

Effect of Loading Rate on Pile Groups in Sand

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ABSTRACT: A total of sixty tests on model steel piles embedded in a sand of medium density were carried out in the laboratory to investigate the behavior of pile groups under different loading rates. Model piles having an outside diameter of 25 mm and embedment length of 500 mm were tested under four different loading rates : 1.0 mm/min., 0.5 mm/min., 0.1 mm/min. and 0.05 mm/min. The piles were subjected to axial compressive loads using different configurations (2x1, 3x1, 2x2, 2x3, 3x3). The center to center spacing of piles in the groups was 3d, 6d and 9d (d is the pile diameter). The experimental results indicated that the axial compressive capacity of pile group increases as the loading rate increases. The relationship between the pile capacity and the loading rate can be represented by straight line on semi-log plot. The slope of the linear relationship between the pile capacity and the loading rate increases as the number of piles in a group increases. However, the slope decreases as the spacing between piles in a group increases.

KEY WORDS: Pile group, model test, sand, axial pile capacity.