

SLOPE AND SHAFT SINKING PLANS
30 CFR Part 77.1900

**Compliance Guide:
Developing a Comprehensive
Slope and Shaft Sinking Plan**

U.S. Department of Labor
Mine Safety and Health Administration
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**Compliance Guidelines for Developing Slope and Shaft Sinking Plans
(For all methods of coal mining)**

We designed this compliance guide for use in developing a comprehensive slope and shaft sinking plan. A typical comprehensive slope and shaft plan should contain the following elements specific to the particular mine and slope and shaft operation. The District Manager may require additional information based on the conditions present at the particular operation.

Plan Elements:

1. Name, location, and MSHA ID number for the mine.
2. Name and address of operator and/or contractor performing the work, including the contractor ID number and a letter of concurrence from the mine operator if the plan is submitted by the contractor. The operator may be in the best position to supply certain information listed below that should be included in the plan submittal. Amendments can be made by either party by contacting MSHA and notifying the other party.
3. Description of the construction work and methods used in the construction:
 - a) Surface map showing:
 - 1) geographic location
 - 2) distance from existing and abandoned underground and surface mines that may impact the slope or shaft
 - 3) utilities (gas wells, gas lines, electric utilities)
 - b) Drawings (general overview and layout) and specifications (as listed below) of the hoisting system including:
 - 1) size and capacity of hoist, headframe, and sheaves, type and manufacture, type of drive (electric/diesel), safety factors, maximum load capacity, maximum fleet angles, wire rope specifications, construction and classification, rope breaking strength and working load data
 - 2) rigging for concrete forms and work platforms, devices used to hoist materials shall be suitable for handling the type of materials being hoisted
 - 3) if equipped, the device to ensure proper spooling on hoist/winch
 - 4) emergency hoisting system
 - c) Operational sequence for initial and subsequent excavation including:
 - 1) initial excavation
 - 2) drilling
 - 3) blasting plan if required– refer to ATF P 5400.7

- a. type of explosives and detonators
 - b. shot pattern, wiring and delay diagrams
 - c. shot firing unit type, maintenance and calibration
 - d. statement that storage will be according to the American Table of Distances
 - e. method of transporting explosives
 - f. required permits (such as non-permissible blasting units and non permissible explosives)
 - g. handling of misfires
 - 4) loading and transportation of excavated materials
 - 5) placement of lining, concrete forms, and panning (general statement on procedures)
 - 6) water ring excavation and construction, method of ventilating and methane examination, safe work procedures
 - 7) if the slope or shaft will intersect or be impacted by existing or abandoned mine workings outline the excavation procedures
 - 8) bottom station and mine development
4. The surface elevation, depth, and dimensions of the slope or shaft
 5. The name, location and elevation of the coal seam(s)
 6. The general characteristics of the strata through which the slope or shaft will be developed:
 - a) core log
 - b) approximate location of water table
 - c) other coal seams/vein
 7. List type of equipment to be used:
 - a) temporary (initial) sinking and hoisting equipment
 - b) drilling equipment
 - c) mucking and loading equipment
 - d) diesel equipment (note: must comply with all applicable parts of 30 CFR)
 - e) spoil/coal removal loading, and haulage equipment
 - f) list weights of each piece of major equipment and maximum loads to be hoisted
 - g) safety precautions for use of equipment with integral winches
 - h) safety precautions for use of remote controlled mobile equipment when used
 8. Ventilation system:
 - a) fan type, size, and maximum cfm
 - b) type and diameter of air duct
 - c) minimum air quantity and measurement locations
 - d) type of pressure testing devices, tubing location in relation to the work area, method of determining air direction and quantity
 - e) fan offset (minimum 15 feet), type of alarm in case of fan stoppage

- f) method and location of methane examination, method of maintaining calibration of methane detection devices, frequency of calibration and recording of calibration tests
 - g) method used to ventilate water rings during remainder of shaft construction
 - h) provisions for stopping the fan during idle periods or for setting sight lines
9. Ground Control (Prevention of Caving)
- a) support methods and materials (note: arches, timbers, roof support procedures and materials used for initial bottom development)
 - b) rock bolting
 - c) ground freezing
 - d) lining
 - e) control of sloughing (note: scaling bars, screening, etc.)
10. Electrical
- a) type of electrical source and type of grounding system
 - b) list permissible equipment below shaft collar
 - c) identify resistance grounded systems/ground monitors
11. Precautions
- a) describe cutting and welding procedures in accordance with 30 CFR Section 77.1916
 - b) protection against falling tools and material
 - c) protection against fall of persons
 - d) guarding and barricading
 - e) procedures for inclement weather (lightning, ice, wind)
 - f) number of persons permitted in the slope or shaft while cutting and welding in or around the slope or shaft
 - g) describe the check in check out system
 - h) smoking prevention plan
12. Emergency procedures
- a) list names and phone numbers of persons to be notified in the event of an emergency
 - b) list names and numbers of emergency medical assistance providers
 - c) first aid/emergency response/communications

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