

Railway works

Shotcrete - Cutting - Sheet piles - Nails - Piles - Micropiles
Drilling - Civil works

BOURG - BELLEGARDE LINE - CONTRACT 1

AIN - FRANCE



Upgrade of tunnels, creation of an underpass, construction of a bridge and other civil engineering works to modernize a railway

As part of the modernization of the Bourg en Bresse / Bellegarde railway line, Soletanche Bachy was awarded contract no.1 works. This involved a 25 km section, with three major elements of work :

Racouze tunnel

The existing tunnel was 1,700m long and about 4.7m wide and needed to be modernized for the TGV high-speed train line. Work was scheduled as follows:

Phase 1 – Tunnel arch and piers:

- Construction of emergency recesses (refuges) for employees every 50m, by saw cutting at regular intervals and demolition by layer removal using a Brokk machine. Expanding mortar was required for the residual angles.

- The arch was sealed using strip drains and watertight sealers.

- Bringing the arch up to TGV standard by cutting: saw-cutting every 7 cm, demolition of layers of 10 to 50 cm using a hydraulic rock breaker.



Cutting operation

CLIENT:	RÉSEAU FERRÉ DE FRANCE
ENGINEER:	INEXIA
CONTRACTORS:	SOLETANCHE BACHY (MAIN CONTRACTOR), DG CONSTRUCTION, ROGER MARTIN
CONSTRUCTION PERIOD:	OCTOBER 2006 - JUNE 2008

MAIN WORKS QUANTITIES:

- 5,200m² of shotcrete (0.05 to 0.25m thickness)
- Cutting and hydraulic rock breaking : 600m²
- 6 catenary recesses and 37 emergency recesses refuges
- 3,000 two-metre long nails for anchoring the piers
- 980m of sheet piles (10 to 19m deep)
- 28 Starsol piles (diam 820mm)
- 600 micropiles (diam 150mm)

- Construction of recesses in the arch to accommodate the catenary suspension system by saw cutting, demolition using a hydraulic rock breaker and then shotcreting.

- Nails fitted every 2m to anchor the piers before the track was lowered.

Phase 2 - Lowering the track:

- Ballast removal
- Lowering the track in the limestone, using a planing machine
- Installation of precast reinforced concrete channels (acting as struts)
- A reinforced concrete slab was laid in the clay areas to withstand the uplift caused by swelling clay.



New Reyssouze bridge

Rail underpass

An underpass (460lm, 3 to 11m deep and 6 to 7m wide) was built under the RD1075 to enable the removal of the PN5 level crossing (work carried out in phases so as not to disrupt traffic flow). A temporary retaining wall solution using sheet piles and reinforced-concrete U-shaped units was chosen. The 1000m of sheet piles were installed using high frequency variable vibro-drivers.

Reyssouze bridge

The old stone bridge was not suitable for TGV traffic and was demolished and then rebuilt as a cased composite beam bridge founded on 28 Starsol piles.

Contract no.1 also comprised a number of other items, including the renovation of the S nissiat tunnel, soil-nailed walls, frame bridges, watertightness, acoustic screens, excavations, etc.



PN5 underpass

Shotcrete rig