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Sutong Bridge—A cable-stayed bridge with main span of 1088 meters

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Summary

The Sutong Bridge is the longest spanning cable-stayed bridge in the world with a main span of 1088 meters. In this paper, the design and construction concepts are briefly presented. Key technologies and innovative achievements are summarized. These focus mainly on pile foundation bearing capacity analysis, river bed scour protection and monitoring, superstructure wind-resistance study, mid-span closure method, as well as long cantilever structure construction control.

Keywords: cable-stayed bridge, foundation, pylon, steel box girder, cable stay, construction control

1. Introduction

The Sutong Bridge crosses the Yangtze River approximately 100 km upstream from Shanghai, China, connecting the cities Suzhou and Nantong located on the southern and northern banks respectively. It is a key project for the coastal highways in China. The bridge is a seven span double pylon and double cable plane steel box girder cabled-stayed bridge, and has a span arrangement of 100 + 100 + 300 + 1 088 + 300 + 100 + 100 = 2 088 m (Fig. 1). The Sutong Bridge sets the record of being the longest spanning cable-stayed bridge in the world.

The Chinese policy of reform and opening up to the outside world, as well as the strategic development of Pudong in Shanghai began in 1990s, have boosted rapidly the economic development of the Yangtze River Delta in China. As a result, crossing the Yangtze River has become a transportation bottle-neck for traffic directed to the new urban agglomerations north of the Yangtze River Delta, restricting economic development of those cities to the north of the Yangtze River. Therefore, a proposal to build the Sutong Bridge was submitted for state approval as early as 1991.