Minimum Potential Energy Method for 3D Stability Analysis of Non-homogeneous Slope with Irregular Sliding Surface

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Abstract: For the non-homogeneous slope with irregular sliding surface, the shear stress on any point of sliding surface is obtained through the static equilibrium relationship of unit body，so the shear potential energy on sliding bed can be calculated in a concise way. In consequence, the improved method for three-dimensional slope stability analysis based on principle of minimum potential energy is put forward. Compared with other three-dimensional methods based on slope examples, the results indicate the following: the safety factor of this method is basically consistent with those of other methods, which shows that this method is feasible. In addition，the method is no need to partition strips and iterate，so the computing process is relatively simple and easy to apply in practical engineering projects.

Keywords: three-dimensional, non-homogeneous slope, stability analysis, minimum potential energy principle