

Customer case study

Túnel del Toyo

Project specifications

Project type: Road tunnel
Application: Shotcrete and Cast in Situ

Partners

Owner: National Roads Institute (INVIAS) and the Antioquia Government
Contractor: Antioquia El mar Consortium (Estyma, FCC Construcción, CASS Constructores).



A new 40km-long road in Colombia will pass through the mountains of western Antioquia, drastically cutting journey times and improving freight transportation across the region. Seven tunnel excavations will eventually connect the road through this difficult stretch, including the 9.74km Túnel del Toyo, currently the longest road tunnel in the Americas.

The challenge

The New Austrian Tunneling Method (NATM) had been chosen for advancing the Túnel del Toyo's excavation through highly complex ground conditions that included limestone and volcanic rock at one face, and sedimentary mudstones and sandstones at the other.

There are also two nearby faults that indicated severe to extreme squeezing, rock bursts, high geostatic pressures and water inflows all could be possible along the alignment. The contractors anticipated a variety of support types would be required to cope with these geological challenges.

The solution

On the Túnel del Toyo project, Dramix 3D 65/35 BG is used for the primary support and 5D6560BG fibre for the for sections of the permanent lining.

The team carried out different tests to determine the optimum dosage for the type of concrete and the requirements of each section of the project.

This successful approach helped contribute to the contractor completing tunnel excavation one year ahead of schedule.

