Reliability Assessment of Dynamic Soil Properties

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ABSTRACT

Dynamic soil properties are very important topic in geotechnical earthquake engineering due to associated with dynamic loading. Probabilistic analysis of dynamic soil properties is as effective tools to evaluate uncertainty of soil parameters. In this paper, Monte Carlo Simulation (MCS) is used for reliability assessment of dynamic soil properties. For this purpose, a famous model is selected for predicting normalized shear modulus reduction and damping ratio curves. The selected stochastic parameters are internal friction angle, dry and saturated unit weight of soil which is modeled using normal probability distribution functions. To assess the reliability of dynamic soil parameters a computer model is developed for generating input parameter uncertainties. The results show that the shear modulus and damping ratio have more uncertainty for middle range of shear strain. The sensitivity analysis's results show that saturated unit weight is the most effective parameter in shear modulus and damping ratio.

Keywords: