

Design of Twin River Bridges for Light Rail Transit and Highway

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Abstract

Dongshuimen Yangtze River Bridge and Qiansimen Jialing River Bridge, together be called the Twin River Bridges, are designed to carry two tracks of light rail transit and four lanes of highway traffic through three business districts of Chongqing, China. The actual weight of the trains and their intended configuration of the rail transit are used for the design of the bridges. The main spans of these two bridges are 445 m and 318 m, respectively. This article describes the special provisions of the specifications for the design of this dual-function bridge, and the special devices used for light rail transit operations.

Keywords: steel truss girder; long-span bridge; cable-stayed bridge; light rail transit; highway; aerodynamic performance; dual functioning bridge; double decks.

1 Facts of the project

Dongshuimen Yangtze River Bridge and Qiansimen Jialing River Bridge are designed to carry two tracks for light rail systems and four roadway traffic lanes through three business centers of Chongqing, China. These bridges are strategically located at the tip of the Yuzhong Peninsula, connecting the central business district with both the newly developed Jiangbei business district in the north and the recreation quarter on the south bank of the Yangtze River. The new Dongshuimen Bridge crosses the Yangtze River and the new Qiansimen Bridge crosses the Jialing River; together, they are called the Twin River Bridges. A tunnel in the Yuzhong District connects these two bridges, allowing both light rail and road traffic from the southern district to flow though Yuzhong to the northern district without interruption^[1]. Both bridges have four lanes of city traffic and two pedestrian paths on the upper deck and two light rail tracks on their lower decks.

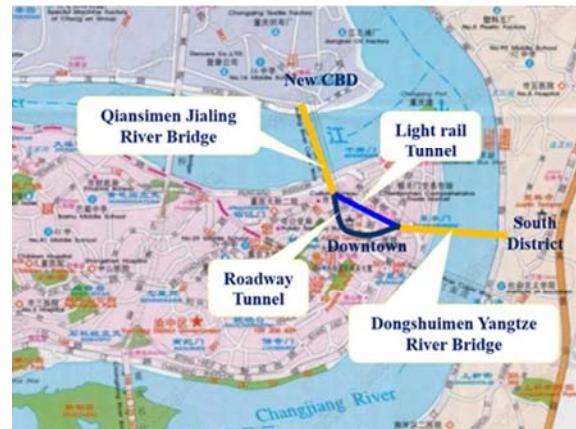


Figure 1. Location of the two bridges.

The main span length of the two bridges was determined by the navigational requirements of the Yangtze and Jialing Rivers. The Dongshuimen Yangtze River Bridge requires a 320 m minimum net width and an 18m vertical clearance for a two-way ship channel. The Qiansimen Bridge requires a minimum 242 m net width and a 10 m vertical