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Effects of Hydraulic Conductivity / Strength Anisotropy on the Stability of Stratified, Poorly Cemented Rock Slopes

Jia-Jyun Dong (1) and Huai-Houh Hsu (2)

(1) National Central University, Graduate Institute of Applied Geology, Jhongli, Taiwan (jjdong@geo.ncu.edu.tw, 886-3-4224114), (2) Chienkuo Technology University, Department of Civil Engineering, Changhua, Taiwan (geolab.hsu@msa.hinet.net, 886 -4-7111165)

This study explores how hydraulic conductivity anisotropy and strength anisotropy affect the stability of stratified, poorly cemented rock slopes through numerical simulations. The results provide information about the anisotropic characteristics of the medium, including the orientation of bedding planes, the anisotropic ratios of the hydraulic conductivity and the geological significance of the hydraulic conductivity anisotropy on the pore water pressure estimation of finite slopes. Neglecting the hydraulic conductivity anisotropy leads to a 40% overestimation of the safety factor. By combining the effects of the hydraulic conductivity and the strength anisotropy, the safety factor was reduced by 51% compared with that of an isotropic slope. This study highlights the importance of the hydraulic-conductivity anisotropy and the strength anisotropy on the stability of stratified, poorly cemented rock slopes.