Izmit Bay Suspension Bridge: Construction of Tower Foundation

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Summary

The Izmit Bay Suspension Bridge will carry the new Gebze-Orhangazi-Izmir motorway across the Sea of Marmara at the Bay of Izmit in northern Turkey. The bridge construction has started in January 2013 and will be completed in early 2016. The construction of large scale suspension bridge over the sea to be completed in such a short period requires a sufficient knowledge and experience of construction of large scale marine work and large scale suspension bridge. This paper deals with the construction of the tower foundation leading up to sinking of caissons of the Izmit Bay Suspension Bridge.

Keywords: tower foundations; dry dock; wet dock; caissons; composite steel-concrete shafts; self-compacting concrete; dredging; steel inclusion piles; gravel bed.

1. Introduction

The Izmit Bay Suspension Bridge is a three span suspension bridge having a main span of 1550m supported by two tower foundations located off shore, two side span piers located on land and two cable anchorages on land as shown in the general arrangement below. The side span pier and the cable anchorage on the south are located on reclaimed land made for this project.

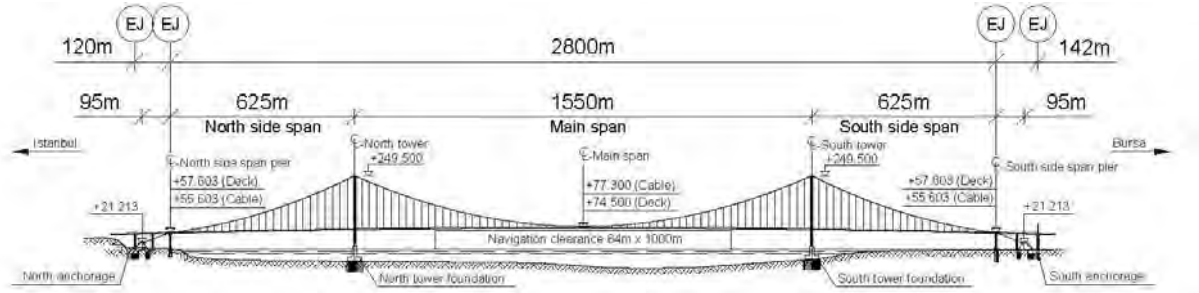

Fig. 1: General Arrangement of Bridge

The tower foundations have been designed as concrete caisson placed on gravel bed on improved soil at -40 m below sea level, which allow the tower foundation to move under strong earthquake not to transfer a huge seismic force into the bridge system. The soil below the caisson is improved by steel pile inclusion to a depth of about 25m below the sea bed providing the required bearing capacity and eliminating potential risk of liquefaction during earthquake.

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