Structural Performance and Cost Analysis of Multi-span Extradosed Cable-Stayed Bridge

Zhihua Xiong

College of Water Resources and Architectural Engineering, Northwest A&F University, Yangling, Shaanxi, China

Xu Hou

CCCC First Highway Consultants Co. Ltd., Xi'an, Shaanxi, China

Houda Zhu

College of Water Resources and Architectural Engineering, Northwest A&F University, Yangling, Shaanxi, China

Yuqing Liu

Department of Bridge Engineering, Tongji University, Shanghai, China

Yang Meng

College of Water Resources and Architectural Engineering, Northwest A&F University, Yangling, Shaanxi, China

Contact: 370375000@qq.com

Abstract

To investigate the structural performance and economic applicability of multi-span extradosed cable-stayed bridge, a comparative scheme of composite beam with corrugated steel web was designed based on the Wangjia River Bridge, which was an extradosed cable-stayed bridge with prestressed concrete girder built in Shaanxi. Spatial finite element models of the whole bridge were established by CSIBridge for extradosed cable-stayed bridge with two different sections of girder. Considering the influence of p-Δ effect, the vertical and horizontal deformation and the governing sections of the two forms were analyzed and compared. The material consumption of steel, concrete and steel strand of the extradosed cable-stayed bridge with corrugated steel web was calculated. The material consumption of the two schemes was compared. The differences in structural performance and economic cost for the two structures were explored. It's expected to provide a reference for the tender design of multi-span extradosed cable-stayed bridges with similar span length.

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