

🚩 **ERGOSE S.A.**

NEW DOUBLE HIGH SPEED RAILWAY LINE IN SECTION LIANOKLADI-DOMOKOS AT CHAINAGE 13+500 - 25+000 / RAILWAY BRIDGES ΣΓ12, ΣΓ13, ΣΓ14, ΣΓ15, ΣΓ16

PROJECT BUDGET: 21.400.000 €

DESIGN: KANON CONSULTING 80% - PREZA-PILITSIS-TOLIS & PARTNERS 20% (2006-2007)

CONSTRUCTION: AKTOR SA (2008 - 2011)

A series of five railway bridges was currently being constructed on section Lianokladi-Domokos of the new double high-speed railway line. A common characteristic of all of these bridges is the installation of a seismic isolation system due to the high seismicity of the area and the active seismic faults in the vicinity. The cross-section of all bridges is a single cell box 13.90m wide: 8.70m for the gravel bed and 5.20m for the two sidewalks. The middle piers have a hollow rectangular cross-section and their longitudinal sides are slanted for aesthetic reasons. Foundation of all piers and abutments is via a grid of Φ 1.20 piles.



Bridge ΣΓ12, constructed with incremental launching. Top picture: the completed structure



The seismic isolation system is comprised of spherical sliding bearings (FPS) and hydraulic viscous dampers in both directions arranged in all piers. The bridges are supported rigidly in the transverse direction at the abutments

Detail of superstructure bearing on a pier depicting the seismic isolation devices

The five-span railway bridge $\Sigma\Gamma 12$ has a total length of 207.0m (36.0+3x45.0+36.0). The bridge shape is a circular arc with a radius of 750m. Longitudinally it has 1.99% slope. The bridge is continuous, prestressed and is constructed in segments 22.50m each by incremental launching. Each part is prestressed and launched towards its' final position with the assistance of hydraulic jacks anchored to the abutment. In sum, nine segments 22.50m long and one segment 7.50m long comprise the bridge. A special steel nose structure 29.0m long is attached to the front segment for launching.

The railway bridge $\Sigma\Gamma 13$ is 105.0m long (32.50+40.0+32.50), has three spans and is constructed with conventional formwork. It bears the same characteristics in plan and elevation with $\Sigma\Gamma 12$.



Bridges $\Sigma\Gamma 14$ above and $\Sigma\Gamma 15$ below, constructed with incremental launching



The bridge $\Sigma\Gamma 16$ has fifteen spans with a total length of 657.0m (36.0+13x45.0+36.0m). The bridge is straight in plan - apart from the last 50m towards the abutment A5, where there is a diversion of the railway line. The bridge has a longitudinal slope of 1.99% and is being constructed using the traveling formwork method.



Bridge $\Sigma\Gamma 16$, 660m long constructed with travelling formwork