
Development of pile head connection method using circular steel pipes

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To improve the productivity of a steel-concrete pile-to-pile cap connection, a new connecting method has been developed by the authors. Using the developed method, a circular steel pipe is placed around the steel-concrete pile head, and the gap between the steel-concrete pile and a circular steel pipe is filled with concrete. The structural performance of the pile head connection method using a circular steel pipe was verified through a pushout and pullout test, and a lateral load test.

This paper reports the tests and analyses of the structural mechanism in a steel-concrete pile-to-pile cap connection. Even if the diameter-to-thickness ratio exceeds 100, it is possible to consider the confining effect of the circular steel pipe on bearing strength. The effects of embedded axial load and concrete strength on the maximum flexural strength of a steel-concrete pile-to-pile cap connection were also clarified. The estimated flexural strengths through the proposed equation and test results showed good agreement.
