

ABSTRACT

PHYSICAL MODELING OF BRIDGE PIERS PROTECTION STRUCTURE FOR DEBRIS FLOWS

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Debris flow generally occurs in rivers in mountainous areas. This flows is a very dangerous and destructive. This happens because the debris flow has a high speed and carry a mixture of sediment and other materials. Of infrastructure is built on rivers area flow pattern makes the need for special handling to maintain the protected structure with a substantial investment. This study focuses on the modeling and observation influence debris flow on bridge piers with three (3) conditions: unprotected bridge piers, using gabion safety, and using protected bored pile on the model.

By using a discharge of 1.54 liters/sec on a scale model of the maximum scours depth is obtained that occurred on bridge piers unprotected condition, that is equal to 1.7 cm and the minimum scours occurs in conditions of safety piers the bored pile is equal to 1.48 cm. The maximum scours volume occurs in the downstream bridge using gabion protected, amounting to 400 cm², while the minimum volume of sediment scours occurs by using a safety bored pile 257.5 cm³. By the using protected piers bored pile more effective to resist scours due to debris flows. This is due to the construction of bored pile does not impede the flows that occurs so that the effect scours will reach a point of equilibrium.

Keywords: debris flow, bridge piers, safety bored pile.