

Influence of Intermediate Principal Stress on Solution of Planar Stability Problems

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Abstract : In this paper, von Mises and Drucker-Prager yield criteria, as typical ones that consider the effect of intermediate principal stress σ_2 , have been selected and employed for investigating the influence of σ_2 on the solution of a typical stability problem. The bearing capacity factors have been calculated under plane strain condition (strip footing) and axisymmetric condition (circular footing) using the method of stress characteristics together with the criteria mentioned. Different levels of σ_2 relative to the other two principal stresses have been considered. While a higher σ_2 entry in yield criterion gives a higher bearing capacity; its entry in equilibrium equations (axisymmetric) causes substantial reduction.

Keywords : intermediate principal stress, plane strain, axisymmetric, yield criteria

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