

Bending Moment of Flexible Batter Pile in Sands under Horizontal Loads

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Abstract : The bending moment of a single free head model flexible batter piles in sand under horizontal loads is investigated. The theoretical estimate of the magnitude maximum bending moment for the piles was considering a vertical rigid pile under an inclined load and using semi-empirical relations. The length of the equivalent rigid pile was based on the relative stiffness factor of the pile. Model tests were carried out using instrumented piles of wide-ranging flexibilities. The piles were buried in loose sand at batter angles of $\beta=\pm 150$, $\beta=\pm 300$ and were applied to incrementally increasing lateral loads. The pile capacities and the variation of bending moment along the pile shaft were measured. The new coefficient of 0.5 was proposed to estimate the bending moment of a flexible batter pile in the sand under horizontal.

Keywords : batter pile, bending moment, sand, horizontal loads

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