Customer case study

Westconnex tunnel

Project specifications

Project type: Road tunnels
Application: Permanent sprayed concrete linings

Partners

- Owner: Sydney Motoway Corporation
- Contractors: Acciona Samsung Bouygues JV & John Holland
- Concrete supplier: Hanson

In what is described as one of the most complex underground junctions ever built, WestConnex is a 33-kilometer (21 mi) predominantly underground motorway tunnel network in Sydney. Its walls are lined with two permanent sprayed layers: one is a fiber reinforced primary support lining, the other is a fiber reinforced concrete smoothing layer. Both are reinforced with Dramix® 4D steel fiber for optimal load-bearing capacity.

The challenge

Like many road tunnels in Australia, these are designed as a drained, permanent sprayed concrete lining tunnel.

This was especially relevant for this project, because of the low cover and its permeable nature and the proximity of the Wolli Creek.

The solution

A spray applied waterproofing membrane was added between the layers of concrete. Both the primary support lining and the final lining are reinforced with Dramix® 4D steel fibers, providing flexural tensile strength of 40 MPa. The primary lining is about 300 - 350mm thick and the secondary lining is 200-300 mm thick and contains polypropylene fibers for fire resistance.

By building the interchange mostly underground, the project will deliver new active transport options in Rozelle: up to 10 hectares of new public parkland, new pedestrian and cycling paths and sports fields.