

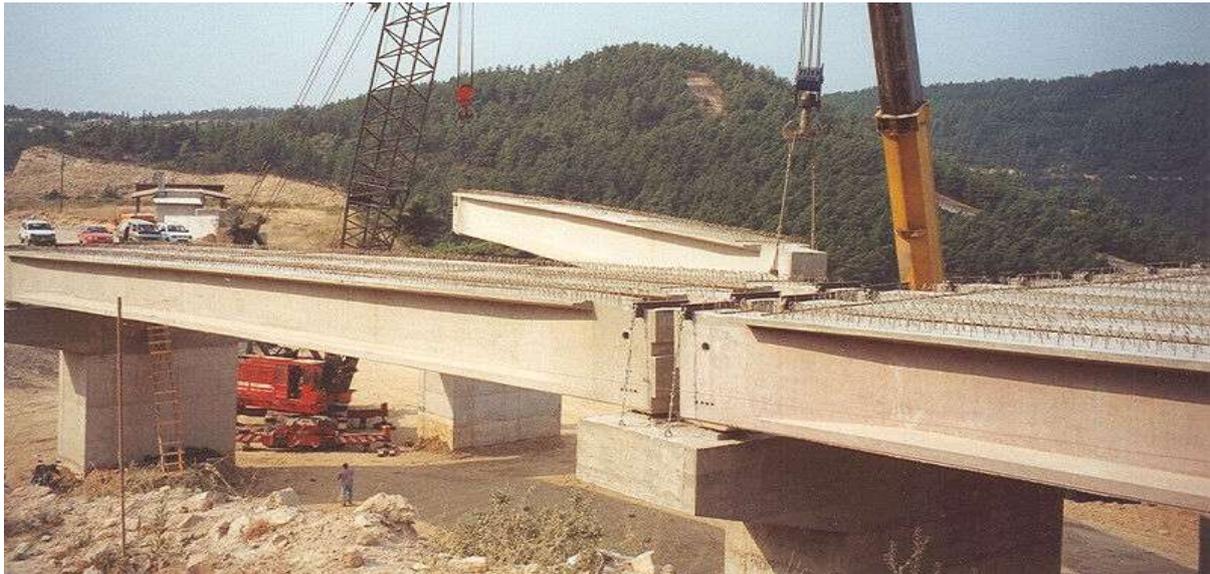


EGNATIA ODOS S.A

SECTION: KAVALA DEVIATION

PROJECT BUDGET: 16.650.000 €
CONSTRUCTION: T.E.B. S.A.
STRUCTURAL DESIGN: KANON CONSULTING (1997-1998)

This section was the last of three parts of the Egnatia Odos highway built for the deviation of the city of Kavala. It included a multitude of technical works, the most important of which were a Cut & Cover tunnel 300.0m long, three bridges 70.0 to 100.0m long, six underpasses, and fourteen small structures



Bridge 103.36m long (34.19+34.98+34.19) at chainage 1+100.0 constructed with precast beams

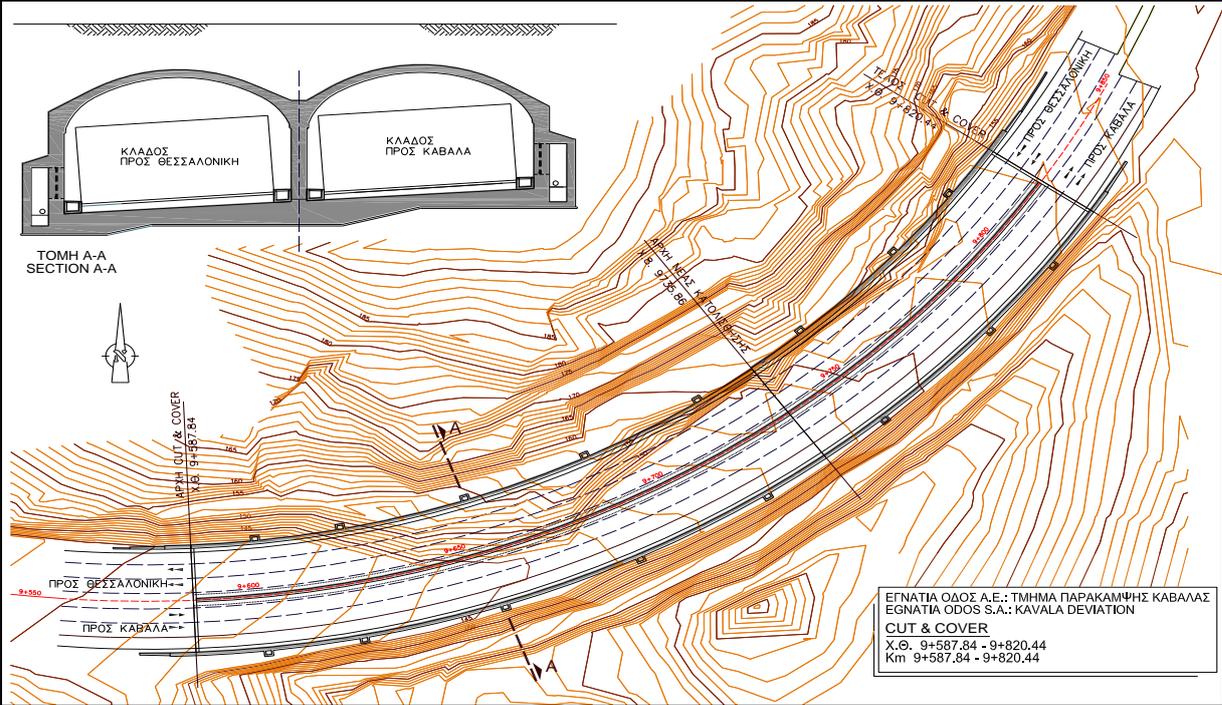
The Cut & Cover tunnel served both directions of traffic through a 2x14.0m wide tunnel. The tunnel's thickness was 50cm, and its' roof was curved due to the high overburden placed on top; the height of the overburden ranged between 3.0 and 6.0m. In addition, wall thickness measured at 90cm, while the thickness of the raft slab measured 1.0-1.50m. Expansion joints were constructed every 30.0m.



Egnatia Odos: Cut & Cover Tunnel at km 9+590 - 9+820 of Kavala Deviation

The tunnel waterproofing was externally conducted using a waterproofing membrane. In addition, we provisioned a drainage system at both sides of the tunnel.

A main part of the Cut & Cover tunnel was in an area of frequent landslides. Even during the construction phase, a partial landslide occurred - prompting an in-depth geotechnical study into how severe load cases would affect the tunnel's design. As such, we loaded the part of the tunnel vulnerable to landslides with up to six meters of overburden, along with side pressure corresponding to an 'at rest' condition. Apart from the main loading cases, accidental load cases were also considered, such as explosions within the tunnel and landslides caused by earthquakes or unusually high, hydrostatic pressure resulting from a clogged tunnel drainage system.



Cut & Cover Tunnel: Plan and cross-section



Cut & Cover Tunnel under construction