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Effects of Axial Loads and Soil Density on Pile Group Subjected to Triangular Soil Movement

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Abstract : Laboratory tests have been carried out to investigate the response of 2x2 pile group subjected to triangular soil movement. The pile group was instrumented with displacement and tilting devices at the pile cap and strain gauges on two piles of the group. In this paper, results from four model tests were presented to study the effects of axial loads and soil density on the lateral behavior of piles. The responses in terms of bending moment, shear force, soil pressure, deflection, and rotation of piles were compared. Test results indicate that increasing the soil strength could increase the measured moment, shear, soil pressure, and pile deformations. Most importantly, adding loads to the pile cap induces additional moment to the head of front-pile row unlike the back-pile row which was influenced insignificantly.

Keywords : pile group, passive piles, lateral soil movement, soil density, axial loads
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