

TOULOUSE SUBWAY – Interaction between lines A and B TOULOUSE - FRANCE

Monitoring of an existing station, metro tunnels, and buildings during the excavation of three new tunnels in the city centre of Toulouse

A new subway line (line B) is under construction, running across Toulouse from North to South.

Sol Data have been appointed to carry out the monitoring to the existing tunnels of line A, the 3 new tunnels constructed for line B, the new Jean Jaures metro station, the existing Jean Jaures station and the surrounding buildings, as well as subsurface soil behaviour.

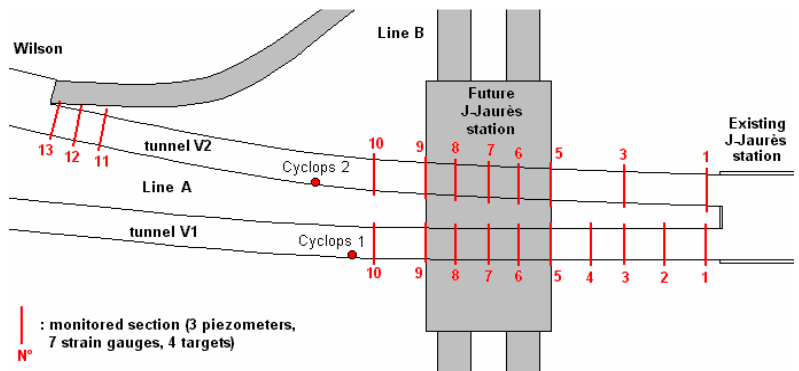
The new station will be excavated just above the existing line A (diaphragm walls are located one metre away from the live tunnels).

A comprehensive monitoring system, including 2 CYCLOPS and more than 200 different sensors (strain gauges, piezometers & crack meters), are connected to Sol Data's GEOSCOPE Web software package in real-time using a combined cable and radio network.

Boreholes have been installed with in-place inclinometers and extensometers to monitor the real time effects of the tunnel boring machine passing through the station profile, and the movements of the existing tunnels.

GEOCAM video cameras are also connected in real-time through the radio network to the engineer's office allowing remote optical inspections of the tunnel at any time during sensitive or critical phases of work.

Real-time deformation monitoring of the existing running tunnels are measured using the two CYCLOPS systems. Strain gauges also transmit changes to the concrete in real-time to the Engineer, allowing finite element calculation loops and observational retroactions during the construction process.



OWNER :	JOINT VENTURE BETWEEN CARRILLION, BESSAC & SBF.
PROJECT DURATION :	2002 - 2005
SCOPE OF WORKS :	
<ul style="list-style-type: none"> • 2 CYCLOPS with 120 targets. • 21 GEOCAM Videocameras • 63 piezometers, 148 strain gauges and 14 crackmeters. • 23 boreholes with in place inclinometers and real time extensometers. • Cable and radio monitoring network. • Real-time monitoring, alarms and reporting. 	