

# Argentina



**Name:** Asociación Argentina de Túneles y Espacios Subterráneos (AATES)

**Type of Structure:** non profit, open association

**Number of Members:** 57 affiliate members, 7 corporate members

## ASSOCIATION ACTIVITIES DURING 2020 AND TO DATE

October 28th – 29th saw the Tunnelling Congress held named “Progress of the Construction of Tunnels in the Region”, with experts taking part from different countries in Latin America, and Mr. Nasri Munfah, as a representative of the ITACET Foundation. A training lecture called “Innovation in Conventional Tunnel Construction” was developed.

Two online training courses, each consisting of four classes, were developed for the Argentine Construction Chamber, dealing with the subjects “Construction Methodologies employed for the construction of tunnels and shafts in the metropolitan area of Buenos Aires” and “Tunnels in urban environment”.

## CURRENT TUNNELLING ACTIVITIES Sarmiento Railway Line – Buenos Aires

Replacement of the “Sarmiento” Railway Line, running from the Western Head Station in Buenos Aires (Station Once) to Station Castelar, located approx. 22km away, via a double track tunnel, mainly excavated with a 12m diameter EPBM, and a short NATM section, featuring nine stations, seven mined and two in cut & cover. By mid 2019 the first 7km of running tunnel excavated by EPBM was completed and the machine recovered in an open pit for maintenance.

Due to financing problems the Owner (Transport Ministry) decided to interrupt all construction works. Only limited works for the mined stations have been done. After the change of the National government at the end of 2019 and to the end of 2020, also marked by the quarantine, and without any new public infrastructure projects starting, due diligence on the project is now underway by the national government to allow a decision to be made on the resumption of the construction and its extent, functionality and scope.

## Sewer (Left Margin) Riachuelo River and Emissary – Buenos Aires

This project comprises the construction of a main sewer located parallel to the Riachuelo River, composed of two

sections: a 9.4km long upper section with a 3.2m i.d. excavated by EPBM, and a lower section of 5.1km with a 4.5m i.d. excavated using a slurry machine. The project features a treatment plant and an Emissary of 12km with 4.3m i.d. to be excavated into the La Plata River with an EPBM. Three contracts were awarded in 2015 (sewers, plant, emissary), which are all in construction. At the end of 2018 the construction of the treatment plant was stopped, due to the withdrawal of the contractor JV. This work was restarted at the end of 2019, after the appointment of a new contractor. At the end of 2019 the excavation of the emissary tunnel was concluded successfully, with construction of the raisers towards the riverbed carried out in 2020. The EPB shield machine used to excavate the upper sewer section completed its 9,400m, whilst the slurry machine finished the lower 5.1km long section. Secondary pipe jacking galleries of dia 800mm and 1,100mm are also fairly advanced, with a total excavated length of 12km, with only 0.5km remaining.

## Underground water main “Río Subterráneo Sur” – Buenos Aires

This project was designed to provide a new potable water distribution main, fed by the Grl. Belgrano water purification system in Bernal, to the southern area of Buenos Aires, feeding a population of 2.5M people. It consists of a 23km long underground river and 2 large pumping plants, tendered for construction by the water company AYSA in 2 contracts. A contractor has been selected for the first section (Lot 1) of 13.5 km, 3,9 m inner dia and pumping plant No.1. The project has two EPBM machines,  $\varnothing$  4.66m, with a universal segment ring 6+0, 1.4m wide, and 0.25m thick. The first TBM is currently in operation, launched from the shaft in the General Belgrano plant and has excavated 1,175m to date. The second TBM will leave from an intermediate quad-lobed launch shaft to complete the tunnel to pumping plant No. 1 in Lomas de Zamora. The first contract is scheduled to be completed in August 2024. The second part of the project, (Lot 2) is still not awarded, but has been tendered.

## Two road tunnels on the National Highway 75 – Province of La Rioja

The project will bypass a road section aligned next to a creek, that features beautiful gardens and weekend houses, via the construction of 2 bidirectional road tunnels of 560m and 890m in length. The construction method is conventional tunnelling with a shotcrete primary lining and a prefabricated inner lining. The excavation of the shorter of both tunnels was completed at the of 2020. Meanwhile, the excavation of the second (longer) tunnel was initiated early 2021 and is scheduled to complete by end of 2022.

## Several sewer projects - Buenos Aires

Over the last few years, in the surrounding neighbourhoods of Buenos Aires, a large number of sewer projects were constructed for the Water Company AYSA. Some are still in progress using the pipe jacking method, with pipes made in concrete and GFRP. Typical diameters used range between 0.8 and 2.4m, with jacking sections in the range of 200 – 300m.

## FUTURE TUNNELLING ACTIVITIES Red de Expresos Regionales (RER)

In 2016, the present national government presented this very challenging project, featuring the underground inter-connection of the three main railway stations in Buenos Aires: West Station “Once”, South Station “Constitución” and North Station “Retiro”.

The project comprises 20km of new railway lines, approx. 85% underground, and the rest on viaducts. Besides the underground enlargement of the head stations, four new underground stations of a 280m<sup>2</sup> cross section will be constructed using the NATM method. During 2018 and 2019 all three viaducts were completed. All other underground works, however, were not started due to financing restrictions. During 2019 the Transport Ministry modified the original underground works, optimizing and downsizing it, to make it more economical, but also scalable for construction. Since then, no action regarding the implementation of this projects has been taken, basically due to a lack of financing.

## Bi-National Trans Andean Tunnels - Argentina - Chile

Agua Negra Tunnel: This 14km long twin-tube road tunnel is a project of priority for both countries. Its financing

was guaranteed by the IDB for the Argentine part, whereas Chile would finance its part without the support of the bank. After a pre-qualification process for contractors, launched in 2017, with a short list of companies published in 2018, no further action for the tender of the construction has been implemented. According to the latest developments, it seems that both countries still do not agree on a final technical solution for this project. The bi-national Authority EBITAN did advance the preparation of the tender documents, supported by the IDB. However, due to recent criticism of the project by the Chilean authorities, the entire process is now under review. At the end of 2020, no official decision from either side has been taken to advance the infrastructure project.

**Las Leñas Tunnel:** This approx. 11km long twin-tube road tunnel is officially recognized by both countries as the other relevant bi-national base tunnel. By the end of 2019 a new geological-engineering study was awarded by the Chilean Public Works Ministry to a consulting JV. Its aim

is to develop more detailed geological investigations, to create a better geological model, defining the final corridor for the tunnel, as well as its functional design. The study is well advanced and scheduled to finalize mid-2021.

**Tunnel Cristo Redentor – second tube (Widening of Tunnel Caracoles):** With the support of the IDB during 2019 the design of the second tube of the existing Cristo Redentor road tunnel of approx. 3.1km length was completed and the tender for construction developed. This second tube will be constructed as an enlargement of the existing single track “Caracoles” railway tunnel, which was part of the Transandean Railway from Buenos Aires to Valparaiso and which has been out of operation since 1978. The offers of contractor JVs were delivered in 2019 for the construction of the Argentine part of the tunnel, with an award to the winning contractor JV in early 2021. It is expected that works will be initiated in the first half of this year. As far as the Chilean part of this tunnel is concerned, the tender process has still not started.

### **Metro Buenos Aires and other underground projects in Buenos Aires**

A tender for the basic design of the new Metro Line “F”, a circumferential line which crosses most of the existing lines, was launched in 2019 and repeatedly delayed. To early 2021, this process has been neither cancelled nor confirmed.

During 2020, the so called “Colector Baja Costanera”, a sewer tunnel along the coast of the La Plata River, was tendered and awarded.

The third and last “rainwater relief tunnel” for Buenos Aires, called “Medrano River”, is scheduled for design, although it is yet to be tendered.

### **EDUCATION ON TUNNELLING IN THE COUNTRY**

Postgraduate Course of Design and Construction of Tunnels and Underground Works at the Engineering Faculty of the University of Buenos Aires, held for the second year in 2019, with a duration of 32 hours. Both lecturers, the engineers Ezequiel Zielonka and Jorge Laiun, are members of AATES.