



Piling Works - Access Roads Senegambia Bridge



TERRATEST
G R O U P

Contractor: CORSAN AREZKI JV
Location: FARAFENNI - SOMA (THE GAMBIA)
Period of Execution: October 2018 - May 2019



INTRODUCTION

Transgambia Bridge is about 120 km from the river mouth at Bathurst, between the towns of Farafenni in the north and Soma in the south, close to the Farafenni ferry.

The objective of the project (bridge and accesses) is to facilitate overland traffic flow between the northern and southern parts of both The Gambia and Senegal, and by extension among the ECOWAS member states.

The Bridge is 942 meters (m) long between the axis of the abutments (15 span of lengths 41 m + 5x60 m + 80 m + 100 m + 80 m + 5x60 m + 41 m). It has a 12 m wide deck. The bridge has a straight alignment. The symmetrical longitudinal section has a shape of a parabola with a 4500m radius extended on each side by ramps with a 5% slope. The bridge goes from abutment C1 at the South on the Left Bank at Soma side, to the North abutment C16 on the Right Bank at Farafenni Side.

All the supports are founded on two or three rows of driven steel piles with a 1.20m or 1.50m diameter. The piles are between approximately 40m and 78m long.

The connection of the bridge accesses to the Transgambian road required the construction of a new road, to be based on a very compressible and sensitive soil.

The northern and southern banks are covered with a strip of mangrove some 2.1 km wide at each side.

A large strip at each side is flooded by the river with tides, with highest water level at +2.00 m. This means all the length of the access roads actual terrain was in flooded area at level +1.00 m, until reaching the existing road.

On the North bank (Farafenni side), a new road 601m long was built between the northern bridge abutment (C16) and the existing road. On the southern side (Soma), it was only be necessary to build 389m of road between the southern abutment (C1) and the existing road.

Access roads constitute a total length of 990m, with height (vertical distance between projected profile and existing ground) varying between 4.15 and 1.20 m.



2018 - 2019

Precast Piles



WORKS DESCRIPTION

Terratest set up a factory of precast piles close to the site to fabricate all the required concrete piles (TERRA 400, square section 400mmx400mm). ABB joints were imported from our warehouse in Spain, and the concrete was supplied by the Client.

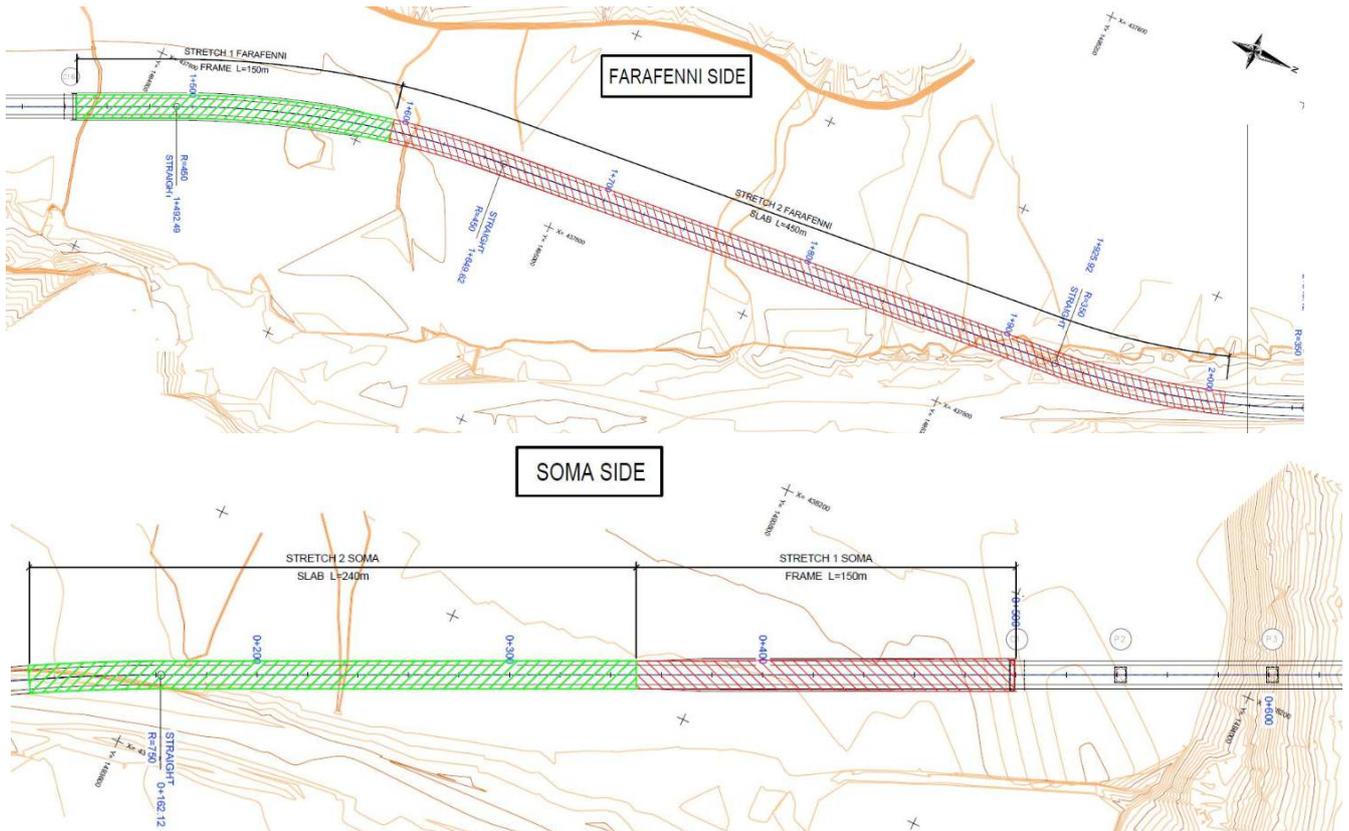
The structural solution, based on driven precast concrete piles, was considered the most advantageous, and also the only solution able to meet the criteria defined by the Client:

- Reduction of the duration of the access roads construction to avoid delaying the opening of the infrastructure. The access roads construction would end at the same time as the bridge construction. In other alternatives the delay ranged from 1 to 2 years due to consolidation and preloading times required.

- Elimination of long term settlements in the roads, which means the maintenance works and affection to traffic associated are avoided. In other alternatives relevant long-term settlements were expected during the first 10 years which would lead to maintenance works, and road closure during maintenance periods.

- Minimum level of uncertainty, as the feasibility of the solution didn't depend on the soil conditions found during construction. The solution was able to adapt to variable soil conditions that may be found during its construction.

The access roads have two very differentiated zones, one with constant fill height 1.20 m above existing ground level (road level +2.50 m GD) and the ramps with varying between 1.20 m and 4.40 m (road level up to +5.40 GD).



WORKS EXECUTED:

Fabrication: PRECAST PILES TERRA 400 38. 828 m
Driving: PRECAST PILES TERRA 400 36. 946 m
PDA Test 27 Nos

EQUIPMENT USED:

- Piling rig IMT220 - JUNTAN HAMMER 9 TON
- Piling rig HITACHI KH-180 - JUNTAN HAMMER 9 TON
- Crawler Crane LIEBHERR 845
- Crawler Crane LIEBHERR 883



