

## **Large-scale model tests on high-rise platform pile groups under cyclic lateral load**

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### **Summary**

With the rapid development of the ocean economy in our country, more and more offshore structures appear in recent years, and high-rise platform pile group is one of the conventional forms of these structures. A large-scale physical model test was carried out to study the bearing characteristics of high-rise platform pile group subjected to cyclic lateral load such as wave, tidewater and wind, etc. Two sets of pile group tests under lateral load were conducted in QianTang silts, which consist of nine steel-pipes in a closely-spaced arrangement. The group effect of pile groups, and its variation under cyclic loading conditions are discussed. The results indicated that the cyclic loading produced plastic deformation within soil around piles, and the lateral load carried by each row was redistributed during loading. The lateral stiffness of pile-soil system reduced with circulation and had a logarithmic relationship with the number of cycles. Non-ignorable axial force was founded in piles because of the constraint provided by the cap, which then lead to the settlement of the pile group during test.

