Black Rock Rail Siding

Hotazel, Northern Cape

Installation of 1 200mm diameter oscillator piles to a depth of 33m.

The project

Due to the expansion of the Black Rock Mining Operations, the railway axle loading capacity had to be increased to 26 ton.

Keller was involved with the bridge section over the Gamagara River. The bridge's total length is 54.4m and is supported by two abutments and two piers. The piers consisted of 6 no. piles and the abutments consisted of 11 no. piles. To gain access to the abutment, Keller installed temporary lateral support adjacent to the existing railway line.

The challenge

Working on a remote site with very little to no connectivity.

Very stiff medium dense silt from ground level to an average depth of 8m, as a result it was difficult to drive casings, and medium hard rock at 16m resulted in casing driving refusal.
There was a soft layer with a very high-water content between 20m to 22m resulting in a localized collapse.

Working on a live railway line transporting manganese ore.

The solution

Detailed pre-contract and day to day planning to ensure that material and other supplies did not affect operations of the site.

Use of tremmie pipes and casing to counter side collapse.

Traffic management plan with presence of flagman on the railway line, to warn the team when a train was approaching, to stop any lifting activities within the railway servitude.

Keller successfully installed 40 no. 1 200mm diameter oscillator piles to a maximum depth of 33m (all piles were tested using sonic logging tests).

Project facts

Owner(s)
Assmang (Pty)

Keller business unit(s)
Keller Geotechnics SA (Pty) Ltd.

Main contractor(s)
Makali Plant & Construction

Solutions
Heavy foundations

Markets
Power

Techniques
Bored piles

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