

RIVER HYDRAULICS

**6TH CONGRESS
APD-IAHR
PROCEEDINGS
VOLUME II-2**

CONTENTS

TOPICS 2. RIVER HYDRAULICS

(Vol. II-1)

2.a Sediment Transport

Motion of Single Particles in Steep Channels	1
<i>AGARWAL V. C. and PANDEY, H. C.</i>	
Fluctuation of Bed Load Transport Rate on Steep Gravel Beds	7
<i>TSUJIMOTO, Tetsuro</i>	
Bed-Load Transport in Unsteady Flow	15
<i>TSUJIMOTO, Tetsuro, GRAF, Walter H. and SUSZKA, Lechoslaw</i>	
Sediment Transport Rate of Nonuniform Sand	23
<i>SUZUKI, Koichi and MICHIE, Masanori</i>	
Roles of Step-Pool Morphology in Sediment Transportation	29
<i>EGASHIRA, Shinji and ASHIDA, Kazuo</i>	
On Sediment Routing of a Supercritical Flow	37
<i>LEE, Hong-Yuan and YU, Wei-Sheng</i>	
Lateral Sediment Transport of Heterogeneous Bed Materials	43
<i>YAMASAKA, Masashige and IKEDA, Syunsuke</i>	
Cellular Secondary Currents and Sand Ribbons in Fluvial Channel Flows	51
<i>NEZU, Iehisa, NAKAGAWA, Hiroji and KAWASHIMA, Nobuya</i>	
Experimental Study on the Interaction between Longitudinal Vortices and Sand Ribbons	59
<i>HIRANO, Muneo and OHMOTO, Terunori</i>	
Effect of Velocity Profile on Sediment Transfer Coefficient	67
<i>LIN, G. F. and CHANG, B. K.</i>	
Suspended Load Transport in Compound Channels	75
<i>ASHIDA, Kazuo, FUJITA, Masaharu and LIU, Bing-Yi</i>	
Depositing Process of Mud Flow on Gentle Slope Bed Plunging from Steep Slope	83
<i>ARAI, Muneyuki and TAKAHASHI, Tamotsu</i>	

2.b River Bed Configuration

Stability Analysis of Erodible Beds	91
<i>WATANABE, Kunitoshi and HIRANO, Muneo</i>	
Equilibrium Dune Profile Determined by Non-Equilibrium Bed Load Transport Process	99
<i>NAKAGAWA, Hiroji, TSUJIMOTO, Tetsuro and MURAKAMI, Shogo</i>	
The Consideration from the Energy Aspect on Free Meander and the Application	107
<i>KIMURA, Kiyoji, TAKAHASHI, Michio and NAGABAYASHI, Hisao</i>	
A Case Study of Fluvial Processes in a Braided River	115
<i>WAN, Zhaohui and HE, Qing</i>	
An Observation of River Bank Erosion	123
<i>FUJITA, Yuichiro, MURAMOTO, Yoshio and MIYASAKA, Hirofumi</i>	
Mechanism of Development of Alluvial Fan in an Estuary Caused by Bed Load	131
<i>SHIEH, C. L., ASHIDA, Kazuo and SAWAI, Kenji</i>	
Effect of Flow Non-Uniformity on Mobile Bed Open Channel Bends in Series	139
<i>SATAPATHY, B.</i>	

2.c River Bed Variation

A Study on Aggradation of Coarse Sediment in Open Channel	145
<i>YEN, Chin-Lien, WANG, Ru-Yih and Chang, Shou-Young</i>	

Effect of a Series of Consolidation Works on the Lowering of River Bed	153
<i>MICHIUE, Masanori, HINOKIDANI, Osamu and SUZUKI, Koichi</i>	
Equilibriums of Bed Load Movement in the Upper and Lower Reaches of Diversion Dams	161
<i>WANG, Shixia</i>	
Retgression Downstream of the Headworks on Kankai River – A Case Study	169
<i>SARMA, Nayan, KUMAR, Ashok and SINHA, C. P.</i>	
Movement of Cohesive Sediments into, in and out of a Reservoir	177
<i>Zhang, Xu-Hong and SHUTO, Nobuo</i>	
Aggradation Model for an Alluvial Channel	185
<i>SONI, J. P. and KUMAR, Neeraj</i>	

2.d Reservoir Sedimentation

Reservoir Sedimentation Desilting by Sluicing	191
<i>WU, Chian-Min</i>	
Reservoir Sedimentation Investigation Using Hydraulic Models	199
<i>CHEE, S. P.</i>	
Experimental Verification of the Deposition Model Law	205
<i>TSAI, Chang-Tai, YEN, Pei-Hwa and WEY, Yun-Lu</i>	
Analysis and Simulation on Suspended Load Flocculation in Datengxia Reservoir	213
<i>YIN, Hongchang and YUAN, Yunbao</i>	
Maintenance of Long-Term Capacity of Reservoirs and Its Fluvial Process	221
<i>YANG, Guowei and LUO, Minxun</i>	
Dredging Program for Shihmen Reservoir	229
<i>HSU, R. L., WANG, M. H. and HSU, M. C.</i>	

2.e Local Scour and Flow

Sedimentation Control in Reservoir at Power Intake	237
<i>KULKARNI, V. K. and SHAH, C. M.</i>	
Sediment Control by Sabo Dams with Slits and/or Large Drainage Conduits	245
<i>MIZUYAMA, Takahisa, ABE, Shohei and IDO, Kiyoo</i>	
Scour Depth Prediction around Bridge Piers	253
<i>QADAR, A., KHAN, R. U., MUZZAMMIL, M., ANSARI, S. A. and AHMAD, Naqi</i>	
Maximum Scour Depth at Circular Bridge Piers in Clear-Water Flows	261
<i>KOTHYARI, U. C., GARDE, R. J. and RANGA RAJU, K. G.</i>	
A Vortex Model for Bridge Pier Scour Prediction	269
<i>MUZZAMMIL, M. and GANGADHARAI AH, T.</i>	
Effect of Piles on Flow and Local Scour around Piled Cylinders	277
<i>SUGA, Kyozo, MATSUI, Hiromu, FUJITA, Koichi and ODA, Shoichi</i>	
Channel Bed Degradation Caused by Constriction	285
<i>WANG, Tsan-Wen and YANAPIRUT, Nati</i>	
A Basic Study on the Development of Secondary Circulation in Curved Channels	293
<i>ISHIKAWA, Tadaharu and KIM, Soonbum</i>	
Variation of Some Flow Characteristics in Channel Bends	301
<i>YEN, Chin-Lien and HO, Shin-Ya</i>	
Experimental Study on Flow with Submerged Fill-Type Spur Dikes	309
<i>OKABE, Takeshi</i>	
Hydraulic Design on River Closure by End Dumping Method	317
<i>LU, Hsingtsu</i>	
On the Behaviour of a Full/Partly-Full Interface of the Flow in Storm Sewers	325
<i>YASUKAWA, Hiroshi, UI, Masakazu and YAMAGUCHI, Iwao</i>	

2.f Flood Flow and Routing

Relative Performance of Flood Routing Methods 333
NOUH, M.

Application of General Storage Equation in River Routing 341
RANGAPATHY, V., KARMEGAM, M. and SAKTHIVADIVEL, R.

Case Study of Flood Flow Simulation in a Selected Reach of the River Brahmaputra 349
SARMA, Nayan, YOGANARASIMHAN, G. N. and KALITA, Anil

A New Approach for Solving Shallow Water Equations in Irregular Domain 357
CHENG, Liang, NI, Han-Gen and LI, Jian-Cu

Effects of Typhoon Thelma of 1987 on the Flooding at the Nakdong Estuary, Korea 363
CHO, Woncheol C., LEE, Won-Hwan and LEE, Jae-Joon

The Application of Finite Element Method in River Network Unsteady Flow 371
WANG, Xiangsan

Real-Time Forecasting for Stages of a Flash Flood (Part 2) 379
HIRANO, M., MORIYAYA, T., YAMASHITA, S., TETSUYA, H. and SHU, Y. J.

Development of a Graphical-Numerical Method for Prediction of Effects of Flood Control Measures:
 Cilamaya River, Indonesia 385
TINGSANCHALI, Tawatchai and IBRAHIM, Agung Bagiawan

Characteristics of Flood Flow in the Hinuma River 393
FUKUOKA, S., TAKAHASHI, A., FUJITA, K., HIRABAYASHI, K. and SAKANO, A.

Sedimentation in Flood Plains Due to River Bank Breach 401
TAKAHASHI, Tamotsu, NAKAGAWA, Hajime and HIGASHIYAMA, Motoi

Hydraulic Features of Breach in Earthfill Dam Break Overtopped 409
LI, Xin-Zhou and ZHOU, You-Zhong

Levee Overflow Survey and Development of the Armored Levee 417
FUKUOKA, Shoji and FUJITA, Koh-ichi

2.g Velocity Distribution and Resistance

Velocity Distribution in a Gravel-Bed Flume 425
TU, Haizhou, TSUJIMOTO, Tetsuro and GRAF, Walter H.

Estimating Mean Velocity in Mountain Rivers of Large-Scale Roughness 433
LIN, G. F. and TING, W. P.

Experiments on Resistance to Flow in Channels with Permeable Bed 441
DAS GUPTA, Ashim and UTAINRAT, W.

Velocity Profile of Flow over Rough Permeable Bed 449
NAKAGAWA, Hiroji, TSUJIMOTO, Tetsuro and SHIMIZU, Yoshihiko

Friction, Energy and Momentum Correction Factors for Compound Channels 457
LAI, Chan-Ji and KNIGHT, Donald W.

Hydraulic Characteristics of Compound Channel Flow 465
TOMINAGA, Akihiro and EZAKI, Kazuhiro

2.h Turbulence and Secondary Flow

On the Stability of Laminar Sub-Layer 473
HOU, H. C. and LI, Y. W.

Simulation of Two-Dimensional Separated Flows 481
HUANG, Jianbo and NI, Han-Gen

Numerical Analysis for Turbulent Boundary Layer on Spillway 489
ZHENG, Bong-Min and CHEN, Fei-Yung

The Turbulent Boundary Layer Development on the Overfall Surface and Its Study
 of the 1/n-th-Power Velocity-Distribution Law 497

<i>LI, Jianzhong and NING, Lizhong</i>	
Turbulent Structure of a Gravel Bed River	505
<i>MATSUOKA, Yasumasa</i>	
Measurement of Secondary Flow in an Open Channel	513
<i>IMAMOTO, Hirotake and ISHIGAKI, Taisuke</i>	
2.i Hydraulic Structures	
The Approximate Calculation of Flow over a Spillway Dam	521
<i>LIU, Manling</i>	
Problems Encountered in the Hydraulic Design of a Side Channel Spillway	529
<i>KHATSURIA, R. M. and DEOLALIKAR, P. B.</i>	
An Experimental Study on the Hydraulic Characteristics of Labyrinth Weir to Increase the Discharge Passing over the Spillway	537
<i>LEE, Won-Hwan, CHO, Woncheol, C., CHOI, Tae-Hoon and SONG, Jae-Woo</i>	
Instability of Flow Downstream of Hydraulic Structures	543
<i>MAZUMDER, S. K. and DARDE, P. N.</i>	
A Study on Dissipating Energy and Scour below Sluice-Dams with Low Froude Number	551
<i>ZHOU, Ming-De and MAO, Chang-Xi</i>	
A Reappraisal of Stilling Basin Design with Reference to Turbulence Characteristics	559
<i>KHATSURIA, R. M., DEOLALIKAR, P. B. and BHOSEKAR, V. V.</i>	
The Energy Dissipating Effect of Impinging Jets from Spillway Buckets	567
<i>HU, Cheng-Yi</i>	
Hydraulic Problems of Flaring Gate Piers and Special Bucket Lips	575
<i>LIU, Yongchun</i>	
A Study of Multiple-Orifice Energy Dissipators in Outlet Works	583
<i>DING, Zeyu, CAI, Junmei and ZHAN, K. X.</i>	
Impacting Hydraulic Jump	591
<i>PAN Guangzai</i>	
Flow Characteristics of the Hydraulic Jump with an Abrupt Bottom Rise	599
<i>KARKI, K. S., ROY, N. and SINGH, P. N.</i>	
Hydraulic Computation of Rectangular Divergent Jump	607
<i>ZHANG, Zhiheng</i>	
Influence of Bubble Oscillation on Cavitation	615
<i>HU, Ming-Lung</i>	
Design Criteria of Aerator for Preventing Cavitation Damage	623
<i>PAN, Shuibo and SHAO, Yingying</i>	
Simplified Calculation of ECN Curve for High Ski-Jump Spillway	631
<i>GONG, Zhenying and LIN, Bingnan</i>	
The Characteristics of Multi-Orifice	637
<i>XU, Fu-Sheng, YU, Ming-Xang and LIU, Shu-Jun</i>	
Observation of Aerated Flow and Atomization on Baishan Dam Spillway with High Step	645
<i>ZHOU, Lintai, WANG, Junjie and LIU, Renshan</i>	
A Study on Energy Dissipation Effectiveness and Cavitation Characteristics of Silt-Laden Flow through Tunnel Orifices in Series	653
<i>HA, Hwanwen, WANG, Hengfeng and LI, Shangwu</i>	
Model Study of Pier Vibration at Dahua Hydroelectric Project	659
<i>LIN, Qinhua and XIE, Shengzong</i>	
Helmholtz Resonator Model of Nappe Oscillations	667
<i>KNISELY, Charles W.</i>	
Removal of the Air-Entraining Vortex	675
<i>NI, Han-Gen and HE, Z. G.</i>	
Appearance of Air-Intake Vortices	683
<i>OGIHARA, Yoshio and AMEMIYA Ken</i>	

A One-Dimensional Model of a Bent-Over Jet	691
<i>HADANO, Kesayoshi, SAITOU, Takashi and HIRANO, Muneo</i>	
A Numerical Modelling of Sudden Enlargement Flow in a Pressure Tunnel	699
<i>ZHI, Daoshu, HA, Hwanwen and ZHANG, Jian</i>	

POSTER SESSION

Effect of Boundary Condition on the Computation of Urban Storm Drainage	707
<i>NOGUCHI, Masato and NAKAMURA, Takehiro</i>	
Development of a Flood-Wave Generator for River Model Experiments	715
<i>KOMURA, Saburo and NAKATANI, Tsuyoshi</i>	
An Experimental Study on Permeable Sediment Control Dams as a Countermeasure against Floating Logs	723
<i>ISHIKAWA, Yoshiharu and MIZUYAMA, Takahisa</i>	
Cost Reduction in the Construction of Small or Medium-Sized Waterpower Stations – The Case of Fukue Waterpower Station –	731
<i>YAMAMOTO, Isao, BUTSUHARA, Hajime and MIZUSHIMA, Yoshiaki</i>	
Author Index	739