

An Approach for Determination of Shotcrete Thickness in Underground Structures

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Abstract : An intrinsic property of rock mass known as rock bolt supporting factor (RSF) or rock bolting capability of rock mass was developed and used for explanation of the mechanism of rock bolting practice. Based on the theory of RSF, numeral values can be assigned to each given rock mass to show the capability of that rock mass to be reinforced by rock bolting. For determination of shotcrete thickness, both safety and cost must be taken into account. The present paper introduces a scientific approach for determination of the necessary shotcrete thickness in underground structures for support purposes using the concept of rock bolt supporting factor (RSF). The proposed approach makes the outcome of shotcrete design one step more accurate than before. The actual dataset of 500 meters of Alborz Tunnel length is used as an example of the application of the approach.

Keywords : rock bolt supporting factor (RSF), shotcrete design, underground excavation, Alborz Tunnel

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