

Design Processes and Mine Parameters in Open Pit Mining

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Abstract: In open pit mining, excavation processes are carried out based on the dimensions indicated in the technical scheme of the mine. A mining technical passport is created when the mine is being designed. It is necessary to be able to ensure the continuity of technological processes in the mine. When designing mines, it is necessary to take into account the parameters of the mine and the intervals for traffic movement in the mine. Also, in the design of the mine, based on the parameters of the mine, it is necessary to show the boundary part of the mine on the general map of the mine. When designing the working area of the mine, several mining processes, such as digging, loading, piling, and mineral transportation, must be planned.

Keywords: Open pit, mining scheme, mine project, mine scheme, mine map, mine technical parameters, rock, ore degradation, ore loss.

Introduction

Disadvantages of open pit mining in mine design: Large areas for production at the limit of open pit mining and sometimes lead to depletion of groundwater levels over large areas. Open pit mining depends on climatic conditions. An excavated area with a stepped upper area with a horizontal line delimiting the upper edge of the step, the lower area. The line formed in the middle of the inclined plane is a step called the lower edge. The shape between the upper and lower edges of the step An inclined plane is an inclined plane of the step, with which it is horizontal. The angle formed between the boundaries of the general area of the mine is called the slope angle of the stairs. Fragments of minerals or mineral rocks that are mined in a quarry dug to a certain width (10 - 15 m or more). is taken, and this width is called entrance (zahodka) and its front part kavjoy (zaboy). The part of the step prepared for digging in the direction of the pit is called the digging front. Excavation of the overlying rocks and opening of minerals in mineral deposits is called the appropriate mining complex opening operations. The distance of transportation of rocks is determined in the area of the location of the main mining equipment. The area is called the upper area of the stairs, the width of which is 2-4 times the height of the step. It has a small width and mining operations are not carried out, berms are called transport berms according to their function and do not provide protection - it can be. Step height and slope angle in quarries depend on a number of factors, the main of which is the rock that formed the step density. Mining coefficient of internal friction such as humidity physical and technical characteristics and the slope angle of the step is above In addition to the factors, it also depends on the height of the step. As a result of surface mining large pits appear. The sum of the pits is the quarry (open pit mining enterprise). From these depths the boundary of the section will not be adjacent. In the administrative and economic concept, it is a career the mine is open means a mining enterprise that organizes mining. In the coal industry and open pit mining quarry cut (razrez) - is called. A rock that covers and contains minerals with stratification of quarrying from top to bottom is done. As a result, quarried rocks takes the form of an array step. It has separate digging, loading and transport facilities (supplied) and an installation with a stepped work surface. A part of the jeans layer is called a step. Each stage has vehicles on the horizon characterized by a height symbol corresponding to its location. Grades are absolute. i.e. absolute (relative to sea level) or it can be conditional (relative to a fixed point on the surface). Excavated with separate digging tools, but all service with public transport for steps step to the step height portion of the specified step is called. Worked and unworked steps there are types mining. Installation of coating during the work phase stone removal or mineral extraction is

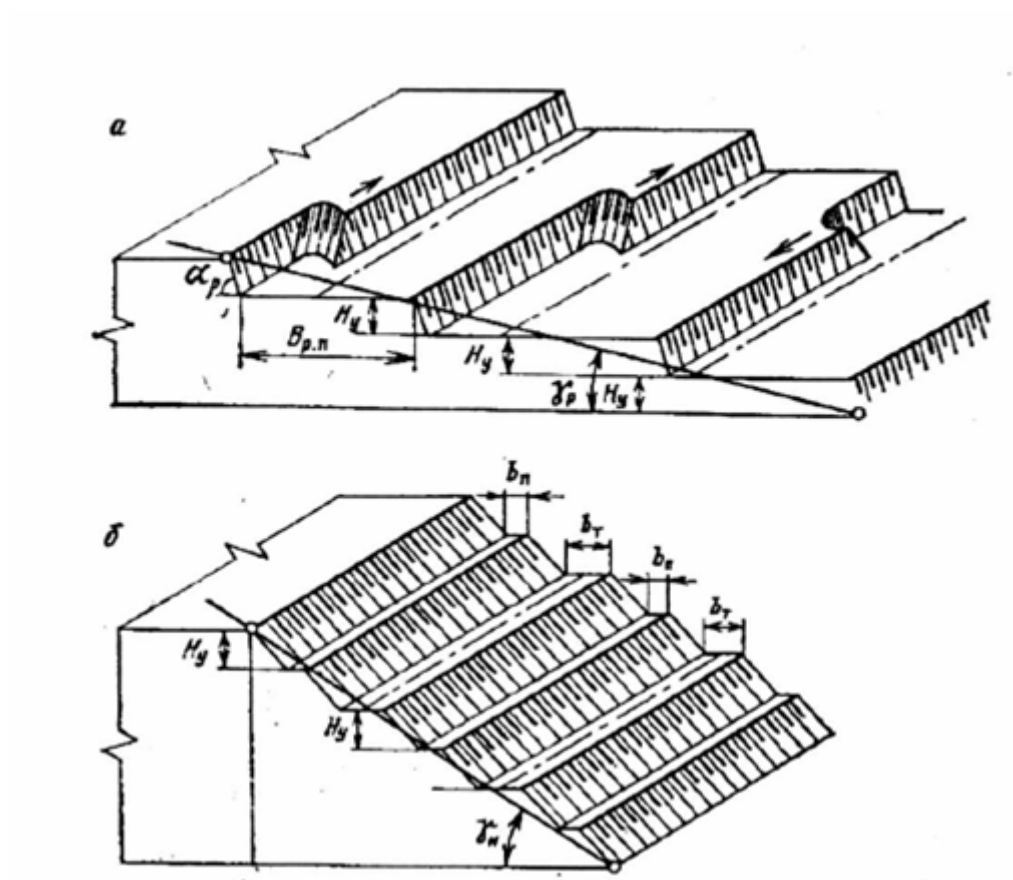
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done. Lower stairs and upper platforms. from slopes and slopes will consist of At an angle to the dug side of the step. The limiting slope is called the step slope. Staircase corresponds to the line intersecting its lower and upper areas. They are called upper (s) and lower (d) brocades. Mining equipment (drilling machines. excavators. vehicles, etc.) are located the area is called the workspace. The width of the workplace is 40-70 m. If the mining operations are stopped in the area, then the work will be carried out is called a no-go zone. Stairs are usually parallel lines in a row, 10-20 m wide and sometimes wider is mined. Excavation and loading operations are underway. As a result, the mining moves and the cesspool is excavated and then transferred to a new cesspool. The working board of the quarry is a trench located in the lower horizon is formed on account of transition. Along with digging latrines in stages the working board of the quarry also moves and the boundary of the quarry approaches the contour, then becomes empty. Work area and becomes a protection or transport area. The steps that make up a non-working board are working called impassable steps. The surface of transport areas and workplaces in the quarry serves the location of transport routes connecting with The width of transport platforms is 10-25 m. Protective pads vp and to increase the stability of the board as a result of wind erosion of the steps. It serves to catch fragments of fallen stones. The width of these fields is 3-5 m. Usually the shape of the quarry (in plan) is oval. Career length it will be from 0.5 km to 5 km. sometimes even higher. Width and 2-4 km. Currently, the depth of quarries from several dozen meters to 300-450 m. In projects and recent career in technical and economic calculations in promising careers the depth reaches 500-900 m. Total volume of loose rock and minerals in the quarry (the size of the mine mass) depends on its size and several tens from one thousand to one hundred million cubic meters. Digging the layers when a mineral is formed in a quarry after extraction the field is called a minefield. If technically possible mining placement of rocks covering the maximum grain is advantageous or transport used to transport fossil and surplus cargo can be used to place communications. Land use and open pit mining related to the disorder. Therefore, open pit mining in order to reduce the impact on the environment A mountain that has been mined in open pits and is no longer needed where rocks and unconditioned mineral resources are accumulated it is said to overturn. If, the quarry was dug before overturning. Internal overthrow of Boisa located in the field. from career limit. The one on the outside is called an external overturn. If the mine or part of it is mined by one quarry called the career field. Planned quarry area and the geometric form describing the dimensions of the density is its volume It is considered retired covers the stones. industrial site and other production border where devices are located. i.e. the pit of the quarry enters. At the moment, steps are being taken inside the quarry the assembly is called the working area of the car. Work area upper and lower steps of the quarry where the work is being carried out lower horizontal fields (by time) characters. Along the entire length of the front, the quarry is defined by mining operations steps taken from the sum of the length of the mine front Just transport it to start a new level ensure arrival and work front suitable for the workplace should be created. There is one step in the book above the first step a transport link that carries out mass transportation. A new step should be opened for deployment. that is, from the surface of the earth or especially from the upper rung to the lower rung It is necessary to transfer (open) mines. In most cases, these are the same connects points located at different heights (if one step is opened, the height difference will be one step equal to the height). so is the target slope (i). Opening seams are trapezoidal or triangular in cross section will have a look and according to capital moat and half called a trench. To create an initial work queue in the opened step (cutting stage) trapezoid (triangle) of soldering iron. Length and cross-sectional dimensions are very different making horizontal mining slabs - trench cutting (half trench) or part with a single measurement system of length and width you have to go through the abyss. The main purpose of open pit mining is mineral extraction a large one that covers and mixes with surface rocks simultaneous purchase of volumes - the leading and most expensive open mining operations is achieved by organizing the process clearly and with high efficiency - receiving ore mass from warehouses in warehouses and dumpers move to Underground mining is different from open pit mining significantly different. Distinctive features of open pit mining:



1. mining only loose rocks will be done after receiving. Empty ridges, that is, coverage the volume of rocks is usually 2-3 times larger than the volume of minerals Therefore, opening the main costs in open-pit mining work related.
2. Size of open mines in all directions large and of great size and strength equipment and the use of a high explosive charge allows.
3. removal of waste rock and extraction of minerals mining is mainly carried out with the help of an excavator. Drilling and blasting operations when using an excavator. As a result, the crushed concrete mass is transported using an excavator it is loaded into the means \ a is taken out to the surface of the quarry. The last depth is the digging of piles, which are inclined and vertical production capacity of the quarry, its area dimensions. the total volume of mined mine mass is determined. The final depth for horizontal and vertical piles is natural conditions determined by and during the entire mining period of the quarry little changes. The ultimate depth is during career planning installed.



Picture 1: Mine design parameters in open pit mining.

Elongation and transverse direction of the pile on the surface of the earth according to the indicators of the quarry, the dimensions of the heap, i.e the dimensions of the bottom of the pit, its depth and the slope angle of its side determined by. They can be set as a graphical representation or analytically. The shape of the quarry in the plan is often oval. The length of the quarry is from 100 meters to 8 km. and width depending on the structure of the mine, its length varies up to 4 km. Dimensions below the quarry are at the mark of the last depth of the quarry limited to the excavated part of the pile. The bottom of the quarry rocks with minimum values in the lower stage determined by safe mining and loading conditions (at least 20 meters wide, less than 50 meters long should not be). Slope angle of quarry board Slope massif rocks strength and location of transport communications determined by the conditions. By Excavating Cap Rock1 to reduce the angle of inclination of the boards taken as upright as possible. The entire mine at the quarry boundary mass volume, production capacity of the enterprise, its extraction determining the period of admission and several other indicators is a necessary indicator. A trench or other solder track is laid in this area a line defining the plan and



profile of the road surface. The horizontal projection of the route is the road map its vertical the projection is the longitudinal profile of the road. Road in the plan consists of straight and curved parts and in profile – horizontal and from oblique parts. as well as necessary transitions. It consists of adjacent parts that provide smoothness Finds. Routing from defining the axis of the transport route in the plan and profile. The route consists of topographical points to pass. geological. determined by a combination of construction and other factors. To the welders on leveling the road in relation to the quarry contour respectively external. internal and mixed routes are distinguished. Service stationary according to the duration of the display. semi-stationary and sliding distinguishes between (temporary) tracks; the first is on the quarry workers board. the second is the temporary suspension of quarry job boards in parts. and sliding (temporary) - of quarry workers located in developed parts. To the height of the arch in the plan of laying capital trenches with equally spaced isolates of the same superscript.

Conclusion

In the design of mines, with the location of rocks in layers, the main scheme of mining when extracting the ore body is transferred to the horizontal, which determines the position of the belt; A trail of trenches runs along the inner board and crosses the horizontals that separate the arches. Usually, the road is excavated in areas with reduced surface relief. The contour is entered from its body, which is the interior of the quarry area. This makes it easier to follow the contours and shortens mining and construction. When choosing the condition of the track, it is also necessary to ensure the stability of the roads when it comes to the convenience of placement of ditch parts, station and overturners, which are the capital of the board and increase their service life. Surface also the career length of connecting roads between ditches and secondary roads, etc. are taken into account. The height of the column is the height of the beginning and end of the road, the radius of the curved parts, the theoretical and actual length of the road, the number of construction points connecting horizontal roads to inclined roads are the main indicators. the route is taken into account. Mining is carried out at the shortest distance in width and separation of the ore body from the layer.

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