Key Techniques Introduction to Maputo Bridge Steel Box Girders Construction

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Abstract

Maputo Bridge in Mozambique is the largest suspension bridge under construction in Africa, which adopts a double-pylon single-span steel box girder structure with a main span of 680m.

The superstructure steel box girder construction faces a series of obstacles. By researching and applying the key construction techniques, such as whole-section factory manufacturing, all girders one-time ocean shipping, complex environment wharfing and lifting, new rotating cable crane erection and site connection, and etc., the project achieved the purpose of period guarantee, quality control, environmental impact reduction and suspension bridge construction technology promotion. Furthermore, it is expected to provide a reference and engineering example for similar large-scale bridge projects in the future.

Keywords: Underdeveloped region; Suspension bridge; Steel box girder manufacture; Ocean shipping; Cable crane rotary erection.

1 Foreword

Maputo Bridge is located on the outskirts of Maputo city, the capital of Mozambique, where the industrial foundation was weak and the manufacturing conditions for steel box girders were inadequate. The site is also affected by the marine environment and high humidity, leading to poor controllability of the welding quality. Furthermore, the bridge across the Maputo port and the waterway, the axis of the bridge and the port shoreline has an angle of 72.46 degree. The navigation channel just in front of Maputo pylon is narrow and has a busy shipping traffic, which do not allow a long-time occupation or interruption. In KaTembe bank, there is a 100m shoal area in front of KaTembe pylon and a large number of wartime wrecks, the site conditions inadequate for berthing.

In order to solve the above problems, this paper focuses on the key construction technology and organization of the steel box girder superstructure of Maputo bridge, via whole-section factory manufacturing, all girders one-time ocean shipping, complex environment wharfing and lifting, new rotating cable crane erection and site connection and etc.

2 Project Profile

2.1 General Introduction to Maputo Bridge

Maputo Bridge is the largest span suspension bridge under construction in Africa at present and

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