



Expertise on the Jacquville bridge

Civil Engineering Structures

2013 - 2014



IVORY COAST -

Abidjan

Client

AGEROUTE

Miscellaneous

570m long, 15 spans of
38.10 m long each,
Rollable width: 7,5 m



Description of the project

The Jacquville bridge links Jacquville with the mainland across the Ebrié lagoon west of Abidjan (Ivory Coast). This structure has 16 supports (2 abutments, 14 piers), 13 of which are built in the lagoon. Works started in 2012 with the boring of large-diameter (1.20 m) piles, at depths down to more than 50 m in some cases.

Key features

- Expertise of the bridge foundations performed in 2012
- Advice on the reinforcement of the foundations system

Description of the mission

Investigations performed on the piles after construction showed bearing capacity defects on a large number of supports. After attempting to reinforce the deep foundations by grouting on three supports without reaching the target result, the owner (AGEROUTE) called upon TERRASOL for the following tasks:

- Detailed analysis of the geotechnical context of the supports concerned (P4, P14 and C16),
- Validation/proposal of a method for modification of the foundation system by addition of extra piles,
- Calculation of the new foundation system.

Addition of piles under the headers raised the problem of the proximity of the abandoned piles, which disturbed the friction and the tip behaviour of the piles, but also the question of the capacity of the new piles under horizontal loads in a disturbed environment. Several bracketing calculations were performed using the Fondprof, Taspie, Tasneg, Piecoef and Groupie modules of the FOXTA program in order to determine the behaviour of the foundation and validate the repair principle. These calculations enabled to proceed with the works on site, while globally maintaining the geometry of the planned headers.

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