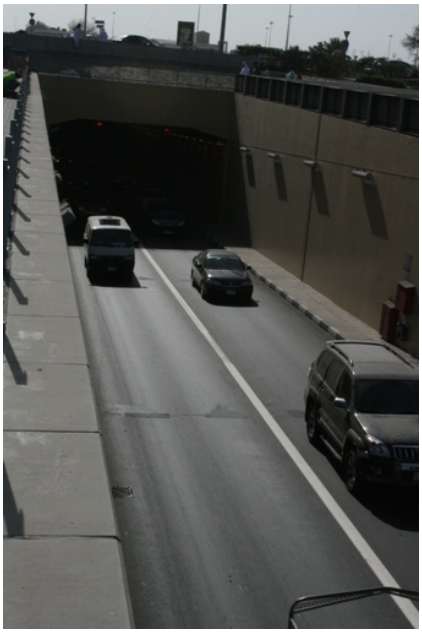
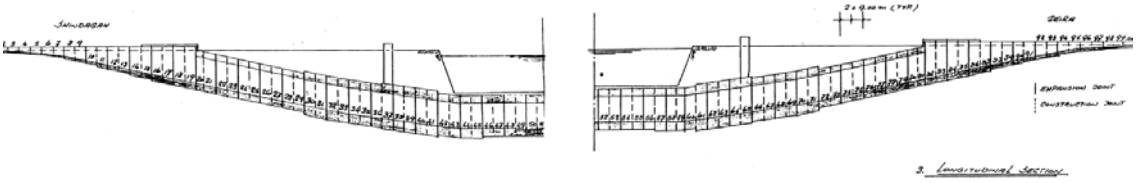
Tunnel Engineering Consultants

Project identification

Shindagha Tunnel - Structural integrity assessment

Type of project
Consultancy





Client
Dubai Road & Transport Authority

In co-operation with
n.a.

Project assignment
Determination of the remaining life expectancy through a structural integrity assessment

Country
United Arab Emirates

Location
Dubai

Project duration
2008

Project phase
Operational phase

Construction cost
n.a.
(excl. VAT)

Consultancy fee
EURO 85.000
(excl. VAT)

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Project description

The Shindagha tunnel runs underneath The Creek, downtown Dubai. The structure was built in-situ and dates from the late 1970's. It consists of a 550 m long closed tunnel with approximately 200 m long open-ramp approach sections at either side. The road tunnel accommodates 2 x 2 traffic lanes and has a 3rd bore, specifically for pedestrians.

Shortly after opening, the tunnel required already substantial repairs due to chloride induced deterioration of the concrete (reinforcement). In an attempt to stop the deterioration process, the tunnel was fully renovated in the late 1980's; amongst others reinforcement was replaced, an additional layer of high quality concrete was added to the inside of the tunnel as well as an airtight coating.

In the current situation, the Shindagha tunnel has an important role in the Dubai road network and the owner / operator needed assurance regarding the expected remaining life time of the tunnel. This information was, amongst others, needed to include possible replacement / expansion options in the development plans for the Dubai road network.

Scope of work

TEC was contracted by the tunnel operator to assess the remaining life expectancy of the tunnel and provide consultancy regarding improvements in the maintenance regime.

As part of their assignment, TEC reviewed the available as-built drawings and reports (mainly of the renovation works), as well as inspection and test reports that were prepared by various companies that were involved in the maintenance of the Shindagha tunnel since its renovations.
In addition, TEC made various numerical analyses to assess the robustness of the structure.
The results of the analyses were combined with the findings regarding the development of deterioration mechanisms in the structure over time. This allowed TEC to assess the expected remaining life-time of the structure on a 'global'-level, to the satisfaction of the Client.