



WEST VIRGINIA SECRETARY OF STATE

MAC WARNER

ADMINISTRATIVE LAW DIVISION

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Office of West Virginia
Secretary Of State

**NOTICE OF FINAL FILING AND ADOPTION OF A LEGISLATIVE EXEMPT, INTERPRETIVE OR PROCEDURAL
RULE**

AGENCY: Coal Mine Health And Safety TITLE-SERIES: 36-01

RULE TYPE: Legislative Exempt Amendment to Existing Rule: Yes Repeal of existing rule: No

RULE NAME: Shaft and/or Slope Operations in the State of West Virginia

CITE STATUTORY AUTHORITY: W. Va. Code §22A-6-4 and 22A-6-5

This rule is filed with the Secretary of State. This rule becomes effective on the following date:

March 27, 2021

BY CHOOSING 'YES', I ATTEST THAT THE PREVIOUS STATEMENT IS TRUE AND CORRECT.

Yes

Jack M Rife -- By my signature, I certify that I am the person authorized to file legislative rules, in accordance with West Virginia Code §29A-3-11 and §39A-3-2.

TITLE 36
LEGISLATIVE EXEMPT RULE
BOARD OF COAL MINE HEALTH AND SAFETY

SERIES 1
SHAFT AND/OR SLOPE OPERATIONS IN THE STATE OF WEST VIRGINIA

§36-1-1. General.

- 1.1. Scope. -- This rule governs shaft and slope coal mine operations in the State of West Virginia.
- 1.2. Authority. -- W. Va. Code §§22A-6-4 and 22A-6-5.
- 1.3. Filing Date. -- February 25, 2021.
- 1.4. Effective Date. -- March 27, 2021.

§36-1-2. Effect of Rule.

- 2.1. All provisions of the mining laws of this state intended to safeguard life or property shall extend to all shaft and slope construction operations insofar as such laws are applicable thereto.
- 2.2. This rule shall have the effect of law, and violations shall be deemed a violation of law and so cited with the same effect as law. All provisions of W. Va. Code §22A-1-1 *et seq.* relative to enforcement are applicable to the enforcement of this rule.

§36-1-3. Definitions.

- 3.1. The words used in this rule shall have the meanings defined in this Section unless the content or context indicates a different meaning. All other terms used in this rule, not defined herein, shall have the meanings set forth in W. Va. Code §22A-1-2.
 - 3.1.1. Office. -- The term "office" shall mean the West Virginia Office of Miners' Health, Safety and Training provided for in W. Va. Code §22A-1-2(b)(4).
 - 3.1.2. Director. -- The term "Director" shall mean the Director of the Office of Miners' Health, Safety and Training provided for in W. Va. Code §22A-1-3 *et seq.*
 - 3.1.3. Mine Inspectors' Examining Board. -- The term "Mine Inspectors' Examining Board" shall mean the Mine Inspectors' Examining Board provided for in W. Va. Code §22A-9-1 *et seq.*
 - 3.1.4. Board of Appeals. -- The term "Board of Appeals" shall mean as provided for in W. Va. Code §22A-5-1 *et seq.*
 - 3.1.5. MSHA. -- The term "MSHA" shall mean the United States Mine Safety and Health Administration.
 - 3.1.6. Mine Inspector. -- The term "mine inspector" shall mean a state mine inspector provided for in W. Va. Code §22A-1-8.
 - 3.1.7. Interested Persons. -- The term "interested persons" shall include the operator, members

of any mine safety committee at the mine affected and other duly-authorized representative of the mine workers and the Office of Miners' Health, Safety and Training.

3.1.8. Agent. -- The term "agent" shall mean the person charged with the responsibility for the operation of all or a part of a shaft and/or slope or the supervision of the miners in a shaft and/or slope.

3.1.9. Operator. -- The term "operator" shall mean any firm, corporation, partnership or individual engaged in the construction of shafts and/or slopes and the associated facilities thereof.

3.1.10. Superintendent. -- The term "superintendent" shall mean the certified person whom the operator shall place in charge of a shaft and/or slope or associated facilities thereof.

3.1.11. Shaft-Slope Miner. -- The term "shaft and/or slope miner" shall mean any individual working in a shaft and/or slope or associated facilities thereof.

3.1.12. Supervisor. -- The term "supervisor" shall mean a superintendent-examiner-foreman or examiner-foreman designated by the superintendent to supervise work or employees and who is action pursuant to such specific designation and instructions.

3.1.13. Certified Person. -- The term "certified person," when used to designate the kind of person to whom the performance of a duty in connection with the operation of a shaft and/or slope shall be assigned, shall mean a person who is qualified under the provisions of this rule to perform such duty.

3.1.14. Certified Electrician. -- The term "certified electrician" shall mean any person who is qualified as a mine electrician and who has passed an examination given by the Office of Miners' Health, Safety and Training, or has at least three (3) years of experience in performing electrical work underground in a coal mine, in the surface work areas of an underground coal mine, in a surface coal mine, in a non-coal mine, in the mine equipment manufacturing industry, or in any other industry using or manufacturing similar equipment, and has satisfactorily completed an electrical training program approved by the Office of Miner's Health, Safety and Training.

3.1.15. Mine. -- The term "mine" includes the shafts, slopes, drafts or inclines connected with, or intended in the future to be connected with, excavations penetrating coal seams or strata, which excavations are ventilated by one (1) general air current or divisions thereof, and connected by one (1) general system of mine haulage over which coal may be delivered to one (1) or more points outside the mine, and the surface structures or equipment connected or associated therewith which contribute directly or indirectly to the mining preparation or handling of coal, or construction thereof.

3.1.16. Shaft. -- The term "shaft" shall mean a vertical opening through the strata that is or may be used for the purpose of ventilation, drainage, and the hoisting and transportation of personnel and material in connection with the mining of coal.

3.1.17. Slope. -- The term "slope" shall mean a plane or incline roadway, usually driven to a coal seam from the surface and used for the same purposes as a shaft.

3.1.18. Drift. -- The term "drift" shall mean a horizontal or approximately horizontal opening through any natural strata or in a coal seam and used for the same purposes as a shaft.

3.1.19. Excavations and Workings. -- The term "excavations and workings" shall mean any or all parts of a mine excavated or being excavated, including shaft, slopes, drifts, tunnels, entries, rooms and

working places, either abandoned or in use.

3.1.20. Active Workings. -- The term "active workings" shall mean all places in a shaft and/or slope that are ventilated and inspected regularly.

3.1.21. Working Place. -- The term "working place" shall mean the area of a shaft and/or slope in by the surface collar.

3.1.22. Working Face. -- The term "working face" shall mean any place in a shaft and/or slope in which work of extracting material from its natural deposit in the earth is being performed.

3.1.23. Attendance. -- The term "attendance" shall mean a distance not to exceed the radius of four hundred (400) feet from the collar of a shaft and/or slope and within sight or sound.

3.1.24. Working Unit. -- The term "working unit" shall mean an area of a shaft and/or slope in which natural deposits are mined with a set of production equipment; a conventional mining unit by a single loading machine; or continuous mining unit by a single continuous machine.

3.1.25. Return Air. -- The term "return air" shall mean a volume of air that has passed through and ventilated the working face in a shaft and/or slope.

3.1.26. Imminent Danger. -- The term "imminent danger" means the existence of any condition or practice in a shaft and/or slope where all the potentials are present that could constitute or cause a serious injury to any person before corrections can be made or while the corrections are being made.

3.1.27. Accident. -- The term "accident" shall mean any explosion, ignition, fire, or inundation, or injury to, or death of, any person in a shaft and/or slope.

3.1.28. Approved. -- The term "approved" shall mean in strict compliance with the mining law or, in the absence of law, accepted by a recognized standardizing body or organization whose approval is generally recognized as authoritative on the subject.

3.1.29. Permissible. -- The term "permissible" shall mean any equipment, device or explosive that has been approved as permissible by MSHA and meets all requirements, restrictions, exceptions, limitations and conditions attached to such classification.

3.1.30. Armored Cable. -- The term "armored cable" shall mean a cable provided with a wrapping of metal, usually steel wires or tapes, primarily for the purpose of mechanical protection.

3.1.31. Borehold Cable. -- The term "borehold cable" shall mean a cable designed for vertical suspension in a borehole or shaft and used for power circuits in the mine.

3.1.32. Cable. -- The term "cable" shall mean a standard conductor (single conductor cable) or a combination of conductors insulated from one another (multiple conductor cable).

3.1.33. Flame-Resistant Cable, Portable. -- The term "flame-resistant cable, portable" shall mean a portable flame-resistant cable that has passed the flame tests of MSHA.

3.1.34. Portable (Trailing) Cable. -- The term "portable (trailing) cable" shall mean a flexible cable or cord used for connecting mobile, portable or stationary equipment to an external source of electric

energy where permanent mine wiring is prohibited or is impracticable.

3.1.35. Branch Circuit. -- The term "branch circuit" shall mean any circuit, alternating current, or direct current connected to and leading from the main power lines.

3.1.36. Circuit Breaker. -- The term "circuit breaker" shall mean a device for interrupting a circuit between separable contacts under normal or abnormal conditions.

3.1.37. Zig-Zag Transformer (Grounding Transformer). -- The term "zig-zag transformer (grounding transformer)" shall mean a transformer intended primarily to provide a neutral point for grounding purposes.

3.1.38. Neutral Point. -- The term "neutral point" shall mean the connection point of transformer or generator windings from which the voltage to ground is nominally zero (0), and is the point generally used for system groundings in wye-connected A.C. power system.

3.1.39. Neutral (Derived). -- The term "neutral (derived)" shall mean a neutral point or connection established by the addition of a zig-zag or grounding transformer to a normally ungrounded power system.

3.1.40. Effectively Grounded. -- The term "effectively grounded" shall mean grounded through a grounding connection of sufficiently low impedance (inherent or intentionally added or both) so that fault grounds which may occur cannot build up voltages in excess of limits established for apparatus, circuits or systems so grounded.

3.1.41. Grounded (Earthed). -- The term "grounded (earthed)" shall mean that the system, circuit, or apparatus referred to is provided with a ground.

3.1.42. Ground or Grounding Conductor (Mining). -- The term "ground or grounding conductor (mining)", also referred to as a safety ground conductor, safety ground and frame ground, shall mean a metallic conductor used to connect the metal frame or enclosure of any equipment, mine track device or wiring system to an effective grounding medium.

3.1.43. Delta Connected. -- The term "delta connected" shall mean a power system in which the windings or transformers or A.C. generators are connected to form a triangular phase relationship, and with phase conductors connected to each point of the triangle.

3.1.44. Wye-connected. -- The term "wye-connected" shall mean a power system connection in which one (1) end of each phase windings or transformers or A.C. generators are connected together to form a neutral point, and a neutral conductor may or may not be connected to the neutral point, and the neutral point may or may not be grounded.

3.1.45. High Voltage. -- The term "high voltage" shall mean voltages of more than one thousand (1000) volts.

3.1.46. Medium Voltage. -- The term "medium voltage" shall mean voltages from six hundred sixty-one (661) to one thousand (1000) volts.

3.1.47. Low Voltage. -- The term "low voltage" shall mean up to and including six hundred sixty (660) volts.

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3.1.48. Lightning Arrester. -- The term "lightning arrester" shall mean a protective device for limiting surge voltage on equipment by discharging or bypassing surge current to ground, and is capable of repeating these functions as specified.

3.1.49. Power Center or Distribution Center. -- The term "power center or distribution center" shall mean a combined transformer or distribution unit, complete within a metal enclosure from which one (1) or more power circuits are taken.

3.1.50. Deadman Control. -- The term "deadman control" shall mean a hand- or foot-operated device which must be moved to a certain position before the hoist will function and when released will stop the hoist independent of the over-speed or over-wind controls.

3.1.51. Indicator. -- The term "indicator" shall mean a dial or column with a hand or pointer attached which is operated by a chain or gear drive from the drum shaft which shows the position of the bucket in the shaft.

§36-1-4. No Shaft and/or Slope to be Opened Without Prior Approval of the Director.

4.1. An application for the sinking of a shaft and/or slope shall be filed by the coal mine operator for approval to the Director. All revisions to such approved application shall be resubmitted for approval to the Director. A shaft and/or slope permit application filed for approval with the Director shall include the following:

4.1.1. The name and address of the coal company and permit number, if such shaft and/or slope is an additional opening.

4.1.2. A surface topographic map revealing the geographic location of the shaft and/or slope operation.

4.1.3. A certified engineer's map revealing the locations of underground mining, oil, and/or gas wells and construction projects within five hundred (500) feet of the shaft and/or slope.

4.1.4. A certified engineer's map showing the profile of the shaft and/or slope.

4.1.5. A description of the construction work and methods to be used in the construction of the slope and/or shaft, including a detailed description of how water rings will be constructed.

4.1.6. The elevation, depth, and dimensions of the shaft and/or slope

4.1.7. The location and elevation of the coal bed.

4.1.8. All hoisting and ventilation equipment will meet MSHA standards.

4.1.9. The approved methane detectors to be used and/or other equipment needed to make proper methane examinations (such as probes or pumps). Also a description of how, where, and when these examinations will be conducted and the maintenance and calibration of detectors which will be in accordance with manufacturer's recommendations. A shaft and slope examiner can be certified by the Office of Miners' Health, Safety and Training to qualify other employees to make required methane examinations.

4.1.10. The company's comprehensive mine safety plan will detail specific training subject matter to be covered and established time frames of the training sessions. Also training will be conducted with examiners as the shaft and slope work approach coal bed seams that have a history of liberating methane.

4.1.11. Provide a list of all certified persons responsible for making all mandatory examinations and inspections (not limited to blasting, pre-shift, electrical, gas testing, etc.).

§36-1.5. Information to be Filed by Company Performing Construction Work; Notices, Orders, and Decisions Received by Company Agent; Principal Officer in Charge; Permits to be Obtained by Company Performing Construction Work.

5.1. Prior to beginning work in a shaft and/or slope, the company performing such construction work shall file with the Director the name and address of the company performing the shaft and/or slope construction work.

5.2. Prior to beginning work in the shaft and/or slope after the permit approval has been obtained by the coal mine operator, the company performing such construction in a shaft and/or slope shall file with the Director the name and address of the person who controls or operates the shaft and/or slope. Any revisions in such names and addresses shall be promptly filed with the Director. Each operator of a shaft and/or slope shall designate a responsible official at such shaft and/or slope as the principal officer in charge of health and safety at such shaft and/or slope and such official shall receive a copy of any notice, order, or decision issued under this rule affecting such shaft and/or slope. In any case where the shaft and/or slope is subject to the control of any person not directly involved in the daily operations of the shaft and/or slope, there shall be filed with the Director the name and address of such person and the name and address of a principal official of such person who shall have overall responsibility for the conduct of an effective health and safety program at any shaft and/or slope subject to the control of such person and such official shall receive a copy of any notice, order, or decisions issued affecting any such shaft and/or slope. The mere designation of a health and safety official under this rule shall not be construed as making such official subject to any penalty under the West Virginia Code.

5.3. The following permit approvals shall be obtained from the Director by the company performing construction work in a shaft and/or slope before such work is started:

5.3.1. Stop the ventilation fan.

5.3.2. Stop the ventilating fan when personnel are in shafts and/or slopes.

5.3.3. Use electrical machinery in shafts and/or slopes.

5.3.4. Use electrical lights in shaft and/or slopes.

5.3.5. Multiple shots of coal or rock in a shaft and/or slope.

5.3.6. Use or store any non-permissible explosives or non-permissible blasting devices at a shaft and/or slope.

5.3.7. Hoist more than four (4) personnel at one time in buckets or cars in a shaft and/or slope.

5.3.8. Use welder, torches, and like equipment in a shaft and/or slope.

§36-1-6. Posting of Permit Approvals.

6.1. At each shaft and/or slope there shall be maintained an office with a conspicuous sign designating it as the office of the shaft and/or slope, and a bulletin board at such office, in such office, in such manner that permit approvals required by this rule to be posted on the bulletin board shall be posted thereon and be easily visible to all persons desiring to read them.

§36-1-7. Roof and Rib Control Programs and Plans.

7.1. Each operator shall undertake to carry out on a continuing basis, a program to improve the roof control system of each shaft and/or slope and the means and measures to accomplish such system. A roof control plan and revisions thereof suitable to the roof conditions and mining systems of each shaft and/or slope and approved by the Director shall be adopted and set out in printed form before new operations are started. The safety committee of the miners of each shaft and/or slope where such committee exists shall be afforded an opportunity to review and submit comments and recommendations to the Director and operator concerning the development, modification or revision of such roof control plan. The plan shall show the type of support and spacing approved by the Director. Such plan shall be reviewed periodically, at least every six (6) months by the Director, taking into consideration all falls of roof or rib inadequacy of support of ribs. A copy of the plan shall be furnished to the Director or his/her authorized representative and shall be available to the miners and their representatives.

7.2. The operator, in accordance with an approved plan, shall provide as the Director may prescribe an ample supply of suitable materials of proper size with which to secure the roof of all working places in a safe manner.

§36-1-8. Use of Authorized Explosives; Storage or Use of Underground Explosives.

8.1. It shall be unlawful to have, use, or store any permissible explosives or non-permissible blasting devices at any shaft and/or slope on the premises of the shaft and/or slope operation without a permit of approval from the Director.

§36-1-9. Use of Magazines for Explosives.

9.1. Separate surface magazines at least fifty (50) feet apart shall be provided for storage of explosives and detonators.

9.2. Surface magazines shall be provided with doors constructed of at least one-fourth inch steel plate lined with two-thickness of wood or equivalent, properly screened ventilators and with no openings except for entrances and ventilation and shall be kept locked securely when unattended.

9.3. The area for a distance of at least twenty-five (25) feet in all directions shall be kept free of materials of a combustible nature.

9.4. Suitable warning signs shall be erected, so located that a bullet passing directly through the face of the sign will not strike the magazine.

9.5. The location of magazines shall not be less than three hundred (300) feet from any shaft and/or slope opening, occupied building or open roads, unless barricaded in a manner approved by the Director.

9.6. If magazines are illuminated electrically, the lamps shall be of vapor type, properly installed and

wired.

9.7. Smoking and open lights shall be prohibited within twenty-five (25) feet of any surface magazine.

9.8. Surface magazines shall be located away from power lines, fuel storage areas and other possible sources of fire.

9.9. Surface magazines shall be electrically bonded and grounded if constructed of metal.

§36-1-10. Transportation of Explosives.

10.1. Individual containers used to carry permissible explosives or detonators shall be constructed of substantial non-conductive materials kept closed and maintained in good condition.

10.2. Any container used for transporting or storage of explosives shall be properly identified or marked.

10.3. Explosives and detonators shall be transported in the following manner: original and unopened cases, or in suitable individual containers.

10.4. If a large quantity of explosives and/or detonators are transported to a blasting site, more than are needed, such explosives and/or detonators shall be returned immediately to the surface magazines prior to blasting operations being performed.

§36-1-11. Vehicles Used to Transport Explosives.

11.1. Vehicles used to transport explosives shall have substantially constructed bodies, no sparking metals exposed in the cargo space, and shall be equipped with suitable sides and tail gates. Explosives shall not be piled higher than the side and end.

11.2. Vehicles containing explosives and/or detonators shall be maintained in good condition and shall be operated at a safe operating speed.

11.3. Vehicles containing explosives or detonators shall be posted with placard warning signs. Placards shall be located on all four (4) sides of the motor vehicle. The placards shall contain letters four (4) inch minimum height, using 3/4 inch stroke.

11.4. Other materials or supplies shall not be placed on or in a cargo space of a vehicle containing explosives or detonators.

11.5. Explosives or detonators shall be transported in separate vehicles unless separated by four (4) inches of hardwood or the equivalent.

11.6. Explosives or detonators shall be transported promptly without undue delay in transit.

11.7. Only necessary persons shall ride on or in vehicles containing explosives or detonators.

11.8. When vehicles containing explosives or detonators are parked, the brakes shall be set, the motor power shut off and the wheels blocked.

11.9. Vehicles containing explosives or detonators shall not be taken to a repair garage for any purpose.

11.10. Smoking and open lights shall be prohibited on vehicles transporting explosives or detonators.

§36-1-12. Explosives Handling and Use.

12.1. Damaged or deteriorated explosives or detonators shall be destroyed by a representative from a powder company.

12.2. Light and power circuits shall be disconnected and removed from affected blasting area before charging and blasting.

12.3. No shots shall be fired until such place has been properly examined by an examiner-foreman and no shots shall be fired in any place where methane gas in excess of one percent (1%) is detected with an approved methane gas detector.

12.4. Blasting practices.

12.4.1. All persons shall be removed from the shaft prior to blasting.

12.4.2. All persons in a slope shall be given ample warning before shots are fired. Care shall be taken to determine that all persons are in the clear before shots are fired.

12.5. Blasting areas in shaft and/or slopes shall be covered with mats or other suitable material when the excavation is too shallow to retain blasted material.

12.6. Where it is impractical to prepare primers in the blasting areas, primers may be prepared on the surface and carried into the shafts in a specially constructed, insulated, covered container.

12.7. No other development works shall be performed in a shaft or at the face of a slope where drill holes are being charged until after all shots have been fired.

12.8. Explosives shall be kept separate from detonator until charging is started.

12.9. Holes shall not be drilled where there is danger of intersecting a charged or misfired hole.

12.10. Only wooden or other non-sparking implements shall be used to punch holes in explosive cartridge.

12.11. Tamping poles shall be blunt and squared at one end and made of wood, non-sparking material, or of special approved plastic.

12.12. Electric detonators shall be kept shunted until they are being connected to the blasting line or wired into a blasting round.

12.13. Wired rounds shall be kept shunted until they are being connected to the blasting line.

12.14. Completely wired rounds shall be tested with a blasting galvanometer before connections are made to the blasting line.

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12.15. Permanent blasting lines shall be properly supported, insulated and kept in good repair.

12.16. Electric detonators of different brands shall not be used in the same round.

12.17. A capped primer shall be prepared so that the detonator is contained securely and is completely embedded within the explosives cartridge.

12.18. No tamping shall be done directly on a capped primer.

12.19. Shots shall be fired promptly after charging. Mudcaps (adobes) of any other confined shot shall not be permitted in any shaft and/or slope.

12.20. Drill holes shall be stemmed from the charge of the collar of the hole unless more effective permissible stemming material or methods are approved by the Director.

12.21. Explosives shall not be removed from their original wrapper.

12.22. An independent circuit unless otherwise approved by the Director shall be provided for electric blasting. The circuit shall be well insulated and protected from sources of active or stray electrical currents.

12.23. Electrical currents for firing shots shall be adequate to ensure detonation of an entire round.

12.24. Shooting cables shall be connected to the leg wires by the person firing the shot.

12.25. After blasting, all wires in the broken rock shall be carefully traced and a search made for unexploded explosives.

12.26. Shooting shall not be performed where a danger exists from the shooting cables crossing high voltage power lines above the shaft, after shots are fired.

12.27. When electrical detonators are used, charging shall be suspended and personnel withdrawn to a safe location upon the approach of an electrical storm.

§36-1-13. Misfires of Explosives.

13.1. When electric blasting caps have been used, personnel shall not return to misfired holes for at least fifteen (15) minutes.

13.2. Misfires shall be reported to the examiner-foreman and shall be disposed of safely before any work is performed in the blasting area.

13.3. After a misfire, the blasting cable shall be disconnected from the source of power and the battery ends short-circuited before electric connections are examined.

13.4. When a charge has misfired, the misfire shall be removed by:

13.4.1. Firing separate holes at least two (2) feet away from the parallel to the misfired charge.

13.4.2. Washing the stemming and the charge from the borehole with water.

13.4.3. Inserting and firing a new primer after the stemming has been washed out.

13.5. The handling of a misfired shot shall be under the direct supervision of an examiner-foreman.

13.6. Requirements for the use of sheathed explosive units for the construction of shaft and/or slope mines.

13.6.1. Notwithstanding W. Va. Code §22A-2-33(d), sheathed explosives that are approved by the Mine Safety and Health Administration shall be permitted for use in West Virginia coal mines, provided however, that they are used in accordance with Subections 13.6.2. through 13.6.8. as stated herein.

13.6.2. Sheathed explosives units shall be primed and placed in a position for firing and detonated by a certified shot firer designated by mine management. To prime a sheathed explosive unit, the entire detonator shall be inserted into the well of the unit and be held securely in place.

13.6.3. A separate instantaneous detonator shall be used to fire each sheathed explosive unit.

13.6.4. Use, transportation, handling and storage of sheathed explosives shall be in accordance with the manufacturer's specifications and applicable state and federal law.

13.6.5. Sheathed explosive units shall not be primed until immediately before units are placed where they are to be fired. A sheathed explosive unit shall not be primed if it is damaged or deteriorated.

13.6.6. No more than three sheathed explosive units shall be fired at one time.

13.6.7. No sheathed explosive unit shall be fired in contact with another sheathed explosive unit.

13.6.8. Certified shot firers and all persons responsible for the use, transportation and handling of sheathed blasting explosives shall be trained in the care and use of sheathed explosives.

§36-1-14. Examination - Records - Ventilation - Shaft and/or Slopes.

14.1. All shafts and/or slopes shall be ventilated by mechanical ventilation equipment during development. Such equipment shall be examined before each shift and the quantity of air in the shaft and/or slope measured daily by a certified person and the results of such examination and tests recorded in a book approved by the Director.

§36-1-15. Ventilation - Working Area.

15.1. While personnel are employed in a shaft and/or slope, all shafts and/or slopes shall be ventilated adequately and continuously with fresh air. Air tubing shall deliver not less than nine thousand (9,000) feet per minute at the working area or as much as necessary to remove noxious gases.

§36-1-16. Ventilation - Fans.

16.1. Ventilation fans shall be:

16.1.1. Installed on the surface.

16.1.2. Installed in fireproof housing and connected to the shaft and/or slope opening with

fireproof air ducts.

16.1.3. Designed to permit the reversal of the air current and located in an area which will prevent a recirculation of air from the shaft and/or slope or air contamination from any other source.

16.1.4. Equipped with an automatic signal device designed to give an alarm in the event the fan slows or stops which can be seen or heard by any person on duty in the vicinity of the fan, except where fans are constantly attended.

16.1.5. Offset not less than fifteen (15) feet from the shaft and/or slope.

§36-1-17. Ventilation - Methods - Maintenance - Evacuation - Quality - Quantity.

17.1. Ventilating tubing shall be constructed to permit ventilation by either exhausting or blowing methods and when metal air ducts are used, they shall be grounded effectively to remove static and other electrical currents.

17.2. Ducts shall extend as close to the bottom as necessary to ventilate properly.

17.3. A certified person, designated by the operator, shall be assigned to maintain each ventilating system.

17.4. Unless a permit has been obtained from the Office of Miners' Health, Safety and Training, the fan shall be operated continuously when personnel are below the surface of a shaft and/or slope. Any accidental stoppage or reduction in air-flow shall be corrected promptly; however, where repairs cannot be made immediately, development work below the surface shall be stopped and all the personnel who are not needed to make necessary repairs shall be removed to the surface. If ventilation is not restored in fifteen (15) minutes all underground employees shall be removed from the shaft and/or slope and the underground employees shall not return until ventilation is restored and the shaft and/or slope is examined by a certified person holding a certificate to make a pre-shift examination.

17.5. No superintendent-examiner-foreman shall permit any person to work where he/she is unable to maintain the quantity and quality of the air required. Provided, that such provisions shall not prohibit the employment of personnel to make place of employment safe.

17.6. All active underground working places in a shaft and/or slope shall be ventilated by a current of air obtaining not less than nineteen (19) and five tenths (5/10ths) percent oxygen and no harmful quantities of other noxious or poisonous gases.

§36-1-18. Device to Detect Overlapping on Hoists.

18.1. Hoists used to raise and lower persons shall be equipped with an overlap device to detect improper spooling of the cable.

§36-1-19. Emergency Communications Requirements.

19.1. Each operator of a shaft and/or slope shall establish and maintain a communication system from the shaft and/or slope to the nearest point of medical assistance for use in an emergency.

19.2. The emergency communications system required to be maintained under Section 19.1. of this rule

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may be established by telephone or radio transmission or by any other means of prompt approved communications to any facility (for example, the local sheriff, the state police or local hospital) which has available the means of communication with the person or persons providing emergency medical assistance or transportation in accordance with the provisions of Section 19.1. of this rule.

19.3. Precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by mobile transmitters. The following precautions are recommendations of the Institute of the Makers of Explosives Publication No. 20, shall be complied with:

Recommended Distances for One Ohm Electric Detonators from RF Sources such as Fixed and Mobile Transmitters, Including Cellular Telephone Service, Amateur Radio and Citizens' Band

MINIMUM DISTANCE (Feet)

Transmitter ¹ Power (Watts)	MF 1.7 to 3.4 MHz Fixed, Mobile, Maritime	HF 28 to 29.7 MHz Amateur	VHF 35 to 36 MHz Public Use 42 to 44 MHz Public Use 50 to 54 MHz Amateur	VHF 144-148 MHz Amateur 150.8-161.6 MHz Public Use	UHF 450 to 470 MHz Public Use Cellular Telephones above 800 MHz
1	15	47	37	12	8
3	25	81	64	21	14
5	33	105	82	27	18
10	46	148	116	38	25
50	102	331	259	85	55
100	144	468	366	120	78
180 ²	193	627	491	161	104
200	204	661	518	170	110
250	228	739	579	190	123
500 ³	322	1,045	818	268	174
600 ⁴	353	1,145	897	294	190
1,000	455	1,478	1,157	379	245
1,500 ⁵	557	1,810	1,417	464	300
10,000 ⁶	1,438	4,673	3,659	1,198	775

**Recommended Distances for One Ohm Electric Detonators from
Citizens Band, Class D Transmitters 26.965 MHz
(Channel 1) 27.405 MHz (Channel 40)**

	Recommended Minimum Distance
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Type	Hand-Held	Vehicle-Mounted
Double Sideband - 4 Watts Maximum Transmitter Power	5 feet	65 feet
Single Sideband - 12 Watts (Peak Envelope Power)	20 feet	110 feet

¹Power delivered to the antenna.

²Maximum power to two-way mobile units in VHF (150.8 or 161.6 MHz range) and for two-way mobile and fixed station units in UHF (450 to 460 MHz range).

³Maximum power for major VHF two-way mobile and fixed station units in 35 to 44 MHz range.

⁴Maximum power for two-way fixed station units in VHF (150.8 to 161.6 MHz range).

⁵Maximum power for amateur radio mobile use.

⁶Maximum power for some base stations in 42 to 44 MHz band and 1.6 to 1.8 MHz band.

Note, this chart is found in the Institute of the Makers of Explosives publication No. 20, December 2011.

§36-1-20. Arrangements for Emergency Medical Assistance and Transportation for Injured Persons; Reporting Requirements; Posting Requirements.

20.1. While employees are on duty, each operator of a shaft and/or slope shall have made arrangements with a licensed physician, medical service, medical clinic, or hospital to provide emergency medical assistance for any person injured at any shaft and/or slope.

20.2. While employees are on duty, each operator shall have made arrangements with an ambulance service or otherwise provided for emergency transportation for any person injured at the shaft and/or slope.

20.3. After the effective date of this rule, each operator shall report to the Director the name, title and address of the physician, medical service, medical clinic, hospital, or ambulance service with whom arrangements have been made or otherwise provided, in accordance with the provisions of Sections 20.1. and 20.2. of this rule.

20.4. Each operator shall, within ten (10) days after any change of the arrangements required to be reported under Section 20.3. of this rule, report such changes to the Director. If such changes involve a substitution of persons, the operator shall provide the name, title, and address of such persons together with the names and addresses of the medical service, medical clinic, hospital, or ambulance service.

20.5. Each operator shall immediately after making arrangements required under the provisions of Sections 20.1. and 20.2. of this rule, or immediately after any changes of such agreement, post at appropriate places at the shaft and/or slope the names, titles, and addresses, and telephone numbers of all persons or services currently available under such arrangements to provide medical assistance and transportation at the shaft and/or slope.

20.6. All requirements of 36CSR56 apply.

§36-1-21. Employment of Agent.

21.1. At each shaft and/or slope construction operation, the operator shall employ a shaft and/or slope superintendent, who shall be the agent in charge of the shaft and/or slope operation.

21.2. A certified person shall be in attendance at all times at each shaft and/or slope who has passed

an examination given by the Office of Miners' Health, Safety and Training.

§36-1-22. Superintendent-Shaft and/or Slope Certification.

22.1. Each applicant for certification as a shaft and/or slope superintendent shall, at the time he/she is issued a certificate:

22.1.1. Have had at least five (5) years experience in the workings, ventilation and drainage of a shaft and/or slope, or other related experience approved by the Director, which shall include at least twenty-four (24) months experience in the working place of a shaft and/or slope or be a graduate of an accredited engineering or technology school with a bachelor's degree in mining, electrical, mechanical or civil and have had at least four (4) years practical experience in the construction of shafts and/or slopes or other related experience approved by the Director, which shall include at least twenty-four (24) months experience in the working place of shafts and/or slopes.

22.1.2. Have demonstrated his/her knowledge of dangerous mine gases and their detection, mine safety, first-aid, safety appliances, state mining laws and regulations by completing an examination as may be required of him/her by the Director.

§36-1-23. Duties - Shaft and/or Slope Superintendent.

23.1. The superintendent, or in his/her absence the examiner-foreman in charge of the shaft and/or slope, shall, each day, read carefully and countersign with ink or indelible pencil all reports entered in the record book of the shaft and/or slope examiner.

23.2. The superintendent, or in his/her absence the examiner-foreman in charge of the shaft and/or slope, shall provide and maintain at all shaft and/or slope operations lights of stationary character, sufficient to illuminate the surface landing area and all surrounding objects distinctly.

23.3. The superintendent or other certified person shall give prompt attention to the removal of all dangers reported to him/her by his/her examiner-foreman or any other person working in a shaft and/or slope and in case it is impracticable to remove the danger at once, he/she shall see that such area is properly dangered off.

23.4. It shall be the duty of the superintendent of every shaft and/or slope operation in this state to see that all persons employed be furnished a copy of the rules and regulations promulgated by the Coal Mine Health and Safety Board.

23.5. The superintendent shall see that a new company employee, regardless of previous experience, receives instructions in a particular danger incident in such shaft and/or slope work and be furnished a copy of the rules and regulations promulgated by the Coal Mine Health and Safety Board. Each such new employee shall be adequately familiarized with the approved roof control plan, ventilation plan and ventilating controls and hoisting procedures, location of first-aid equipment and procedures established for contacting medical assistance, check-in check-out system, communications, fire protection and evacuation. He/she shall be given a complete tour and explanation of the entire construction operation.

23.6. It shall be the duty of the superintendent to provide a danger signal (a separate signal for each shift) red in color at a conspicuous location on the surface near each shaft and/or slope opening.

23.7. The superintendent or other certified examiner-foreman designated by him/her shall, at least

weekly, search all persons entering or about to enter a shaft and/or slope to prevent such person from taking or carrying therein any hallucinating drugs, matches, pipes, cigars, cigarettes, or any device for making lights or fire not authorized or approved. The superintendent or other certified examiner-foreman designated by him/her shall, at least weekly, search all shaft and/or slope surface employees for hallucinating drugs and alcoholic beverages. Such person being searched may be required to reveal the contents within their clothing and material belongings. Results of weekly searches shall be recorded in ink or indelible pencil in the shaft and/or slope examiner record book prescribed by the Director.

23.8. The superintendent shall at least monthly examine stored first-aid supplies and first-aid equipment. Should he/she find an inadequate supply to comply with the provisions of this rule, immediate action shall be taken to provide such first-aid equipment as required.

23.9. The superintendent or other certified person shall not permit unauthorized persons around shafts and/or slopes.

23.10. The superintendent shall provide a check-in and check-out system which shall consist of a check board or time clock record in a place that will not be affected in the event of an explosion.

23.11. The superintendent or examiner-foreman of the operator of a shaft and/or slope shall comply with the requirements of W. Va. Code §22A-2-66 (Accident, notice, investigation by Office of Miners' Health, Safety and Training), W. Va. Code §22A-2-67 (Written report of accident), and W. Va. Code §22A-2-68 (Preservation of evidence following accident or disaster). The operator shall not alter an accident site or an accident-related area until completion of all investigations pertaining to the accident except to the extent necessary to rescue or recover an individual, prevent or eliminate an imminent danger, or prevent destruction of mining equipment.

§36-1-24. Duty of Operator; Duty of Superintendent to Notify Operator When Unable to Comply With Rule.

24.1. Every operator of a shaft and/or slope shall furnish all supplies necessary for the superintendent to comply with requirements of this rule.

24.2. The superintendent shall notify, in writing, the operator of the shaft and/or slope and the Director of his/her inability to comply with any of the requirements of this rule.

§36-1-25. When Examiner-Foreman May Be Designated.

25.1. At any shaft and/or slope in which the operation is so extensive that the duties devolving upon the superintendent-examiner-foreman cannot be discharged by one (1) person, one (1) or more examiner-foreman may be designated and such person shall act under the instruction of the superintendent-examiner-foreman.

25.2. Any person holding a superintendent, examiner or foreman certificate issued by any other state may act in the capacity of superintendent-examiner or foreman in any shaft and/or slope in this state until the next regular examination is held by the Office of Miners' Health, Safety and Training, but not to exceed a maximum of ninety (90) days.

§36-1-26. Requirements for Shaft/Slope Examiner-Foreman Certification.

26.1. At every shaft and/or slope, the operator shall employ at least one (1) person certified as a shaft

and/or slope examiner-foreman. Each applicant for certification as a shaft and/or slope examiner-foreman at the time the certificate is issued shall:

26.1.1. Have had at least three (3) years experience in the workings, ventilation and drainage of a shaft and/or slope, twenty-four (24) months experience in the working place of a shaft and/or slope or be a graduate of an accredited engineering or technology school with a bachelor's degree in mining, electrical, mechanical or civil, and have had at least two (2) years practical experience in a shaft and/or slope or other related construction work approved by the Director, which shall include at least eighteen (18) months experience in the working place of a shaft and/or slope.

26.1.2. Have demonstrated his/her knowledge of dangerous mine gases and their detection, mine safety, first-aid, safety appliances, state mining laws and regulations by completing an examination as may be required of him/her by the Director.

§36-1-27. Duties - Shaft and/or Slope Foreman.

27.1. The foreman shall before the beginning of any shift upon which he/she will perform supervisory duties, review carefully and countersign all books and records reflecting the conditions and the areas under his/her supervision which the operator is required to keep under this rule.

27.2. The foreman shall keep a careful watch over the ventilating apparatus, pumps and drainage.

27.3. The foreman shall not permit any person to work where he/she is unable to maintain the quality and quantity of air current as heretofore required: Provided, That such provisions shall not prohibit the employment of personnel to make the place of employment safe.

27.4. A superintendent-examiner-foreman or examiner-foreman shall be in attendance at all times at each shaft and/or slope operation.

27.5. The foreman shall carry an approved methane gas and oxygen detector at all times when in a shaft and/or slope.

27.6. It shall be the duty of the foreman to immediately remove any accumulations of explosives or noxious gases after its discovery.

27.7. The foreman shall direct and see that the entrance or entrances to all dangerous places are properly dangered off; he/she shall give prompt attention to the removal of all dangers, and in case it is impracticable to remove the danger at once, he/she shall notify all persons whose safety is menaced thereby to remain away from the area where the dangerous condition exists.

27.8. It shall be the duty of the foreman to examine all working places under his/her supervision for hazards at least once every two (2) hours during each working shift, or more often if necessary for safety. Such examination shall include tests for methane gas and oxygen deficiency, examinations of roof, face and ribs in working places of shafts and/or slopes.

27.9. An examination for methane and other hazardous conditions shall be made before and after shooting by the foreman.

27.10. Evidence of the foreman's examinations shall be left on an approved device at the working place by marking the date, time and his/her initials.

27.11. The foreman on each shift shall record conditions and practices in a book prescribed by the Director. Unsatisfactory conditions or practices reported and action taken shall be continuously repeated on the daily report until corrected.

27.12. It shall be the duty of the foreman to examine the surface area surrounding each shaft and/or slope for hazards four (4) hours after the beginning of the work shift, or more often if necessary for safety.

27.13. The foreman shall examine and test daily the signaling systems used for communications in shafts and/or slopes.

§36-1-28. Duties - Shaft and/or Slope Examiner.

28.1. It shall be the duty of the shaft and/or slope examiner, acting as such, to prepare the danger signal (a separate signal for each shift) with red color at the shaft and/or slope entrances prior to his/her making his/her pre-shift examination.

28.2. It shall be the duty of the shaft and/or slope examiner to examine each shaft and/or slope within three (3) hours prior to the beginning of each shift and before any worker on such shift enters the shaft and/or slope.

28.3. In making a pre-shift examination, the shaft and/or slope examiner shall examine each working place with an approved permissible methane detector for methane gas and examine the sides of shafts and ribs and roof of all slopes.

28.4. Should the shaft and/or slope examiner find an accumulation of methane gas in excess of one (1) percent or a condition he/she considers dangerous to persons, he/she shall place a conspicuous danger sign at all entrances to such place or places. If a danger sign is posted by the shaft and/or slope examiner, only persons authorized by the shaft and/or slope examiner, operator or agent shall enter such places for the purpose of eliminating the dangerous condition.

28.5. The shaft and/or slope examiner shall place his/her initials, date and time within twenty-five (25) feet of the places he/she examines.

28.6. When the shaft and/or slope examiner finds the shaft and/or slope safe, he/she shall indicate so by changing the danger sign, red in color, to a safe sign, green in color, indicating the shaft and/or slope is safe, and that employees going on shift may enter such shaft and/or slope.

28.7. The shaft and/or slope examiner shall record the results of his/her pre-shift examination with ink or indelible pencil in a book prescribed by the Director, kept for such purpose at a place on the surface of the shaft and/or slope designated by the shaft and/or slope operator.

28.8. All records as prescribed herein shall be open for inspection by interested persons and such employees working at such shaft and/or slope operation.

28.9. Except for those persons already on assigned duty, only the shaft and/or slope operator or agent shall be permitted beyond the danger signal, while red in color, until the shaft and/or slope has been examined by the shaft and/or slope examiner.

28.10. No person shall enter such shaft for any purpose at the beginning of work upon each shift therein

until such signal has been changed to green in color by the examiner, as provided by this rule, except under his/her direction another designated shaft worker shall ride with such examiner and remain in the bucket, to relay signals to the hoist operator in case of an emergency, during his/her initial pre-shift examination each day: Provided, That when personnel are regularly working on a shift and workers are inside such shaft another shaft worker is not required to accompany him/her.

§36-1-29. Shaft and/or Slope Examiner to Have No Superior Officers.

29.1. In the performance of the duties devolving upon a shaft and/or slope examiner, acting as such, they shall have no superior officers, but all employees working inside of such shaft and/or slope shall be subordinate to them in their particular work.

§36-1-30. Authority of Examiner to Perform Other Duties.

30.1. Any person who holds a certificate issued by the Office of Miners' Health, Safety and Training certifying his/her competency to act as a shaft and/or slope examiner may perform the duties as a foreman and any other duties statutory or otherwise, for which he/she is qualified, in the same shaft and/or slope and on the same day or shift.

§36-1-31. Electrical Provisions -- Shaft and/or Slope.

31.1. Power circuits and electric equipment shall be deenergized before work is done on such circuits and equipment, except when necessary for troubleshooting or testing.

31.2. No electrical work shall be performed on electrical distribution circuits or equipment, except by a qualified person or by a person trained to perform electrical work and to maintain electrical equipment under the direct supervision of a qualified person. Disconnecting devices shall be locked out and suitably tagged by each person who performs such work, except that in cases where locking out is not possible, such devices shall be opened and suitably tagged by each person who installed them, or, if such persons are unavailable, by qualified persons authorized by the operator or his/her agent.

31.3. Electrical equipment shall be examined weekly, tested, and properly maintained by a qualified person to assure safe operating conditions. When a potentially dangerous condition is found on electric equipment, such equipment shall be removed from service until such condition is corrected. A record of such examination shall be kept and made available to an authorized representative of the Director and to the miners in such mine.

31.4. Surface transformers shall be elevated at least eight (8) feet above the ground or enclosed by a fence six (6) feet high, grounded if metal; shall be properly grounded; shall be installed so that they will not present a fire hazard; and shall be guarded by sufficient danger signs. The gate or door to the enclosure shall be kept locked at all times unless authorized persons are present.

31.5. Electric conductors shall be sufficient in size and have adequate carrying capacity and be of such construction that a rise in temperature resulting from normal operation will not damage the insulating material.

31.6. Electrical connections or splices in electric conductors shall be mechanically and electrically efficient, and suitable connectors shall be used. All electrical connections or splices in electrical connections or splices in insulated wire shall be reinsulated at least to the same degree of protection as the remainder of the wire.

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31.7. Short circuit protection to protect all electric equipment and circuits against short circuits and overloads shall be provided by an automatic circuit breaker or other no less effective device approved by the Director. Three-phase motors on all electric equipment shall be provided with overload protection that will deenergize all three phases in the event that any phase is overloaded.

31.8. The booms and masts of equipment operated on the surface of any shaft or slope shall not be operated within ten (10) feet of an energized overhead powerline. Where the voltage of overhead powerlines is sixty-nine thousand (69,000) volts or more, the minimum distance from the boom or mast shall be as follows:

Nominal power line voltage (in (1,000) volts)	Minimum distance (feet)
69-114	12
115-229	15
230-344	20
345-499	25
500 or more	35

31.9. During construction, electrical equipment employed below the collar or within twenty-five (25) feet of the return or exhaust of a slope or shaft during excavation shall be approved or permissible and shall be maintained in a permissible condition.

31.10. The insulation of all electric conductors employed below the collar of any slope and shaft during excavation shall be of the flame resistant type.

31.11. During the construction of shaft or slope only lamps and portable flood lights approved by MSHA shall be permitted below the collar of the shaft or slope.

31.12. Metallic frames, casings, and other enclosures of electric equipment that can become "alive" through failure of insulation or by contact with energized parts shall be effectively grounded.

31.13. All power wires (except trailing cables on mobile equipment, specially designed cables conducting high-voltage power to underground rectifying equipment or transformers, or bare or insulated ground and return wires) shall be supported on well-insulated insulators and shall not contact combustible material, roof, or ribs.

31.14. Well-insulated insulators is interpreted to mean well-installed insulators. Insulated J-hooks may be used to suspend insulated power cables for temporary installation not exceeding six (6) months and for permanent installation of control cables such as may be used along belt conveyors.

31.15. Power wires and cables shall be insulated adequately and fully protected.

31.16. Power wires and cables shall have insulation with a dielectric strength at least equal to the voltage of the circuit.

31.17. Each ungrounded, exposed power conductor that leads underground shall be equipped with suitable lightning arresters of approved type within one-hundred (100) feet of the point where the circuit enters the mine. Lightning arresters shall be connected to a low resistance grounding medium on the surface which shall be separated from neutral grounds by a distance of not less than twenty-five (25) feet.

31.18. Short circuit protection for trailing cables shall be provided by an automatic circuit breaker or other no less effective device approved by the Director of adequate current-interrupting capacity in each ungrounded conductor. Disconnecting devices used to disconnect power from trailing cables shall be plainly marked and identified and such devices shall be equipped or designed in such a manner that it can be determined by visual observation that the power is disconnected and a suitable means to provide the ability to lock and tag.

31.19. Dry insulating platforms of rubber or other suitable nonconductive material shall be kept in place at each switchboard and at stationary machinery where shock hazards exist.

§36-1-32. Lights to be Used in Shaft.

32.1. Only approved cap lights shall be used in shafts. Lights shall be suspended in shafts by cable or chain other than the power conductor. In slopes, lights must be substantially installed. Power cables shall be of an approved type.

32.2. Power cables shall not be taunt from shaft collar to light. Power cables shall be in good condition and splices shall be:

32.2.1. Mechanically strong with adequate electric conductivity and flexibility,

32.2.2. Effectively insulated and sealed so as to exclude moisture, and

32.2.3. Vulcanized or otherwise treated with suitable materials to provide flame-resistant qualities and good bonding to outer jacket.

32.3. Lights shall be suspended not less than twenty (20) feet above where personnel are working. Lights and power shall not be restored in work area of shaft or slope until examination has been made for gas by the shaft-slope examiner and found clear. Fronts of lights need not be guarded with a metal guard providing light is permissible with an approved lens.

§36-1-33. First-Aid Training of Shaft and/or Slope Employees.

33.1. Each employer at a shaft and slope site shall provide every new employee within six (6) months of the date of hire with the opportunity for first-aid training as prescribed by the Director, unless the employee has previously received such training. Each employee is required to take a refresher first-aid training of not less than five (5) hours within each twenty-four (24) months of employment. The employee shall be paid regular wages and overtime pay, if applicable, for all periods of first-aid training.

§36-1-34. Hoist Equipment Daily Visual Examinations.

34.1. Hoists shall be examined daily according to the manufacturer's recommended guidelines and such examinations shall include, but not be limited to, the following:

34.1.1. An examination of the rope fastenings for defects;

34.1.2. An examination of safety catches;

34.1.3. An examination of the cages, platforms, or other devices for loose, missing or defective parts;

34.1.4. An examination of the head sheaves to check for broken flanges, defective bearings, rope alignment, and proper lubrication;

34.1.5. An observation of the lining, wear pads, rollers, and all other equipment and appurtenances installed in the shaft.

34.1.6. An examination of attachment point pins on booms and structure.

34.1.7. At the completion of each daily examination, the person making the examination shall certify, by signature and date, that the examination has been made. If any unsafe condition is found during the examinations required, the person conducting the examination shall make a record of the condition and the date. Management shall ensure any unsafe conditions are corrected prior to hoisting operations. Certifications and records shall be retained for one (1) year.

34.1.8. Hoists shall have rated capacities consistent with loads handled or hoisted. The load capacity of the hoist system shall be posted in a conspicuous place at the loading point(s) and hoisted loads shall not exceed those limits.

34.1.9. Hoisting equipment used to transport personnel shall be equipped with over-speed, over-wind, over-lap, and automatic stop controls.

§36-1-35. Wire Ropes.

35.1. This section applies to wire ropes in service used to hoist persons, materials, and equipment in shafts or slopes underground and when persons work below the suspended loads during construction and development, but does not apply to wire ropes for elevators.

35.2. The wire ropes shall be used and maintained in accordance with manufacturer's guidelines.

35.3. Minimum rope strength:

35.3.1. At installation, the nominal strength (manufacturer's published catalog strength) of wire ropes used for hoisting shall meet the minimum rope strength values obtained by the following formulas in which "L" equals the maximum suspended rope length in feet:

35.3.1.a. Winding drum ropes (all constructions, including rotation resistant).

35.3.1.a.1. For rope lengths less than 3,000 feet: Minimum Value = Static Load x (7.0-0.001L).

35.3.1.a.2. For rope lengths 3,000 feet or greater: Minimum Value = Static Load x 4.0.

35.3.1.b. Friction drum ropes.

35.3.1.b.1. For rope lengths less than 4,000 feet: Minimum Value = Static Load x (7.0-

0.0005L).

35.3.1.b.2. For rope lengths 4,000 feet or greater: Minimum Value = Static Load x 5.0.

35.3.1.c. Tail ropes (balance ropes).

35.3.1.c.1. Minimum Value = Weight of Rope x 7.0.

35.4. Initial measurement.

35.4.1. After initial rope stretch but before visible wear occurs, the rope diameter of newly installed wire ropes shall be measured at least once in every third interval of active length and the measurements averaged to establish a baseline for subsequent measurements. The established baseline measurement shall be recorded and kept on file and accessible to representatives of the Director throughout the lifespan of the ropes.

35.5. Lubrication of ropes.

35.5.1. Wire ropes used for hoisting equipment or personnel shall be adequately lubricated according to the manufacturer's specifications.

35.6. Examinations.

35.6.1. At least once every seven (7) calendar days, each wire rope in service shall be visually examined along its entire active length for visible structural damage, corrosion, and improper lubrication or dressing. In addition, visual examination for wear and broken wires shall be made at stress points, including the area near attachments, where the rope rests on sheaves, where the rope leaves the drum, at drum crossovers, and at change-of-layer regions. When any visible condition that results in a reduction of rope strength is present, the affected portion of the rope shall be visually examined on a daily basis. At the completion of each examination required by Section 34.1., the person making the examination shall certify, by signature and date, that the examination has been made. If any condition listed in Section 34.1. is present, the person conducting the examination shall make a record of the condition and the date. Certifications and records of examinations shall be retained for one (1) year.

35.6.2. Before hoisting of equipment or personnel with a newly installed wire rope, the wire rope shall be examined:

35.6.2.a. Wherever wear is evident;

35.6.2.b. Where the hoist rope rests on sheaves at regular stopping points;

35.6.2.c. Where the hoist rope leaves the drum at regular stopping points; and

35.6.2.d. At drum crossover and change-of-layer regions.

35.6.3. At least once every one hundred eighty (180) calendar days, nondestructive tests shall be conducted of the active length of the rope, and rope diameter measurements shall be made at least once every ninety (90) calendar days.

35.6.4. The person making the measurements or nondestructive tests as required by Subsection

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35.6.3. of this Section shall record the measurements or test results and the date. This record shall be retained until the rope is retired from service.

35.7. Load end attachments.

35.7.1. Wire rope shall be attached to the load by a method that develops at least eighty (80) percent of the nominal strength of the rope.

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

35.7.3. Load end attachment methods using splices are prohibited.

35.8. Drum end attachment.

35.8.1. For drum end attachment, wire rope shall be attached:

35.8.1.a. Securely by clips after making one (1) full turn around the drum spoke;

35.8.1.b. Securely by clips after making one (1) full turn around the shaft, if the drum is fixed to the shaft; or

35.8.1.c. By properly assembled anchor bolts, clamps, or wedges, provided that the attachment is a design feature of the hoist drum. Design feature means either the manufacturer's original design or a design approved by a registered professional engineer.

35.8.2. A minimum of three (3) full turns of wire rope shall be on the drum when the rope is extended to its maximum working length.

§36-1-36. Wire Rope End Attachment Re-termination.

36.1. Damaged or deteriorated wire rope shall be removed by cutoff and the rope re-terminated where there is:

36.1.1. More than one broken wire at an attachment;

36.1.2. Improper installation of an attachment;

36.1.3. Slippage at an attachment; or

36.1.4. Evidence of deterioration from corrosion at an attachment.

§36-1-37. Wire Rope End Attachment Replacement.

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

§36-1-38. Retirement of Wire Ropes.

38.1. Unless damage or deterioration is removed by cutoff, wire ropes shall be removed from service

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when any of the following conditions occur:

38.1.1. The number of broken wires within a rope lay length, excluding filler wires, exceeds either:

38.1.1.a. Five (5) percent of the total number of wires; or

38.1.1.b. Fifteen (15) percent of the total number of wires within any strand.

38.1.2. On a regular lay rope, more than one (1) broken wire in the valley between strands in one rope length;

38.1.3. A loss of more than one-third (1/3) of the original diameter of the outer wires;

38.1.4. Rope deterioration from corrosion;

38.1.5. Distortion of the rope structure;

38.1.6. Heat damage from any source;

38.1.7. Diameter reduction that exceeds six (6) percent of the baseline diameter measurement; or

38.1.8. Loss of more than ten (10) percent of rope strength as determined by nondestructive testing.