Izmit Bay Suspension Bridge: Structural Concrete

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Summary

The Izmit Bay Suspension Bridge will be the vital road connection between North and South coasts of the Marmara Sea. The safe, robust, reliable and durable design have been set for this mega infrastrucuture project to fulfil a minimum 100-year service life requirement under the severe environmental condition. The present paper deals with the design philosopy of the structural concrete developed for the construction of substructure components to achieve this challenging service life requirement and presents the controls performed from the stage of laboratory scale works to the field execution assuring long-term servicebility of the bridge structure. In order to comply with the design requirements, the highest attention has been paid to chloride induced corrosion risk and its mitigation measures, controlling early age crack ocurrance and temperature limits.

Keywords: service life modelling; durability design; tower foundations; anchorages; piers; pile foundations; chloride induced corrosion; early-age cracking; temperature limits; slag cement.

1. Introduction

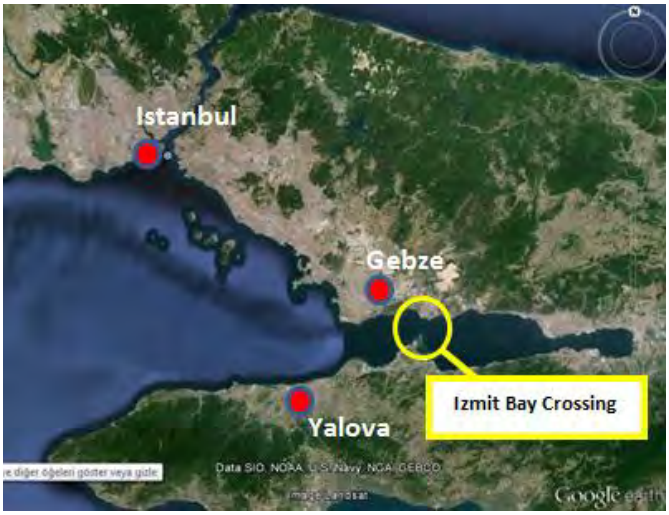

Fig.1: Location of the Izmit Bay Bridge Project

The Izmit Bay Suspension Bridge will be a 2,682 m long structure located at the eastern end of Marmara Sea with the main span of 1550 m making it the world's fourth longest suspension bridge at the completion of 2016. The aerial overview and location of the project is shown in Figure 1. The tower foundations (pre-fabricated caissons, steel/concrete composite shafts, plinths and tie beams) are built up with about 45,000m^3 structural concrete located in a severe marine environment where the depth of seabed is approximately 40m. The South and North anchor blocks and piers (side span and transition piers) including the pile foundation

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