

Mexico



Name: Asociación Mexicana de Ingeniería de Túneles y Obras Subterráneas, A. C.

Type of Structure: Non profit, open association

ASSOCIATION ACTIVITIES DURING 2019 AND TO DATE

Between November 2018 and February 2019, the members of the 16th Executive Council have dedicated most of the work to important administrative, legal and accounting issues that were necessary to regulate. Some other activities in this period were:

- A complete restructuring and new design of our website.
- Scanning of the covers and indexes of all the books in our library, as well as the elaboration of a database with all the bibliographic records.
- Creation of the AMITOS Photo Archive.
- Sending to ITA the tender for the candidacy for the WTC 2022.
- Multiple academic meetings with the professors of the Master studies on tunneling and underground works and redesign of the academic programs.
- Advances in the book "Brief History of the Tunnels and their passage through Mexico"
- Announcement of the first tunneling photo contest AMITOS 2019.
- Preparation of the campaign for WTC 2022 to be presented in Naples in WTC 2019.
- Visit with the AMITOS young members group to the Compostela Tunnels in the state of Nayarit.
- Publication of magazine Obras Sbterráneas #23.

During the ITA general assembly 2019 in Naples, Mexico won the elections to host

the congress in Cancun.

Other activities during this period were:

- Participation in the Costa Rican Tunneling Congress 2019 (March 28th - 29th). Fermin Sánchez, president opened the ceremony on behalf of former ITA president Tarcisio Celestino.
- On March 12th, in the auditorium of the postgraduate division of the engineering faculty of the UNAM, AMITOS organized an informative session for students interested in our master's program.
- Held the Conference on sustainability and underground infrastructure during the oath taking of the new directive committee of the young member association of the Instituto Politécnico Nacional (IPN).
- Participation of AMITOS at the 45th General Assembly of ITA.
- Speech and presentation of the promotional video for WTC 2022 during the candidate's dinner in Naples.
- Participation of Mexico's representative during the ITA young member's meeting in Naples.
- Participation of AMITOS during the event of the 100 years of the Madrid metro with the lecture "Modern Design Techniques of sprayed concrete linings applied to Mexico City metro line 12".
- Creation of the AMITOS photographic archive.
- Participation during the Third Latin American Congress of Urban Railway Lines in Medellin Colombia (March 7th - 8th).

- Participation of AMITOS during the debates on the National Infrastructure Plan at the Chamber of Congressmen of Mexico's government.
- Publication of the magazine Obras Sbterráneas #24.

May to August.

- Lecture on Advanced Techniques for the design of fiber reinforced shotcrete linings, by Fermin Sánchez during the "Shotcrete Underground Santiago de Chile" congress.
- Working sessions with the Chilean Underground Space Technical Committee.
- Course on Underground Support Systems organized by AMITOS and DSI International on June 20th, 120 participates and 7 lecturers.
- Interview with Jesús Esteva Medina, Secretary of the Public Works of Mexico City's Government. The objective was to promote underground infrastructure as a sustainable solution for urban problems.
- Interview with Rodrigo Díaz, Vice Secretary of Mobility of Mexico's City Government, with the same objective.
- First course on design and construction of tunnels in soft ground with EPB technology, organized by the young member's group of AMITOS with five expert lecturers.
- Publication of magazine Obras Sbterráneas #25.

August to December.

- Participation of AMITOS in the Tunnel & Mining 2019 Congress in Lima Perú (October 22nd - 24th).
- Participation of Fermín Sánchez during the ExCo Meeting in Warsaw (September 14th and 15th).
- Presence at the XIV Seminar on Tunnels and Underground Works in Medellin, Colombia, where Fermin Sánchez presided over the opening ceremony and gave a lecture on geo-structural models for studying rock-shotcrete interaction.
- Conference on the Role and Relevance of underground projects in Santiago de Chile (September 23rd). The Lecturer was Francisco Schmith, Architect and Urban Planner from the Catholic University of Lovaina.
- AMITOS Workshop on Sustainable Underground Space Use, ITACUS-AMITOS (November 7th and 8th). This workshop aimed to analyze multiple environmental problems in the modern world and the way in which



underground works can contribute to improving the living conditions of the population as well as protecting and preserving the natural environment. The participants were Han Admiraal, Antonia Cornaro, Marilú Melo Zurita and others from Sweden, Colombia and Mexico.

- Prize ceremony of the first photography contest of AMITOS 2019 (November 8th).

CURRENT TUNNELLING ACTIVITIES

- Six road tunnels are being constructed at the Tepic Puerto Vallarta with lengths between 200 – 1000m; three of them are for 4 lanes with a span of up to 22m, the others will have three lanes.
- Three road tunnels at the Oaxaca Puerto Escondido highway of about 250m each, advanced to about 45%.
- Three road tunnels on the de Mitla-Tehuantepec highway of about 250m each with an advance of 30%.
- 4.06km of Metro Line 12 tunnel with three underground stations. Works started in 2017, with a current advance of 75% of the tunnelling works and 50% of the total construction of the line.
- 5.3km of TBM tunnelling were finished in 2019 for Line 3 of the Guadalajara City Metro System with a diameter of 11.55m.
- 4.7km twin tunnels excavated with 8.57m diameter TBMs for the railway tunnel in Mexico City, where finished in 2019. The total completion of the works is about 90%.
- 13km of 5m diameter TBM tunnelling for the sewage system in Mexico City.
- 115m long road tunnel at the Atizapán-Atacomulco highway in Estado de México.
- Finishing of 62km of the Emisor Oriente Tunnel.

FUTURE TUNNELLING ACTIVITIES

- Continuation of 134 road tunnel listed above; completion of the Line 12 Metro System; three 5m diameter tunnels with TBM.
- There is also a possibility of building a railway tunnel below the city of Merida y state of Yucatán.

EDUCATION ON TUNNELLING IN THE COUNTRY

Master studies on tunnelling and underground works, Faculty of Engineering, National University of México (UNAM), organized and coordinated by AMITOS and the Faculty. This master program is endorsed by ITA.

Finishing of 62km of the Emisor Oriente Tunnel



STATISTICS

1. Length or volume excavated - % mechanized/% conventional during 2019 In 2019 (conventional):

Conventional Tunnels	Length (m)	Advance %	Advance (m)
Mitla-Tehuantepec 1	170	100.00%	170
Mitla-Tehuantepec 2	94	0.00%	0
Mitla-Tehuantepec 3	173	0.00%	0
San Antonio	145	60.00%	87
San Sebastián	130	0.00%	0
Santa Martha	170	100.00%	170
El Paso del Jaguar	240	100.00%	240
Las Truchas	235	10.00%	23.5
El Puma	200	10.00%	20
Guamuchil	1080	90.00%	972
Los Bueyes	267	10.00%	26.7
Las Varas-Puerto Vallarta (3)	120	0.00%	0
Línea 12 del Metro	4060	10.00%	406
Atizapán-Atacomulco	115	10.00%	11.5
TOTAL	7199		2126.7

Mechanized Tunnels	Length (m)	Advance %	Advance (m)
Túnel Emisor Oriente	62000	1.62%	1006.88
Churubusco-Xochiaca	13000	20.00%	2600
TOTAL	6200		3606.88

2. List of tunnels completed:

Mitla-Tehuantepec 1, Santa Martha, El Paso del Jaguar, Túnel Emisor Oriente