

# Construction Technologies of a large span Railway Suspension Bridge- Wufengshan Bridge

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## Abstract

This paper is to introduce construction technologies of a thousand-meter scal high-speed railway suspension bridge in China, Wufengshan Bridge. There are basic principles applied throughout the bridge construction process: 1) To pay attention to innovations in bridge design method and basic theory by emphasizing both life cycle optimization design and durability design; 2) To advance key bridge construction technology; 3) To grasp the state deterioration mechanism and evolution law of the bridge operation and maintenance process in advance; 4) To build a whole life-cycle management framework system. This paper involves the design method, calculation theory, and the corresponding technical standards of high-speed railway suspension bridges in China.

**Keywords:** railway bridge; suspension bridge; construction; anchorage; cable saddle; steel beam erection

## 1 Introduction

The Wufengshan Yangtze River Bridge is an essential part of the Lianzhen Railway. The bridge is about 39KM upstream from the Runyang Yangtze River Highway Bridge and 28KM downstream from Taizhou Yangtze River Highway Bridge. The total length of the bridge is 6,408.909M, which includes a 1,432M main bridge for the river crossing, a 1,444.799M approach bridge for the railway and highway joint section, and a 3,532.11M approach bridge for the railway-only section[1-3]. The bridge is shown as Figure 1.

The main bridge is a steel truss suspension bridge of 1,092M with the rise-span ratio of 1/10. The side span of the main bridge is 350M. A total of

two main cables are used in the bridge, and the transverse distance is 43M. The stiffening beam uses a continuous steel truss beam with five spans: 84M, 84M, 1092M, 84M, and 84M.



Figure 1. Wufengshan Yangtze River Bridge

The longitudinal design of the bridge is symmetrical. The main towers on both sides of the bridge are comprised of a portal frame concrete