Verification of Accuracy of Soil-Structure Interaction Model According to Seismic Motion Level

Koji ITO Kimitoshi SAKAI Taisuke SANAGAWA
Akihiro TOYOOKA Yoshitaka MURONO

The aim of this study is to investigate effectiveness of the bilinear-type ground springs that expresses ground-structure interactions in a seismic design under various seismic motion levels. Nonlinear dynamic analysis for pile foundation piers employing both bilinear type ground springs and detailed model were conducted, and their responses were compared according to the seismic level. As a result, it was confirmed that the bilinear type of ground springs is suitable for calculating the seismic response under L2 strong motion. However, there is a possibility that the bilinear model tends to overestimate the response if the input level is relatively smaller. In such a case, it was confirmed that precision of the seismic response value can be improved by setting a large initial rigidity to the ground spring. It follows that it is necessary to characterize the appropriate initial rigidity according to the seismic motion level.