

Uncertainty Related to Liquefaction-Induced Settlements

From the owner's and reviewing agency's perspective, there is considerable uncertainty and variability associated with evaluating the liquefaction resistance of soils. The current state-of-practice in performing liquefaction assessments leaves a potential for large variations in the magnitude of anticipated settlements for any given site. This problem is compounded when assessing the performance of ground improvements in mitigating seismically-induced settlements.

The primary factors contributing to the variability in determining free-field settlements include: criteria utilized to delineate between liquefiable and non-liquefiable fine-grained soils, method of analysis used to perform the liquefaction assessment, selection of the volumetric strain curve used to calculate corresponding settlements, errors associated with field testing, and "ground improvement correction factors". This presentation considers geotechnical data from projects in the southwestern United States to explore this uncertainty.