ALABAMA DEPARTMENT OF WORKFORCE
ADMINISTRATIVE CODE

CHAPTER 480-3-3
MINE SAFETY

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480-3-3-.01 Means Of Access.

(1) Mines three hundred (300) feet deep vertically, three hundred (300) feet deep on the incline or three hundred (300) feet deep on a combination of vertical and incline shall have two (2) or more exits or openings to the surface, and these exits where inclined more than 20^ from the horizontal shall be equipped with stairs or steps, (track or abandoned track where ties are not more than eighteen inches (18')center to center shall constitute stairs and steps) and where inclined more than 35^ from the horizontal shall be equipped with ladders, provided, that if both exits have hoisting equipment maintained in good operating condition, and the mine has hoisting equipment in two exits, the above requirements shall be waived.

(2) The required exits shall be not less than fifty feet (50') apart at the surface and shall not be covered by one building or connecting buildings. Signs with arrows indicating the way to and through the second exit shall be posted in all regularly used underground travel or passageways.

(3) Exits - Mines opened by a tunnel or adit level one thousand (1,000) feet in length, or opened by a tunnel or adit level where workings are three hundred (300) feet deep vertically or on an incline or a combination of both below the tunnel or adit level, shall have two (2) or more exits or openings to the surface. An underground travel or passageway to an adjoining mine may be considered as one of these exits.

(4) No mine shall be worked to a greater depth vertically, on incline or both than three hundred (300) feet below the last level without connecting the bottom of such exits. Provided, however, that none of the preceding requirements shall be applied in cases where outlets are in process of being connected to comply with these requirements, or where openings or shaft are being driven or sunk for the prospecting or developing of mines and not for the extraction of minerals except such as may be extracted in course of prospecting or development work, or in any mine where one of the outlets shall have become temporarily impassable and in which all reasonable effort is being directed towards opening such outlet.

(5) Exits Through Other Mines - When a travel or passageway shall have been established by agreement between adjoining mines, this travel or passageway shall be kept available for egress, and shall

not be closed except temporarily in cases of extreme emergency. Such travel or passageway shall be constructed, equipped and maintained according to plans approved by the Department.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, §25-2-13(2).
History:

480-3-3-.02 Ladders And Ladderways.

(1) Construction of Ladders - Except in the case of swinging or extension ladders used for shaft sinking, all ladders and ladderways shall be built of clear lumber free of knots or other imperfections as prescribed below:

(a) The stringers of ladders shall be built of not less than two by four (2 x 4) inch sound lumber or its equivalent.

(b) The distance between the centers of the rungs of a ladder shall not exceed twelve (12) inches and shall not vary more than one (1) inch in any one ladderway. The length of the ladder rungs (width of ladder) shall not be less than ten (10) inches between stringers.

(c) The back side of the rungs of a ladder shall in no case be less than six and one-half (6 1/2) inches from any obstruction.

(2) Wooden ladder rungs shall be set in one of the following ways:

(a) Flush with the outer surface of the stringers.

(b) Nailed on top of the stringer. If this is done, there shall be filler pieces between the ends of the rungs. These filler pieces shall be the same width as the stringer and the thickness of the rungs.

(c) Stringers bored through and round rungs inserted and wedged.

(3) Installation of Ladders - Platforms Required Every main ladderway, such as those used in shafts, winzes, raises and those used in second exits, having an inclination of more than 70^ from the horizontal, and where the distance between the top and bottom of the ladderway is more than thirty (30) feet, shall have substantial platforms at intervals of not more than thirty (30) feet. If possible, the sections of the ladders shall be staggered at each platform so that no section shall be directly in line with the section above or below it.

(a) The opening in any such platform shall be approximately twenty-four by twenty-four (24 x 24) inches or larger, but no

opening shall be of such size or dimension as to retard the passing through thereof of rescue men equipped with oxygen breathing apparatus.

(b) Ladders shall project at least three and one-half (3 1/2) feet above every platform in the ladderway and at least three and one-half (3 1/2) feet above the collar of a shaft, winze or raise, unless convenient and secure hand holds are fixed at such places.

(c) In ladderways, other than main ladderways, the ladders may be fixed vertically, provided platforms are installed at least every thirty (30) feet.

(d) All ladders shall be securely fastened.

(e) Under no circumstances shall any ladder inclining backward from the vertical be installed or used.

(f) Ladderways shall be maintained in safe condition, kept clear of loose rock and obstructions and shall be inspected regularly to ascertain that such condition exists.

(g) Ladders of metal or a combination of metal and wood, of equivalent strength, installed in a safe manner shall be satisfactory.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.03 Fencing Abandoned Openings And Other Areas.

All abandoned entrances to underground workings and condemned mines or parts of mines shall be fenced or effectively guarded and posted with signs reading "Danger-Keep Out." Permanently abandoned underground workings shall be fenced or posted with signs reading, "Danger-Keep Out."

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.04 Structures Over Or Near Mine Openings.

(1) Nonflammable Housing Over Mine Openings - Only housing having a framework of metal or wood, and metal or other nonflammable sides and roof and dirt, gravel, concrete or other fireproof flooring, shall be erected over any shaft, tunnel, portal or other mine opening. All non-fireproofed structures constructed after the effective date of these rules and located within 50 feet of such

shaft, tunnel, portal or other mine opening shall be made fireproof or removed.

(2) Nonflammable Material and Buildings Near Mine Openings - Timber framing or storage sheds or any flammable structures or piles of flammable material other than the current supply of mine timbers and ties shall not be placed or permitted to remain within one hundred (100) feet of any mine opening, shaft house, hoisting engine house or ventilating fan house; provided, however, that wooden head-frames and wooden structures within one hundred (100) feet of shaft house over or near shafts or openings, which have been returned airways continuously for the past two years, need not be removed during the time said shafts or openings continue to be return airways at all seasons, and said shafts or openings are guarded by fireproof doors and other fire prevention equipment satisfactory to the Department.

(a) When the portal of any mine opening or the collar of any shaft is covered by a flammable building built prior to the date these rules become effective, such building shall be permitted to remain. In such case, a fireproof door shall be provided for such mine opening which shall be and shall fit as nearly gas tight as possible. Said door shall be installed in such a way that the opening can be closed from the outside of the building by a pull wire or rope, in the event of fire. This door shall close automatically upon release of the wire or rope. If a wire or metal rope is used, there shall be several fusible links in it or other efficient means shall be provided to cause the door to close in case of an outside fire. If a fiber rope is used, it shall be of the minimum necessary size and be readily destroyed by fire.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.05 Fire Prevention And Fire Fighting Equipment.

(1) Electrical Installation - All stationary electrical equipment, which might communicate fire to adjacent flammable material shall be of a type which will confine the heat and flames within the equipment or it shall be so located and installed that flammable material will not be ignited. This rule does not apply to conduit wiring or to approved enclosed externally operable switches.

(2) Fireproofing Mine Entrances and Stations - Where it is determined by the Department that a serious fire hazard exists, mine openings for a distance of fifty (50) feet from the surface and underground stations having a fire hazard, shall be constructed of fireproof material or maintained in a nonflammable condition. The use of water, steel supports, concrete, granite, cement plaster or other fire resistant material satisfactory to

the Department is recommended. It is further recommended that at regular intervals, in the main shafts and haulage ways, certain sections be made fireproof, to serve as fire barriers.

(3) Heating Devices Underground - Fire for personal warmth shall not be permitted underground and open torches, acetylene lamps, electric heaters, (except approved electric heaters used for baking armatures), and candles shall not be left unattended in any mine in the vicinity of wood or other flammable material. This shall not be construed to prohibit the use of torches or heating devices necessary for mechanical repairs, provided such devices have continuous attendance while lighted, and all flammable material within a radius of five (5) feet of the work being done has been removed or made wet with water before work is commenced and after the repairs have been finished.

(4) Exits to be Passable in Case of Fire - Each mine required to maintain a second exit or travelway shall protect underground employees against the hazard of all exits or travelways becoming impassable because of fire or fire gases, by one or more of the following methods:

(a) By fireproofing the main drift, slope or shaft and slope stations, provided that where there is no fire hazard sufficient to interrupt the use of the main hoist for rescue purposes, such conditions shall be a sufficient compliance.

(b) By maintaining a connecting passageway between working levels or sections of such mine and an adjoining operating mine.

(c) By such mechanical control of the air currents as will permit the supplying of fresh intake air through any shaft or escapeway by reversal of air currents, if necessary.

(d) By installation of fire-proof, smoke-proof and gas-proof doors satisfactory to the Department.

(5) Fire Doors and Bulkheads - Where it is determined by the Department that a serious fire hazard exists in a mine, then emergency fire doors or bulkheads shall be placed according to a plan to be submitted to and approved by the Department to prevent smoke and gases from cutting off the escape of men. Such doors may also be used for the control of normal mine ventilation.

(a) Such bulkheads, door frames, and fire doors shall be constructed of fireproof material and so placed and maintained that they can be readily closed and will be reasonably gas-tight.

(b) Fire doors shall be provided with suitable latches or other suitable devices so that they may be opened from either side, but cannot be opened by the reversal of the air current.

(6) Fire Warnings - A fire alarm system adequate to give warning of a fire to all employees who are working above and below ground shall be provided and maintained in good working condition in all mines. Stench warnings, telephone systems or light blinker systems are suggested.

(a) Notice of a fire must be given to all employees concerned above and below ground immediately upon discovery of a fire in or near the mine.

(b) At any mine where it is determined by the Department that the workings constitute a local or general fire hazard, the following fire fighting apparatus shall be provided and maintained in good order and available for instant use:

1. Fire Fighting Equipment - A supply of water for fire fighting so distributed that a stream of water can be had at any active working section of a mine, or unsealed section abandoned after the effective date of these rules in which a fire hazard exists and through timbered and nonfireproofed portions of the shaft or slope, with necessary connections for the attachment of hose and an adequate supply of hose so arranged that it can readily be put in a skip, cage, or other conveyance. Hose shall be kept at the mine entrance, in each working section, and at such other places as may be required by the Department.

2. Where the water supply is inadequate or cannot practicably be applied to meet the requirements of these rules, special fire fighting equipment and protection, according to a plan to be submitted to and approved by the Department, shall be supplied.

3. All equipment for fire protection purposes, when one and one-half (1 1/2) inches or larger, shall be equipped with standard threads for fire hose couplings and hydrant fittings as adopted by the National Board of Fire Underwriters.

4. For couplings under one and one-half (1 1/2) inches, standard equipment couplings shall be used.

5. A supply of sand, rock dust or other incombustible dust shall be provided where electrical equipment such as motors, transformers, etc., are located underground, or one or more fire extinguishers of an approved type for electrical fires.

6. There shall be provided at all mine openings where flammable structures exist within one hundred (100) feet of the opening, a system of fire hydrants with sufficient

hose or monitors properly placed and connected with the main water supply system.

7. Maintenance of Fire Extinguishers - All equipment intended solely for fire fighting purposes shall be tested or carefully inspected at monthly intervals and defective equipment repaired or replaced immediately. All hand chemical fire extinguishers of the soda acid type shall be discharged, inspected and refilled every twelve (12) months and the date of last refilling marked on a tag attached to the extinguisher. Special care must be taken to keep the nozzles of chemical fire extinguishers free from corrosion.

8. Special provisions shall be made to protect fire extinguishers whose effectiveness is destroyed by cold.

9. Fire extinguishers shall be so placed that they will always be accessible in case of fire within the area in which such fire extinguishers may be used.

(7) Fire and Safety Diagram - Within ninety (90) days after the effective date of these rules each mine employing twenty-five (25) or more men underground shall prepare a diagram showing the position of (1) exit, (2) manways, (3) tunnels, (4) shafts, (5) fire doors, (6) fire extinguishers, (7) water lines available for fire fighting, (8) telephones, (9) refuge places. Such diagram need not show boundary lines, outlines of ore bodies, or other details not essential for the safety of the employees. Legible copies of said diagram shall be available in the mine office. They shall be brought to date at least once in six months.

(a) At each mine, there shall be an organization for fire prevention, fire control and rescue work. The members of the organization shall be instructed in their duties and a plan of action shall be posted on the mine bulletin board. Fire drill for fire organization members shall be held once every sixty (60) days.

(8) Storage of Flammable Materials and Oils - Oils and other dangerous flammable material shall be stored in a covered building kept solely for such storage, which building shall be at least one hundred (100) feet from any shaft, tunnel or other mine opening or building over a mine opening, and at least one hundred feet from any powder magazine; provided, that petroleum products may be stored in a tank or tanks buried in the ground, which tank or tanks shall be provided with proper vents, and shall be placed at least one hundred (100) feet from any shaft, tunnel or other mine opening, or building over a mine opening, and at least one hundred (100) feet from any explosives magazine.

(a) Tanks containing flammable liquids shall be so located that the escaping liquid cannot run over the surface from such

tank to any mine opening or building, within one hundred (100) feet of any mine opening. Under no circumstances shall oxygen or inflammable gas be stored in proximity to oil.

(b) At all places where gasoline, distillate, oil or other flammables are stored, approved electric lights with switch outside of storage place shall be installed, if electricity is available, in order to obviate the use of open lights.

(c) Lubricating oils, greases, rope dressings and fuel oils taken underground shall be kept in approved closed metal containers that will not permit the contents to leak out or spill; provided that lubricants including fuel oils may be stored in reasonable quantities if stored in a fire-proof compartment connecting with the return airway direct to the surface, and in such manner that the oil from a ruptured or overturned container will not flow from its storage place.

1. Lubricants and fuel oils used in sections must be kept in approved metal containers kept securely closed when not in use, in minimum quantities for operations. Reasonable quantities, however, may be stored in a fire-proof compartment connecting with return airway direct to the surface and in such manner that the oil from a ruptured or overturned container will not flow from its storage place.

2. Five hundred pounds of rock dust or sand or a chemical liquid, gas or dry dust fire extinguisher suitable for use in extinguishing oil and grease fires shall be kept convenient to each oil or grease storage room in mines.

(d) No oil shall be taken underground for illuminating purposes.

(9) Flammable Material Underground - The use of gasoline underground is forbidden except in small amounts such as is required for blow torches or miners' safety lamps.

(a) The use of fuel burning engines or locomotives and internal combustion engines underground is forbidden, unless the engine or locomotive or internal combustion engine has been approved by the Department for such use.

(b) Flammable or other rubbish shall be promptly removed from the mine or placed at a point within the mine where it will not constitute a fire hazard.

(c) All discarded oily waste used about underground machinery shall be deposited in closed metal receptacles. The contents of the receptacle shall be sent to the surface when it is full.

Author: Marcus Davis, Workers' Compensation Examiner.

Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.06 Shafts And Hoisting.

(1) Construction of Shaft Landings, Surface and Underground. All vertical and inclined shafts over 35^ shall be enclosed on the surface. Gates at ground landings shall be not less than five (5) feet in height, of substantial construction, and except when the case is at the landing, shall be kept closed at all times. When the shafts are enclosed by a fence it shall be not less than five (5) feet in height and of substantial construction. As an additional precaution to prevent the cage being moved from the ground landing while the gate is open, a red warning light should be installed in view of the hoistman or hoisting engineer and so connected as to burn while the gate is open. Hinged or sliding gates at least five (5) feet in height shall be installed at the shaft on each underground level and shall be kept closed at all times except during periods of continuous hoisting when an attendant or cager is constantly on hand.

(2) Station Deflecting Screens - At the bottom of every shaft and at every station in the case of mines operating from more than one level, there shall be heavy deflecting screens hung by hinges at the top and extending down to within about six and one-half (6 1/2) feet of the floor to protect workmen near the shaft from falling objects. These protecting screens may be pulled up out of the way when unloading long material such as rails and timbers.

(3) Shaft Equipment - When a bucket is used for hoisting, means shall be provided that will prevent material from falling into the shaft while the bucket is being dumped.

(a) All stations, levels, or skip and cage landing stations shall have a passageway around the working shaft so that crossing through the hoisting compartment may be avoided.

(4) Shaft Repairs - Entering or crossing the hoisting compartment of a shaft except to ascend or descend, or for the purpose of inspecting or effecting repairs is prohibited.

(a) Before repairs in the shaft are commenced, the person in charge of or directing the repairs shall inform the hoisting engineer of the nature thereof.

(b) All planks and timbers used for temporary staging or scaffolding in shafts shall be secured in place before operations are commenced.

(5) Crossheads for Buckets - Buckets used for hoisting or lowering men in vertical shafts more than two hundred (200) feet deep shall

have under bonnet, a crosshead traveling upon guides. The height of the crosshead shall be no less than two-thirds (2/3) of its width.

(6) Maintenance of Safety Catches - The safety catches of cages, skips or buckets shall be kept well oiled and in good working order; they shall be tested at least once each month by tying up the cage bucket or skip with hemp rope, lowering a few feet of hoisting rope on top of cage, skip or bucket, then cutting the hemp rope; provided, that any other method of testing which is equally effective may be used after securing the approval, in writing, of the Department.

(7) Shaft Sinking - During sinking operations in shafts or slopes steeper than 20 degrees from the horizontal, no other work in any other place in the shaft or slope shall be executed, not shall any material or tools be hoisted or lowered from or to any other place in the shaft or slope while men are at work in the bottom of the shaft or slope, unless the men so at work are protected from the danger of falling material by a securely constructed covering, sufficient closable openings being left for the passage of men and the bucket or other conveyance used in the sinking operations.

(8) Hoisting at Sinking Operations - In no case shall a cage, skip, bucket, or other vehicle be lowered directly to the bottom of the shaft or slope when men are working there, but such cage, skip, bucket, or other vehicle shall be stopped at least fifteen (15) feet above the bottom of such shaft, or slope until the signal to lower farther is given to the hoisting engineer, by one of the men at the bottom of the shaft or slope.

(a) On slopes and haulage ways driven after these rules become effective, there shall be a clearance of at least two and one-half (2 1/2) feet from the side of the cars on one side and not less than one (1) foot from the side of the cars on the opposite side. The wide clearance shall be carried continuously on the same side of the slope.

(b) The operator shall determine the number of men that can be safely permitted to ride on the cage at one time and this number shall be posted at the shaft and shall not be exceeded.

(9) Construction of Cage and Safety Devices - Cages on which men are hoisted or lowered shall have overhead or side bars or chains so arranged that every man on the cage may have an easy and secure hand hold.

(a) Cages or skips used for hoisting or lowering men in vertical or steeply inclined shafts shall be provided with safety catches designed to prevent falling of the cage or skip if the hoisting rope or other connections break. Skips, cars or trips of cars used for hoisting or lowering men in slopes shall have a safety rope extending from the rear of the skips,

cars or trips of cars through or around the skips, cars or trips of cars to an attachment on the hoist rope, except more positive safety catches approved by the Department shall be permitted. Cars or trips of cars used for hoisting men shall have a drag or drags on the rear of car, side of car or trip of cars, or equally effective device, which will arrest, stop or derail such car or trip of cars in case of rope or hoist failure. It is recommended that these drags be raised and equipped for manual release as a protection in the lowering of men.

(10) Cage Chair - In vertical shafts where men are hoisted or lowered, cage rests or chairs shall be provided at each station unless their omission is authorized in writing by the Department.

(a) The surface landings at all shafts where men are hoisted or lowered between sunset and sunrise, shall be illuminated by permanently installed electric lights. At the upcast shafts where the vision may be obscured in the winter because of fog, the lights shall be of sufficient intensity and so placed that the cage and cage platform may be readily seen.

(11) Shaft Station Illumination, Surface and Underground - Each underground shaft station or landing regularly used by men being hoisted or lowered shall be so illuminated by permanently installed electric lights, as to give at least three (3) foot candles of light intensity on the station sill and in the station for a distance of fifteen (15) feet back from the shaft. The lights and lighting shall be so chosen, protected, enclosed, installed, or located, as to be free from shadows and of such intensity that the landings will be clearly and distinctly visible. The illumination shall be maintained at all times when men are in the mine, except during power interruption.

(a) The track at the top landing of a shaft or slope shall have a derailing or other protective device which shall always be kept in derailing or blocking position except when a car is being placed on or being taken off the cage at said landing, or when cars are entering the slope under control.

(12) Hoisting Speed - The speed at which men are hoisted or lowered in shafts or slopes shall not exceed the following: 500 feet in depth or less-500 feet per minute 500 feet to 1,000 ft. in depth-800 feet per minute over 1,000 feet in depth-1/2 regular hoisting speed.

(13) Interrupted Hoisting - After any stoppage of hoisting for repairs or for any other purpose exceeding two (2) hours in duration, the cage or other conveyance shall be run up or down the shaft or slope at least once before hoisting or lowering men.

(14) Sinking Bucket Hooks, Shaft Covering - The hooks used with sinking buckets or cans shall be of the self-1ocking type and, in

addition, the bucket shall be secured to the rope by a safety chain. If the shaft is more than two hundred (200) feet in depth, guides and a crosshead shall be used. The crosshead shall be so designed that when it is traveling with the bucket, it will be securely locked to the rope. The top of the shaft shall be covered over with a strong platform or cover, equipped with door for the passage of the bucket. These doors shall be kept closed at all times except when the bucket is passing through them.

(15) Inspection of Hoisting Equipment - Daily inspection or more often, if necessary, shall be made of all hoisting equipment used in hoisting and lowering men and at least once each week a thorough inspection shall be made of the hoisting shaft, the cages, rope connections, ropes, sheaves, hoisting engine and appurtenances used in connection with the hoisting and lowering of men. Once each month, or more often if necessary, the safety catches, overwind and overspeed devices, and any other automatic devices used for hoisting from vertical shafts or steeply inclined shafts or slopes shall be tested. A signed report shall be entered in a book provided for that purpose, giving in detail the results of the monthly tests and inspection, and what repairs or adjustments were made as a result of these tests and inspections.

(16) Transporting Materials - No person other than the cage tender or men in charge of transported material shall ride or be permitted to ride on any cage on which tools, explosives, or supplies, are being hoisted or lowered. No person shall ride or be permitted to ride on a cage on which there is a loaded or empty car. No ore or other material shall be hoisted or lowered in any shaft while men are being hoisted or lowered by the same hoist. No tools shall be permitted in cars, cages or skips in which men are riding except scientific instruments, or tools carried on the employee's person, unless a fixed closed compartment is provided for such tools or equipment. No explosives shall be transported in the mantrip.

(17) Duties of Cager or Triprider - The cager, cage tender, or in the case of slopes, the triprider, chainer or designated signal man shall be in charge of the hoisting and lowering of men and no one else shall give any hoisting signals while these men are on duty. It will be the duty of these men to enforce all regulations or rules with regard to the hoisting or lowering of men and not to signal for the movement of the cage, skip or mantrap until these rules have been complied with. Men riding in open mantrips, hauled by trolley locomotives, shall sit on the side of the car away from the trolley wire. No man or men except trip-riders, shall ride, or be allowed to ride, on loaded skips of ore being hoisted or lowered.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.07 Hoisting Engines.

(1) Hoist Capacity - All hoisting equipment used in shafts and slopes shall be of ample capacity and of standard design commercially recognized as safe, for its particular duty.

(a) The drums or cable reels of hoists used in shafts and slopes shall be provided with flanges that extend not less than two inches (2") radially beyond the outer layer of rope when the rope is fully wound on the drum or reel.

(2) Hoist Brakes - All such hoists shall have sufficient power to hoist the unloaded unbalanced cage or skip and shall be equipped with brakes adequate to stop and hold the fully loaded unbalanced cage or skip, (or trip of cars), at any point in the shaft or slope.

(a) All hoists used for handling mantraps shall be provided with indicators that plainly show the engineer or hoistman the true position of the cages, skips, or cars in the shaft or slope at all times.

(3) Safety Devices on Hoists - All electrical hoists used for handling mantrips in vertical shafts shall be equipped with protective devices which will promptly bring the hoist to rest upon failure of power and will permit the lowering of the cage, skip or cars by brakes after it has been brought to rest through failure of power.

(a) All electrical hoists used for handling man trips in vertical shafts shall be equipped with a device to prevent overwinding and to prevent the cage or skip from falling back down the shaft or incline if overwound. It shall also be provided with an overspeed device which shall be connected whenever men are being hoisted or lowered and which shall be so adjusted as to prevent the men from being hoisted or lowered in excess of the speed stipulated in these rules.

(b) Hoisting cable shall be firmly clamped to the drum or reel and at least three (3) turns of the cable shall remain on the drum or reel at all times when the cable is extended to the lowest landing.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2)
History:

480-3-3-.08 Hoisting Ropes (Steel Or Iron).

(1) No rope for hoisting or lowering men shall be used when such hoisting or lowering is done by any means other than human or animal power, unless such rope shall be composed of metal wires with a factor of safety determined as hereinafter set forth; provided, however, that such metal wires may be laid around a hemp center. Such ropes shall be inspected daily.

(2) Safety Factor for Hoisting Ropes - The safety factor of a new rope shall be calculated by dividing the breaking strength of the rope as rated by the manufacturer, by the sum of the maximum load to be hoisted, plus the total weight of the rope in the shaft when fully let out.

(a) Hoisting rope safety factors for various depths of shafts shall continuously conform with the table given below:

Length of rope (vertical or incline)	Minimum factor of safety for new rope	Minimum factor of safety when rope must be discarded
500 feet or less	8	6.4
500 to 1,000 feet	7	5.8
1,000 to 2,000 feet	6	5.0
2,000 to 3,000 feet	5	4.3
3,000 to more	4	3.6

(3) Shaft or Incline Rollers - The safety factor shall be calculated by dividing the breaking strength of rope (as rated by the manufacturer or in accordance with test of sample by the United States Bureau of Standards), by the maximum pull not including friction or acceleration-- that is, by the sum of the maximum weights to be hoisted including weight of skip or car and cage plus weight of material to be hoisted plus total weight of rope when extended to bottom of hoist way. If the hoist way is inclined, the calculated components of the weights parallel with the incline shall be used.

(a) At angle points in incline shafts, the rope shall be supported on rollers or sheave wheels.

(4) Hoist Rope Maintenance - No rope shall be used for hoisting or lowering men (1) if there are six broken wires in one strand of a rope lay (2) if the wires on the crown are worn to sixty-five (65) per cent of their original diameter; (3) if more than three (3) wires which have been reduced by wear more than thirty (30) percent in cross-section are broken in one strand of rope lay (4)

if marked corrosion appears (5) if minimum safety factor falls below that specified in these rules. Where it is not practical to caliper accurately rope strands of wire in the field, then the test for wear and remaining strength shall be determined by measuring across the crown of the wire in accordance with methods approved by the Department.

(a) In all shafts containing acid waters, some acid resisting preservative shall be regularly used upon the rope.

(b) The rope shall be attached to the load by the thimble and clip method or the zinc socketing method.

1. Thimble and Clip Method

a. The rope shall be attached to the load by passing one end around an oval thimble that is attached to the load and 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.

b. 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 table below:

c. The following number of caps shall be used for various diameters of six (6) strand nineteen (19) wire plow steel ropes:

(Follow manufacturer's recommendations for other kinds of wire rope).

Diameter of rope (inches)	Number of clips	Space between clips (inches)
3/4	5	4-1/2
7/8	5	4-1/4
1	5	6
1-1/8	5	7
1-1/4	6	8
1-3/8	7	9
1-1/2	8	10
1-5/8	8	10
1-3/4	8	11
1-7/8	8	12
2	8	12

d. For all wire ropes less than 3/4 inch in diameter, at least four clips shall be used.

2. Socketing Method

a. For wire ropes over 1 1/4 inches in diameter it is recommended that the zinc socketing method be used. If used, the work shall be done by a person experienced in this kind of work.

b. The rope should be securely seized or bound at the end with soft iron wire before the end is cut square. An additional seizing should be placed on the rope a distance equal to the length of the socket from the end. After the rope is trimmed off, the seizing on the end should be removed, the rope opened down to the second seizing, the hemp center cut out, and the wires broomed out; that is, all the wires should be untwisted but not straightened. Then the wires should be thoroughly cleaned in benzene, naphtha, or gasoline, as far as they are to be inserted in the socket, and dipped in commercial nuriatic acid for thirty (30) to sixty (60) seconds until the acid has cleaned each wire. Next, the end of the rope should be dipped in boiling water, to which a little soda has been added to clean off and neutralize the acid, and inserted in the socket and warmed, if the temperature is below sixty-five (65") degrees F. to prevent cooling the zinc too rapidly. The socket is placed with its axis vertical to and coinciding with the axis of the rope; the bottom is sealed with clay or putty; and molten zinc or spelter, heated to a temperature that will just char wood, is poured into the socket until it is full. The socket preferably should be forged from one piece of soft iron or steel without welds.

c. Babbit metal, lead, or other anti-friction material for socketing wire ropes is prohibited.

d. All hoisting rope in use for hoisting and lowering men and materials in shafts shall be examined once every three (3) months by cutting off from the lower end of such rope a section not less than five (5) feet in length (from above clips or socket) and having such section examined carefully both externally and internally for crystallization, wear, corrosion and breaks.

e. If, upon any inspection, a hoisting rope shall be found to be below the requirements set forth in this rule, the rope or that portion of it which is found to be defective shall be immediately discarded for such purposes.

(5) Hoist Rope Reports - In a book in the mine office the operator shall keep a record of every hoisting rope used for hoisting and lowering men, noting the length and cross-sectional dimensions of

the rope, the breaking strength of the rope as given by the manufacturers, the name and address of the maker, the date of purchase, the date when put in use, the designation of the shaft and compartment or slope in which the rope is used, the dates of resocketing, re-clamping, and shortening, the length of rope cut off at each such operation, the dates of reversing ends, the date when discarded, the reason for discarding, and other items which appear to him to be pertinent to safe and efficient use of hoist rope.

(6) Lubrication of Hoist Ropes - Every hoisting rope used in shafts shall be lubricated at least twice monthly with a suitable lubricant. Only lubricants recommended by the rope manufacturer and developed as the result of tests shall be used.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.09 Signal Systems.

(1) Each hoisting engine operating at a shaft or slope where men are being hoisted shall have at least two independent signaling systems of which one shall be a telephone. Provided that a telephone shall not be used in lieu of regular signaling devices except in extreme emergency and when the regular signal system is out of order. One signal system shall be permitted for shaft or slope in a process of being sunk or deepened.

(2) Special care shall be taken to keep the signaling apparatus in good order, and signal and telephone wires shall be run at a safe distance from other electrical circuits, and where possible, placed on side of the shaft, slope or heading away from other circuits.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.10 Hoisting Signal Code.

The following code of signals shall be used for the operation of hoists. (All signals used for hoisting of men shall be acknowledged by the hoisting engineer before men may enter the shaft or slope conveyance.)

1 ring -- stop

2 rings -- hoist

3 rings -- lower

4 rings -- hoist slowly

5 rings -- lower slowly

8 rings -- man on skip, cage or trip followed by hoist slowly or lower slowly signals after men have entered cage, skip or trip.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.11 Hoisting Engineers.

(1) Qualifications of Hoisting Engineers - At every mine where men are hoisted or lowered, there shall be two (2) or more men available to be known as hoisting engineers. These men shall be able to speak and read English readily, and must have had practical experience in operating mine hoists. Each hoisting engineer shall be given a thorough physical examination annually by a physician licensed to practice in Alabama and selected by the operator.

(a) Men who wish to become hoisting engineers but who have not had practical experience in hoisting and lowering men and material must operate a hoist, handling material, a sufficient length of time under the instruction of an experienced hoisting engineer, until the employer considers the learner competent to hoist and lower men, and he may then act as a hoisting engineer.

(b) At all shafts where men are hoisted or lowered, such hoisting engineers shall be not less than twenty-one years of age. Hoisting engineers shall be familiar with the details and workings of a mine hoist, and, except in cases of emergency, no others than the duly appointed hoisting engineers shall run such mine hoist; provided, however, that learners may be taught the operation of the hoist at such times and under such restrictions that there shall be no danger to life or limb.

(2) Extra Man Required at Hoist for Hoisting Men - At all times when the shift is hoisted or lowered in a shaft or slope, a man who is familiar with the operation of the hoist, but not necessarily a qualified hoist engineer, shall be present beside the hoisting engineer and be on the alert to assume immediate control of the hoist in the event the hoisting engineer should become incapacitated.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.12 Duties of Hoisting Engineers.

(1) It shall be the duty of every hoisting engineer to keep a careful watch over his engine, hoisting rope and all other machinery under his charge.

(2) Hoistman in Charge - He shall at all times be in immediate charge of his engine, and shall not delegate any of his duties to any other person, except to learners duly designated as provided in these rules; provided, however, that nothing herein contained shall be construed to prevent any hoisting engineers from delegating to or sharing his duties with any other duly appointed hoisting engineer.

(3) Duties of Hoistman - He shall familiarize himself with and use all signal codes for hoisting and lowering as directed to be used in these rules.

(a) He shall not operate his hoist until he is satisfied that the hoist and appurtenances are in safe working order.

(b) It shall be the duty of the hoisting engineer to exclude every person from his engine room, excepting any person or persons whose duties require their presence therein, and authorized visitors.

(c) He shall hold no conversation with any one while his engine is in motion, or while attending to signals, except to receive orders or instructions in case of emergency.

(d) He shall run his engine with extreme caution whenever men are being hoisted or lowered.

(e) He shall not hoist men out of or lower men into any mine or shaft at a speed greater than the rate stipulated in these rules and posted in the engine room.

(f) He shall inspect daily all hoisting machinery and safety appliances connected therewith and shall report any defects found therein to the proper authority.

(g) He shall not land the trip, bucket, skip, cage, or other conveyance at the collar of the shaft, or at a level but must hang it at least ten feet (10') above the collar of the shaft, or above a level before leaving his post.

(h) He shall familiarize himself with and carry on the requirements of all rules pertaining to his duties.

(i) Whenever men are working in a place to which they have been lowered by mechanical power, an engineer or a substitute must remain within hearing of the telephone and signal gongs while the aforesaid men remain in their working places.

(j) The hoisting engineer shall not operate the hoist while it is being oiled or cleaned. The oiler shall notify the hoisting engineer when oiling or cleaning operations are to commence and when they are finished.

(4) Hoist Operations Restricted - When men are working in a shaft without bulkhead over their heads and the skip, cage or bucket is "hung up", neither the hoist engineer, not any one else, shall move it or knowingly give orders to move it without having received verbal permission to do so from those who are holding it.

(a) When men are working in a shaft without bulkhead over their heads, the hoisting engineer shall not move the skip, cage or bucket until he is notified by the person in charge, that the employees in the shaft have been warned and are in the clear.

(b) A copy of these rules shall be posted in a conspicuous place in the engine house.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.13 Haulage.

(1) Blocking Frogs - When mechanical haulage is used, the wedge opening formed between the switch point and stock rail must be so filled as to eliminate the danger of a foot being jammed or caught therein. Openings formed by wing rail of frogs must likewise be so filled.

(2) Trolley Suspension and Guarding - All trolley wires carrying two hundred twenty (220) volts or more and less than six feet six inches (6'6") above the top of rail must be guarded at all points under which men and animals are required to pass and regardless of height, at stations designated for loading and unloading of man trips and at sand boxes.

(3) Person Operating Locomotive - At no time shall a haulage locomotive be operated by any one other than a qualified motorman or man having had experience or training in the operation of such motor. The motorman shall have direct supervision of the haulage crew and shall be responsible for the safe operation of the trip.

(4) Maintenance and Inspection - Haulage locomotives shall be maintained in good operating condition and shall be equipped with

adequate brakes, head-1ights, warning signals, sanding devices and two standard re-railing devices.

(a) Before operating a haulage locomotive, at the beginning of a shift, the motorman shall inspect such locomotive to determine whether it may be safely operated; such inspection shall include the testing of brakes, lights, warning signals and sanding devices.

(5) Men and Material on Locomotives - Unless safe and adequate facilities are provided therefor, men shall not ride, or be permitted to ride, on top of electric locomotives and no material shall be transported on top of haulage locomotives except in a fixed compartment provided for that purpose.

(a) Haulage locomotives shall not be left unattended, except at regularly designated locomotive stations or repair places, or in cases of emergency, and then the brakes must be set, the brake wheel spragged and the trolley pole removed from the wire.

(b) Back-poling with a trolley locomotive shall not be practiced or permitted except that it shall be permitted at points where there is not sufficient clearance to turn the trolley pole and then only for the purpose of moving the locomotive to a point where such clearance is available. Should other conditions necessitate back-poling, it shall be practiced only where permission has been granted by the mine foreman.

(c) Haulage locomotives shall not be operated except when the operator is in the locomotive seat.

(6) Operation and Switching - Flying switches and coupling cars, while the train is in motion shall not be practiced or permitted.

(a) Standard switches with parallel throws shall be provided at all switches on main line haulage.

(7) Rail Bonding - Where trolley locomotive haulage is used, at least one rail shall be continuously bonded and cross bonds installed at all switches and turnouts, provided, however, that cross bonds must be installed at distances of not to exceed two hundred (200) feet apart.

(a) Except in emergencies, the motorman shall accept signals only from his triprider.

(8) Pushing Trips - No trips shall be handled at a speed which is excessive or unsafe as determined by local conditions. Tail lights or approved markers must be used on the rear of the last car of any trip, connected to an electric locomotive.

(a) Where it is necessary to "top" or "rack" cars loaded with rock or ore, they shall not be "topped" or "racked" to a height exceeding eight (8) inches above the side or end of the car.

(9) Cars - Cars, uncoupled from the motor, shall have the brakes set or the wheels spragged when placed on any grade. They shall be further safely secured by effective blocking with blocks or stops if uncoupled from the motor and standing on a grade of two (2) per cent or more.

(a) Drags shall be used on the rear of all cars or trips of cars being hoisted or hauled upgrade, or a derailing device shall be installed to prevent such cars or trips of cars endangering men.

(b) No person excepting trip riders, shall ride on loaded car or cars, and they shall ride only the front or rear end of pulled trips.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.14 Explosives To Be Used.

(1) Each case containing explosives for underground use shall be clearly marked by the manufacturer with the class which indicates the amount of poisonous gas produced per one and one-fourth by eight (1-1/4 x 8) inch cartridge.

(2) Explosives Specifications - For the purpose of this rule, the poisonous gas producing properties of an explosive shall be the volume of carbon monoxide plus hydrogen sulfide emitted by one and one-fourth by eight (1-1/4 x 8) inch cartridge as shown by tests in the Bichel Guage in accordance with procedure approved by the Department, provided the resultant gases do not contain more oxygen than is sufficient to burn the combustible gases to their maximum oxidizable state.

(a) No explosive shall be used underground if the gases emitted in the tests in the Bichel Guage according to the procedure approved by the Department show more oxygen than is sufficient to burn the combustible gases to their maximum oxidizable state.

(3) Markings on Explosives Containers - Cases containing explosives for use underground will be considered clearly marked in one-fourth (1/4) inch or larger type, the designation "Fume Class 1", or "Fume Class 2", or "Fume Class 3", provided the explosives contained in the cases so marked comply with the following classification:

Cubic feet of carbon monoxide plus hydrogen sulfide per one and one-fourth by eight (1 1/4 x 8) inch cartridge when tested according to paragraph (a).

Fume Class 1 --- Less than 0.16
Fume Class 2 --- 0.16 to 0.33
Fume Class 3 --- 0.33 to 0.67

Explosives in cartridge sizes smaller than one and one-fourth by eight (1-1/4 x 8) inch shall not emit more poisonous gases per cartridge than arE1/2 emitted by one and one-fourth by eight (1-1/4 x 8) inch cartridge as defined above.

(4) Conditions Under Which Explosives Are Used - Explosives complying with the requirements of Fume Class 1 may be used in underground workings free from combustible gases and, or, combustible dusts without specific application by the operator to the Department provided the explosive (1) has not deteriorated in prolonged or improper storage; (2) is properly charged and stemmed with no@combustible stemming; (3) does not have a burden so heavy that it will obviously be liable to blow out; (4) is not overloaded and (5) the mine is properly ventilated as required by these rules.

(5) Explosives - Explosives complying with the requirements of Fume Class 2nd Fume Class 3 shall not be used underground unless the operator has made specific application to and has shown to the satisfaction of the Department that adequate ventilation has been provided and that the operating requirements specified in these rules will be met.

(a) All explosives packed in cartridges must be loaded in the original cartridge without change in the quantity of the wrapper.

(b) Ammonium nitrate mixed with other materials as an explosive in underground blasting is hereby recognized. Due to the experimental state, no attempt is offered for rules covering its application. When suitable experience has been attained, rules shall be established and appended hereto.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2)
History: Prior to October 1, 1982, this rule was designated.as General Rule 14.

480-3-3-.15 **Explosives Magazines - Surface.**

(1) All magazines in which explosives are kept or stored shall comply with the requirements of these orders within six (6) months of the date these rules become effective.

(2) Location - All magazines in which explosives are kept or stored shall be located at a distance from buildings, railroads and highways in conformity with the Quantity and Distance Table in these rules.

(3) Barricades - The term barricaded shall mean a physical barrier either natural or artificial around the magazine, to protect life and limb in buildings and on highways, railroads and railways, from damage by premature explosions. Methods of barricading are as follows:

1. Locate the magazine in an isolated ravine; or

2. Excavate at foot or side of hill sufficiently deep to provide protection on the sides and end of the magazine. A two (2) foot space shall be allowed between the magazine and the excavated sides; or

3. Construct a substantial barricade of concrete or timber or earth or stone bank.

(4) All magazines containing more than two hundred (200) pounds of explosives shall either be barricaded or the distance from inhabited buildings, public railways and public highways shall be doubled.

(5) When as much as two hundred (200) pounds of explosives is kept on hand, it shall be stored in a magazine constructed of one of the following materials, and shall be termed as Class "A" Magazine:

FRAME: The walls shall be constructed of two inch by four inch (2" x 4") studding with a two inch (2") plank outside wall. The outside wall shall be lined with tongue and groove lumber. The outer wall shall be covered with No. 26 gauge galvanized iron or sheet steel on the outside. The space between the outer and the inner wall shall be filled with dry, coarse sand (not crushed stone or gravel). All dry timber shall be well seasoned and free from loose knots wind shakes, bark edges or decay.

BRICK: or RUBLE MASONRY: The walls shall be eight (8) inches in thickness. The bricks shall be of medium soft variety, or the masonry blocks or granite, laid in cement mortar containing not over twenty-five percent (25%) lime.

CONCRETE: The walls shall be six inches (6") in thickness constructed of four (4) parts sand and one (1) part cement.

TILE: The walls shall be constructed of either six inch (6") or eight inch (8") tile. The space in the tile shall be filled with dry, coarse sand (not crushed stone or gravel).

ROCK: In solid ground or rock ("L"shaped magazines are recommended.)

(a) The foundation shall be of stone laid in cement, concrete or brick piers; or a solid foundation may be used.

(b) Magazines of less than thirty thousand (30,000) pounds capacity shall have seven-eighths (7/8) inch tongue and groove flooring. Magazines of larger capacity shall have double floorings.

(c) All nail heads shall be counter sunk. No metal shall be exposed within the buildings.

(d) The door shall be constructed of at least three (3) layers of seven-eighths (7/8) inch hardwood lumber and metal covered on outside.

(e) The roof shall be constructed of at least one (1) inch lumber and covered with No. 26 gauge galvanized iron.

(f) For ventilation, four inch by six inch (4" x 6"), or equivalent, openings shall be spaced not more than five feet (5') center to center just below the roof line and at the floor level, covered with wire screen. The floor and ceiling shall be constructed to within two inches (2") of the walls in order to provide air circulation.

(g) The magazine shall be located in an isolated place. A damp location shall be avoided. All drain ditches around the magazines shall be kept open at all times.

(6) Size of Magazines - The size of the magazine depends upon the amount of explosives to be stored. The dimensions given in the following table are suitable for the amounts indicated.

MAIN STORAGE MAGAZINES

DIMENSIONS

Quantity	Widths	Lengths
1,000 lbs.	6 feet	6 feet
2,000 lbs.	6 feet	7 feet
5,000 lbs.	8 feet	9 feet
10,000 lbs.	10 feet	12 feet
15,000 lbs.	12 feet	12 feet
20,000 lbs.	12 feet	16 feet
25,000 lbs	12 feet	18 feet
30,000 lbs	12 feet	20 feet
40,000 lbs	14 feet	22 feet
50,000 lbs	14 feet	24 feet

(a) When less than two hundred (200) pounds of explosives are kept on hand, it shall be stored in a magazine of the following construction, which is termed a Class "B" Magazine:

(7) Class "B" Magazine and Construction - The principle of construction is simply that of placing one substantial box inside of another with a five inch (5") space filled with dry coarse sand (not gravel or crushed rock).

1. The outer box shall be built on the type of an ordinary contractor's tool box, equipped with sloping hinged lid.

2. The box shall be constructed of seven-eights (7/8) inch tongue and groove boards or one and one-eighth (1-1/8) inch plan lumber. The outside of the box shall be covered with not less than No. 24 gauge sheet iron.

3. The outer box will be one (1) foot longer, one (1) foot wider and six (6) inches deeper than the inner box so that when the inner box is set inside the outer box the tops will be level with each other and there will be a five (5) inch space on all sides for coarse sand filling. The inner box shall be set inside of the larger box and fastened into place.

4. The inside of all boxes shall be surfaced. No nail, bolt, or screwheads shall be exposed on the inside of the inner box.

5. At the top of each box, on the sides and ends, but one-fourth (1/4) inch by two (2) inch notches, spaced about (1) one foot apart, and not directly opposite.

6. Set the box (magazine) so that it is level and support it either on wooden sills, bricks, or piers; keep bottom of the magazine about six (6) inches off the ground.

7. Fill space between boxes with dry, coarse sand (not gravel or crushed stone) to within one-fourth (1/4) inch of the top of boxes. To prevent sand from falling into the storage space or into a shifting position, a cover may be placed over the sand space. All magazines shall be provided with substantial locks.

(8) Marking Magazines - magazines must be designated by conspicuously posted signs with the words "Magazine", "Explosives", "Dangerous" legibly printed thereon. Such signs shall be so placed that a bullet passing through the sign will not enter the magazine.

(9) Detonator Storage Separate - Blasting caps and electric blasting caps shall not be stored in the same magazine with dynamite or powder, but shall be stored in a magazine of similar construction as the dynamite or powder magazines, and not nearer than fifty feet (50') to any other explosives magazine

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.16 Transportation Of Explosives.

(1) Explosives shall be transported from the surface to the underground magazines between shifts if possible. Where this is not possible the movement of explosives shall have the right-of-way over all other operations. The explosives shall be transported from the surface to the underground magazines in the original containers.

(2) Train Transportation - Explosives transported by electric trolley locomotives shall be carried in substantial constructed enclosed cars lined with a non-conducting material with two empty cars between explosives car and locomotive.

(a) Detonators or capped fuses shall not be transported with other explosives in the same train.

(b) Card carrying explosives shall be hauled only in a train carrying no other material.

(c) No explosives shall be transported on an electric locomotive.

(3) Transportation and Handling - Explosives shall be transported from the underground distributing magazine to the face and shall be carried only in containers or conveyances approved by the Department.

(a) When capped fuse or detonators are used, they shall be carried in a separate container.

(b) Open lights and smoking shall not be permitted in or near an underground explosive or detonator magazine.

(c) Detonators shall not be stored nearer than fifty feet (50) to any explosives magazine.

(4) Location and Lighting of Underground Magazines - Explosives stored in an underground magazine shall be stored not nearer than seventy-five feet (75') to any active haulage or travelway, shop or repair place and shall be located not nearer than seventy-five feet (75') to any electric power lines except that lighting may be provided in a magazine if the wiring is in grounded conduit from a point at least twenty feet (20') from the explosives magazines, detonator magazine or fuse capping places. Where electric lighting is used inside of any magazine, wiring shall be in grounded conduit and the lamp shall be enclosed in a vapor proof globe in

turn protected with a wire guard. The entrance to any magazine shall not be in line with any shop, repair place or haulageway.

(a) No fuse shall be used that burns faster than one (1) foot in thirty (30) seconds or slower than one (1) foot in fifty-five (55) seconds.

(5) Burning Rate, Waterproofing Fuse - When capping fuse at least one inch (1") shall be cut from each roll.

(a) The use of oil or grease to waterproof joints between cap and fuse is forbidden. Special compounds are available for that purpose.

(b) Nothing less than No. 6 or equivalent strength detonators shall be used to explode dynamite at any time.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.17 Handling And Use Of Explosives.

(1) Black Blasting Powder - No black blasting powder shall be used in any underground mining operation.

(2) Squibs - No squibs, other than those ignited by electricity shall be used.

(3) Use of Blasting Materials - All detonators and capped-fuse shall be used as soon as is reasonably possible after being taken underground.

(a) Blasting caps shall not be removed from original containers except as they are used for capping fuse or when placed in other containers recommended by manufacturer.

(4) General Requirements for Handling - When blasting supplies are removed from a magazine, those which have been longest in the magazine shall be taken first to eliminate hazards from deterioration.

(a) No explosives container shall be opened with any metallic instrument.

(b) Explosives shall not be placed or left within fifteen feet (15') of electric wires or electric lights except during transportation.

(c) No person shall remove any explosive from a mine or magazine without permission of the Superintendent or Mine Foreman.

(d) A fire hazard shall not be permitted to exist near an underground magazine or an explosive distributing station.

(5) Smoking, Locking Magazine, Storage of Other Material Smoking in an explosive magazine, or at an explosive distributing station, or while handling explosives shall be strictly forbidden.

(a) Oils or other combustible substance shall not be kept or stored within fifty (50') feet of an underground magazine or distributing station.

(b) The explosive container shall be opened at a distributing point near and outside the magazine, and only designated men shall be designated to issue explosives from this underground magazine. The underground magazine shall be kept locked when unattended.

(c) Only designated men shall be designated to cut and cap fuse, and issue same. Such persons may also issue explosives.

(d) When cutting fuse for capping, it shall be cut square across with a sharp clean instrument.

(e) Fuse shall be cut long enough to extend beyond the collar of a loaded drill hole and in no case shall it be less than four feet (4') in length, and it should be of a contrasting color with that of the material being blasted.

(6) Capping Fuse Length of Fuse - Fuse shall be cut and capped at a safe place and not nearer than twenty feet (20') to the explosive magazine. Only a cap crimper of a type recommended by explosive manufacturers may be used in crimping caps. A bench type crimper is recommended.

(a) Paper, sawdust, wooden boxes or cartons, except containers necessary for measuring explosives, shall be placed at a safe distance from the underground magazine and shall be removed from the mine at sufficiently frequent intervals to prevent unsafe accumulation.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.18 Blasting (General).

(1) Time of Blasting - Blasting shall be done at the end of the shift except that blasting may be done during the shift provided:

1. That such blasting is done with the permission of the mine foreman or one of his assistants and under the supervision of the miner in charge of the working place.

2. That all approaches to the working place where blasting is being done are guarded.

3. That the requirements set forth in Section 24-a. of these rules are continuously complied with.

(2) Preparation of Primers - Primers shall be made up near the working place of competent men experienced in handling explosives. Competent men experienced in handling explosives shall also load, assist in loading or supervise the loading or charging of drill holes.

(3) Open Lights - Open lights shall be kept at least six feet (6') from any explosive when preparing primers, handling explosive at the face, and charging drill holes.

(4) Loading Holes - In loading holes only a wooden tamping bar, having no metal parts, shall be used. Before charging drill holes, they shall be thoroughly cleaned. Explosives shall not be violently tamped in the drill hole, but may be firmly charged, except that undue pressure shall not be used against the primer cartridge when placing it in the drill hole. In no case shall a primer cartridge be slit.

(5) Bringing Explosives to the Face - All drills and mobile equipment shall be removed from the face before bringing explosives to the face. Explosives shall not be brought to the face. Explosives shall not be brought to the working place more than one hour before loading operations begin and shall be kept in a place safe from danger of ignition or detonation by open lights, electric wiring, mechanical equipment or loose rock.

(6) Tamping or Stemming - When a drill hole has been charged with explosives, at least 12" of non-combustible stemming shall be firmly tamped in place against the explosive, except that in block hole shots, length of stemming may be reduced. Fuse shall be cut for rotation of blasts and the fuse ends split before lighting except where special fuse igniters are used.

(a) Where loose rock on roof or face may endanger men loading drill holes, such loose rock shall be removed or securely supported before, loading operations begin.

(7) Two Men Present - Two (2) men shall be present when lighting fuse, if more than 18 fuses are lighted at one time.

(8) Disposing of Mis-fires - Mis-fires shall be reported to the foreman. Where mis-fires are suspected, no person shall return to the vicinity of the suspected mis-fire until not less than 30 minutes have elapsed, in the case of fuse blasting, and until not less than 15 minutes after blasting, if electric blasting was employed. In the working places where mis-fires have occurred, no regular mine operation shall be conducted until the mis-fire

charge has been disposed of except by permission of mine foreman or one of his assistants. Mis-fires shall be re-blasted by inserting a new primer in the drill hole. Tamping may be washed from the drill hole with water before inserting the new primer.

(a) If not possible or safe to insert a new primer, a new hole may be drilled with the permission of the mine foreman or one of his assistants and under the supervision of the miner in charge of the working place, and such hole shall be started at a distance of not less than two (2') feet from the original drill hole, and shall be drilled at such an angle as to eliminate all danger of meeting or coming close to the original drill hole.

(9) "Bootlegs" or "Guns" - "Bootlegs" or "guns", unless the bottom can be seen shall be washed out with water or cleaned out with non-sparking tool to determine whether or not explosive remains in same. If explosives are found in such "Bootleg" or "Gun", the hole shall be treated as a mis-fired shot or left for shooting by head miner at end of shift.

(10) Blasting Boulders - Boulders which must be broken by blasting, shall be lock-holed and "adobe", "plaster" or "mud-capped" shots are hereby prohibited, except that such shots may be permitted where no means of drilling such boulders is available, provided that such shots shall then be fired with the permission of the mine foreman or one of his assistants and under the supervision of the miner in charge of the working place.

(11) Explosive in Muck Pile - All mine operations in any working place shall be stopped if explosive is found in the muck pile, and such work shall remain suspended, until there is reasonable certainty that all of the recoverable unexploded powder ascertained to be in the muck pile has been recovered. Such recovered explosive shall be returned to the magazine, and later destroyed following procedure recommended by the explosive manufacturers. Any left over explosive, capped-fuse, or detonators remaining after loading the drill holes, shall be returned to the distributing magazine or other place provided for that purpose as designated by the mine foreman or one of his assistants.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.19 **Electrical Blasting.**

(1) Method of Blasting - Electric blasting with blasting machines or special blasting circuits is permissible. With blasting machines, connections shall be made in series or in a combination connection recommended by the manufacturer. With power currents,

connections shall be made in series, parallel, or a combination of the two.

(2) Blasting Equipment - When blasting by means of a special blasting circuit, no one shall enter the place in which the blasting has been done until the permanent blasting wires have been disconnected from the source of electrical energy and the blasting switch has been locked in the open position.

(a) All blasting machines for generating or supplying electricity for shot firing shall, when in the mine, be in charge of a person properly instructed in blasting practice and no other person shall connect the blasting machine to the leading wires, and such connections shall not be made until all other steps preparatory to the firing shall have been completed and the men removed to a safe place.

(b) Electric power shall not be used for firing shots in a mine except when connections are made through a blasting switch as described in these rules.

(3) Electrical Blasting Required - Only electric or delay electric blasting caps shall be used:

1. In sinking shafts or winzes.

2. In cutting shaft stations.

3. In drifts, crosscuts, storage pockets, and lumps where there is not enough protection for the men from flying rock or concussion.

4. In any raise where a hazard exists in the blasting operation by reason of the unusual length of the raise or lack of stations for protection.

(4) Placing and Maintenance of Circuits - Blasting lines shall be kept well in the clear from all power and lighting lines and from all pipes, rails, etc., and shall be run on the side of the working opposite all power and lighting circuits.

(a) Grounded circuits or systems shall not be used for electric blasting.

(b) Permanent blasting lines, safety switches and blasting switches shall be maintained by a competent electrician.

(5) Leading Wires - Leading wires from portable generating blasting devices or approved type batteries shall be not less than #14 A.W.G. insulated wires except that for single shot they shall be not less than #16 A.W.G. insulated wires.

(6) Permanent Blasting Circuits - Permanent blasting wires shall be so installed and maintained that they provide the electrical current carrying capacity required by the electrical firing device. All such wires shall be in conduit, shall consist of type "S" cable or equivalent, or shall consist of two (2) rubber covered wires strung on glass insulators or porcelain knobs. If rubber covered wires are used, they shall be kept at least five (5") inches apart.

(a) All splices and joints shall be well made, clamped or soldered and taped.

(7) Wire Sizes - Connecting wires shall be not less than #20 A.W.G. insulated wires, temporary wires shall be not less than #14 A.W.G. insulated wires and bus wires shall not be smaller than #16 A.W.G. bare copper wires.

(8) Blasting - At the location where the shot firing is to be controlled, there shall be installed in the blasting circuit an approved, enclosed, externally operated pole switch with the handle or lever arranged to be locked in the 'off' position only.

(9) Safety Switch to be Used - Single Blasting Circuit: Where the blasting lines run to a single face to be blasted, a "safety" switch of the same type as required for blasting switch shall be installed between the blasting switch and the face. This switch shall be installed in a safe location guarded from flying rock.

(a) Multiple Blasting Circuit: Where a single blasting switch is used for several blasting circuits, a "safety" switch shall be installed in each circuit immediately adjacent to the blasting switch.

(10) Handling of Electrical Detonators - A blasting galvanometer or circuit tester especially designed for blasting work shall be used for testing.

(a) Leg wires of electric detonator shall be kept short circuited by means of short circuiting device or by twisting ends of leg wires together, except that the short-circuiting devices may be removed temporarily for the purpose of testing detonators with a galvanometer.

(11) Connecting up for Blasting - Before connecting the temporary wires to the leg wires, or bus wires, the ends of the temporary wires, that are to be connected to the safety switch, shall be "shorted" by being twisted together.

(a) The man making the connection at the face must have the "shorted" ends of the temporary wires in his possession and after making the connections at the face, he shall run the temporary wires to the safety switch and he shall never attach

the temporary wires to the safety switch before attaching them to the leg wires or bus wires.

(b) At the safety switch, he shall untwist the temporary wires, unlock the safety switch, attach the temporary wires to the terminals of the safety switch and then place the safety switch in the "on" position. He shall then proceed to the blasting switch, unlock it, throw it in the "on" position to fire the shot then immediately return the blasting switch to the "off" position and lock it in that position.

(c) After blasting, no one shall go nearer the face that has been blasted than the safety switch until that safety switch has been opened, the temporary wires disconnected and the safety switch locked in the "off" position.

(d) No electric blasting or preparation for electric blasting shall knowingly be done during electrical storms.

(12) Precautions in Electric Blasting - No electrical equipment using direct current shall be in operation, within two hundred (200') feet of holes loaded for electric blasting or while such holes are being loaded.

(a) The minimum necessary number of men shall be at the heading or face when making the blasting connections. All other men shall be away from the heading at least as far as the safety switch.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.20 Drilling With Compressed Air Machines.

(1) All drilling for blasting shall be done wet, including the collaring of drill holes, or an equally effective method of dust control may be used.

(2) Air lines and hoses shall not be disconnected from drills while under pressure.

(3) Where column or post mounting is used, the drill column or post shall be of such length as to eliminate the necessity for excessive blocking. Where blocks are necessary, only rectangular blocks shall be used.

(4) Where stagings are necessary in drilling or for other purposes, they shall be solidly constructed and the platform or staging shall be of good planking not less than two (2") inches thick, or material of equivalent strength.

(5) Drilling in "bootlegs" or "guns" is prohibited.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.21 Mechanical Loading.

(1) Scrapers or Drags - Scraper or drag hoists shall be solidly placed and anchored securely to their foundation, rail or roof.

(a) The scraper or drag operator shall be protected from the danger of rope failure by two guards, one mounted over the segment of the drum near the operator, which shall not obscure the rope windings, and the other mounted ahead of the drum which may be the sheaves and sheaves supports, shields with cross bars, wire netting of their equivalent.

(b) "Bootlegs" or "guns" shall not be used for eye bolt placement.

(c) Unless by permission of the Mine Foreman or his assistant, no person shall be allowed at the face of the working place where a scraper or drag is in operation except where one man is employed for the purpose of signaling the scraper or drag operator. Persons employed at such face shall remain in a place safe from danger of being struck by flying cable or a scraper, and the signal man shall be provided with a suitable device for signaling a scraper or drag operator. A standard signaling code shall be used.

(d) When moving power shovels into or out of a working place, bucket shall be securely blocked in the "up" position.

(e) No person shall be permitted to operate, a power shovel while standing on the ground beside such shovel.

(f) The Muck Pile shall be kept well sloped while loading with a power shovel.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.22 Examination And Timbering Places.

(1) Duties of Mine Operator, Miner Inspection and Testing. It shall be the duty of any owner or operator to provide safe working places for all mine employees. Provided, however, that it shall be the duty of every mine employee to care for the place where he is working. A mine owner or operator shall provide for inspection of

all working places where men are employed by competent, qualified and experienced men. Such inspection shall be made at least once each shift. Any dangerous conditions found by such inspector or supervisor shall be immediately corrected, if at all possible, or employees removed to a place of safety until such dangerous conditions can be corrected. No person shall be permitted to work in any place, where danger exists, except for the purpose of making such place safe and then only under the supervision of the mine foreman, his assistant or duly authorized competent supervisor. No person shall knowingly work or remain under loose rock and such loose rock must be taken down or securely timbered.

(a) The rib, roof, top or back of any working place shall be thoroughly examined and tested at intervals of at least every two (2) hours during the working shift, regardless of the operation being performed. The rib, roof, top or back and sides of passageways where traversed by employees passing to and from working places shall be inspected daily and any hazardous conditions observed shall be immediately remedied. No person shall remove any timber supporting roof or sides without authority of the mine superintendent or mine foreman.

(b) The owner or operator of any mine shall furnish the mine employees all timbers necessary for safe mine operations and such timbers shall be supplied and delivered to a point readily accessible and convenient to the working places.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.23 Lighting And Electric Installation.

(1) Inspection Reports - At each mine where electricity is used underground, a systematic inspection of all wiring and equipment shall be made at regular intervals, at least once every month. A written or verbal report of each inspection shall be made by the mine electrician or inspector to the mine foreman. Equipment and circuits found to be defective shall be immediately removed from service until repaired.

(2) Marking Switches - All electrical control switches shall be plainly marked, with the name of the machine which each controls.

(3) Insulated Platforms - At any place in the mine where it is necessary to manipulate or adjust "live" equipment operating at more than three hundred (300) volts, including switches, motor starters, or other controlling appliances, insulated platforms shall be provided and used.

(4) Installation and Grounding Electrical Equipment - The frames and bed plates of generators, transformers, compensators,

rheostats, motors and switches shall be effectively grounded. All metallic covering and conduit shall also be grounded. Such grounded shall be to water pipe systems, bonded rail or artificial ground, with preference in the order named. Where trailing cables are used, it is recommended that such cables contain a separate wire to be used as a ground wire.

(a) The ground connection to metallic piping systems shall be made by means of an approved clamp firmly belted to the pipe after all rust and scale have been removed, or by means of a brass plug which has been tightly screwed into a pipe fitting or where the pipe is of sufficient thickness, screwed into a hole in the pipe itself, or by other equivalent means. The grounding conductor shall be attached to the clamp or to the plug by means of solder or by an approved solderless connector.

(b) If conduit, couplings, or fittings having protective coating of non-conducting material, such as enamel, are used, such coating shall be thoroughly removed from couplings, conduits and such surfaces of fittings where the conduit or ground clamp is secured, in order to obtain a good connection.

(c) All electrical switches located in wet places shall be mounted in weatherproof switch boxes or cabinets in accordance with standards approved by the Department, and shall be grounded.

(d) All permanent installations of underground lighting or power circuits shall be installed and maintained in accordance with standards approved by the Department. All wiring shall be strung on standard insulated supports, six and one-half feet (6-1/2) or more above the floor or travelways, or in the event this height is not available, the wiring shall be in conduit or properly guarded; provided that armored cable may be buried at least six (6") inches deep and markers installed not less than two hundred (200') feet apart, and closer where necessary to show changes in direction.

(e) Switchboards shall consist of a substantial framework of iron pipe or structural steel, on which shall be mounted a panel or panels of incombustible non-absorbent insulating material, or other material according to the standards of the Department, that is mechanically strong and has insulation qualities suitable for the voltages at which it is used. All switchboard mountings, instrument transformers and meter casings shall be grounded.

(f) Portable extension lamps shall be guarded by a heavy wire cage which completely incloses both lamp and socket, and shall be provided with a handle of insulating material to which both cage and socket are firmly attached and through which the wire supplying the current is carried. The socket shall be keyless

and the lamp circuit shall be protected by a fuse. Extension lamps shall be wired with heavy flexible rubber insulated cord. It is recommended that low-voltage be used for portable extension lamps.

(5) Rules for Repair Works on Electrical Equipment - The following safety rules shall be complied with in all electrical work in and around mines:

1. Do not permit any work to be begun on any electrically operated machinery until the control switch has first been locked in the "off" position, and properly tagged by the person doing the work.

2. Do not change any wiring or connections while the circuit is "live" unless absolutely necessary. All electrical work, so far as it is possible to do so, shall be done on days when the mine is not in operation. Whenever circuits are opened for repairs, alterations, or examinations, the disconnecting switches or cut outs shall also be opened as an additional safeguard against accidental closing of the circuit or the circuit may be locked open and the wires short circuited or grounded. The workman responsible for having the circuit opened shall place on a controlling switch a tag bearing his name and a notice that the switch shall not be closed until the tag is removed. No person, shall be allowed to remove the tag.

(a) Circuits having in excess of five hundred (500) volts potential shall be carried inside metal conduit or metallic sheathing or other protective covering recommended by the manufacture. Such circuit, conduit or sheathing shall be electrically continuous and effectively grounded.

(6) Electrical Installation Requirements - Underground electrical stations shall be so constructed as to allow clearance for passing all electrical equipment where such passing is permitted. They shall be of fireproof construction, well-lighted, as dry as conditions permit, provided with a floor affording secure footing, and where feasible, ventilated by a separate air split.

(a) Underground transformer stations shall in addition be designed so that oil escaping from transformers will be retained within the station.

(b) Any transformers installed underground after the effective date of these rules, unless they contain nonflammable, non-explosive transformer fluid, shall be in a fireproof enclosure as near gas tight as possible, provided that such enclosure shall have openings for ventilation and provision shall be made for the automatic closing of such openings in case of fire within the enclosure.

(c) Switchboards shall be located as to allow a space of at least three (3') feet in front and in back of them.

(d) All underground electric stations shall be completely fenced or walled in and provided with a substantial good fitting door or gate.

(e) Danger signs shall be conspicuously placed at all such stations. All electric circuits entering any mine shall be protected by lightning arresters.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.24 Ventilation.

(1) Quantity of Air to be Provided - The operator of every mine shall provide and maintain in each mine a good and sufficient amount of ventilation and shall cause air to circulate through any place where men are working. Employees shall not be permitted to work in any place where the air is found to contain less than 19% oxygen more than 1% carbon dioxide, more than 1-1/2% methane, a harmful amount of poisonous gas or harmful concentrations of dust. Sufficient fresh air shall also be conveyed to the working place to keep the temperature and humidity of such working place healthful.

(2) Air Samples and Analysis - Once each month or as often as the Department deems necessary, air samples shall be collected by the Department at the face of each heading and at the face of the deepest closed stope in each heading. Such samples shall be analyzed for oxygen, carbon dioxide, carbon monoxide and methane content. Analyses of samples shall be recorded and a report filed in office of the Department on forms provided by the Department.

(a) Principal fan or principal fans installed on the surface after these rules become effective shall have air ducts so installed that the ventilating current can be quickly reversed in direction. All surface fans, casings and air ducts connecting with the mine openings and also the fan houses and other buildings in close proximity shall be made of non-combustible material throughout.

(3) Ventilating Fans - All booster fan installations underground, shall comply with the following provisions:

1. The fan must be constructed of non-combustible material and equipped with bearings which leak no oil.

2. The installation must be absolutely fireproof.

3. The stooping between fan intake and fan discharge must be built fireproof and equipped with a large door which swings in the direction of the air current.

4. The fan must be installed in such a manner as to prevent re-circulation of more than 10% of the air.

(a) No surface fan house shall be erected within fifty (50') feet of any flammable structure or flammable material.

(b) The intake, of any fan, including auxiliary blowers, shall be adequately guarded.

(c) All auxiliary blower fan installations underground, shall comply with the following provisions:

1. The installation shall be on the air intake.

2. The volume of the intake air, passing the blower fan, and shall be at least 1-1/2 times the volume of air circulated by the blower fan.

3. If more than one blower fan is located on one heading, then the volume of intake shall be at least 1-1/2 times the total volume of air circulated by all blower fans on that split.

4. All auxiliary blower fans installed underground and operated by electric motors, shall be constructed of non-combustible material and the combustible material in the immediate vicinity shall be fireproofed.

(d) Doors used for deflecting and conducting the ventilation shall be so hung and affixed that they will be self-closing by gravity or by proper mechanism. No person shall prop a door or use any other means to hold a door open that will prevent it from being self-closing.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.25 Health Requirements.

(1) Change House - The operator of every mine except as provided in paragraph (c) shall provide a dressing room or a change house at a place convenient to but not within one hundred (100') feet of the mine opening, if the dressing room or change house is made of combustible material, for the purpose of drying the clothing of the persons employed in and about the mine. Such dressing room or

change house shall be provided with adequate means of heating and lighting. These dressing rooms or change houses shall be available to the men at all times when they are going on or coming off shift and shall be equipped with shower baths having hot and cold water, at least one shower being provided for each fifteen (15) men on a shift working in the mine. Such change houses shall be kept reasonably clean and in a sanitary condition. This requirement should not be deemed to affect any existing practice or agreement as to changes for bathhouse facilities.

(a) It is recommended that working clothes be either elevated by suitable means, such as chains, to the upper side of the change house or that separate rooms be used for working and street clothes.

(b) Mines which employ less than ten (10) men and which have no suitable water available on the property for washing and bathing purposes, shall be exempt from the shower bath provision of paragraph (a) of this article; but such mines shall provide their employees with washing and bathing facilities that are reasonably clean and sanitary.

(2) Drinking Water - Fresh and pure drinking water shall be available to employees during working hours. This may be accomplished by piping water into the mine and providing drinking fountains, or by means of individually owned canteens. Community drinking vessels are prohibited.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.26 Illumination.

(1) No open flame light shall be left burning unattended near flammable materials.

(2) Stationary lights shall be provided during the working hours at all shaft or slope stations during the time the same are in actual use and also at all stations on the levels where hoisting or hauling is effected by means of machinery.

(3) All places where hoisting, pumping or other machinery is erected and in the proximity of which persons employed in the mine are working or moving about shall be so lighted that the moving parts of such machinery can be readily distinguished.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.27 Dust.

Use Of Water and Ventilation to Control Dust. Effective means for controlling dust in any part of a mine shall be used and shall be subject to inspection by the Department monthly. Sufficient water shall be used on broken rock such that the water together with adequate ventilation will prevent accumulation of injurious concentrations of dust, and such sprinkling or application of water shall be used wherever normally dry rock or ore must be handled,except that if dust cannot be controlled by use of water and ventilation, then permissable dust respirators may be worn by employees, continuously, during their exposure to such dust concentrations until the condition is relieved.

(a) Sufficient circulation of air shall be provided to dilute, carry off and render harmless, injurious dust which is not otherwise controlled.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.28 Telephones.

(1) In all mines, a telephone system shall be established, equipped and maintained with a telephone on the surface and at each working level or section at all times when men are working in the mines.

(2) Telephones shall be installed in mine tunnels or adits and on the surface if mining or development work is being done more than one thousand (1,000') feet from the portal.

(3) Mines opened by an inclined shaft or slope having an inclination of less than twenty (20) degrees from the horizontal shall be considered, for the purpose of this order, to be mines opened by tunnels or adits.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.29 Maps.

(1) The operator of every mine shall make or maintain or cause to be made or maintained by a competent engineer or surveyor, a clear and accurate map or maps on a legible scale, with sections if necessary, showing clearly all workings of such mine. At least

once in every calendar year or oftener, if necessary, the operator of each mine shall cause to be shown clearly and accurately on the map or maps of such mine, all the excavations made therein during the time elapsed since such excavations were last shown on such map or maps, and all parts of said mine that have been worked out or abandoned during said elapsed period of time shall be clearly indicated on said map or maps, and all underground workings shall be surveyed and mapped before they are allowed to become inaccessible.

(2) A print or copy of such map, certified by the superintendent or operator, shall be filed in the office of the Department annually. This map shall not be made available to any person other than the Department, without the authorization of the owner of the property. Such maps shall show the exact position of the mine in reference to the section lines or sub-division of the section; the accurate position of any branches, creeks, rivers, and railroads under which said mine workings extend; and the approximate location of contiguous workings or adjacent mines. Such maps shall show all shafts, slopes, tunnels, or other openings to the surface or to the workings of a contiguous mine; the location of the fan and the direction of the air currents, stoppings, undercasts or overcasts; the location of permanent pumps, electrical sub-stations and transformers, hoisting engines, hoisting planes, abandoned workings, fire walls and standing water; the approximate boundary line of any surface outcrop of any seam. Such map shall also show by elevation in feet and decimals thereof the rise and dip of seam from the opening in either direction to the face of the workings. Said maps shall be certified and signed by the engineer making the map.

(3) Before any mine, having underground workings, is abandoned, the operator of such mine shall cause to be made by a competent engineer or surveyor and file with the Department, a map on a legible scale, showing all underground workings.

(4) An additional survey shall be made between the regular survey periods, of the workings of any mines, the results to be extended on the maps of the same and the copies thereof, whenever, in the judgment of the Department, the safety of the workmen, the support of the surface, and the conservation of the property or the safety of an adjoining mine, require it.

(5) Subsequent to the effective date of these rules, in no case shall the workings of any mine be driven nearer than fifty (50') feet to the boundary line of the mineral rights of the owner of said mine, except for the purpose of establishing an underground communication between contiguous mines. By mutual consent of adjacent property owners, this distance may be reduced, increased, or eliminated entirely, and any operator working up to an abandoned mine may be permitted to work up to his property line, if approved by the Department.

Author: Marcus Davis, Workers' Compensation Examiner.

Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.30 Protection Against Water And Gas.

(1) Notice shall be given to the Department in writing before any mine working shall be allowed to approach within fifty (50) feet of any part of a winze, stope or other opening in which there is a known or suspected dangerous accumulation of water, the level of which may be above the level of the approaching working.

(2) Notice shall be given to the Department in writing before starting to advance a mine working within one hundred (100') feet of another mine working that is likely to contain a dangerous accumulation of gases or water. Workings, when approaching such places, shall not exceed eight (8') feet in width, and the person, or persons driving such place shall constantly keep a sufficient distance ahead, not less than ten (10') feet in advance, one bore hole near the center of the working, and one in each corner fifteen (15') feet deep, at an angle of forty-five (45) degrees, at intervals of six (6') feet. These holes shall not be used for blasting but separate holes for blasting not over four (4') feet deep, must be drilled.

(3) In every mine where there is danger of a sudden inburst of water, additional passageways, shall be constructed as are necessary in the opinion of the Department, to insure the escape of workmen.

(4) Except in emergencies no restraining dam shall be installed in any mine where the rupture of such dam would imperil the safety of men in said mine or other mine, until the Department has given its approval for the construction of said dam. Immediate notice must be conveyed to the Department when it becomes necessary to construct an emergency dam.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.31 Air Receivers.

Each air receiver underground shall be equipped with a drainage valve.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.32 First Aid Training And First Aid Equipment.

(1) Arrangements shall be made and faithfully maintained such that every injury suffered will receive adequate treatment promptly.

(2) Material etc. to be Furnished - The necessary equipment and material with which to conduct properly such training shall be furnished by the operator. A suitable clean, lighted and well ventilated room shall be provided by the operator for First Aid Training. It shall be the responsibility of the operator to obtain the required instructors and arrange the place and times for the classes. The place of training should be so located as to cause no unnecessary travel hardship to employees.

(3) First Aid Equipment Required - At every mine there shall be adequate approved first aid materials, stretchers, blankets and other facilities properly to care for injured employees. First aid materials shall be kept in a sanitary and usable condition. Woolen and waterproof blankets shall be kept in a moisture and dustproof container. A portable first aid kit shall be kept as near the working place as feasible.

(4) Main Underground First Aid Stations - A stretcher of a type approved for use in case of a broken back, together with a woolen or cotton blanket, and such approved first aid materials as are here listed shall be kept at the mine and placed at convenient location or locations about the mine for the use in caring for injured employees. Adequate and suitable first aid materials to be kept at the place where each stretcher is located.

(5) Material at Each Station - Adequate and suitable first aid materials shall be kept at or on all sectional hoists, working sections or haulage locomotives.

(6) Individual First Aid - Each supervisor and head miner shall be furnished and carry or have available and each employee working in an isolated place should carry a packet containing adequate and suitable first aid materials.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.33 Mine Rescue Training And Equipment - Oxygen Breathing Apparatus.

(1) Mine Rescue Equipment Required - There shall be provided and kept in a readily accessible place at every mine employing more

than fifty (50) men underground on one shift, a minimum of the following equipment or its equivalent:

1. 10 complete sets of self-contained oxygen breathing apparatus of a permissable type.

2. 1 extra small oxygen bottle for each oxygen breathing apparatus.

3. 2 extra reducing valves, extra mouthpieces, breathing bags, bypass tubes, gaskets, and other parts for repairing apparatus.

4. 2 flame safety lamps of a permissable type, with repair parts.

5. 12 permissable flashlights, 12 permissable electric cap lamps. Charging rack and facilities for electric cap or hand lamps.

6. 1 oxygen pump, hand or power-driven, with extra gaskets and repair parts.

7. 1 1,000-foot life line and reel, or approved electric life line.

8. 1 carbon monoxide (hoolamite) detector.

9. 1 orstat apparatus for analyzing gases and 6 gas-sampling tubes or bottles.

10. 1 oxygen inhaler.

11. 1 tool box with good assortment of wrenches and other tools.

12. Means for transporting equipment.Provided that the Department may require the maintenance of such apparatus at a mine employing less than fifty (50) men underground on one shift, when the ventilation or the fire hazard at such mine, in the opinion of the Department justifies this protection. Nothing in this section shall be construed to prevent the construction of a cooperative station in any district where mine operators may build and maintain a station to supply apparatus for several mines; not less than ten (10) sets of permissable self-contained two-hour oxygen breathing apparatus shall be kept at such station. A cooperative station shall be located at no greater distance from each mine which it serves than can be covered by the most convenient means of transportation in two hours' time, during all seasons of the year.

(a) Oxygen breathing apparatus shall be stored fully charged with oxygen and cardoxide and shall be maintained in condition for immediate use.

(2) Requirements for Cooperative and Privately Owned Mines - The requirements of Paragraph (1) shall be suspended where mines are less than the designated distance from the United States Bureau of Mines Rescue Station at Birmingham and the operator notifies the Department and the Bureau of his intention to depend upon that station.

(a) Where a cooperative station is maintained, a competent man shall be designated as foreman to have charge of such station. Such foreman need not be exclusively so employed, but his employment shall be such that he or a substitute can arrive promptly at the place of the accident in case of need. He shall occupy living quarters at the station, or convenient thereto, and shall make reports to the Department as provided in Paragraph (e) and (f) of this rule.

(b) Telephone communication shall be maintained between a cooperative station and each mine where it serves. If the foreman in charge of a station does not reside thereat, his residence shall also be in telephone communication with each mine served by the station.

(c) In addition to the supplies used for training of men, an oxygen pump, an emergency supply of oxygen and regenerator charges sufficient to keep all apparatus running for at least ten (10) hours shall be kept on hand, at each cooperative or privately owned station, and sufficient spare parts shall be kept to assemble at least one additional apparatus in good working order.

(d) The apparatus at privately owned and cooperative stations shall be thoroughly inspected monthly by a competent man designated for this duty. At cooperative stations the inspections and tests shall be made by the foreman of the station. Monthly inspections of each apparatus shall include tests for tightness of all joints, breathing bags and breathing circuit, and flow of oxygen from the reducing valve.

(e) The result of such tests and inspections shall be tabulated on forms prescribed by the Department and shall be forwarded to the Department at least once a month.

(f) Each member of a cooperative station shall be furnished with a copy of the monthly tests and training at the station to which he belongs.

(3) Mine Rescue Crews and Training - At each mine employing fifty (50) or more men underground on one shift, at least twelve (12) men physically fit and thoroughly qualified to use permissable

self-contained two-hour Oxygen Breathing Apparatus shall be trained by an instructor approved by the Department, except, that where three or more mines operated by one company are within a radius specified by these rules, not more than thirty-six (36) men need be trained. Men receiving Mine Rescue Training for the first time, shall be trained in an approved course for a minimum of twenty (20) hours and shall be retrained at least once every six (6) months.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.34 Physical Examinations For Mine Employees.

Pre-employment Examinations. All prospective employees at any mine shall receive a careful and thorough examination by a licensed physician, designated by the operator, before employment. Such examination shall determine the prospective employee's hearing, vision, the condition of his heart and lungs and any detectable physical or mental abnormalities, or defects which may affect his health or the health or safety of fellow employees.

(a) A prospective employee not physically fit shall be employed only at work which may be performed by such employee, without endangering the health or safety of himself or other employees.

(b) No person proven to be mentally unbalanced shall be employed in or around any mine.

(c) Physical examinations before employment shall be provided by the operator without cost to the prospective employee.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.35 Personal Protection.

(1) All persons employed underground in mines, or any persons entering mines for any reason should wear a protective or hard hat and hard toed shoes, except persons specified by physicians as physically unable to wear safety shoes.

(2) Suitable goggles should be worn by employees engaged in work which may be hazardous to the eyes, including employees exposed to possible eye injury as a result of work being performed by other employees.

(3) Additional protective apparel or equipment required for the personal protection of any person exposed to a special hazard by reason of a special occupation or work should be worn or used by the employee subjected to such hazard.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.36 Safety Rules.

These mine safety rules represent the minimum requirement for safe mine operation. Further to safeguard the health, life and limb of persons employed in and around mines, mine operators shall formulate, distribute and enforce reasonable and detailed safety rules or regulations not in conflict herewith, which thoroughly cover all mining operations and conditions characteristic of their mine or mines.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.37 Responsibility Of Operators And Employees.

(1) It shall be the responsibility of the operator to perform the following:

(a) Provide safe plant and equipment.

(b) Safeguard all machinery.

(c) Place no new machinery or equipment in operation unless full attention has been paid to its safety.

(d) Plan and arrange all processes and operations with careful attention to safety.

(e) Maintain a system of inspection to discover correctable hazards.

(f) Maintain safety minded supervision.

(g) Train, educate and stimulate its employees to follow safe methods of work and take a sincere interest in the safety of themselves and their fellow workers.

(h) Investigate all accidents to determine how best to prevent a recurrence.

(i) Keep proper record of all cases of injury.

(2) It shall be the responsibility of the employee to:

(a) Use all safeguards provided.

(b) Comply with the mine safety rules and follow the safety rules and regulations prescribed by the Department.

(c) To follow safe methods for performing work.

(d) To continue guarding against injury to himself and his fellow employees.

(e) Immediately report to his supervisor all hazardous conditions which come to his attention.

(f) To report all injuries, regardless of severity, to his immediate supervisor.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.38 Tools.

(1) The operator shall be responsible for the safe condition of tools furnished employees by the operator and shall not permit the use of tools which are unsafe or permit the mis-use of any tools.

(2) The employee shall be responsible for the safe condition of tools he furnishes and shall not use any such tools which are not in safe condition for use.

(3) The employee shall promptly report to the superintendent or foreman any tool being used by him which is in an unsafe condition and said tool shall be promptly replaced or made safe by the person furnishing same.

Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.39 Inspections And Reports.

(1) Some competent, qualified and experienced person or persons shall make an inspection at least every two (2) weeks of all travelways and working places of the mine and appliances in the mine which are in use, and shall report any unsafe conditions to the employer who shall take immediate steps to remedy the same.

(2) Inspection of the main shaft or slope and the active underground workings for any conditions tending to increase the

fire hazard shall be made every month. Required second exits and other portions of the mine not regularly frequented shall be inspected for fire hazards and deterioration of ladders or of other appliances necessary to maintain an adequate escapeway, upon regular rounds through such places, and in any event, at least once every month, and a report of the inspection filed in the mine office. If any condition be found in a second exit making it inadequate for an escapeway, repairs shall be commenced immediately and completed with reasonable diligence. A signed report of each inspection shall be kept in the mine office, whether hazardous conditions be found or not.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.40 Reports To The Department.

(1) On or before the twenty-fifth day of October in each year, the operator or superintendent of each mine shall send to the Department a correct report, specifying with respect to the year ending with the thirtieth of September preceding, the name of the operator and location of offices of mines, the quantity of material and kind of materials mined. The report shall be in such form and give such information regarding such mines as may be, from time to time, required and prescribed by the Department. Blank forms for such report shall be furnished by the Department.

(2) Where an accident results in serious injury or death, the Department shall be immediately notified by telephone or telegraph.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.41 Inspections, Investigations And Reports By The Department.

(1) Ninety Day Inspections - One complete inspection of active workings shall be made by the Department at every mine every 90 days, and more often if necessary. If conditions in inactive workings are believed to affect adversely the safety of the mine or its employees such inactive workings shall be inspected if accessible.

(2) Annual Report - The Department shall keep a record of all mine inspections showing the date when made, the condition in which the mine is found, the extent to which the mining company is complying with these orders,the improvement and security of life and health sought to be secured by the provisions of these rules, the number

of accidents, injuries received, or deaths in or about the mine, together with all such other facts and information of public interest concerning the condition of the mine.

(3) Disposition of Mine Inspection Report - A comprehensive report of each inspection shall be promptly made to the operator, superintendent and mine foreman by the Department and said report in the hands of the superintendent shall be accessible to employees affected, or the representatives of said employees. This report to be on a form provided for that purpose and furnished by the Department.

(4) Investigation and Report of Accidents - Representatives of the Department shall promptly investigate all accidents resulting in serious injury or death to any person or persons, whether employees or not, in or about the mines. The Department shall keep on file at its office a list of all accidents resulting in death or serious bodily injury to any person working in or about such mines.

(5) Authority to Stop Operation - If at any time the Department shall be notified and shall find by investigation that the ventilation in any mine is insufficient or that the air in any mine or working place in the mine is so contaminated by poisonous gases or rendered dangerous by low oxygen content or the presence of inflammable gas or that the lives of the employees in such mine or in any section of such mine are endangered by other hazardous conditions the Department or its mine inspectors shall have the authority to stop the operation of the entire mine or the section affected, until the conditions are corrected.

(6) Major Accidents - In case of major accident, the Department or its Mine Inspectors shall have the authority to issue such orders as are necessary or proper to secure the safety of the persons working in the mine.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.42 Checking In And Out Of Mine.

The owner, operator, or superintendent of each mine shall have a check in and check out system in order that all employees, or other persons not regularly employed in the mine, may check in and out upon entering or leaving the mine, and all persons shall be required to check in and out of the mine at all times. The check-board or other record shall show the location of all men employed in the mine, as far as practicable. The mine superintendent, foreman or some competent person, designated by the mine superintendent or mine foreman shall inspect the check-board or

other record at the end of each shift and make sure that all employees are safely out of the mine before leaving the mine.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History:

480-3-3-.43 Working Alone.

Men shall not be prohibited working alone, provided that other workmen are present within the production section or area.
Author: Marcus Davis, Workers' Compensation Examiner.
Statutory Authority: Code of Ala. 1975, § 25-2-13(2).
History: