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The Evaluation of the Safety Coefficient of Soil Slope Stability by Group Pile

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Abstract : One of the factors that affect the constructions adjacent to a slope is stability. There are various methods for the stability of the slopes, one of which is the use of concrete group piles. This study, using FLAC3D software, has tried to investigate the changes in safety coefficient because of the use of concrete group piles. In this research, furthermore, the optimal position of the piles has been investigated and the results show that the group pile does not affect the toe of the slope. In addition, the effect of the piles' burial depth on the slope has been studied. Results show that by increasing the piles burial depth on a slope, the level of stability and as a result the safety coefficient increases. In the investigation of reducing the distance between the piles and increasing the depth of underground water, it was observed that the obtained safety coefficient increased. Finally, the effect of the resistance of the lower stabilizing layer of the slope on stabilization was investigated by the pile group. The results showed that due to the behavior of the pile as a deep foundation, the stronger the soil layers are in the stable part of a stronger slope (in terms of resistance parameters), the more influential the piles are in enhancing the coefficient of safety.

Keywords : safety coefficient, group pile, slope, stability, FLAC3D software
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