

Colombia

ACTIVITY REPORT 2014

Colombian Tunneling Committee
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Comité Colombiano de Túneles is a Non-profit Organization created in 1986.

Members of the Colombian Tunneling Committee participated in the WTC 2015 in Brazil, as members of working group number 2 (Research) and number 3 (Contractual Practices).

Members of the Committee organized four conferences at the Escuela Colombiana de Ingenieros. The main topics included tunneling in rocks, failure mechanisms and tunnels for underground subway systems. These events included the presence of recognized experts such as ITA vice president Mr. Tarcisio Celestino and Gianfranco Perri.

Furthermore, The Committee organized a graduate course on tunnels in rock and soil, to be taught at the Escuela Colombiana de Ingenieros, including topics on design, construction, contractual aspects and risks. The course is expected to take place on June/July 2015. Experts have been invited to participate, including Tarcisio Celestino, to lecture on soft soil tunnels and shafts.



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Colombia is currently undergoing a massive program for the project organization, design and construction of a series of last generation highways (called fourth generation highways) which are intended to enhance the country's economy by reducing travel and transportation costs. These projects, which are going to be built within the next 10 years, include more than 125 km of tunnels (out of which approximately 96 km are more than 2 km long).

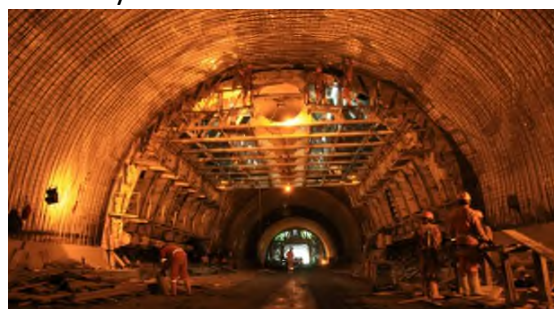
Furthermore, the growing electric industry has been working on the development of a series of projects which require underground works to be located on the geologically complex Andes mountain range. At present, three hydropower stations are being built (with installed power between 400 MW and 2400 MW) along with small hydropower stations (ranging from 20 MW to 60 MW installed capacity), including large tunnels and underground caverns. Approximately 28 km of tunnels of hydropower stations have been built recently, and around 34 km are currently under construction. Moreover, 4 deep underground caverns have been built in the last years and 5 are under construction.

Regarding urban infrastructure, an underground subway system is being considered to be built in the following years in Bogotá, as a response to the demanding situation in terms of public transportation in this city. In consequence, a first critical 24 km long subway line is under study, along with its second-phase expansion up to 76 km.

Finally, a series of sewer system projects are currently being developed, which use the latest trenchless technology systems and specifically micro-tunneling (Pipe jacking). The northern interceptor of the Medellín River, which is under construction as applies this technology, is around 8 km long and has diameters between 2.2 m and 2.4 m. Also underway is the Tunjuelo Bajo Interceptor in Bogotá, with an approximate length of 8.3 km and between 2.4 m and 2.75 m of diameter.

The pilot tunnel for the Tunnel of La Línea, an 8.6 km long milestone tunnel in Colombia, was completed on 2008, and the tunnels expected completion is on year 2015. Moreover, around 165 km of road for the Ruta del Sol project, which intends to enhance the transportation between the country's inner cities and the Atlantic Ocean, were built in 2013 involving 4 tunnels. Under construction also are 22 tunnels on the road between Buga and Buenaventura (with 8.8 km of total length) and 19 tunnels on the road between Bogotá and Villavicencio. Besides, most of the fourth-generation highways involving tunnels are currently under tender for the final design and construction; and should be beginning in works in the next couple of years.

One of the biggest hydropower projects in Colombia, involving underground works and tunnels, was completed in 2014: the Sogamoso Hydroelectric Project (it has begun operations successfully on 2015). Furthermore, El Quimbo Hydroelectric Project is another significant project being completed at the present time. Finally Ituango Hydroelectric Project, which includes underground tunnels and caverns, is currently under construction.



La Línea Tunnel. Taken from National Highway Institute (INVIAS) - <http://www.invias.gov.co>



Sogamoso Hydroelectric Project – Underground cavern. Taken from INGETEC.