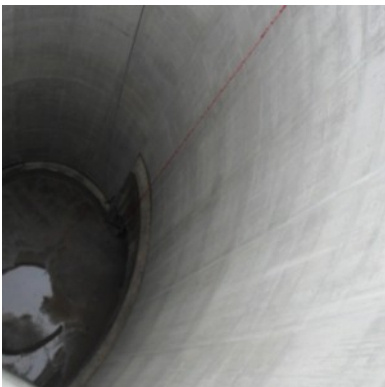
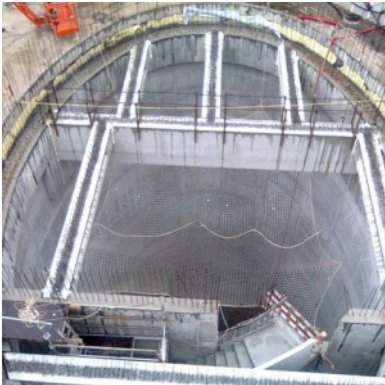


VENTILATION SHAFT - METROPOLITANO DE LISBOA (LISBON METRO COMPANY)

PRELIMINARY STUDY; DETAILED DESIGN; TECHNICAL ASSISTANCE TO THE CONSTRUCTION



Client: Metropolitano de Lisboa (Lisbon Metro Company) / Nova Estação, ACE / CJC Engenharia Ltda.

Location: Linha azul (blue line) – amadora este – reboleira and terminus

Design date: 2010 - 2010

Construction date: 2011 - 2011

Services: Preliminary study; Detailed Design; Technical Assistance to the Construction

Construction: Andrade Gutierrez EAA / Soares da Costa, S.A. / Construtora do Tâmega, S.A. / Teixeira Duarte, S.A.

Summary:

The rocky nature of the site leads to the adoption of an elliptical geometry. The ventilation shaft has a depth of 47 m and a groundwater level at 7 m below the surface.

The axes of the ellipse have 18.7m and 13.2m. The concrete slab is concave (invert).

The cover and emergency exit stairs were made with totally pre-fabricated components, eliminating the need for formwork. The singularities of this project are the connection between the gallery tunnel and the ventilation tunnel (due to high pressure) and the complexity of geometry and construction.

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