HEC-RAS 模式在野溪水理演算之應用與探討

林永峻[1]　丁振章[2]　鄒宗儒[3]　李鴻源[4]　賴進松[5]　黃杰立[6]

摘　　要　近年來各項工程水理相關設計除安全考量外，亦應儘量符合自然生態工法之需求。採用較合理且簡便的水理演算模式，可有效地進行河道斷面及工程佈置之設計規劃。美國工兵團之 HEC-RAS 模式，考慮實際河道斷面幾何特性及糙度，且可考量水工結構物（如橋墩、橋台、涵洞等）造成之效應，具備較完善之水理計算能力。本研究採用 HEC-RAS 模式，針對台北縣雙溪鄉丁子蘭坑溪之第一至三期整治河段進行水理計算；同時進行水工模型試驗，試驗成果與水理演算模式模擬結果相互比較分析，並獲得良好之比較成果；由成果可說明 HEC-RAS 模式可作為野溪水理計算之良好工具。

關鍵詞：HEC-RAS 模式、水工結構物、水工模型。

Application and Verification of the HEC-RAS Model in a Stream

Yong-Jun Lin[1]　Zhen-Zhang Ding[2]　Tsou-Tsung Ju[3]
Hong-Yuan Lee[4]　Jihn-Sung Lai[5]　Chieh-Li Huang[6]

ABSTRACT　Except for the safety consideration, hydraulic design should satisfy the demands of the ecological point of the view. A robust and user-friendly hydraulic computational model can effectively speed up hydraulic engineering design and layout. The HEC-RAS model was developed by the Hydrologic Engineering Center of the U.S. Army Corps of Engineers. This software allows the user to perform one-dimensional hydraulic computation based on various geometric characteristics, roughness of river sections and effects of hydraulic structures in a river. The Tin-Chi-Lan-Kan Creek located in Taipei County is selected as a study site. An experimental study is also conducted by constructing the physical model for this site. The measured water levels are compared with the calculated results by the HEC-RAS model. The applications of HEC-RAS model in the Tin-Chi-Lan-Kan Creek

〔1〕國際水利環境學院副研究員
　　Associate Research Fellow, Taiwan International Institute For Water Education, Taiwan, R.O.C.
〔2〕行政院農業委員會水土保持局南投分局局長
　　Director-General, Soil and Water Conservation Bureau, Council of Agriculture, Executive Yuan, Nantou Branch, Taiwan, R.O.C.
〔3〕行政院農業委員會水土保持局保育治理組科長
　　Division Head, Soil and Water Conservation Bureau, Council of Agriculture, Executive Yuan, Conservation Management Division, Taiwan, R.O.C.
〔4〕國立台灣大學土木系教授暨國際水利環境學院院長
　　Professor, Department of Civil Engineering at National Taiwan University and Superintendent, Taiwan International Institute For Water Education, Taiwan, R.O.C.
〔5〕國立台灣大學水工試驗所研究員暨生物環境系統工程學系兼任副教授（通訊作者）
　　Research Fellow, Hydrotech Research Institute and Associate Professor, Department of Bioenvironmental Systems Eng., National Taiwan University, Taipei City, 106, Taiwan, R.O.C.
　　E-mail: jslai525@ntu.edu.tw
〔6〕國際水利環境學院工程師
　　Engineer, Taiwan International Institute For Water Education, Taiwan, R.O.C.

demonstrate its effective potential of applying in the upper land streams.

Key Words: HEC-RAS model, hydraulic structure, physical model.