

## 臺灣中部河川臨時土石攔河堰之安全性評估

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**摘 要** 台灣中部地區之灌溉水源多為河川取水，為將地面水體引入灌溉系統須修築矮堰集水；惟考量防汛期間避免阻礙洪水宣洩，導水用矮堰多採用河床土砂堆砌而成之臨時性構造物，此類土石矮堰常因河川逕流量改變而損壞，進而影響灌溉取水量之穩定性。為瞭解臨時土石攔河堰之破壞原因，本研究以修築於中部地區三條重要河川(由北而南為大安溪、大甲溪及烏溪)14 處農業灌溉用途之臨時土石攔河堰為主，進行臨時土石攔河堰之安全性分析，探討其破壞主因為滲流破壞或結構破壞，並依現有之土石堰尺寸計算造成現有臨時土堤破壞之流速臨界點，分析方式以丁壩之安全性分析進行。分析結果顯示造成 14 處臨時土石堰破壞之主因為滲流破壞，9 處堰體為滲流破壞，其餘 5 處則為滑動破壞。本研究進一步探討沖毀各臨時攔河堰之流速臨界點，結果顯示造成構造物破壞之流速約 0.20~1.35 m/s；影響破壞臨界點流速之因素為攔河堰與河川水流之夾角，故本研究建議臨時攔河堰軸線與河岸應採用較小之角度構築於行水區內。

**關鍵字：**HEC-RAS、淹水潛勢分析、渠首工。

## Safety analysis of the temporary earth-rock weir of rivers in the middle of Taiwan

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**Abstract** The main irrigation water has been intaken from rivers in central Taiwan. Dwarf dams are usually constructed in two sides of rivers due to intake water smooth to canals and avoid flow in floods seasons. Considering with the destruction of dwarf dams has been often caused by various flow conditions. A procedure of safety analysis is conducted to evaluate the safety of dwarf earth-rock dam. Fourteen dwarf earth-rock dams which distributed in DaAn, Da belong to the Taichung irrigation association are selected as the study area in this article. First of all, the paper was analysis safety of the earth-rock dam, above broken in account of seepage or structural failure. Second, calculate the flow rate of the destruction of the critical point; analysts use the groins of security analysis in accordance with the existing size of the earth-rock dam. Therefore, the analysis showed the main cause of the destruction of 14 earth-rock dam: 9 dam seepage failures and rest of five were sliding failure. In addition, this study further explores washed away the earth-rock dam flow rate of the critical point, the results show that the flow rate of 0.20 ~ 1.35 m/s earth-rock dam will damage; and impact damage critical point velocity due to the angle between the weir and river water. In conclusion, this study shows the earth-rock dam axis smaller the angle should be used to build a water district in line with the riverbank, and that will be less to destroy.

**Key Words:** Earth-rock dam, Safety analysis, headworks.

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