

Investigation of causes of elevated quarry floor and modeling its effects on mining operational cost- More Advanced Approach

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Abstract:

This research modifies the investigation of the causes of elevated quarry floors, poor fragmentation, and the formation of toes in various Construction Company quarries and recommends best practices to provide good working pit floors and eliminate or reduce the cost of secondary breakage. The methods employed include Drilling performance analysis using statistical tools, modification of secondary breakage cost estimation model using two different existing models, and estimation of the cost of secondary drilling and blasting using the designed modification model and two other existing models; sensitivity analysis. From the analysis, it was observed that the blast-designed parameters and blasting practices (desk design) were acceptable to produce good fragmentation and good working pit and bench floors but the actual drilling parameters deviated from the designed parameters by about 26, 19, 26, and 2% in hole depth, burden, spacing, and hole inclination, respectively. It was concluded that the cause of the ineffective fragmentation leading to the high cost of secondary breakage and uneven pit floors was operational errors during drilling. It is recommended that combined field experience and theoretical knowledge of drill and blast geometry be used during drilling activities for the accuracy and precision of all blast holes. Modifications will be made to this research using the more advanced approach to the previous work. And the anticipated time of completion would likely be the 25th of November, 2022. This is an abridgment of the entire research work.

Keywords: Fragmentation, Sensitivity Analysis, Drilling, Blasting.