

Incremental Launching Method for Cayirköy bridges

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1 Abstract

Çayirköy viaduct is part of the Northern Marmara motorway, an alternative road to link the western part of the country to Istanbul via the 3rd Bosphorus Bridge. The 750m long viaduct, made of two carriageways, cross a valley at more than 60m high. This paper gives an overview of the construction methods of this viaduct and focuses on its specificities. The major ones are earthquake loads to be considered during construction and the launching downhill with a -2.8% slope. The incremental launching method (ILM) has been completely rethought to be adapted to this viaduct. A system has been designed in order to block the deck during stop phases against earthquakes, but also to brake it during launching phases. Temporary structures associate to ILM will also be described in this paper, as one of the challenges was to adapt equipment from previous projects.

Keywords: ILM viaduct; Earthquake; downhill; post-tensioning; temporary structure.

2 Introduction

Çayirköy viaduct, located close to İzmit city, on the Marmara Sea is part of the Northern Marmara Motorway. It is a large project of 431 km of highways in the Istanbul region which aims to unblock the congested Istanbul area and to link the western part of the country to the city and its new airport (Figure 1).

The viaduct is in a high seismic region between two hills (two tunnels) and cross a valley at more than 60 m high (Figure 2). Considering access issues, the Incremental Launching method (ILM) solution has been used to erect the viaduct.



Figure 1 – Location of Çayirköy viaduct