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Rate-Dependent Cyclic Lateral Load Test on a Single Pile in Sand

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Abstract **–** The loading rate effect on a single pile subjected cyclic lateral loads is studied experimentally. The scaled model pile embedded in cohesionless sand is housed in a laminar shear box under 1g condition. Loads are applied with a horizontal actuator rigidly connected at the pile-head allowing only horizontal translation. The results show the significant effect of loading rate in bearing capacity of the lateral pile subjected to cyclic loading. Further, the variation of the lateral resistance of the pile are found to be linear function of logarithmic of the loading rate. However, no effect of loading rate appears in the bending moment, deflection and soil reaction profile along the pile depth, which indicates that soil near the pile show a consistent failure pattern despite a significant change in the loading velocity.

Keywords**:** single pile, cyclic load test, rate effect, model testing