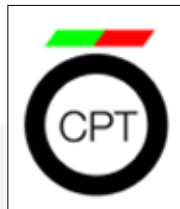


# Portugal



**Name:** Comissão Portuguesa de Túneis e do Espaço Subterrâneo (CPT) – Portuguese Tunnelling Association and Underground Space

**Type of Structure:** A Committee of Portuguese Geotechnical Society (SPG), non-profit, open association

**Number of Members:** 70 individual members, 8 corporate members

## ASSOCIATION ACTIVITIES DURING 2021 AND TO DATE

In 2020 a new CPT Board was appointed for the period 2020-2024. The current president is Dr. Raul Pistone, former vice president. The former president Ing. João Bilé Serra integrates into the board as past president.

There are seven working groups in operation: GT1-Registry of Tunnels; GT2: Contractual Practices; GT3- Health and Safety; GT4-BIM and Information Management; GT5- Innovation and Life cycle Management; GT6: Construction Methodologies: Conventional and Mechanized Methods; YM: Young Members.

In 2021, CPT organized online events on Shotcrete in Underground Works, and Design of Complex Geotechnical Works.

GT2 worked with ITA-WG3 and published ITA Report #25: ITA Contractual Framework Checklist for Subsurface Construction Contracts (2nd Edition/2020), which is the revision of the 2011 checklist.

The GT3 worked on the preparation and editing of the technical guide - "Safety and Health in the phases of Project and Construction of Underground Works" (to be published in 2022).

CPT participated in the ITA's WG through meetings and paper contributions. During 2020 the CPT participated in the WTC20 in Kuala Lumpur and in the 2020 ITA General Assembly as well as the 2021 Extraordinary General Assembly.

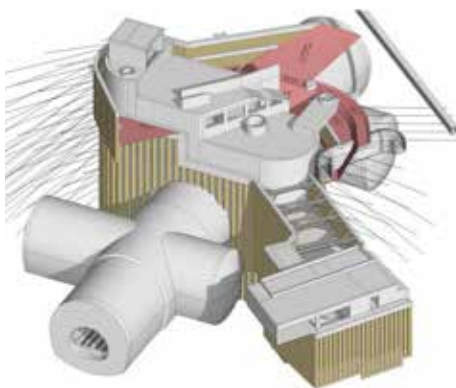
CPT also participated in the board of the European Forum EUTF and in the Iberoamerican Group on Underground Works.

## CURRENT TUNNELLING ACTIVITIES

### Lisbon Drainage Tunnels-Municipality of Lisbon

EPC contract for two drainage tunnels (4.5km and 1.3km long) with an i.d. of 5.5m, three shafts in urban areas of about 20m depth and 15m diameter.

### Reinforcement of the sewage and water system in Basin Q with Microtunneling



Santos Station 3D Model

Works concluded in March 2020. Lump Sum contract of one microtunneling pipeline with 1,6m diameter and 320m long, between two shafts (launch and reception) and several sewage box culverts.

### Lisbon Metro Extension (subway)

The new Metro extension (with a construction length of over 2000m) will connect the Yellow Line with the Green Line is expected to open in 2024. Launched in 2020, it was divided into four Design/ Construction EPC tenders, Lots 1 to 4. The works include two new stations at Estrela and Santos and two new ventilation shafts. Campo Grande and Cais do Sodré stations will also be rebuilt/adapted as part of the project, to become the new circular line "closing points". Once the extension is in service the Green Line will run as a circular route and will take over the section of the Yellow Line between Campo Grande and Rato, while the Yellow Line will run between Odivelas and Telheiras.

### Oporto Metro System - Pink Line

The construction contract was awarded in 2020 and notice to proceed was issued in March 2021. The new 3.1km Pink Line tunnel, constructed by the conventional method between Praça da Liberdade and Casa da Música, includes four Stations (Liberdade, Hospital de Santo António, Galiza and Boavista/Casa da Música) and

three ventilation shafts. The executions of the tunnels started during 2021. Piles for diaphragm walls are in progress at the new two stations.

### Oporto Metro System - Yellow Line

The construction contract was awarded in 2020 with notice to proceed issued in March 2021. The new 3km Yellow Line between Santo Ovídeo and Vila D'Este stations includes three stations (Manuel Leão, Hospital Santos Silva and Vila d'Este), a ventilation shaft, about 0.9km of tunnel between Manuel Leão and Hospital Santos Silva stations (bored by the conventional method), a viaduct and rollingstock maintenance, and parking installations. Construction of the tunnel and the shaft are in progress.

### Electrification and refurbishment of the Minho line ancient railway tunnels

### Rehabilitation of several others ancient rail tunnels

### Alto Tâmega Hydroelectric System – IBERDROLA.

The system comprises the following hydroelectric complexes:

#### Gouvães

- Dam height: 30m
- Installed power: 880MW
- Hydraulic circuit length: 7.6km
- Reservoir area and volume: 176 ha - 13.7hm<sup>3</sup>

#### Daivões

- Dam height: 77.5m
- Installed power: 118MW
- Hydraulic circuit length: 0.25km
- Reservoir area and volume: 340ha - 56.2hm<sup>3</sup>

#### Alto Tâmega

- Dam height: 106.5m
- Installed power: 160MW
- Hydraulic circuit length: Powerhouse at the dam foot
- Reservoir area and volume: 468ha - 132hm<sup>3</sup>

## STATISTICS

**1. Length or volume excavated - % mechanized / % conventional during 2020:** 3,000m, 100% Conventional

**2. Amount (USD or EUR) of tunnelling / underground space facilities awarded in 2020:** €400M