

**Numerical Analysis of Local Scour Around Pier
Based on 3D Movements of Sediment Particles**

Hidenori ISHII Kohei MUROTANI Koji NAKADE

This paper describes a numerical model developed to simulate the flow and scour around a bridge pier. The flow is modeled by large eddy simulation. The morphological change of riverbeds is calculated by coupling sediment transport with models for sediment pick-up and deposition. The sediment transport is calculated by 3D momentum equations of sediment particle. Sediment pick-up and deposition are modeled by stochastic models for the purpose of reducing computational demand. The numerical model was applied to the local scour around a vertical cylinder pile under clear water condition. The results agreed well with experimental data, except shape of downstream riverbed. It is concluded that this model can evaluate a local scour on the upstream side considering 3D movements of sediment particles.