed to fit the original installation.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


Ropes shall be kept well-lubricated from end to end as recommended by the manufacturer.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4920. Cutting of ropes for inspections.

On other than friction hoists, ropes shall be cut off and reconnected to the conveyance as often as necessary to ensure adequate inspection of rope condition and to distribute wear of the rope. At least six feet shall be cut from the rope above the highest connection; this portion shall be examined carefully for corrosion, damage, wear, and fatigue by the rope manufacturer or an acceptable agency.

Statutory Authority

§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Historical Notes


4VAC25-40-4930. Cutting of ropes to distribute wear.

Hoisting ropes wound in multiple layers shall be cut off and repositioned on the drum at regular intervals as necessary to distribute wear of the rope. The length of cutoff at the drum end should not be an even multiple of the circumference of the drum.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

Historical Notes


4VAC25-40-4940. Ropes to be calipered.

Ropes shall be calipered at regular interval as necessary to effectively determine the rate of wear and damage. Caliper measurements shall be taken immediately above the socket or clips and above the safety connection.

Statutory Authority

§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.
4VAC25-40-4950. Electromagnetic or other nondestructive testing.
Electromagnetic or other nondestructive rope testing systems shall be used only as supplements to, and not as substitutes for, recommended inspection and tests.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-4960. Substandard ropes.
Ropes shall not be used for hoisting when they have:
1. More than six broken wires in any lay; and
2. Crown wires worn to less than 65% of the original diameter.

Statutory Authority
§§ 45.1-161.3 and 45.1-161.294 of the Code of Virginia.

4VAC25-40-4970. Testing on each shift.
Hoist persons shall examine their hoists and shall test overtravel, dead man controls, position indicators, and braking mechanisms at the beginning of each shift.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.

Empty conveyances shall be operated up and down shafts at least one round trip before hoisting persons after any shaft or equipment repairs and before regular mantrips are hoisted or lowered.

Statutory Authority
§§ 45.1-161.3, 45.1-161.294 and 45.1-161.305 of the Code of Virginia.
Historical Notes