

# Jet grouting

## RER C - ST BERNARD TRENCH (REGIONAL SUBURBAN UNDERGROUND NETWORK) QUAI D'AUSTERLITZ - PARIS - FRANCE



### Consolidating an existing structure with Jet grouting columns

For many years, the vertical vault support and slab of France's busiest railway line ("RER C" in its central underground section through Paris) have been damaged due to the structure's poor foundation soil.

Various past repair methods have not completely solved these problems. SNCF and its consultants decided to perform a general sub-structure review by treating the poor soil with Jet Grouting as far as infrastructure sub-faces.

Thus, a four-week long, work-site wide, trial area was used while the line was cut off completely during the Parisians' holiday season, in August 1996.

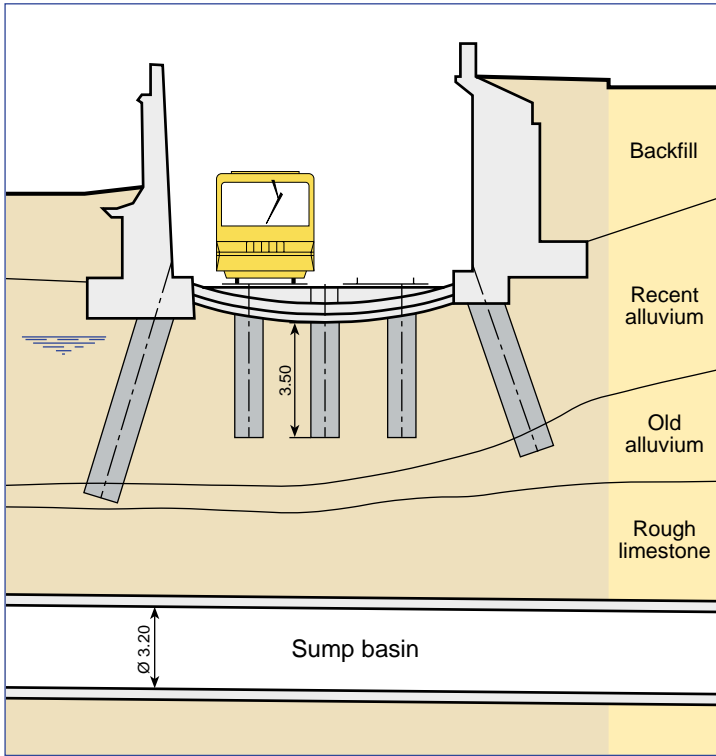


Overview of survey phase

GENERAL PARTNER & CLIENT:	SNCF (FRENCH RAILWAYS)
CONSULTING ENGINEER:	TERRASOL - SIMECSOL
WORKS PERFORMED BY:	SOLÉTANCHE BACHY
WORKS EXECUTED IN:	AUGUST 1996

#### WORKS PERFORMED (within the tunnel area):

- Preparing of ballast, with 200-mm PVC pipes
- Protecting ballast and sleepers with geotextile
- Installing an articulated drill onto a works train
- 180-mm diameter core sampling of vertical support and floor
- Producing 57 columns using various methods and parameters, as well as freeing some of them for inspection
- Inspecting (surveying, convergence measurements, laser alarms) before, during and after producing columns
- Core sampling of finished columns
- Permeability tests before and after treatment



Standard treatment section



Producing columns within tunnel area from a works train



Test columns



Double jet column during execution