

Hwayang Concrete Cable-Stayed Bridge with 500m main span

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Summary

Hwayang Bridge is linking Hwayang-myeon with Jobal-do, Hwajeong-myeon of Yeosu, Jeollanam-do, Korea. Hyundai E&C was awarded the turnkey contract in May 2011, and the construction has started since December 2011. Hwayang Bridge is a concrete cable-stayed bridge with the total span of 854m, composed of a main span of 500m and side spans of 177m. It is ranked the 2nd longest concrete cable-stayed bridge in the world in terms of the main span length. PWS(Parallel Wire Strand) cables with the high strength of 1,860MPa are used and the half cylinder plate is used for the caisson installation. This paper gives brief introduction of the planning and detailed design of Hwayang Bridge, focusing on the overall structural configurations of the bridge.

Keywords: concrete cable-stayed bridge; 500m main span; high strength cable; PWS; half cylinder plate; caisson

1. Introduction

Hwayang-Jeokgeum (The 2nd and 3rd Section) Road Construction Project was ordered in October 2010, by Iksan Regional Construction Management Office of the Ministry of Land, Transport and Maritime Affairs. The 2nd section of this turnkey contract has been awarded to Hyundai E&C in May 2011. Total 192 million dollars will be invested for the project, to connect the missing link of the National Route 77 with offshore bridges of 2.484km and tunnels of 0.364km. The total length of the highway construction project is 5.947km, and the 2nd section includes offshore, onshore bridges, and road works of 2.047km in total. Construction work has started since December 2011, the project is scheduled to complete in the year of 2019.

2. Planning of the offshore bridge

2.1 The concept of design

The concept of the project can be specified in two ways.

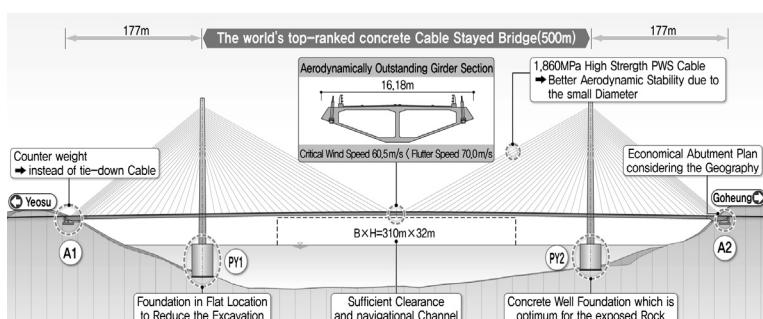


Fig. 1: General profile and section

First, the project aimed at the construction of the world's top-ranked concrete cable-stayed bridge with Korean construction technology.

As an offshore bridge, the girder section and cable type have been selected to secure wind resistance. Considering the negative reaction force created by relatively short side spans, counterweights have been designed to minimize maintenance.