



Sika at Work

Agios Constantinos Tunnel, PATHE Motorway, Greece



Sika Hellas ABEE
15 Protomagias Str.
145 68 Kryoneri
Athens - Greece
Tel. + 30 210 81 60 600
Fax + 30 210 81 60 606
www.sika.gr

Our most current General Sales Conditions shall apply. Please consult the Product Data Sheet prior to any use and processing.



© Sika Hellas ABEE / BU Concrete / October 2010



Innovation & Consistency | since 1910



Innovation & Consistency | since 1910



Agios Constantinos Tunnel, PATHE Motorway

Owner: Greek Public Sector
Contractor: KV AKTOR - IMPREGILO SPA
Start / Completion of Project: 2004 / October 2007
Consultants: JV MOTT BERGER (North Part),
 JV SOGELER Ing-OMEK-LAHMEYER (South Part)

Project Description

The PATHE Motorway (Patra – Athens – Thessaloniki – Efzono) will be Greece's main motorway with a total length of 730 km, after its planned shortening by 40 km, due to the link of Maliakos. The PATHE Motorway will connect Patra, Thessaloniki and the borders of Greece and will form part of the Trans-European Motorway Networks.

The PATHE motorway is of crucial importance, as it crosses the largest part of the country, linking 6 prefectures, 11 counties, 14 cities, 9 ports and 6 airports, contributing decisively to the economical and social development of Greece.

One of the most important parts of PATHE is Maliakos Section. Due to the winding form of the road and its high risk, Maliakos section is characterized by a large percentage of high mortality road accidents. For this reason, one of the largest tunnels of PATHE Motorway was constructed in this part of the road, the tunnel of Agios Constantinos, with total length of 2x 2.6 km.

Project Demands

In the tunneling construction in general, shotcrete is one of the most important phases of the whole construction process. A very important demand in this project was the fastest possible completion of the tunnel, so as to reduce the number of accidents and casualties. In order to do so, the contractor demanded application of shotcrete with output >25 m³/h and at the same time, with low rebound, so as to ensure fast progression and low cost of the construction.

Total quantity of shotcrete: 80.000 m³
Total quantity of final lining concrete: 150.000 m³

During the construction of the road deck at the overhead part of the project, there was a demand for on-site production and placing of safety parapets from concrete (New Jersey), a concrete product category that sets special demands in terms of mixing and handling. The concrete mix for this type of products is semi-dry (Slump~ 0 cm), but the mix design has to be designed in such a way that its compaction could take place relatively easily, in order to produce a final product with increased watertightness, good final surface and high final strengths.

Total quantity of concrete for New Jerseys: 20.000 m³

The construction needs of the project were not limited to the concrete production, but expanded also to issues, regarding waterproofing, joint sealing and anchoring.

Sika Solution

With the use of the new generation **Sika® Viscocrete®** superplasticizers and the utilization of the high performance accelerator **Sigunit® L22E** for shotcrete, we were able to achieve output of almost 30 m³/h. At the same time, with the use of **Sika® Viscocrete®** superplasticizers for the production of the final lining, we achieved early strengths of 10 Mpa at 10-12 hrs and at the same time easy and fast pumping, namely characteristics that enabled faster demoulding and faster completion of the whole process. For the New Jersey safety parapets we used a special mix, which incorporated air entraining admixture. With Sika's help and the contractor's experience, the whole project was finally completed 6 months before the originally scheduled time!

Sika Products

Shotcrete & Concrete Final Lining Production

Product	Description	Quantities (tn)
Sigunit® L22E	Shotcrete accelerator	1.589
Sikament® Eco-3	New generation superplasticizer	310
Sikament® Eco-3300	New generation superplasticizer	150
Separol® AR	Demoulding agent	24

New Jersey safety parapets

Product	Description	Quantities (tn)
Sikament® 220	Superplasticizer	45
Sika Aer®	Air entrainer	1
Antisol® E	Curing compound	0.2

Joint Sealing

Product	Description	Quantities
Waterbar® 025L	PVC waterbar	945 m
Sikaflex® Construction	Polyurethane sealant	3755 sausages 600 ml
Sika® Primer 3	Primer for polyurethane sealant	80 lt

Anchoring

Product	Description	Quantities
Sika® Anchorfix-1	Fast curing anchoring adhesive	198 cartridges 330 ml

