A Critical Study on Behaviour of Pile Groups In Liquefied Soil Under Seismic Conditions

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Pile foundations are widely used in the field of civil engineering when heavy superstructure loads are transmitted to the underlying low bearing soil strata at required depth. Pile foundations are designed for lateral loads due to earthquake/wind/wave etc. in addition to vertical loads. One of the major factors for pile foundation in seismically active areas is liquefaction of soils subjected to earthquake loading. Various factors like ground motions, free field site response, superstructure response, soil – pile – superstructure interaction and pile – soil – pile interaction influences the behavior of piles founded in liquefying soils during earthquake. The behavior of pile foundations under lateral loads in non – liquefied and liquefied soils are analyzed by various researchers through experimental methods like using centrifuge tests (Choudhury et al. (2008)), analytical methods (Choudhury (2005) and Phanikanth et al. (2013)), numerical techniques (Maheshwari et al. (2004)) and simplified approaches. Theoretical approaches like the subgrade reaction approach and elastic approach have been developed for predicting pile movements. In the present study a critical review of all the relevant studies on single and pile groups founded in liquefiable soil subjected to earthquake loads are carried out. The importance of considering both bending and buckling criterion for design of piles have been presented. This study provides a complete understanding of pile foundations which are subjected to earthquake loading in liquefied soils.

\textbf{Keywords:} Piles, Lateral loads, Deflection, Bending moment, Elastic approach, Kinematic.

\textbf{References}


