Water Engineering Panel

Technical Presentation

Local scour at bridge piers – prediction and protection

ENGINEERS AUSTRALIA

VENUE

Engineers Australia Auditorium,
Ground Floor, 8 Thomas St,
Chatswood NSW 2067

DATE & TIME

23rd June 2014
Refreshments from 5:30 pm for 6:00pm

CPD

Eligible for 1.5 hours CPD

COST

EA Members Free
Non-members $30

RSVP

REGISTER ONLINE

Water Panel upcoming presentation on Local Scour at Bridge Piers – Prediction and Protection by Professor Bruce Melville.

The presentation will cover three aspects of local scour at bridge piers:

- The NZ methodology for bridge pier scour prediction, which is a physically-justified method based on extensive sets of laboratory data from The University of Auckland and elsewhere. The method uses a number of multiplying factors (K-factors) for the effects of the various parameters, which influence scour. The values of the K-factors were determined from envelope curves fitted to the data. The method is, therefore, inherently conservative.
- A recently completed research project comprising an evaluation of current methods for predicting local scour at bridge piers, including the development of an improved method for adoption in US. Twenty-three of the more recent and commonly used equilibrium local scour equations were identified and assembled. The scour depths predicted by these equations for a wide range of laboratory and field conditions were evaluated against a significant quantity of both laboratory and field equilibrium scour data (approximately 928 field and 569 laboratory).
- The use of riprap as a countermeasure for bridge pier protection. Most existing equations for predicting the size of riprap that remains stable at the base of bridge piers were based on clear-water scour laboratory experiments. Experiments undertaken at The University of Auckland reveal that the controlling mechanism for stability of riprap at bridge piers in sand-bed rivers is undermining by dune migration. A method for riprap size prediction, derived from these experiments, is presented.

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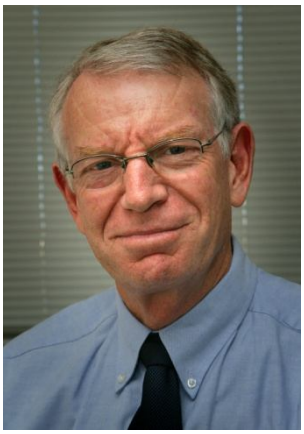

Professor Bruce Melville is Professor of Civil Engineering at the University of Auckland. His academic career spans more than 30 years, prior to which he spent 6 years working for civil engineering consultants in NZ and overseas on water-related projects. He is an active researcher with an international reputation in the field of fluvial sediment transport. His expertise encompasses most aspects of water resources engineering, including hydraulic, hydrological, river, environmental and hydro-electric engineering. He is a founding member of the Centre for Infrastructure Research and is Associate-Editor of the (ASCE) Journal of Hydraulic Engineering, has served on local and international research committees, and has been a member of many tribunals for water consent hearings. He has supervised more than 20 PhD students, published over 75 refereed journal papers and has more than 500 citations in academic journals (ISI Web of science). He received the 2002 ASCE Hydraulic Structures Medal, in recognition of his contributions in the field and was elected to fellowship of the Royal Society of New Zealand in 2006. In 2007, he received the R.J. Scott Medal from RSNZ for his research contributions and in 2012 he received the Dobson Supreme Technical Award in Transportation Infrastructure. In 2011, he was promoted to Distinguished Fellowship of IPENZ and was awarded a Hood Travelling Fellowship.

For further information contact Monique Retallick

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