

Test investigation on fish-shaped pile subjected to torque in silt

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Summary

The torsional capacity of general circular section pile comes mainly from the tangential friction between pile and soil. But the pile - soil interface can provide a limited tangential friction. So the bearing capacity of general circular cross section pile is less. Pile does not bear more torque at a small torsion angle. Then the torsion angle of the pile develops rapidly.

This report presents a experiment on the transformed pile subjected to torque. In this experiment, the steel pipe pile with a closed end is welded with pairs of steel flank pieces on the side from top to bottom. The experimental data shows that the torsional capacity of this transformed pile which named fish-shaped pile increased by several times than the general circular cross section pile due to the normal stress on the steel flank pieces. Meanwhile the fish-shaped pile's torque-torsion angle curve that showed slow variations is quite different from the normal pile. The torque distribution along the pile is also discussed in the report to reveal the effect of the wing in the different depth. Due to the good stability and small cost of renovation, it could be used in the basis of various structures in the offshore engineering and port engineering.

