

Abstract Details

Title: Investigation of Shear Strength Parameters of Highwall Rock Slopes and Overburden Dump Mass in Opencast Coal Mines

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Abstract: India is one of the largest producers of coal in the world with 89% of production coming from opencast mines. Opencast mining operation involves excavation of waste rock i.e. rock formations overlying the coal seams and coal from highwall. Majority of waste rock is back-filled to the de-coaled area and remaining part is dumped outside quarry as external dump. To minimize the amount of rock excavation from highwall, a steep slope of highwall needs to be maintained. The backfilling of waste rock in a limited space of de-coaled area and also outside quarry makes the backfilled dump and external dump slope steeper. Hence, slope stability study of highwall and waste dump embankment needs to be carried out for maintaining safety and economics of the mine. Determination of representative values of shear strength parameters of waste dump and highwall which is not covered in standard soil mechanics and rock mechanics text book is a pre-requisite for stability analysis. This paper presents the methodology of determining representative values of shear strength parameters of highwall and waste embankment.

Keywords: Shear Strength Parameters, Highwall, Overburden Dump, Slope Stability.