عنوان مقاله:

A Typical Design approach of Soil Nailing Pattern forStabilizing Trenches in cohesive soils: A Case Study

محل انتشار:

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خلاصه مقاله:

Slope failure is a common issue in the construction industry, such mining and civil engineers have toavoid its risk on human lives and properties by an appropriate technical design of stabilizing methods.The soil nailing technique has been used in many applications to improve the stability of excavatedvertical cuts and existing natural slopes under precarious conditions. In this paper, the optimum soilnailing system for one of the stations of line-two Isfahan underground urban train is designed underFHWA regulations. For this, the required overall factor of safety is first implemented using Bishop limitequilibrium method to reach the initial pattern of the nailing system. Then, the numerical finite elementapproach is employed to ensure satisfying the FHWA requirements for the bearing capacity, pulloutresistance, nail bar tensile strength, facing flexure, and facing punching shear safety factors,implementing strength reduction method. The paper reports details of the case study, designconsiderations, and the methodology used in stabilizing the vertical cuts such as opening ramps inunderground mines. Finally, the safety factor in general and partial cases including tensile, pullout andprobable fracture modes of the wall face was calculated and the values obtained were compared withthe values recommended by the FHWA. The overall safety factor was obtained using the limit andnumerical equilibrium methods of ۱.۳۵ and ۱.۵۵, respectively, which satisfies the proposed value of thedesired instruction. Ultimately, the nailing system with mesh and shotcrete with the stated features andparameters can provide .temporary stability of the desired station

کلمات کلیدی:

Landslide, Slope Stability, Soil nailing, FHWA regulations