結構參數變化對斜張橋影響線分析結果之影響

高金盛[1]　苟昌煥[2]　洪士軒[3]　蔡政霖[4]

摘要

在橋梁結構設計時，一般利用影響線來確定活載重的臨界位置，進而得出斷面最大應力值，以作為斷面設計之依據，本文旨在利用數值分析模式，探討不同幾何形狀對斜張橋影響線分析結果之影響，另外，亦探討纜索及主梁材料參數變化對斜張橋影響線分析結果之影響。研究結果顯示，橋塔上的纜索錨碇段尺寸改變對張橋影影響線分析結果之影響較大，另外，纜索材料參數改變對斜張橋影響線分析結果之影響較主梁材料參數改變之影響大。

關鍵詞：斜張橋、影響線、彈性模數、數值模擬

The Structural Parameter Variation Effects on the Influence Line Analysis Results of Cable-Stayed Bridge

Chin-Sheng Kao *, Chang-Huan Kou ** ,Shih-Hsuan Hung ***, Jeng-Lin Tsai ****

Abstract

In bridge structural design, the engineer generally determined the critical position of the live load by using influence line, and then used it to calculate the maximum stress of the cross section of bridge. This paper is intended to use the numerical analysis model to investigate the effects of different geometry shape on the analysis results of influence line of cable-stayed bridge. Moreover, the effects of variation of Yong's modulus of cable and main girder on the analysis results of influence line of cable-stayed bridge are also investigated. The numerical results have shown that the variation of the length of the cable anchored zone on tower structure had more effects on the analysis results of influence line of cable-stayed bridge. Moreover, the results have also shown that the variation of Yong's modulus of the cable had more effect than that of the main girder.

Keywords : cable-stayed bridge, influence line, elastic modulus, numerical modeling

[1] 淡江大學營建系　副教授

[2] 中華大學土木與工程資訊學系　副教授

[3] 中華大學土木與工程資訊學系　碩士班研究生

[4] 中華大學土木與工程資訊學系　博士班研究生