

SCOUR COUNTERMEASURE USING ADDITIONAL FACILITY IN FRONT OF BRIDGE PIER

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This paper summarizes the results of an experimental study on the countermeasure of scour below and bridge pier in currents. And this study analyzes factors affecting local scour in order to understand various characteristics of the local scour surrounding bridge piers. Attached with scour countermeasure devices as a method for decreasing local scour, it carries out the laboratory experiments and calculates the scour depth. From the experiments attached with the devices, it seems possible to reduce the scour depth. The paper presents the following research results: the scour depth increases in order of protecting column, protecting plate, sacrificial piles and non-protecting devices.

Based on experimental results from this study, the influence of protecting column, protecting plate and sacrificial piles on the countermeasure for local scour depth is considered.

The decreasing degree of scour depth is in order of protecting column, protecting plate, installing sacrificial piles, and non-protecting facilities.

In $L_p/D = 0.5 - 1$, decreasing effect of local scour depth for protecting plate is maximized whose value approaches range the maximum 40%. Furthermore, the effect is not severe when $L_p/D > 1$.

The effectiveness of sacrificial piles as a scour countermeasure is dependent on the apex angle, α , and flow depth increasing. And the influence of α is shown, without the sacrificial piles, as the α of 60°, 45°, and 30°, respectively.

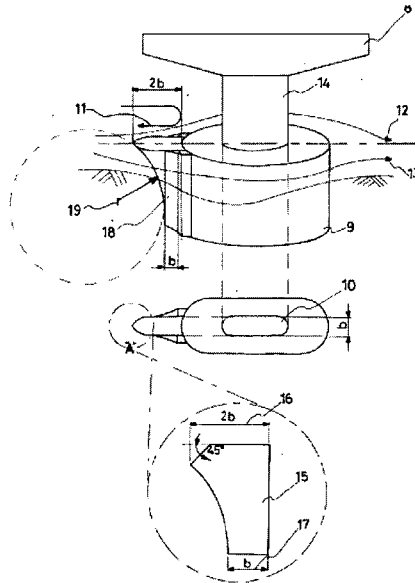
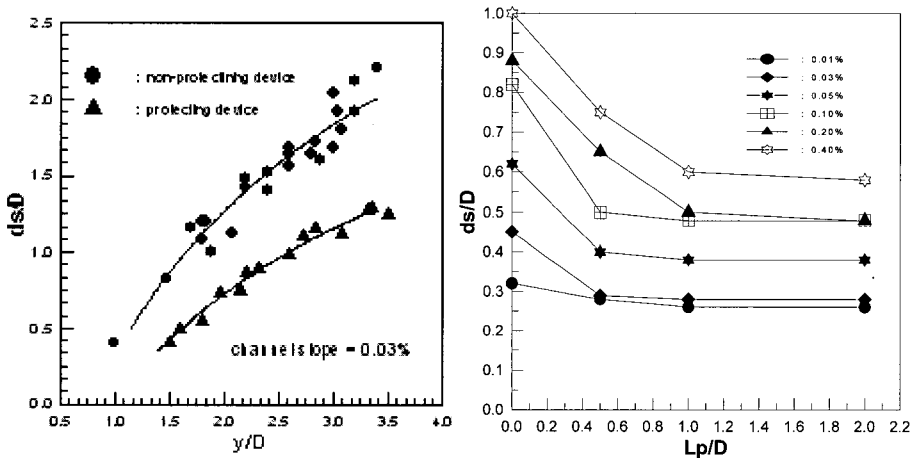


Fig. 1 Definition Sketch for Pier Model front of Scour Countermeasure



(a) Comparison of Scour Depth

(b) Comparison of L_p 's Length

Fig. 2 Scour Depth Comparison of Protecting Devices

REFERENCE

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