

Beira Coal Terminal - Stacker Rail & Splitter Bin and Quay 8

Construction of stacker and quay area for temporary coal terminal in Beira



Project Facts

Owner

Vale do Rio Doce

Client

Odebrecht

Consultant (Stacker Rail & Splitter Bin)

DHV

Consultant (Quay 8)

Analysis

Quantity (Stacker Rail & Splitter Bin)

298 No. CFA Piles

Quantity (Quay 8)

Shiploader

40 No. Tube Piles

Dolphins

8 No. Tube Piles

Period of time

March - October 2011

Due to the construction of a coal-handling preparation plant on an operational site in Moatize it was necessary to create the conditions to export the mineral out of the country. On the first phase of this project the mine's output would be transported about 600km by rail to a new maritime terminal in Port of Beira. Our Client was in charge of the construction management of the new Beira terminal.

There were two main areas with regards to the piling works: the foundations for the Stacker Rail and Splitter Bin and the foundations for the Quay 8, in turn divided into the ship loader beam and the ship dolphins.

For the Stacker Rail and Splitter Bin area the project involved the installation of 298 No. 800mm diameter CFA piles to a depth of 28m, reinforced with 24.8m steel cages. Before starting the installation of the working piles, it was necessary to carry out a test programme to define the best methodology to apply to the drilling, steel placing, grout logging and also to understand the soil characteristics.

The challenges encountered on this phase were numerous: the long and heavy reinforcement; the prohibition of the use of the man-cage, necessary to add and then remove a 7m flight extension with respect to each pile; and the difficulty in receiving a reliable and constant supply of ready-mix concrete. Despite all the challenges, Frankipile completed the piling at the end of June 2011. Pile integrity tests were done on almost every pile and good results were obtained.

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Quay 8

Product Description

Stacker Rail & Splitter Bin

298 No. CFA Piles
Pile Length: 27 - 30m
Pile Diameter: 800mm

Quay 8

Shiploader

40 No. Tube Piles
Pile Length: 13 - 36m
Pile Diameter: 600 & 900mm

Dolphins

8 No. Tube Piles
Pile Length: 35 - 42m
Pile Diameter: 1300mm

After completion of this work Frankipile moved the two piling cranes to Quay 8 area to install the tube piles for the shiploader foundations and dolphins. This work was completed in 3 months despite a host of challenges including casing supply delays due to the steel workers' strike in South Africa.

For the construction of ship dolphins, the installation of 8 No. Tube piles, 1300mm diameter, to depths of between 34.5m to 41.5m, was undertaken in the water and from the quay. The work was completed in 45 days and carried out simultaneously with the ship loader foundations. A platform for the access of the crane and a guide frame for the tubes had to be assembled. This assembly necessitated the constant presence of a safety boat which, due to its frequent failure to arrive, proved to be one of the numerous constraints on the work. Another constraint was huge tidal ranges - approximately 6m at times.

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