Precise Positioning Construction Technology for Cable Ducts and Steel Anchor Boxes in Cable-Stayed Bridges (Postprint)

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Abstract

Yangtang Bridge is a single-tower double-cable-plane inward-inclined cable-stayed bridge with a total length of 607 m. The main tower employs an H-shaped structure with a height of 65m, and features 17 stay cables, among which Nos. 1-8 are cable conduits and Nos. 9-17 are steel anchor boxes. To prevent collision between stay cables and conduit openings and to enhance construction efficiency, the precise positioning of cable conduits and steel anchor boxes is critically important. Based on actual engineering practices and construction conditions, this study proposes a three-dimensional coordinate positioning method for cable conduits, and investigates precision positioning devices for conduit openings along with installation technology for steel anchor boxes, to ensure accurate and rapid construction of cable conduits and steel anchor boxes.

Full Text

Precise Positioning Construction Technology for Cable Ducts and Steel Anchor Boxes of Cable-Stayed Bridges

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Abstract

Yangtang Bridge is a single-tower, double-cable-plane, inward-inclined cable-stayed bridge with a total length of 607 m. The H-shaped main tower stands 65 m high and accommodates 17 stay cables, with cables 1–8 utilizing cable ducts

and cables 9–17 employing steel anchor boxes. To prevent cable-duct opening collisions and improve construction efficiency, precise positioning of these components is essential. This paper presents a three-dimensional coordinate positioning methodology for cable ducts tailored to the actual engineering context and site conditions, along with precision positioning devices for duct openings and installation techniques for steel anchor boxes, ensuring both accuracy and rapid construction progress.

Keywords: single-tower double-cable-plane; cable-stayed bridge; cable duct; steel anchor box; positioning construction technology

Note: Figure translations are in progress. See original paper for figures.