

# **Efforts to Strengthen River Cliffs with the Application of a Combination of Check Dam Stones, Gabions, Tetrapods and Bamboo Flow Harmonizers on River Bends Using Laboratory Model Tests**

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## **ABSTRACT**

Installation of reinforcement buildings on the base or cliffs on river turns with the aim of reducing scour that occurs or directing the flow of water so as to protect the cliffs from the scouring process. The purpose of the study was to determine the effectiveness of various combinations of mounting check dam stones and gabions on river turns

The test is a hydraulic model test using flume / channel with dimensions of 5 m turn length, 0.8 m in width, and 0.5 m in height. Trapezoidal channel. Observations carried out with a constant discharge flow of 7.07 liters / second, with the installation of check dam stones at 90 ° angles of 51 cm, and installation of 45 ° gabions within 51 cm, towards the direction of flow for 3 hours in each mounting variation. The taking of soil samples used in the study was land originating near the Bedog River basin located in Pajangan Village, Bantul, DI Yogyakarta.

Influence of the installation of check dam stones and gabions with combination variations which are considered to reduce scour on the cliff and the base of the river turn. The results of the study proved that at the beginning of entering the turn check check stones were effectively used, with scour in STA 01 of -0.8 cm, then in the middle of the bend the effective use of gabions, with scour at STA 11 of -0.4 cm, and at the end the turn of check dam stones was not effective, with scour at STA 19 of -2.3 cm.

Kata Kunci: *river turn, scour, check dam stones, gabions*