

# Américo Vespucio Oriente (AVO) II

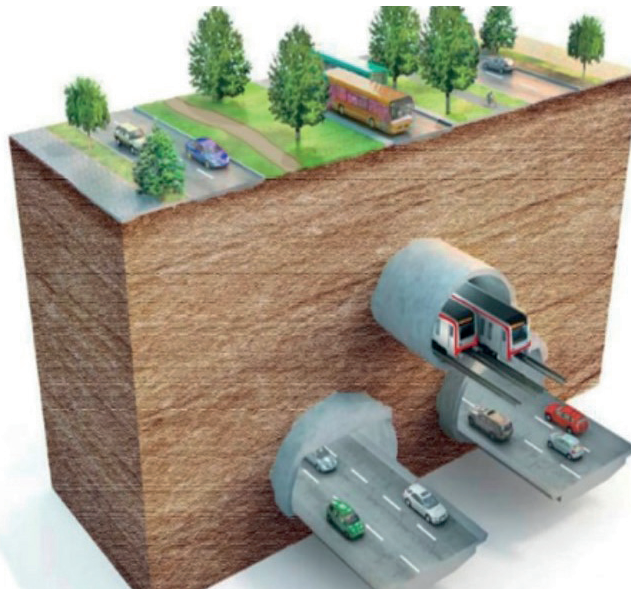


## Project specifications

Project type: Road tunnel  
Application: Temporary shotcrete

## Partners

Owner: Ministry of Public Works  
Contractor: Grupo Costanera/Gesvial  
Ready mix/shotcrete suppliers:  
Polpaico and Unicon  
Engineer: Subterra (Systra)



Santiago's Américo Vespucio ring road project will transform urban transportation in the city and region with a new expressway. The AVO II phase of the project, includes construction of two tunnels, each 5.2km long, at depths of 23-54m below the existing Metro line 4. Once completed, each tunnel, will house three lanes of traffic, connecting to two previous road projects, and closing the ring.

## The challenge

Initially planned for open cut construction, public feedback encouraged the Ministry to pursue mined tunnels that would be less disruptive and more environmentally friendly.

Further pursuing ways to enhance sustainability on the AVO II, the project team considered steel fiber reinforcement for the temporary shotcrete, even when local technical standards, did not yet exist in Chile.

## The solution

Working with Subterra, Bekaert oversaw testing of 3D and 4D fibers in situ and at local laboratories.

These results helped to facilitate the creation of the first two steel fiber standards in Chile. The AVO II project is using Bekaert 3D 65/35BG fibers for its temporary shotcrete.

In addition, the testing demonstrated a 35% reduction in CO<sup>2</sup> emissions when compared to traditional mesh reinforcement. That translates to a 12% cost savings as well.