

Project identification

Reparation Terreiro do Paco tunnel

Type of project

Bored tunnel



Client

Metropolitano de Lisboa, E.P.

In co-operation with

- MOPH - Ministério das Obras Públicas, Transportes e Habitação;
- Ferconsult;
- LNEC - Laboratório Nacional de Engenharia Civil

Project assignment

Reparation

Country

Portugal

Location

Lisbon

Project duration

2002-2007

Project phase

Completed

Construction cost

Appr. € 12.000.000
(excl. VAT)

Consultancy fee

Appr. € 1.400.000,=
(excl. VAT)

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Bored tunnel

Project description

The bored tunnel section is 350 m long and has a diameter of 9.5 m and is a part of the so-called Blue Line. The bored tunnel is running from the Poço de Marinha (Marinha shaft) to the existing station Santa Apolonia. In the alignment of the bored tunnel a new metro station (Estação do Terreiro do Paço) was planned. During the construction of the station a section of the tunnel collapsed and was filled with water. The tunnel section is located beneath the River Tagus.

Scope of work

TEC has advised in relation to inspection of the structural condition of the tunnel and of the dry pumping. After examination, statements were made on the residual strength and the expected durability of the tunnel. Subsequently, a draft was made to take constructive measures to sufficiently secure the use of the tunnel. As Lisbon is located in a major earthquake area seismic issues and measures are in the design involved. The contract has been extended to create a final design, specification of technical requirements on specification level and provide a monitoring plan based on a GIS for the implementation phase. In addition, the implementation guidance was provided. To reduce the movement of the tunnel by earthquakes which can occur, simultaneously with the reconstruction of the tunnel, the land in the area around the tunnel strengthened.

Early 2007's the constructive work in the new tunnel section was completed and a start was made on the construction of the railway in the tunnel and completion of the station. In late 2007, the line was taken into service.

The auxiliary structures built above ground for the tunnel, were in the course of 2008 removed and the quay structures have been rebuilt along the Tagus.