

Stability analysis of infinite slopes in rock with strength governed by the Hoek-Brown failure criterion

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ABSTRACT

Infinite slope analysis is used in practice for soil mass overlying a hard geomaterial at shallow depth. In rock slopes where weathering or other geological processes weaken the slope surface, a shallow slide with the failure surface being parallel to the ground surface is commonly observed. A safety of infinite slope in rock governed by the Hoek-Brown failure criterion is analyzed, and the stability number and the factor of safety are calculated. The kinematic approach of limit analysis is used as the method of study under the assumption that the rock has an enough ductility at failure. The safety measures are strongly dependent on the Geological Strength Index and slope inclination angle. Not surprisingly, the stability of infinite slopes decreases with the presence of seepage and seismic acceleration. Numerical results are presented as charts and tables.

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