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## Evolution of Incrementally Launched Bridge Decks in Turkey

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### ABSTRACT

Incremental Launching Method (ILM) has been seen as an efficient alternative by Contractors and Local Authorities considering many aspects like construction time, cost, and environmental effects. In last decade, Turkey had started several important highway projects including Northern Marmara Motorway, İzmir-İstanbul Highway and recent 1915 Çanakkale Bridge and Motorway Project around Marmara Sea. After a long hiatus, the application of the ILM method restarted in 2014, in the first phase of The Northern Marmara Motorway (NMM). Three viaducts were constructed according to ILM. After the success of this technique, in the second phase of NMM project two more viaducts were constructed according to ILM with some improvements in construction cycles and span lengths. In the recent Çanakkale Motorway project, four viaducts were constructed using the ILM method. In the motorway section, in order to reduce the seismic mass and provide an aesthetic appearance deck was designed as single cell box section with precast struts. This paper summarizes the evolution of post-tensioned concrete deck designs for ILM viaducts over the past ten years in Turkey.

**Keywords:** Incremental launching, post-tension, motorway bridge, bridge construction

### 1 INTRODUCTION

Incremental Launching Method (ILM) has been used all around the world since 1960s in different ways and has become an economic and realistic alternative for bridge construction. Even if the first application of ILM in Turkey was in the 80's, this bridge construction technique was not used again upon to 2014. After a long hiatus, ILM has been reintroduced in one of the major projects, of the last years named Northern Marmara Motorway (NMM). NMM is a new 115 km long alternative ring road around Istanbul. It includes the 3rd Bosphorus Bridge and 37 bridges spread over both the European and the Asian sides. In the initial design of the project, all the viaducts were designed using isostatic precast I-Girder decks. However, for three of these viaducts (V06, V14 and V17) having high piers, an ILM alternative design with 55m typical spans was proposed by Freyssinet, considering cost, material quantities, environmental effects and construction advantages.