

عنوان مقاله:

Comparison of Different Models for Evaluating the Velocity Profiles in compound channels and narrow Sewers

محل انتشار:

پانزدهمین کنفرانس دانشجویان عمران سراسر کشور (سال: 1393)

تعداد صفحات اصل مقاله: 12

نویسندگان:

Negin Bines - *Department of Civil Engineering, Razi University, Kermanshah, Iran*

Hossein Bonakdari - *Associate Professor, Department of Civil Engineering, Razi University, Kermanshah, Iran*

خلاصه مقاله:

Measuring the mean velocity profile through the channel cross section is one of basic issues in hydraulic modeling. In wide open channels, the log law and the log-wake are suitable for describing the velocity profile, but in case of narrow open channel flow, such models deviate from experimental data near the free surface. In such open channels, the three dimensional nature of flow, and transport momentum from the side walls to the central region, causes the maximum velocity to occur below the water surface producing the velocity-dip-phenomenon. Therefore, developing new relations to be able to show this phenomenon appears to be necessary. Numerous models for determining the velocity profile in narrow open channels have been proposed by many researchers. This study provides a comparison among various existing methods for computing the longitudinal velocity profile distribution in narrow sewers. Sewers are designed on the basis of open-channel flow principles. Five models for computing velocity profiles were selected such as Chiu's, Yang's Absi's, Kundu & Ghoshal's and Bonakdari's model. To evaluate the accuracy of the models in describing the velocity profile, the calculated results of the models were compared with the experimental data obtained from an actual measurement site in narrow sewer. The results show that all models except for Kundu and Ghoshal's model represent good agreement with the experimental data, but Yang model and both Absi's models are more successful in predicting the position of maximum velocity, and provides the least errors in most cases

کلمات کلیدی:

sewer, open channel, velocity distribution, dip phenomenon

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/321866>

