



EARTHQUAKE RESISTANT POST-TENSIONED BRIDGES IN EGNATIA MOTORWAY

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Theodoros Tzaveas, born 1970, is a structural engineer currently working in the construction supervision team of Egnatia Odos AE. For the last 10 years he was working in the Bridges Section in the Design Department of the company, responsible for the review of several major bridges. He received his BSc in Civil & Structural Engineering from the University of Bradford, UK; MSc in Structural Engineering from the same university.

Kimon Paraschos, born 1977, is a consulting engineer working for the past 2 years in the construction supervision team of Egnatia Odos AE. Before that he was working in the family's construction enterprise as an assistant construction manager. Graduated from the University of Leeds awarded with a BEng(Hons) in Civil Engineering (1999), with specialty on Bridges Design. Later on he extended his education level by receiving an MSc in Bridge Engineering from the University of Surrey (2002).

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Summary

The Egnatia motorway running across northern Greece is an impressive project. Not only is it currently one of the most ambitious highway projects anywhere in the world, but also carving its way through Greece's mountainous backbone has brought many design and constructional challenges. In this paper the bridge inventory, the design philosophy from the feasibility stage to the detailed design, the procurement methods, and the technological advances implemented for earthquake resistant structures are presented. Case studies are also discussed stating the design details, which lead to more durable low maintenance structures, structural concepts in reference to demanding ground conditions and site-specific requirements.

Keywords: Egnatia Motorway; bridges; construction methods; seismic isolation.

1. Introduction

The project is on a scale hitherto unknown in Greece. What makes it one of the most interesting technical projects in Greece is the number of structures needed to carry it across the countryside; over 560 major bridges and minor structures made of concrete reach a total length of 40km. Construction methods include free cantilevering, incremental launching, advancing shoring and the conventional precast beam and slab construction. Due to difficult terrain morphology, complex ground conditions and site requirements, impressive concrete bridges have been designed and built. The company "EGNATIA ODOS AE" has total responsibility for the management of the project, administration of studies and construction as well as the maintenance, operation and exploitation of the road.

2. The Project and the Company

The 680km route, stretching from one side of the country to the other, is opening in stages as each section is completed. It is part of the Trans-European Road Network linking the port of Igoumenitsa on the Ionian coast, through Thessaloniki and passing along the Aegean sea coast, with Alexandroupoli and Kipi on the Greek-Turkish border in the east. Is one of the 14 priority projects of the European Union, being one of the few Greek highways to be designed and built to full up-to-date national and modern international specifications and meeting the requirements of the Trans-