

Seismic Performance of Micropiles in Sand with Predrilled Oversized Holes

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Abstract : Full scale tests of six micropiles with different predrilled-hole parameters under low frequency cyclic lateral loading in-sand were carried out using the MTS hydraulic loading system to analyze the seismic performance of micropiles. Hysteresis curves, skeleton curves, energy dissipation capacity and ductility of micropiles were investigated. The experimental results show the hysteresis curves appear like plump bows in the elastic-plastic stage and failure stage which exhibit good hysteretic characteristics without pinching phenomena and good energy dissipating capacities. The ductility coefficient varies from 2.51 to 3.54 and the depth and loose backfill of oversized holes can improve ductility, but the diameter of predrilled-hole has a limited effect on enhancing its ductility. These findings and conclusions could make contribution to the practical application of the semi-integral abutment bridges and provide a reference for the predrilled oversized hole technology in integral abutment bridges.

Keywords : ductility, energy dissipation capacity, micropile with predrilled oversized hole, seismic performance, semi-integral abutment bridge

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