

# A Study on the Pier Scour and Seismic Capacity Assessment of Bridges

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## Abstract

Climate changes in recent years have caused a trend of increasing rainfall in Taiwan. In addition, the rivers of Taiwan flow down steep slopes with rapid currents, and the flow is extremely turbulent in particular segments of the rivers, causing pile scours that affect the stability of bridges in the area. Based on turbulent flow theory, this paper establishes an estimation model for the pier scour depth limit of suitable bridges crossing rivers in Taiwan, according to the characteristics of the stagnation point and separation point of fluid mechanics. A bridge in northern Taiwan is analyzed according to measurements, confirming that the channel scour formula suggested in this paper demonstrates sufficient accuracy. Additionally, lateral pushover analysis is performed on the bridge to understand the seismic durability of the bridge structure following a scour.

Keyword : Scour depth limit, bridge seismic durability, lateral pushover analysis.