

Bored Piles

Moulay El Hassan Bridge – Rabat Morocco



/ Spie fondations

spie batignolles

NEW MOULAY EL HASSAN BRIDGE – RABAT – PACKAGE NR. 2

MOROCCO –2008-2009

CLIENT : AGENCE POUR L'AMENAGEMENT DE LA VALLEE DU BOUREGREG
KINGDOM OF MOROCCO

Project carried out in JV with SOGEA MAROC-DODIN-FREYSSINET

Cost of the project

Total Cost (excl.VAT):	19 900 000 €
Cost of the Works performed by Spie Fondations (Amount w/o materials)	1 750 000 €

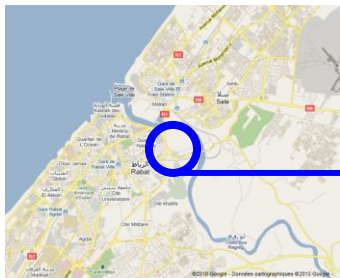
Works performed by Spie Fondations

- Bored piles under bentonite:
 - Diameter: 1 200 mm
 - 190 piles
 - Total Length: 5 600 m
 - Average length: 29,5 m (from 22,5 m to 34,5 m)
 - Sonic logging on all piles



Description of the project

Location: Rabat (Morocco)



Within the framework of the development in the Bouregreg valley near Rabat, the Kingdom of Morocco decided to build a new bridge.

In February 2008, the JV Sogea Maroc - Spie Fondations – Dodin – Freyssinet was awarded the package Nr. 2 corresponding to the building of the northern acces ramp to the bridge.

The northern acces ramp (package Nr. 2) comprises 23 piers on a total length of 507 m. Each pier is founded on 6 to 12 piles socketed in dense sand.



Geology

Following ground layers were found during excavation of bored piles :

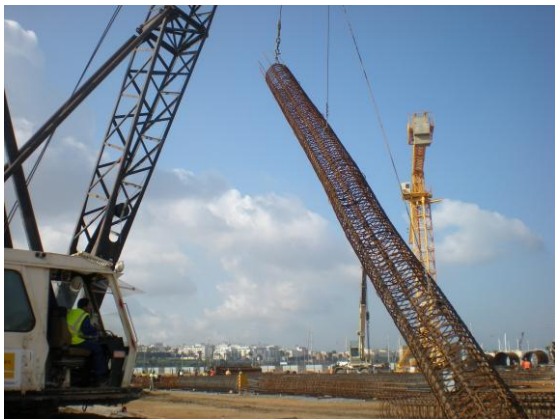
Made ground / loose sand (9 to 10 m)

Sand and Gravel

Water table is around 4 m below GL.

Sequence of Works

A temporary steel lining is installed in the first meters so as to insure the right pile position and to avoid collapse of the first top soil layers. The pile is then excavated with rotary equipment under a bentonite slurry down to the bottom of the pile.



After rotary excavation, the bentonite slurry is recycled and the steel reinforcement cage is lowered down into the pile. The tremie pipe is then installed in the middle of the pile shaft and recycling will continue through the tremie pipe waiting for pouring operations to start.

The concrete is poured inside the tremie pipe, inserted at least 2 meters below the concrete level. To follow the guidance regarding concrete temperature, pouring operations have been mainly carried out during night shifts.

After 7 days for the concrete to set, integrity sonic testing is carried out.

