

3D Numerical Simulation of Flow Field Around Twin Piles

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A b s t r a c t

In this study to identify the flow pattern and local scour mechanism around pile groups, the flow field was simulated using FLOW-3D software. A pair of pile on a flat-bed channel with side by side and tandem arrangements was investigated. To establish Navier–Stokes equations, the RNG k - ε turbulence model was used and the results were verified using experimental data. In case of FLOW-3D capability, it was found that the software was able to properly simulate the expected interaction between the pile groups. The results of flow field simulation showed that Reynolds number and the pile spacing are the most influential variables in forming vortices. The flow around tandem pile and the downward flow around wake vortices were more intense and complicate in comparison with side by side arrangements and single pile.

Key words: bridge, sediment, flow pattern, pile group, local scour.

Full text is available at

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