



EGNATIA ODOS S.A.

SECTION LEFKOPETRA - KOULOURA / BRIDGES Γ1, Γ2

PROJECT BUDGET: 11.166.544 €
CONSTRUCTION: AKTOR S.A. (2003 - 2005)
STRUCTURAL DESIGN: KANON CONSULTING (2002)

Pictured are two similar adjacent bridges at section 'Leukopetra - Kouloura' of Egnatia Highway. Each one of bridges Γ1 and Γ2 consisted of two independent branches - one for each direction of traffic - and was curved in plan. The deck elevation had a variable longitudinal slope ranging between 3.3 and 5.5%. Transversely, the deck slope of the bridge Γ2 was constant over the entire length of the bridge and equal to 7.0%, while the slope of the bridge Γ1 varied between 3.0 and 5.0%.



Bridge Γ1:
The construction of the right branch has been completed - The left branch is under construction



Bridge Γ2: *The construction of the right branch has been completed - The left branch is under construction*



First construction phase of the deck segments

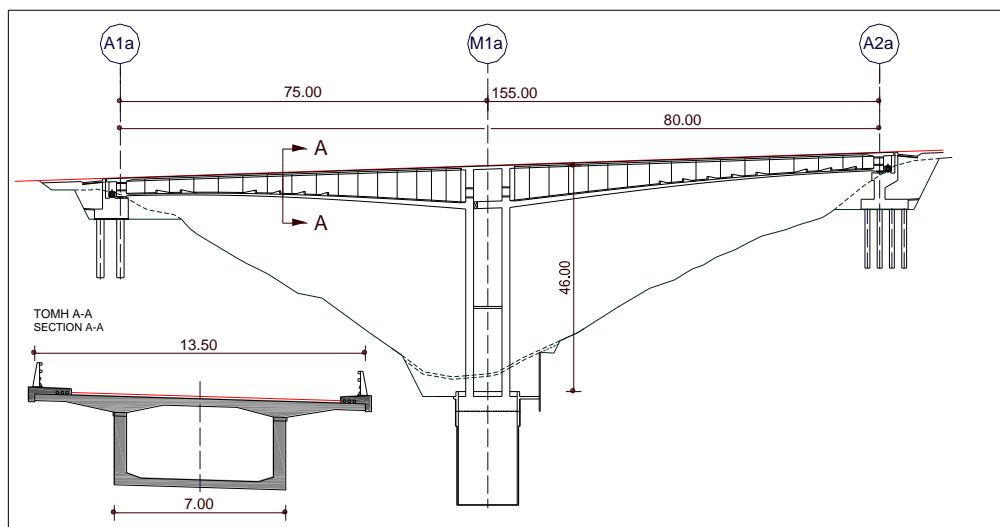
The total deck width of each branch was 14.0m: 11.0m for the road surface and 3.0m for the two sidewalks. In addition, the two bridge branches had a distance between them that ranged between approximately 5.0 and 15.0m.

The total length of bridge's Γ1 right branch was 119.0m (62.0+57.0), while its' left branch was 155.0m (75.0+80.0). The respective total length of bridge's Γ2 right branch was 150.0m (82.0+68.0), while its'

left branch was 166.0m (80.0+86.0). In addition, the maximum height from the deck surface to the foundation level was approximately 46.0m for bridge Γ 1, 55.0m for the left branch of bridge Γ 2, and 44.0m for the right branch. The abutment height varied between 3.0 and 8.9m and 3.0 to 9.96m for both bridges Γ 1 and Γ 2, respectively.



Construction of Bridge Γ 1 with the balanced cantilever method



Longitudinal section of the left branch and cross section of Bridge Γ 1

Constructed using the balanced cantilever method, the bridge deck was a single cell box girder with cantilevered slabs at each side. The deck was integrally connected to the single pier in the middle of the total length and supported by pot bearings at the abutments. In addition, it had a variable height ranging from 9.0m at the pier face to 3.0m at the abutments.

The middle piers had a box cross-section, with 7.0x9.0m dimensions up to a height of 18.27m for bridge Γ 1 and 22.59 for bridge Γ 2. Above that level and depending on the bridge's branch, the pier was transformed into a pair of parallel wall blades 7.0m long and 1.40 to 1.80m thick. In this way, the bridge had an increased strength box cross-section at the base of the pier, in addition to a more flexible configuration at the upper part of the pier.

The bridges were built on a site with treacherous terrain and poor quality soil. The pier foundation for both branches was a 12.0m diameter 17.0 to 22.0m deep concrete well, while the abutment foundation was made up of 1.50m diameter piles.