

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 2019 AND TO DATE

In September, a 3 day Tunnelling Congress was held under the title "Technological innovation in Design, Construction and Operation of Tunnels", with the participation of the ITACET Foundation, developing a training session called "Tunnelling 4.0 : New technologies and automation".

An online webinar was developed for the Argentine Construction Chamber, dealing with "Safety Criteria and Design of Railway Stations" and a second for the Public Companies of the City of Buenos Aires, where Design and Construction Aspects of Mechanised Tunnelling and the Pipe Jacking method were addressed

CURRENT TUNNELLING ACTIVITIES

Extension of the Metro Buenos Aires - Line H

After opening the North section in 2018 to traffic, during 2109 the second workshop cavern at the South end of the Line was completed and put in operation. Station Saenz, further South, as well as the last section of running tunnel are still on hold.

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 section 9 station, 7 mined and 2 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 (the Transport Ministry) decided to interrupt construction works. Only limited works for the mined stations had been done. Until the end of 2019 and also after the change of the National government, no decision has been taken about the future of this project.

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

This project comprises the construction

of a main sewer located parallel to the Riachuelo River, on its left margin, composed of 2 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 presently 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. Also, at the end of 2019 the excavation of the emissary tunnel was concluded successfully. The EPBM used on the upper sewer section bored 6,660m from a total of 9,400m, whereas the slurry machine advanced approx. 2,850m of the lower 5.1km long section. Secondary pipe jacking galleries of dia 800mm and 1,100mm also are fairly advanced, with a total excavated length of 12km, with just 1.75km remaining.

Relief Tunnel of the Vega River – Buenos Aires

This project comprises the construction of a relief tunnel for the existing underground "Vega River", with a total length of 8.4km (6km of 5.3m i.d. using a 5.3m i.d. Herrenknecht EPBM, and the rest as a 2.4m i.d. pipe-jack using a Herrenknecht AVN 1600 slurry machine). Additionally, the project comprises other secondary galleries in NATM and various shafts. The project was awarded mid 2016 and was successfully completed in the second semester of 2019.

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 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. The first, awarded in September 2017, comprises an initial 14km long section of the 3.9m i.d. main and the pumping station N°1. The second part is still to be awarded, but was tendered. Two Terratec EPBMs were purchased for the first contract, with excavation planned to begin in early 2020. Meanwhile the launching shaft is under construction and is pretty well advanced. Each machine is scheduled to excavate half of the total length, some 7km each. The first contract is scheduled to be completed in April 2022.

2 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 top heading of the shorter tunnel was completed at the end of 2019, with the bench and invert excavation still in progress. The start of excavation of the second (longer) tunnel is scheduled for April 2020.

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. Typical diameters range between 0.8 -1.5m, with jacking sections in the range of 200 – 300m.

Highway "Paseo del Bajo" - Buenos Aires

This new highway runs alongside the coast and the La Plata River, northeast of Buenos Aires, closing the circle around the city. Its central 8km long section, between the "Puerto Madero" neighbourhood and the city downtown, is located within a trench which is covered at the points of frequent crossings, both for transversal roads and for the implementation of parks and pedestrian areas. The construction finished successfully at the end of 2019.

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 3 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, 4 new underground stations of a 280m² 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 initiated 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. Presently, there is no official decision about future activities on this project. It is expected that it will be delayed for a couple of years, since financing is currently extremely difficult.

Bi-National Trans Andean Tunnels – Argentina - Chile

Agua Negra Tunnel: This 14km long twin-tube Road Tunnel is the project of highest priority for both countries. Its financing would be provided by the IDB for the Argentine part, whereas Chile will finance its part without the support of this bank. A new pre-qualification process for contractors was launched in 2017, with the short list of companies published in 2018. According to the latest developments, it seems that neither

country agrees on a final technical solution for the project. The bi-national Authority EBITAN did advance the preparation of the tender documents process which was supported by the IDB. However, due to recent criticism of the project by the Chilean authorities, the entire process is back under review.

Corredor Bi-océánico del Aconcagua: This Private Initiative, featuring a railway connection between Mendoza (Argentina) and Los Andes (Chile) with a 52km long base tunnel, developed so far to Preliminary Design, was not further developed by the private initiator JV. This is basically related to the high level of geological investigation costs required.

Las Leñas Tunnel: This approx. 11km long twin-tube Road Tunnel is officially recognized by both countries as the second most important bi-national base tunnel. By the end of 2019 a new geological-engineering study for this project 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, to then define the final corridor for the tunnel, as well as its functional design. The awarded study is scheduled to end in approximately 22 months, including two field campaigns (in 2 summer periods).

Tunnel Cristo Redentor – second tube: With the support of the IDB the design of the second tube of the existing road tunnel Cristo Redentor 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 railway tunnel "Caracoles", which was part of the Transandean Railway from Buenos Aires to Valparaiso and has been out of operation since 1978. It is expected that at the beginning of 2020 a contractor will be selected and construction started.

Metro Buenos Aires and other underground projects in the city of Buenos Aires

For March 2020 the Buenos Aires city government is tendering the design of the new Metro Line "F", a circumferential line which crosses most of the existing lines. Additionally, two further projects would be tendered for design: The "Colector Baja Costanera", a sewer tunnel along the coast of the La Plata River; and a new relief tunnel for the existing rainwater drainage river "Medrano".

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.