



## Cable-stayed bridges, Oyala Micropiles foundations

2010 - 2011



**EQUATORIAL  
GUINEA**

**Client**

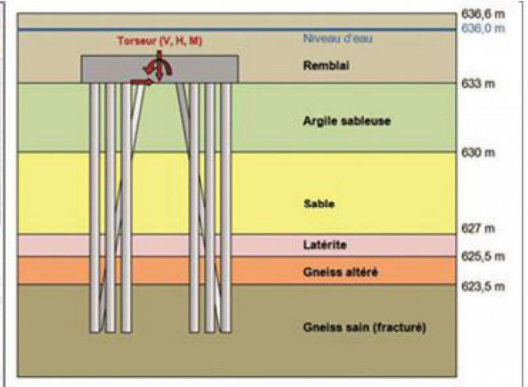
**VSL INTERNATIONAL**

**Owner**

République de Guinée  
Equatoriale

**Highlights**

Three-span cable-stayed  
bridge  
Foundations on micropiles



### The Project

TERRASOL was contracted for the foundation design studies in the context of the design and construction of two three-span cable-stayed bridges over the river Wele on the approaches to Oyala, in the centre of Equatorial Guinea. Bridge no. 1 is located upstream, about 1 km from bridge no. 2. The two bridges are identical, except for the vertical position.

The local geological context comprises:

- alluvia of the River Wele at the surface, with poor mechanical characteristics,
- a level formed by weathering of the crystalline substratum (lateritic profile),
- granitic or gneissic substratum, with an upper part of weathering reaching the sandy state.

### Our Services

The site access conditions and the low availability of laboratories and drilling rigs in the country rendered the soil-testing campaign difficult.

Evaluation of the mechanical characteristics was hampered by the disparity of the measured values. This led to a design approach based on calculation with ranges of values.

The design of the foundations of the two structures in the lateritic geological context resulted in the design of 44 micropiles for each pier and abutment foundation. The micropiles are 10 to 15 m long, and are anchored at least 4 m into the gneissic substratum. They work mainly by friction in the rock, as the contribution of the surface layers remains small.

About ten micropiles are inclined 15° to absorb the horizontal forces.



#### Key points of our mission

- Summary of geotechnical soil testing
- Design of micropiles

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