Abstract

The sharp edge spillways are simple hydraulic structures which are designed to control water level and measure the flow in canals. Ease and accuracy of flow measurement in different conditions, leads to different cross-sectional design such as triangular, rectangular, trapezoidal, parabolic or a combination of them. In spite that rectangular spillways may be built with or without side contraction, triangular and trapezoidal spillways, have always side contraction due to their geometrical structures. Accordingly, the effect of side contraction (ratio of spillway length to channel width) is investigated in the present study. So, some trapezoidal spillways with wall gradient of 2:1 are built and installed on the laboratory flume in the Hydraulic Lab of Water Engineering Department in University of Zabol. several experiments with different flow was carried out on different crest size. Using experimental data by Nero-fuzzy technique, the overflow discharge coefficient were calculated and optimized for different geometric and hydraulic conditions. The RMSE for three stages of training, verification and validation is 0.0000024, 0.0033, 0.0037 and the R^2 is 1, 0.955 and 0.982 respectively. The results reveal that the coefficients of actual and simulated discharge are well matched which indicates the generalizability of the network.

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Simulation of the Coefficient of Discharge Over the Trapezoidal Spillway Connected in Rectangular Cross-section Using Neuro-Fuzzy System

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