

عنوان مقاله:

Comparing ۲D and ۳D Analysis of Concave Corner Behavior in Retaining Walls

محل انتشار:

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خلاصه مقاله:

This study aims to investigate the effect of modeling dimension ($۲D^1$ vs $۳D^2$) on the behavior of retaining structures, specifically soil-nail walls, and to determine the presence and effect of concave corners on the behavior of these structures. Two-dimensional modeling is commonly used in design and analysis, but it can lead to unrealistic estimates of ground movement and settlement when concave angles are ignored. The study validates the modeling using Geoslope and Plaxis software and then investigates the behavior of nailed walls in Plaxis. The study finds that the presence of concave angles causes the values of horizontal displacements to be estimated more in the ۲D model and that the amount of wall displacement decreases at the inner edge of the concave corner but increases as it approaches the outer edge of the excavation. The results also show that different effective parameters such as angle, edge length, nail placement angle, and nail arrangement can affect horizontal displacement and ground surface settlement differently. The study finds that a parallel arrangement with the angle bisector can have better performance in controlling the amount of horizontal deformations of the corners, while the cross-arrangement can have a better performance in controlling the amount of vertical deformations.

کلمات کلیدی:

Retaining structures, Concave corners, Geotechnical modeling, excavation

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