عنوان مقاله:

The Effects of Strength Parameters on Slope Safety Factor in 2D & 3D Analyses using Numerical Methods

محل انتشار:

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خلاصه مقاله:

Slope stability is one of the important issues in geotechnical engineering. In this regard, due to the growth in the number of numerical approaches, the two and Three-dimensional Finite Element Method (FEM) and the Finite Difference Method (FDM) are more important. In this paper, the effects of friction angle and cohesion on the safety factor of slopes were investigated, and the results of 2D & 3D FD were compared with those of FE analyses. The results of 600 analyses indicated that in cohesive soils (friction angle equal to zero) it was not necessary to analyze the slope in the 3D analysis, because the results of 2D & 3D were the same, with a difference of less than 0.3%. In granular slopes (cohesion equal to zero) the safety factor obtained in the 2D analyses (both FEM and FDM) were similar. However, the values in the 3D state were higher, and this indicated that in such a condition, unlike cohesive soils, the results of the 2D analysis were more conservative. It should be noted that in the 2D FDM for pure granular soils, the safety factor values for fine and medium mesh types were close. For the coarse mesh, however, the results were higher, and in pure cohesive slopes, in all three states (fine, medium, and coarse mesh tyes), the results were .the same

کلمات کلیدی:

Friction Angle, Factor of safety, FEM, FDM, Slope