

Detail design of Chacao Bridge in Chile

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Abstract

The paper describes the design process of the Chacao Bridge in Chile, what have been the challenges in the design, and how these challenges are solved. The bridge is a multi-span suspension bridge with main spans of 1155m and 1055m and with a total length of approximately 2750m, making it the longest suspension bridge in South America, connecting the island of Chiloe to mainland Chile. The bridge site is subjected to severe environmental loads, and particular effort has been on ensuring seismic robustness, since the site is located in a high seismic zone. The detail design is performed by consultants Aas-Jakobsen from Norway and Systra from France for Consorcio Puente Chacao. The bridge owner is MOP Chile.

Keywords: suspension bridge, multi span, design challenges, pylons, approach bridge, saddles, main cable

1 Introduction

The bridge concept is a multi span suspension bridge with two main spans and one suspended side span. The span widths on these are 1055m, 1155m and 284m respectively. The opposite approach is a three span approach bridge with span widths 41 + 54 + 43m.

The bridge will mainly be founded on piles in all foundations except for the anchor blocks.

The substructure including the three main pylons are in concrete, while the superstructure is an orthotropic steel box girder in the suspended spans and steel girders with a concrete bridge deck in the approach spans.

The width of the bridge deck is 22.20m between the main cable planes, carrying 4 lanes of traffic. The orthotropic bridge girder is aerodynamic shaped with a maximum depth of 3270mm.

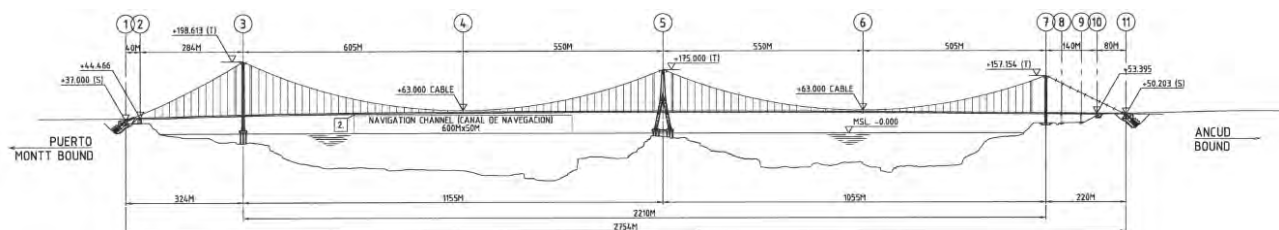


Figure 1. General elevation