



ASSOCIATION  
INTERNATIONALE DES TUNNELS  
ET DE L'ESPACE SOUTERRAIN

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# COLOMBIA

## ACTIVITY REPORT 2015



**CCCT**

**Comité Colombiano  
de Túneles**



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# Comité Colombiano de Túneles (Colombian Tunneling Committee)

Non-profit Organization  
("Asociación Sin Ánimo de Lucro" in Colombia)

Nine (9) members



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## Main activities:

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

### Andrés Marulanda:

Mr. Marulanda was actively involved in activities within work group 3 – Contractual Practices and attended WTC 2015. Moreover, Mr. Marulanda is member of a joint task Group (TG 10) currently undertaking an evaluation of FIDIC forms of contracts in order to produce a FIDIC Standard Form of Contract for Underground Construction Projects.

### Camilo Marulanda:

Mr. Marulanda was actively involved in activities within work group 2 – Research, specifically for site investigations, and attended WTC 2015.



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## WGs

The Colombian Tunneling Committee does not have domestic working groups

## Training:

The Committee organized a graduate course on tunnels in rock and soil, taught at the Escuela Colombiana de Ingenieros (Colombian School of Engineering), including topics on design, construction, contractual aspects and risks. The course took place from May 29 to August 8, 2015. Among the lecturers were several experts who were invited to participate, including Tarcisio Celestino, to lecture on soft soil tunnels and shafts.



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# Training: The Committee organized a graduate course on tunnels in rock and soil.



Part of the CCT organizing staff and lecturers.



One of the lectures of the course.



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**Training:** The Committee organized a graduate course on tunnels in rock and soil.



Visit to the underground works of Chivor Hydroelectric Project.



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## Main works for the year 2014-2015 in Colombia

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).

A tunnel worth mentioning is the Toyo Tunnel, which will be located on the State of Antioquia and will begin construction on early 2016. The highway project features a 9.7 km long tunnel (the longest and most expensive highway tunnel in Colombia) and 4.37 km of shorter tunnels.



El Toyo Tunnel. Taken from Antioquia State Government -  
<[https://www.youtube.com/watch?v=tA\\_I4CdxTs](https://www.youtube.com/watch?v=tA_I4CdxTs)>



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## Main works for the year 2014-2015 in Colombia



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

The pilot tunnel for the Tunnel of La Línea, an 8.6 km long milestone tunnel in Colombia, was completed in 2008, and the tunnel's expected completion and opening is expected to take place on November 2016.

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..





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## Main works for the year 2014-2015 in Colombia

The 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 the Ituango Hydroelectric Project is being built, featuring approximately 10 km of tunnels and 2400 MW of installed capacity.



Final Phase of the excavation of a tunnel on the replacement roads of Ituango Hydroelectric Project. Taken From ><http://www.elcolombiano.com>>



Ituango Hydroelectric Project - Underground cavern. Taken from <<https://medellin.gov.co/>>



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## Main works for the year 2014-2015 in Colombia

El Quimbo Hydroelectric Project, involving approximately 4 km of tunnels, has been completed recently

Likewise, small hydropower stations are also under development (ranging from 20 MW to 60 MW installed power), including large tunnels and underground caverns. Approximately 10 km of tunnels of hydropower stations are currently under construction. Moreover, 3 deep underground caverns are under construction.



El Quimbo Hydroelectric Project - Underground diversion tunnel. Taken from

<<http://www.panoramio.com/photo/63300782>>



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## Main works for the year 2014-2015 in Colombia



Bogota Subway. Taken from <<http://www.bogota.gov.co/>>

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 (to be excavated using EPB method), 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 Medellin 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



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## Activities planned for 2016

The Committee will organize the 2<sup>nd</sup> edition of the graduate course on tunnels in rock and soil, taught at the Escuela Colombiana de Ingenieros (Colombian School of Engineering).