

Rufiji Permanent Bridge for JNHPP

Tanzania

Piling to 2 piers and 2 abutments for a new permanent bridge across the Rufiji River, Stiegler's Gorge.



The project

The bridge is part of the access road to the Julius Nyerere Hydro Power Project (JNHPP) currently being built. The underlying soil profile at each pier position revealed a combination of hard sandstone and softer mudstone rock layers, with the usual silty gravels, colluvium, clay, and boulders, common in river beds, thus piling was required to support the bridge piers and abutments.

The challenge

Due to the extremely hard sandstone layers, specialised rock drilling equipment was deployed to excavate the rock to depths of 29m. Due to the upper soil profile and the high water table, temporary steel casings were used to ensure the integrity of the pile shaft. The piles had to be cast underwater, at night, using a gravity fed tremie pipe system. The high slump, self-compacting concrete mix was transported to the pile positions using traditional ready-mix trucks.

The bridge site is located in a remote part of the country, two powerful Bauer BG28 piling rigs were mobilized to site by railway.

The solution

The pile design called for a total of 82 no. 1 200mm diameter temporary cased bored piles, 62 in the two piers and 20 piles in the abutments, installed in hard rock, between 12m and 29m deep, using rock augers, coring buckets and chisels. The piles were designed to carry a working load of 9,5 MN. Piles tested using Dynamic Load Test Method.

Project facts

Owner(s)

TANESCO (Tanzania Electric Supply Company Limited)

Keller business unit(s)

Keller East Africa

Main contractor(s)

The Arab Contractors/ Elsewedy Electric JV (ACEE JV)

Solutions

Heavy foundations

Markets

Infrastructure

Techniques

Bored piles - cased

Email address

info.za@keller.com