

Design and Construction of Hwamyung Bridge

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Summary

Hwamyung Bridge over the Nakdong River is the largest cast-in place concrete cable stayed bridge in Korea with a center span of 270m and side span of 115m each. The stay-cables are spaced at 6.8m along the box girder and arranged in a semi-harp configuration. They are anchored at central single towers with vertical leg extending 65m above the deck. With the closure of center span in November 2010, the erection of cable and box girder, which is a major portion of the bridge construction, was completed.

Keywords: Prestressed concrete, cable stayed bridge, circular cofferdam with single layered pile, new type concrete box girder, multi-strand cable

1. Introduction

Hwamyung Bridge forms the key section of the external ring road connecting the east to the west of Busan, which is the second largest city in Korea after Seoul. The bridge is composed of a prestressed concrete cable stayed bridge and three steel box girder bridges. The cable stayed bridge is 500m long, and its main span is 270m long. The contract for the project was entered into in March 2007 to commence the construction work in August. At the center span closure in November 2010, the erection of cable and box girder, which is a major portion of the bridge construction, was completed.

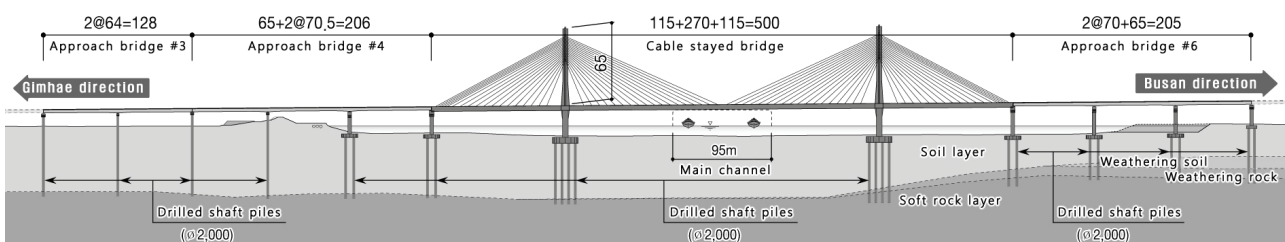


Figure 1: General Arrangement of Hwamyung Bridge

2. Design and Construction of Bridge Structure

2.1 Cofferdam design

The cable stayed bridge is located at the deepest part of the Nakdong River whose water level rises to 8 meters or higher during rainy seasons. Taking such hydrological features into account the substructure of bridge was constructed using cofferdam. The typical cofferdam is built by setting up