Research on Key Technology of Large Tonnage Steel Beam Fast Sliding Positioning

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Abstract

A certain bridge adopts the green design of "one span across the river", and the installation of 21 pieces of steel box girder on the south span is limited by geographical conditions, tower limb width and construction period. Innovatively developed a dedicated skid scooter, the steel box girder successfully crosses the orbit change position with the help of the windlass，move laterally to the tower area，replace the longitudinal skid scooter，move to the design bridge. In the steel beam positioning link, firstly, set bearing pre-offsetting on pier top support to circumvent the influence of steel box girder welding, shrinkage creep deformation and closure temperature difference on the displacement of beam length. After the bridge is completed, the feasibility and reliability of the research method are verified by elevation measurement, static load test and implementation process.

Keywords: one span across the river; dedicated skid scooter; orbit change,pre-offsetting; Static load test.

1 Preface

With the gradual deepening of the concept of green roads, in order to minimize the impact of construction on the water environment and fishermen's lives, more cross-sea passages and bridges across rivers and valleys have adopted the design concept of "one span across the river" [1]. The green design allows the side span or secondary side span of bridge to be located on land or in the shoal area. For the installation of steel girders in this area, the first method is to lift the segment beam to the design bridge position at one time, subject to construction conditions.

However, in many cases, it is impossible to do this due to geographical environment, construction equipment and other factors. The commonly used method in China is to hoist the steel beam to a

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