

Slope Stability Considering the Top Building Load

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Abstract : Slope stability is one of the most important subjects of geotechnics. The slope top-loading plays a key role in the stability of slopes in hill slope areas. Therefore, it is of great importance to study the relationship between the load and the stability of the slope. This study aims to analyze the influence of the building load applied on the top of the slope and deduces its effect on the slope stability. For this purpose, a three-dimensional slope model under different building loads with different distances to the slope shoulder was established using the finite-difference analysis software Flac3D. The results show that the loads applied at different distances on the top of the slope have different effects on the slope stability. The slope factor of safety (fos) increases with the increase of the distance between the top-loading and the slope shoulder, resulting in the decrease of the coincidence area between the load-deformation and the potential sliding surface. The slope is no longer affected by the potential risk of sliding at approximately 20 m away from the slope shoulder.

Keywords : building load, finite-difference analysis, FLAC3D software, slope factor of safety, slope stability

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