

عنوان مقاله:

Stochastic Analysis of Dynamic Soil Liquefaction

محل انتشار:

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خلاصه مقاله:

Liquefaction of soils, defined as significant reduction in shear strength and stiffness due to increase in pore pressure. This phenomenon mostly occurs during the earthquake and it can be assessed in pseudo-static or dynamic loading types. However, in each type, the inherent variability of the soil parameters dictates that the problem is of a probabilistic nature rather than being deterministic. In this research, a stochastic analysis is used for reliability assessment of liquefaction potential based on dynamic loading. The Monte Carlo simulations were used for that purpose. The selected stochastic parameters are soil parameters such as shear modulus, Poisson ratio, unit weight, and friction angle. The thickness of soil layers, the initial water table position and time history record are regarded as constant parameters. This analysis shows that, for the considered case, the Poisson ratio and unit weight are the most subtle Parameters in order to define the liquefaction probability.

کلمات کلیدی:

analysis, Monte Carlo simulation, Reliability assessment, Dynamic soil liquefaction

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