Channels and Channel Control Structures

Proceedings of the 1st International Conference on Hydraulic Design in Water Resources Engineering: Channels and Channel Control Structures, University of Southampton, April 1984.

Editor: K.V.H. Smith



A Computational Mechanics Centre Publication Springer-Verlag Berlin Heidelberg New York Tokyo 1984

CONTENTS

PREFACE

1. CONTROL AND DIVERSION STRUCTURES	
Factors Affecting Brink Depth in Rectangular Overfalls	
G.C. Christodoulou, G.C. Noutsopoulos and S.A. Andreou	1-3
Barrages on Alluvial Rivers C.P. Sinha and D.P. Singh	1-19
Comparative Discharge Performance of Side and Normal Weirs	1 22
Nandana Vittal and N.K. Rastogi	1-33
Model Studies on Local Scour A. Qadar	1-45
Hydraulic Research on Irrigation Canal Falls S.K.A. Naib	1-59
Scour at Bridge Piers in Meandering Channels - I M. Nouh	1-75
Scour at Bridge Piers in Meandering Channels - II M. Nouh	1-85
Vortex Formation at Pipe-Offtake in an Open	
Channel P.K. Bhargava, N. Vittal and K.G. Ranga Raju	1-91
Recirculation in Flow Over Crum Weirs P. Bettess, W.R. White and R. Bettess	1-103
Pressure Field over a Rigid Model of an	
Inflatable Dam N.M. Hitch and R. Narayanan	1-119
Form Drag Resistance of Two Dimensional Stepped	
Steep Open Channels Bahzad M.A. Noori	1-133
Diversion Structure for Purified Wastewater	
Across a River F. Valentin	1-149
The Automatic Throttle Hose. A Flow Regulating Device for Irrigation Turnouts and Storm-water Retention Basins	
F. de Vries	1-155

Struct	ilic Characteristics in a Straight Drop cure of Trapezoidal Cross Section G.C. Noutsopoulos	1-167
Novel Sedime	parison of the Performance of Standard and Culvert Designs including the Effects of entation <i>T.H. Loveless</i>	1-183
	l Automatic Gates J. Lewin	1-195
Tainte	Tests on Natural Vibration Modes of a er Gate 1. Ishii and E. Naudascher	1-209
	mensional Analysis of Sloping Submerged	1 209
	1.M. El-Khashab	1-223
from S	ee Years Experience in Sediment Removal Sefid Rud Reservoir by Chasse Method Technical Bureau, Water Affairs,	
٨	hinistry of Energy, Tehran.	1-235
	EDIMENT CONTROL FACILITIES FOR HEADWORKS AND NTAKES	
	ation Intake from a Steep Gravel Bed River F.G. Charlton and R.W. Benson	2-3
Intake 4	entation of Dave Johnston Power Plant e, Glenrock, Wyoming, U.S.A. Abbas A. Fiuzat, Charles E. Sweeney and Peter J.M. Kerssens	2-15
	ution for Sediment Control at Intakes J.G. Whittaker	2-29
for Di	Design of Sediment Control Facilities version Headworks in Mountain Streams I.J. Scheuerlein	2-43
Invest	Bed Water Intakes: A Laboratory Ligation with Mobile Bed 1.G. Maclean, and B.B. Willetts	2-53
An Imp Cohesi	proved Calculation of the Settlement of onless Grains in Sedimentation Basins Wilhelm Bechteler and Wolfram Schrimpf	2-69
Design System	n of the Remodelled Headworks and Canal n for the Greater Mussayib Project M.E. Bramley and G. Thompson	2-85
The In Multip	mprovement of Flow-Distribution to ole Sedimentation Tanks K.H.M. Ali and R. Burrows	2-105

3.	CANALS	UNDER	QUASI-STEADY	FLOW	CONDITIONS

A Relationship Between Friction Factor and Energy Slope at Incipient Motion of Sediment Particles A. Ramakrishna Rao	3-3
Jonglei Structures: Investigations for the Headworks P.A. Kolkman and H.W.R. Perdijk	3-9
Jonglei Structures: Studies, Investigations and Designs	
W.B. Zimmermann and J.J. van der Zwaard The Response of Aquatic Plant Communities to Changes in the Hydraulic Design of Channels and Channel Systems	3-23
P.M. Wade	3-39
Criterion for Deposition of Sediment Transported in Rigid Boundary Channels A.K. Arora, K.G. Ranga Raju and R.J. Garde	3-45
4. FLOOD CONTROL STRUCTURES, FLOOD CONVEYANCE CHANNELS AND METHODS OF BANK PROTECTION	
The Use and Performance of Gabions in Large Scale Flood Control Structures Alan D. Crawhurst	4-3
	4-5
Ice Floods Caused by Wind Action J. Kolodko and B. Jackowski	4-15
Stage Discharge Relationships for Compound	
Channels D.W. Knight, J.D. Demetriou and M.E. Hamed	4-21
The Control Structure of the River Medway Flood	
Relief Scheme K.J. Shave and M.F. Kennard	4-37
Channel Protection, Operation and Maintenance in Flood Alleviation Schemes	1 50
K.J. Riddell	4-53
Frictional Resistance in Channels with Floodplains	4-72
W.R.C. Myers	4-73
Two-Dimensional Modelling of Dam-Break Floods in Natural Channels with a Movable Bed <i>H. Matsutomi</i> , <i>H. Asada and T. Sato</i>	4-89
Washout of Spillway Dams S.P. Chee	4-103

Design of a Hydraulic Control Structure with an In-Spillway Fishpass Lloyd Meloche and John A. McCorquodale	4-115
Dam and Deviation Tunnel for the Control of a Torrent Upstream a Landslide Eugenio Del Felice and Corrado Merizzi	4-131
Resistance to Flow in Channels with Overbank Flood-Plain Flow J.I. Baird and D.A. Ervine	
Flood Prevention Measures for the Valley of the Rio Aguan, Honduras	4-137
W.R. White, R. Bettess and H.G. Johnson	4-151
5. COMPUTER SIMULATION OF IRRIGATION AND DRAINAGE CANAL SYSTEMS FOR UNSTEADY FLOW CONDITIONS	
Water Movements in a Complex Canal Reach, Computation by a Method of Characteristics, Comparison with Field Measurements <i>G. Bertrand and Y. Zech</i>	5-3
Unsteady Flow Simulation in Complex Drainage Systems by HVM - Hydrograph Volume Method K. Wanka and W. Königer	5-17
Optimal Operation of an Irrigation Canal System for Unsteady Flow Conditions	5-33
Unsteady Flow Phenomena in a Drainage Network in the Po River Delta V. Bixio and A. Defina	5-33
The Unsteady Flow in Complex Irrigation Systems with Discharge Control Devices I. Seteanu and M. Erhan	5 57
Centralized Control of Irrigation Canal Systems	
G. Corriga, S. Sanna and G. Usai Unsteady Behaviour of Dunes	2-69
Tetsuro Tsujimoto and Hiroji Nakagawa	5-85
A General Procedure to Compute Channel Systems for Unsteady Flow Conditions J.L. Sanchez Bribiesca and	
O.A. Fuentes Mariles Flow Study for Operation of a Canal Regulator	
Under Tidal Conditions B.H. Rofe	
A Combined Mathematical and Physical Model Approach for the Final Design of the Gambia Barrage	
H. Bruhl, K. Havnø, J. Dietrich and V. Jacobsen	5-127

6. SEDIMENT PROBLEMS IN RIVERS AND THE EFFECTS OF ENGINEERING WORKS ON THE REGIME OF RIVERS	
Problems Related to Important Changes in River Regime Following Intensive River Training Works Martin N.R. Jaeggi	6-3
The Threshold Between Meandering and Braiding R.I. Ferguson	6-15
On the Evaluation of Sediment Transport in Mountain Rivers H. Asada and C. Ishii	6-31
Estimation of Bedform in Alluvial Channels and Streams by Using Regime-Type Velocity Formulas Sutesaburgo Sugio	6-39
Bathymetric Changes Due to Engineering Structures in the Elbe-Estuary W. Puls	6-55