

Diaphragm walls - Prefounded columns

Struts - Ground anchors

EDOUARD VII BLOCK

PARIS IX



Rehabilitation of Edouard VII block as business district

After demolition of nearly all the building fabric except for the street frontages dating from the 19th century, the block of buildings known as the Edouard IV block was rebuilt to create a new business district covering an area of nearly 1.5 hectare. The Olympia theatre lying at the heart of the project was demolished and rebuilt a few metres away.

Foundation works

- Perimeter diaphragm wall around the 19m-deep excavation for a five-level underground car park (including one level with 4m headroom for coaches). The diaphragm wall reaches down to a stratum of marl and stone with a calcareous facies.

Over three-quarters of the perimeter, the working headroom was limited to 6m by the struts shoring up the old outer building walls. For this reason, an HL 4000 Compact Hydrofraise, not more than 5m high, was used to dig this part of the diaphragm wall. Over the remaining 130m of the perimeter, the 0.82m-thick diaphragm wall was built with a standard HF 4000 Hydrofraise rig.



Renovation of Olympia district

OWNER:	SOCIÉTÉ GÉNÉRALE
ENGINEER:	SERETE CONSTRUCTION
CONTRACTOR:	SOLETANCHE BACHY
CONSTRUCTION PERIOD:	APRIL - DECEMBER 1996

MAIN WORKS QUANTITIES:

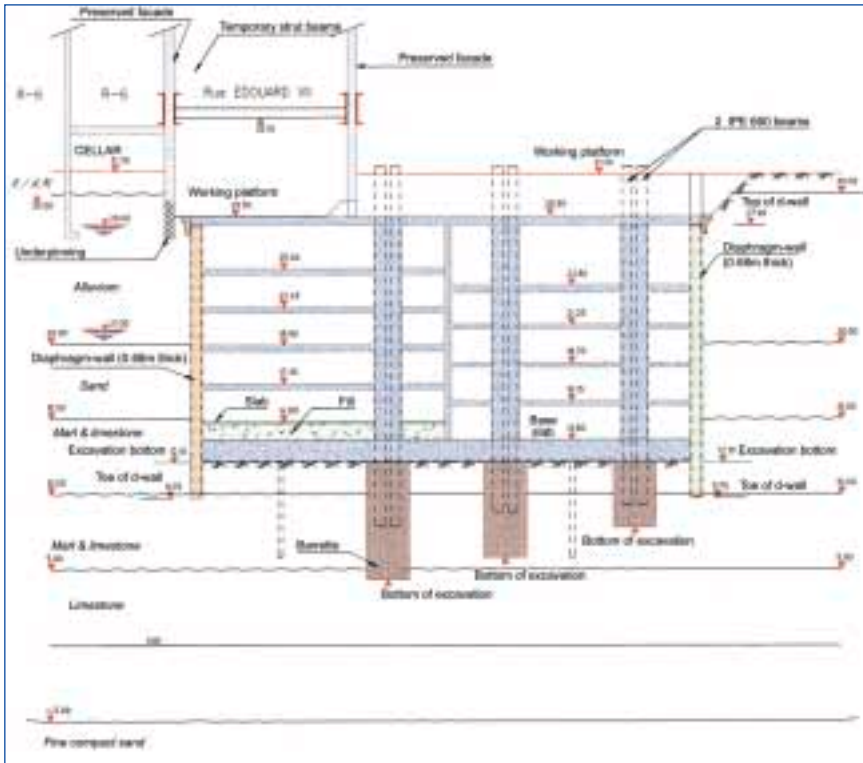
Diaphragm walls

Thickness 82cm, depth 21m, excavated area 2000 m²

Thickness 68cm, depth 21.5m, excavated area 5800 m²

Prefounded columns

56 units incorporated in 30m-deep strip piles



Typical section through project

The tolerance on diaphragm wall verticality is 1%. This was continuously monitored by a system of clinometers on the rig's guide frame.

- Fifty-six 'prefounded columns' up to 30m deep, each having two steel beams (each consisting of a pair of HEB 220 - 320 beams welded together). These permanent prefounded columns in the basement car park area carry the basement floors poured in

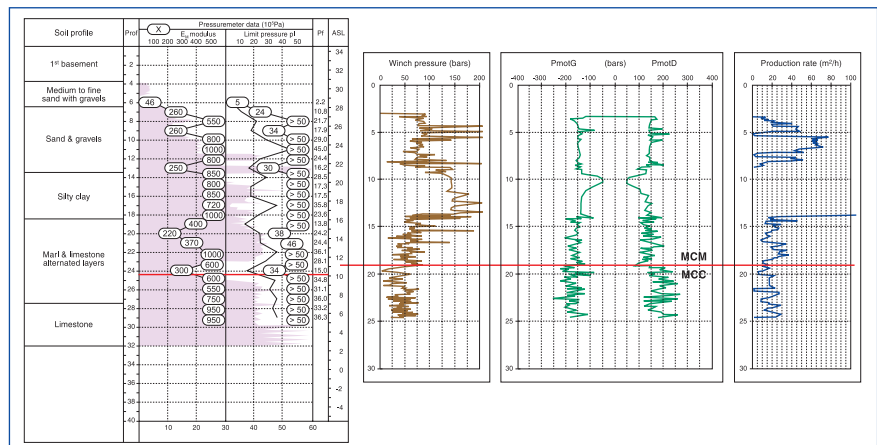


Struts to outer walls

situ during top-down excavation, and part of the loads from the superstructure, built concomitantly with the excavation work. The steel beams must be positioned to an accuracy of 0.5%.

The embedment of the strip piles in the marls and stone stratum was monitored through the records from the Enpafraise instruments, correlated with pressuremeter results.

The most heavily-loaded columns carry a load of 1530 tonnes. The paired steel beams are delivered



Enpafraise/pressuremeter correlation



HL 4000 Compact Hydrofraise building diaphragm wall

in 12m lengths to the works where they are made up to the required length. Works assembly ensures perfectly straight prefounded columns are cut and delivered to site in lengths up to 12 metres, already fitted with their assembly plates, spacers, raft connectors, handling eyes and (on the lower beams) the top part of the reinforcement cage.

The HEB beams in columns located in the area where headroom is limited to 6 metres are made of only 3.50m long elements, making them more difficult to install because some of them consist of seven lengths, bolted together as they are lowered into the trench.

- Struts and temporary ground anchors in the area of open excavation, where the new Olympia theatre is located.