عنوان مقاله:

A SIMPLE MODEL FOR PREDICTING LIQUEFACTION OF SAND UNDER EARTHQUAKE EFFECTS

محل انتشار:

سومین کنفرانس بین المللی زلزله شناسی و مهندسی زلزله (سال: 1378)

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خلاصه مقاله:

SUMMARY An incremental non-linear constitutive model capable of predicting the behavior of liquefiable sand under cyr.lir loading caused by earthquake is presented. In the absence of reliable tests conformed with real stress path, its calibration regarding mechanical characteristics during loading, unloading, and reloading is made from triaxial compression tests: The cal-ibration of model with respect to the variation of E(elastic modulus) and (pcdsson ratio) is done through drained triaxial compression behavior of soil It is found that the behavior is strongly dependent.on these parame-ters with initial conditions. Accordingly, two appropriate mathematical functions capable of presenting the elastic modulus and poisson's ratio variations are proposed. The scheme of these variations are such that the hysteresis loop of energy and damping of soil are considered. The capability of the model to predirt the bchz.wicir of soil under undr-ained monotonic and cyclic conditions has been examined. It is found that the proposed model can describe the behavior of sand under various stress paths due to earthquake effects. This simple quasi-elastic model, although, requiring few parameters, nevertheless is, strongly powerful to cope with cyclic behavior of soil The built up pore water pressure in undrained condition of soil sample-s, under cyclic loading predicted and tally conformed with natural soil condition while it is liquefied. The applicability of proposed model was examined by predicting the ins-tability of a shore-wall under cyclic_ loads build up through earthquake effects. Upon these circumstances the zone most likely to liquefy is obta-ined and presented. The solution of this boundary value problem and prese-nted results have shown the model applicability in predicting instability and liquefaction of sandy layers in foundation and backfill of shore-wall.

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

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