



Design and construction of a flyover for the SAAR Interchange in Bahrain

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Abstract

The Shaikh Khalifa Bin Salman Highway (SKBSH) and Shaikh Isa Bin Salman Highway (SIBSH) are two of the most important arterial roads of the Kingdom of Bahrain. The project for the widening and improvement of the two highways included their junction, known as the SAAR Interchange, with an additional grade separated left turn ramp designed to link the southbound SKBSH onto the eastbound SIBSH. The ramp comprised a 515m long flyover built using the incremental launch method (ILM). This paper gives an overview of the detailed design and discusses the specific aspects of the construction method employed.

Keywords: flyover, incremental launching, box girder, non-concentric prestressing, launching geometry, Bahrain.

1 Introduction

The Shaikh Khalifa Bin Salman Highway (SKBSH) and Shaikh Isa Bin Salman Highway (SIBSH) are two of the most important arterial roads of the Kingdom of Bahrain. The project for the widening and improvement of the two highways included their junction, known as the SAAR Interchange, with an additional grade separated left turn ramp designed to link the southbound SKBSH onto the eastbound SIBSH. The design comprised a 515m long incrementally launched box girder, arranged over 14 spans, with main span of 40m. Detailed modelling and analysis of the 2.6m deep twin-cell post-tensioned box girder were used to understand its behaviour during the construction stages and permanent conditions. Top and bottom flange non-concentric prestressing tendons were used, enabling the removal of traditional second stage prestressing and simplifying construction. The design was carried out according to AASHTO LRFD, Bridge Design Specifications, 2012.

2 Project Team

Client	MINISTRY OF WORKS, MUNICIPALITIES AFFAIRS AND URBAN PLANNING, KINGDOM OF BAHRAIN
Client's Engineer	EUROGROUP
Contractor	ALGHANIM INTERNATIONAL AL FAHD CO JV
Specialist Sub-contractor	VSL
Designer	BG&E
Independent Checking Engineer	SILGA