

視窗化應用於長延時降雨之滯洪池水理設計

陳正炎^[1] 江昇峰^[2] 陳宏宇^[3]

摘 要 台灣地區因社會發達、人口急速增加，使得山坡地被過度的開發。若無恰當之水土保持措施，則洪水來臨時往往易對下游造成危害，故需設置滯洪池以降低尖峰流量、遲滯尖峰到達時間。本文係以等腰梯形入流歷線作為長延時降雨型態之設計理念，採藍吉-庫塔數值法(Runge-Kutta Method)將一系列演算程序予以整合，再利用 VB(Visual Basic)程式語言撰寫一視窗化模式，以供設計者操作使用，並獲致於相同水理條件下，其出流口形式採用孔口形之滯洪池設施，不論就洪峰消減或滯洪容積之滯洪水理特性討論上，皆有較佳的滯洪效果。

關鍵詞：滯洪池、長延時降雨、視窗化模式。

Application of Windows-Based Design for Detention Ponds with Long-Duration Rainfalls

Jen-Yan Chen^[1] Sheng-Feng Chiang^[2] Hong-Yu Chen^[3]

ABSTRACT Because of rapid growth in population, the hillside has been over-developed in Taiwan. In the event of a flood, this situation results in disasters within the downstream areas. It is necessary to establish flood detention facilities to delay the peak time and to reduce the peak flow. This research builds an argument based on the isosceles trapezoidal inflow hydrograph model, using Runge-Kutta Method to resolve the governing continuity equation. In order to provide for designer computing exactly and conveniently, use of a Windows-based module developed by applying Microsoft's Visual Basic combined with the numerical method could be useful. Moreover, we can obtain comparative result of the effect of flood detention with different outlet devices in the same inflow hydrograph by computing the ratio of inflow peak reduction. We found that the orifice outlet shape is a more veritable design for flood detention.

Key Words: detention pond, long-duration rainfall, Windows-based module.