

Numerical Evaluation of the Degradation of Shear Modulus and Damping Evolution of Soils in the Eastern Region of Algiers Using Geophysical and Geotechnical Tests

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Abstract : The research performed during the last years has revealed that the seismic response of the soils is significantly non linear and hysteresis to the deformations it undergoes during earthquakes and notably during violent shaking. This nonlinear behavior of soils can be characterized by curves showing the evolution of shear modulus and damping versus distortion. Also, in this context, geotechnical seismic engineering problems often require the characterization of dynamic soil properties over a wide range of deformation. This determination of dynamic soil properties is key to predict the seismic response of soils for important civil engineering structures. This communication discusses a numerical analysis method for evaluating the nonlinear dynamic properties of soils in Algeria using the FLAC2D software and the database resulting from geophysical and geotechnical studies when laboratory dynamic tests are not available. The nonlinear model proposed by Ramberg-Osgood and limited by the Mohr-coulomb criterion is used.

Keywords : degradation, shear modulus, damping, ramberg-osgood, numerical analysis.

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