

# ARGENTINA

## ACTIVITY REPORT 2014

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AATES is a Professional Association, according to private law regulations, created in 2011, with 46 affiliate members and 5 corporate members.

During 2014 the working group “Training and Education” organized together with the Argentine Construction Chamber a Tunnelling Course to be held in 2015.

A new Working Group “Shotcrete” was constituted end of 2014 and will start its activities early 2015



**PROJECTS UNDER CONSTRUCTION OR JUST TERMINATED**

**Extensions of the Buenos Aires Metro Lines, (see Figures below):**



Last set of stations inaugurated (yellow); Extensions constructed and ready to be opened in 2013, once the rolling stock does arrive (red) and Extensions still under construction (grey).

**2<sup>nd</sup> Extension of the Metro Line H, subdivided into 2 sections:**

North section, comprising 4 new stations currently under construction with the NATM method and featuring a single large cavern of approximately 18 m width (Córdoba, Sta Fe, Las Heras, Facultad de Derecho) and the associated 2 track single tube running tunnels. This section is scheduled to be opened to operation in 2016.

South Section, comprising 1 new station (Sáenz) and the associated running tunnel section, to be constructed with the use of diaphragm walls, as well as a train depot and a train workshop, both structures designed as mined caverns with the NATM Method. The train depot and workshop are under construction and shall be completed in 2016, meanwhile the remaining section (running tunnels and stations) are still not initiated.

Extension of the Metro Line D with a Parking and Workshop tunnel, to be constructed in C&C construction and construction works initiated in 2014 and under development.

Extension of Line E, from Plaza de Mayo to Retiro, featuring 3 c&c stations and 2 single track running tunnels, to be inaugurated in 2015.

**Purification Plant “Juan Manuel de Rosas” in the northern district of the Metropolitan area of the City of Buenos Aires; Owner is the public water company of Buenos Aires, AYSA:**

Comprises the construction of a purification plant on a 16 ha site, with a maximum capacity of 975 m<sup>3</sup>/day, 2 intake tunnels coming from the Lujan river and the Paraná de Las Palmas River, the first with an inner diameter of 0,9 m and a length of 5,1 km and the second with a inner diameter of 3,6 m and a length of 15 km, and finally, with 2 outlet tunnels, each one of 1,2 m inner diameter. The 15 km intake tunnel will be constructed by 2 EPB machines, meanwhile the other 3 tunnels are planned to be constructed with smaller pipe jacking machines. Currently, the work is under progress and well advanced (the excavation of the 15 km long intake tunnel with an EPB machine is completed), scheduled to be completed in the present year 2015.

**Sewage Treatment Plant “Planta Del Bicentenario” in the southern district of the Metropolitan area of the City of Buenos Aires; Owner is the public water company of Buenos Aires, AYSA:**

Comprises the construction of a sewage treatment and an emissary tunnel into the La Plata River of 7 km length and 4 m inner diameter, to be constructed with an EPB machine. The treatment plant is terminated, but the construction of the emissary was postponed, having been tendered and also awarded its construction end of 2014, so that the contract should start early 2015.

**Sewer tunnels contracted by the public water company of Buenos Aires, AYSA:** considering the so called “West Sewer of Tigre”, Sections 1A, 1B and 1C, to be built by the pipe jacking method, with an inner diameter of 1400 mm and a total length of 4.287 m, and the associated pumping station. Section I and II currently are under construction and are scheduled to be completed in 2015.

**2 Single Road Tunnels for bi-directional traffic on the National Road No. 75,** in the Province of La Rioja, with approximate lengths 600 and 900 m, as a part of the construction of a by-pass of the section La Rioja – Dique Los Sauces; Owner: National Highway Directorate - Branch of the Province of La Rioja. The construction did start in 2014 and tunnel excavation is scheduled to start mid of 2015.

**2 Single Road Tunnels for one way Bus traffic in the city of Buenos Aires, (Underground Crossing of the Avenida San Juan on the Axis Av. 9 de Julio),** approx. lengths 250 m each, as a part of the Metro-Bus System of this city, which has been initiated in 2013 and presently are well advanced, scheduled to be completed in the current year 2015. Owner: Municipality of the City of Buenos Aires.

**1 Single Road Tunnels for one way Bus traffic in the city of Buenos Aires, (At the Western end of the Highway 25 de Mayo),** approx. length 450 m, as a part of the Metro-Bus System of this city, to be initiated in 2015 and scheduled to be completed in the year 2016. Owner: Municipality of the City of Buenos Aires.

**6 Road Tunnels for bidirectional traffic, on the National Highway 150, San Juan;** lengths between 200 and 530 m, constructed with the conventional method, which were opened to traffic recently in October 2014.

PROJECTS IN STUDY OR IN TENDER STAGE

**Corredor Bioceánico – Túnel de Agua Negra, Argentina / Chile:**

As a part of this international road connection between Brazil – Argentina – Chile, the design of the Agua Negra Tunnel is in development during the last 5 years, financed by the Government of the Province of San Juan with the support of the National Government of Argentina. It considers an approximately 14 km long twin tube road tunnel operated in one way traffic mode, provided with a ventilation system designed to work in longitudinal mode. For the case of fire, 2 exhaust facilities are foreseen, one consisting of a vertical shaft of approximately 550 m depth and one of a tunnel of 4, 5 km length. The Tender Design was finished in the year 2014 and the Prequalification of Contractors is still under way. It is expected, that in May – June 2015 the tender documents are handed over to the prequalified contractors, to develop their offers and submit their offers late 2015.



*Bi-National Corridor associated to the Agua Negra Tunnel and its influence in the Region*

**Corredor Bioceánico del Aconcagua – Argentina / Chile:**

Corredor Bioceánico Aconcagua (CBA) is a private initiative whose goal is the construction of a state of the art and high load capacity railway network that will establish a new level of physical and commercial integration between the Pacific

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Ocean and the Atlantic Ocean.

This project presented by Corporación America solves the Mercosur - Chile Axis' bottleneck with the construction of a 205km rail corridor that includes a 52Km base tunnel, which not only would be operational all year round, but also leads to highly significant savings in terms of costs and transit time. Such a system would operate with trains driven by electricity (generated by a hydroelectric dam established in the same area) which would allow the final phase of the project carry up 77 Million tons per year of all types of cargo in different combinations, even trucks with their drivers. This not only improves the crossing itself, but empowers the vast network of roads, rails and ports on both sides of the Andes.



CBA alignment

**Optimum Solution = Multimodal Rail System**  
Private initiative. Seven years of study / work (since June 2007)

- Electric Railway from Los Andes (Chile) to Lujan de Cuyo (Argentina) - 205 Km
- 52 kilometers **base tunnel**
- Operating 365 days a year. Avoid high mountains (climate and steep slopes).
- High load capacity (24 million tons / year 1st stage - 77 million tons / year total)
- Today more than 80% of the cargo between both sides of the southern cone travels by sea, given the low efficiency of terrestrial links

**Keystones of the project:**

- 100% Reliable in logistics: operational crossing 365 days a year

- Long term design: scalable three-stage project, following the demand.
- More efficient logistics: open system with unified gauge (1.676 m), creates a railway link between the Atlantic Ocean and the Pacific Ocean.
- Increased economic efficiency: smaller gradients, which means less time (savings starting at 70% and increasing) and lower energy consumption.
- Increased efficiency and regional competitiveness.

The mentioned base tunnel is designed as a twin single track tunnel system, including among other features 2 multifunctional stations designed to provide rescue possibilities for the passengers in the case of an emergency within the tunnel. According to the Preliminary Design so far developed for the purpose of tendering this project, this railway corridor would exhibit a maximum transport capacity of 77 millions of tons per year, once the proposed railway corridor would be fully operable with a continuous double track line and a number of logistic freight distribution centers in both countries. The final decision / approval of the project is expected to be given by the present government of the President Bachelet, allowing the Binational Entity the start of the tender process.

**Sarmiento Railway Tunnel in the city of Buenos Aires:**

This project consists of the replacement of the present Railway Line "Sarmiento", running from the Western Head Station of the city of Buenos Aires until the end station of the metropolitan area, located at a distance of approximately 32 km, by a completely new underground construction, which is based on a double track 12 m inner diameter tunnel, to be excavated with a EPB shield machine. This project was awarded to a joint venture of contactors coming from Italy, Brazil, Spain and Argentina, which developed a general design of the complete project and a part of the detail design of the

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the first phase of 3 construction phases. The mentioned 1<sup>st</sup> phase involves 16,67 km of line, with 12,2 km to be constructed in mined construction, and 8 underground stations, most of them to be constructed with the c&c method. In the year 2012 the construction works did start, basically in terms of preparation of all necessary works for the launching of the excavation of the EPB machine, which was purchased from the manufacturer Herrenknecht. Since this machine is not a new one, it was refurbished by the own manufacturer at the construction site. However, before the tunnel excavation could start, a negotiation period between the Owner and the Contractor JV was initiated, in order to re-evaluate the financing source and conditions for the construction. The result of this process was the restructuration of the construction JV and a change in the financing source, which now would be the National Development Bank of Brazil, BNDES. The contractor meanwhile developed a new alternative of stations in mined construction, which apparently will be approved by the Owner. According to the latest information, the construction would not be initiated in the present year 2015.

### **Sustainable Development Plan of the Matanza – Riachuelo Basin, city of Buenos Aires, including the sewer “Colector Margen Izquierda, Desvío Colector Baja Costanera y Obras Complementarias”, a Treatment Plant and an emissary “Emisario Planta Riachuelo”:**

This project comprises the construction of one main sewer, which will be located parallel to the Riachuelo River, on its left margin, in order to collect basically the sewage water coming from the industrial plants located alongside of this river. This sewer will have a length of approx. 10 km and an inner diameter of 2,9 m, to be built with a pipe jacking system and an EPB machine. Additionally, a second sewer is considered, coming from the West, which will have an inner diameter of 4,5 m, a length of 5,4 km, to be built with an EPB

machine. Finally, the emissary is designed to be approximately 10,5 km long, having an inner diameter of 4,1 m and to be built with a EPB machine. The tender process for construction and site inspection of 3 contracts (emissary, treatment plant and sewer) is finished and the construction JV's and Site Inspection contracts awarded. Presently, the detail design phase is under development and it is envisaged that in 2015 the construction will start.

### **Túnel Las Leñas, Province of Mendoza (Argentina) and IV<sup>th</sup> Region (Chile):**

15 years after the development of a feasibility study and preliminary design of the so called “Las Leñas Road Tunnel”, crossing the Andes Range with a length of approx. 11 km at the South of the Mendoza Province, in Argentina, an update of the existing feasibility study has been tendered and awarded in 2013, both in Argentina and Chile, being the services presently in execution until approximately April 2015. Both countries decided to subdivide the project in two parts, which are independently developed in each country. The scope of the Argentine part of the project encompasses the approximately 74 km long access road until the tunnel portal, meanwhile the Chilean part comprises not only the Western access road to the tunnel, but also the tunnel itself. Both access roads have to be developed on a tender design level, meanwhile for the tunnel only a general conceptual design is requested. Besides, also a detailed geological – hydrogeological mapping along the tunnel corridor is included as a part of the Chilean tender.

### **Relief Tunnels for the existing Medrano and Vega tunnels for rain water collection, located in the city of Buenos Aires, North of the Maldonado Basin:**

Comprises the construction of 2 EPB relief tunnels for both existing tunnels, which lengths are of 5,18 and 8,4 km respectively for the Medrano and Vega Basin, with an

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excavation diameter of 7,8 m. On the following illustration the basins and alignment of all relief tunnels (Maldonado, Medrano & Vega) can be seen. Currently, the tender process for the first of these relief tunnels, the Vega Tunnel, was launched end of 2013, with the expectation of start of construction after mid of 2014. The Prequalification process for the consulting companies applying for the Site Inspection is under progress.

### **Main Water Supply Tunnel “Río Subterráneo Sur”, together with 2 Pumping Stations:**

Comprises the construction of 2 sections of an approx. 4 m dia EPB tunnel, total length 24 km, for potable water supply to the Southern District (Lomas de Zamora and Esteban Echeverría), including 2 large pumping plants for the distribution of the potable water to the network. Presently the evaluation of the offers is still in process and it is expected that the award of the construction will be done in short time.