

Studying the Effect of Froude Number and Densimetric Froude Number on Local Scours around Circular Bridge Piers

Authors : Md Abdullah Al Faruque

Abstract : A very large percentage of bridge failures are attributed to scouring around bridge piers and this directly influences public safety. Experiments are carried out in a 12-m long rectangular open channel flume made of transparent tempered glass. A 300 mm thick bed made up of sand particles is leveled horizontally to create the test bed and a 50 mm hollow plastic cylinder is used as a model bridge pier. Tests are carried out with varying flow depths and velocities. Data points of various scour parameters such as scour depth, width, and length are collected based on different flow conditions and visual observations of changes in the stream bed downstream the bridge pier are also made as the scour progresses. Result shows that all three major flow characteristics (flow depth, Froude number and densimetric Froude number) have one way or other affect the scour profile.

Keywords : bridge pier scour, densimetric Froude number, flow depth, Froude number, sand

Conference Title : ICHEE 2018 : International Conference on Hydraulic and Environmental Engineering

Conference Location : Montreal, Canada

Conference Dates : May 24-25, 2018