

Underpass

Limited headroom diaphragm wall - Ground anchors - Micropiles

CARREFOUR ROMARIN

LA MADELEINE - NORTH - FRANCE



Sensitive geotechnical works for the Grand Boulevard roadway drop

The Romarin district in La Madeleine city has always been crossed by the “Grand Boulevard” (familiarily known as “the mini tunnels”), a major route through the Lille town (41,000 vehicles each day), doubled by a tramway route (32,000 passengers each day) linking Lille to Roubaix and Tourcoing.

As part of this district’s rapid development, we were asked by the Lille Métropole Communauté Urbaine to undertake works for lowering the Grand Boulevard, the first stage in the construction of the “Place du Romarin” which will link both banks of this district.

This drop in level consists in constructing two parallel diaphragm walls, each measuring 200 linear metres (at depths of between 9 and 16m, and measuring 600 and 800mm wide), a roof bearing on these walls and which will form the new square, 33 temporary ground anchors, underpass excavation and then “blind” excavation below the slab, and, finally building the road network.

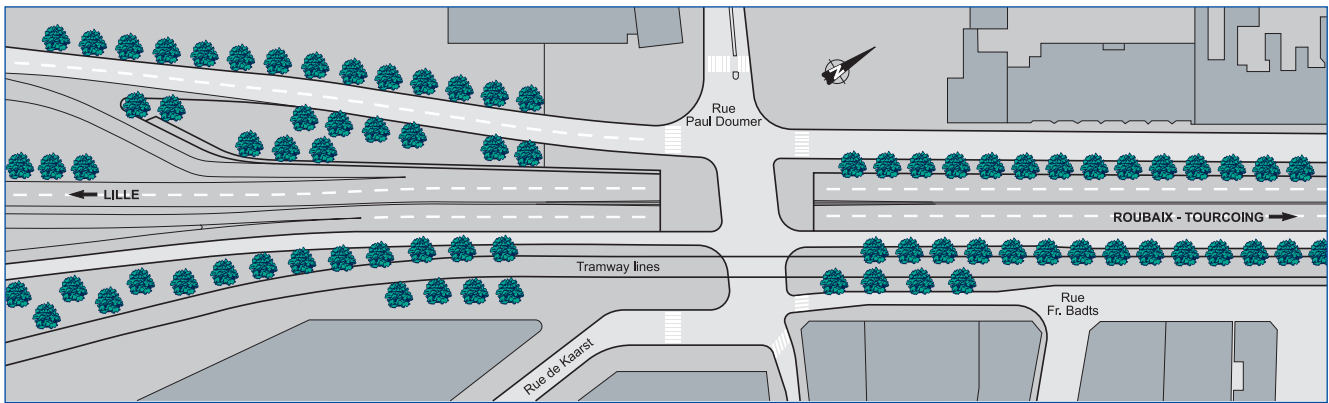


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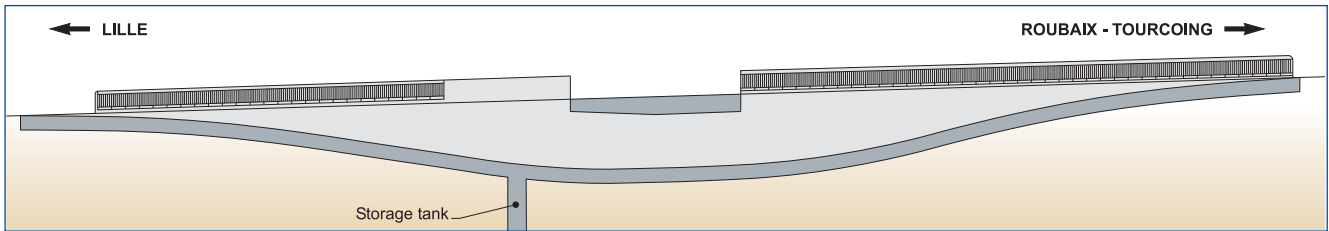
CLIENT AND SUPERVISING ENGINEER:	LILLE MÉTROPOLE COMMUNAUTÉ URBAINE (LMCU)
JOINT VENTURE:	NORPAC - SOLÉTANCHE BACHY - COLAS
TOTAL VALUE OF THE WORKS:	5,3 M. EUROS INCLUSIVE OF TAXES
SOLÉTANCHE BACHY COMPONENT:	2,2 M. EUROS INCLUSIVE OF TAXES
DURATION OF THE WORKS:	JUY 2006 - OCTOBER 2006

WORKS CARRIED OUT:

- 2 parallel diaphragm walls:
 - 0.60 and 0.80m wide
 - 9 to 16m deep
 - Total linear length: 424 linear metres
 - i.e. a total of 4,800m²
- Several diaphragm wall panels under limited headroom (5m)
- Micropiles used to underpin the pedestrian walkway
- Construction of 33 temporary ground anchors



Plan view



vertical section

Constraints and methods

The major constraint affecting this project was the timescale: 1 month for preparation and 4 months traffic closure of which 1 month was allocated to carrying out all diaphragm wall works. In order to meet this deadline, we mobilized up to 3 cable grabs and 3 handling cranes, in two shifts, on the boulevard. Between two and three concrete panels were cast every day.

Proximity to the tramway catenaries, the confined nature of the site and on-going simultaneous activities made site safety a priority. The project was completed without the occurrence of any accidents.

The pedestrian walkway straddling the Grand Boulevard was retained and remained operational throughout the project. Micropiles were used to underpin this walkway.



Constructing the diaphragm wall



Constructing the wall under limited headroom