

「成功人工水草」對彎道中帶工沖刷之保護

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摘 要 本文利用「成功人工水草 CKAW」工法來減少帶工所造成的沖刷現象，以保護帶工安全。試驗在一底床坡度 3% 的圓形渠道中進行，探討 CKAW 的導流條長度變化對帶工沖刷保護效率的影響。由試驗結果顯示，導流條長度(L)愈長愈能達到保護的效果，且其保護效率和 L/L_d 有一關係存在， L_d 為最大沖刷位置離上游帶工的距離。於彎道中對外岸的保護效果比內岸為佳。當導流條長度大於沖刷坑的範圍時，其保護效率隨著長度快速的增加，在 $L=4L_d$ 時，其保護效率可以達到 94%，幾乎達到完全的保護功能，顯示 CKAW 對帶工沖刷具有良好的保護效果。

關鍵詞：帶工、沖刷、成功人工水草、彎道。

"Cheng Kung Artificial Waterweeds" Against Riverbed Girdle Scour in a Circular Channel

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ABSTRACT

"Cheng Kung Artificial Waterweeds (CKAW)" are adopted to reduce riverbed girdle scouring in this paper. Experiments were carried out in a circular flume to study the effect of protection against scouring with CKAW. We selected a 3% of the initial bed slope with movable sand. Protection efficiency of CKAW (PE) was defined as $\left(1 - \frac{d_{sc}}{8.3}\right) * 100\%$ to express the degree of protection; where 8.3 is the maximum scour depth without CKAW, and d_{sc} is the maximum scour depth with CKAW. The PE varied with the length of CKAW (L). From the results of the experiments, the PE was more notable as the CKAW's length became longer. The PE in the outer bank is higher than that in the inner bank in the circular channel. The PE is quickly increased while the length of CKAW is over the region of the scour hole, and it reaches as high as 94% in $L=4L_d$, where L_d is the distance from the position of the maximum scour to the riverbed girdle. It shows that CKAW may provide excellent protection against riverbed girdle scouring.

Key Words: riverbed girdle, scouring, Cheng Kung Artificial Waterweeds, channel bend.

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