



The Applied Research on BIM Design for One Abnormity Cable Stayed Bridge in Hengqin Zhuhai

Zhu Yinqiao, He Wei, Lu Sining, Wang Liang

Southwest Jiaotong University, Chengdu, Sichuan, China

Contact: 740558885@qq.com

Abstract

One cable stayed bridge named Yiyi in Hengqin new district of Zhuhai City in South China was chosen as a research case, some research works of BIM technology in the preliminary design were carried out, a new method of BIM technology application based on XML format for information classification storage and transmission was proposed.

Keywords: BIM technology; cable stayed bridge; life-cycle management in bridge; storage and transmission; XML format

1 Introduction

The requirements of BIM application in construction engineering mainly focus on reducing the repetitive work, solving the collision, facilitating the communication and management of the project and the operation and maintenance. However, the performance requirements of the bridge structure are more prominent. Because of its long span, long service life, large load, easy to damage and long-term monitoring, the modern bridge is mainly applied to the whole life model including performance information, taking structural force performance as the main consideration, focusing on life cycle structure and performance Information integration and traffic management.

2 Application of BIM Technology in Cable Stayed Bridge Design

2.1 Yiyi Bridge Engineering Background

This paper takes Yiyi Bridge project of Hengqin New District in Zhuhai as the project background. The length of Yiyi Bridge is 196m, the span is $4 \times 30 \text{ m} + 68 \text{ m} = 188 \text{ m}$ and the navigable hole set in the main span. The front of the bridge tower is tilted about 40° to the north bank, two sets of back cables (three arranged in each group) are

anchored on the outer edges of the side spans, forming a stable tetrahedral configuration in space with the front cables.

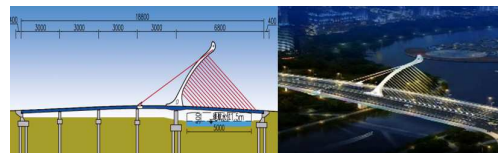


Figure1. Yiyi Bridge Space Environment

2.2 Application of BIM Technology in Preliminary Design of Yiyi Bridge

Yiyi Bridge is a steel structure profiled inclined tower cable stayed bridge, the bridge superstructure consists of steel box girder, forward curve steel tower and inclined cable system. In order to realize the design of the bridge, we have adopted the idea of space 3D model design based on BIM technology from the concept design, some research works of BIM technology in the preliminary design were carried out, such as component classification, visual design, parametric design, semi-automatic drawing.

Therefore, we use the BIM professional software Autodesk Revit parametric function to achieve the curve of each paragraph of the smooth fitting. During the design of the bridge tower, the three-dimensional model of the space display allows