Numerical Analysis of the Effects of Soil Nail on Slope Stability

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Abstract

Soil nailing is one of the good techniques for the improvement of natural and artificial slope. By the application of soil nails the stability can be increased of an unstable slope. The appropriate position of reinforcement can give the ultimate result, and it will be solution of reducing cost. In this paper, an attempt has been made to show the stability of a reinforced dry slope at different nail angles with horizontal axis, and determine the optimum nail inclination to get maximum factor of safety. The analysis was based on numerical analysis by using SLOPE/W (Geo-slope 2007). The factor of safety has been determined using the limit equilibrium (LE) method within the Morganstern-Price method along with Mohr-Coulomb expression. The results show that the factor of safety (FOS) of slope increases with the application of soil nail. The results also show that with the increase of inclination the factor of safety of the slope increases, but after reaching the maximum value further increases of inclination it decreases. The optimum angle of nail was found at 30° with the horizontal.

References


**Index Terms**

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**Keywords**