

Abstract

This paper explores modeling of piles in commercial software LPILE (Ensoft, inc) and Academic license software ANSYS under a static equivalent seismic load. Geotechnical earthquake engineering and design of pile foundation requires the understanding of lateral loading on piles. The models were compared using base shear acting on the head of the piles. The primary function of piles is to transfer external loads from the superstructure to the surrounding ground soil without excessive deflections of both pile and structure. This needs constraints and limits for the lateral deflections on piles. The current design practice and method of seismic design in the building code for pile systems help elaborate on and understand the concepts behind the modeling. The concepts and ideas which form the basis of the code helps to understand the advantages and the limitations of the software used in design practice. LPILE (Ensoft, Inc) software uses a distinct modelling technique known as finite difference method. ANSYS uses finite element method approximations. The case study explores the differences in the modeling technique and results for an equivalent static load. Pile-supported building foundations under seismic load have kinematic interaction by wave propagation under the foundation. The kinematic interaction makes the analysis complex because soil settles away from the pile-supported base of the structure.