

Abstract

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Use of ArcMap for 3D Stability Analysis of Preexisting Landslides

Track: Architecture Engineering Construction

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Different methods of stability analysis ranging from 2D simplified methods to 3D methods are used in the world. However, due to the time consumption and overestimation of factors of safety, 3D stability analysis has not been more widely used. In the preexisting landslides, 3D stability analysis is very important as all prevention measures are planned based on safety factors. Although there is plenty of 2D stability analysis software, 3D stability analysis software is very limited in number, and are very complex and time consuming. ArcGIS Spatial Analyst and ArcGIS 3D Analyst extensions were used to calculate the stability analyses of preexisting landslides. Simultaneous calculations were possible for both 2D and 3D analyses. Besides, it was possible to observe the results in the form of map and feedback the assumed parameters to get best results. which is almost impossible in the available stability analysis software. This paper deals with the methodology of simultaneous 2D and 3D stability analyses using ArcGIS extensions for six preexisting landslides in Japan.

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