拋石保護對固床工趾部局部淘刷之影響

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摘 要 局部淘刷常發生在橫向結構物的趾部，因此，選擇合適的保護措施以保護溪床、減少淘刷是必要的。本研究將一系列 1:50 縮尺之固床工模型，安裝於半循環式渠槽內，進行水工實驗。實驗參數包含三種流量、四種坡度、三種拋石粒徑及兩種拋石長度，試驗過程中並量測最大淘刷深度、拋石結束邊緣至最大淘刷深度之水平距離和淘刷坑之總長；之後對試驗參數進行分析，以研究拋石保護段的長度及拋石大小對減輕溪床淘刷的效益。研究結果顯示，於固床工趾部拋石並不能完全消除投潭水流對溪床的衝擊。本研究亦推導出無因次關係式，可用以估計固床工下游局部淘刷的幾何形狀，甚至可進一步用於拋石保護段長度和拋石粒徑的選擇。

關鍵詞：拋石保護、局部淘刷、拋石長度、固床工。

Riprap Protection in Controlling Local Scour at the Toe of Groundsill

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ABSTRACT Local scour at the toe of groundsill is always inevitable. Therefore, selecting suitable bed protection measures is necessary to protect channel bed from scouring. An array of 1:50 scaled groundsill models was installed in a semi-circulating flume to study the effectiveness of protection lengths and sizes of riprap. Three flow rates. Four channel slopes, three riprap sizes, and two protection lengths were studied in the experiments. Results of this study show that riprap at the toe of a groundsill does not completely eliminate the impact force of plunge flow. A dimensionless relationship was derived from this study to help estimate the geometry of local scour, which in turns helped select the riprap protection lengths and riprap sizes.

Key Words : Riprap protection, local scour, riprap length, groundsills.

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