Cemented Rock Fill (CRF) Design for Extraction of Locked-up Chromite Ore from Highwall of an Open-Pit Mine

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Abstract: Valuable ore deposits often get blocked in highwall of open pit benches due restricted geo-mining and economic constraints. One such scenario, where high-grade chromite deposit is locked up between boundary of two mines namely Jindal Chromite mines and Tata Steel Chromite mines, Odisha has been considered in this study. Based on a detailed feasibility study, the extraction of chromite in the highwall of an existing open pit approaching economic pit limit was planned through underhand cut and fill (UCF) mining with cemented rock fill (CRF). This paper describes the design process of the cemented rock fill materials from mine waste. It also elaborates the nature and strength properties of laboratory prepared CRF blocks and their placement methodologies in the mine voids.

Keyword: *Cemented rock fill (CRF); underhand cut and fill (UCF); highwall; open-pit; mine design*