

Analysis of the Contractive Tendency of an Instrumented Field Deposit

Alejandro Sepúlveda, Vicente Mercado, Waleed El-Sekelly

Abstract

This paper implements an identification technique to characterize the pore pressure behavior of a fully instrumented wildlife site located in the Imperial Valley of Southern California. A 12-year seismic history of the site was analyzed. The technique estimates shear stresses and strains based on acceleration and pore pressure recorded using a vertical array of sensors in the deposit. A constitutive model was implemented to identify optimal material parameters controlling the contractive behavior of the soil based on the recorded response of all seismic events. The relationship between the maximum acceleration and pore pressure ratio was analyzed, as well as the relationship between the maximum acceleration and a parameter controlling the contraction of the soil. It was found that the seismic history of the deposits affects the contractive tendency of the material, which significantly influences the pore pressure response of the deposit.

Keywords

Field Deposit, Imperial Valley, Southern California