Sappi Saiccor - Project Vulindlela

KwaZulu-Natal, South Africa

Saiccor Mill has a capacity to produce approximately 800000 tons of elemental chlorine free dissolving pulp, per annum, mostly for the export market.

The project

Project Vulindlela is a 2.7 billion expansion project of Umkomaas Sappi Saiccor Mill to increase the plant capacity, decrease production costs by conducting maintenance on some parts of the old plant.

This project includes the installation of a new evaporator, recovery boiler and screening and washing plant, along with upgrades to the bleach plant and pulp machines, improved recovery circuits and additional magnesium digesters. The piling tender for all these elements stipulated the installation of approximately 1900 piles to varying depths.

The challenge

Ground conditions encountered on site revealed even greater variations in the geological profile than was expected. Not only would piles have to be installed at depths of 24m but installation would also have to be performed at very shallow depths of between of 5m -8m.

It was not only this significant variation in depth that was challenging but also how quickly the founding depth changed. Over large parts of the site the founding depth would vary by as much as 15m. This was perhaps the single most challenging condition of the site and necessitated very careful site planning and fast and constant evaluation of the deeper areas of founding to ensure that the heavy equipment could be continuously utilised. Franki piles was the most suitable solution for these conditions.

Two more site conditions reinforced the choice of Franki piles. Firstly, there were boulders at localised portions of the site at various depths and this pile type is able to penetrate the boulder horizon. Secondly, across the majority of the site there are very soft silty clays and the Franki piles are ideal for driving through such material with the temporary steel casing preventing collapse of the material and ensuring the integrity of the pile shaft concrete.

The solution

The project involved the installation of 2022 no. Franki DCIS piles where the base of the piles enhances both compression and tension capabilities of the pile to depths of 24m.

There were no anomalies on all integrity tests conducted, all piles installed within the allowable tolerances and concrete cube tests results met the required minimum compressive strength.

Project facts

Owner(s)
Sappi Southern Africa Ltd
Saiccor Mill Umkomaas

Keller business unit(s)
Keller South Africa

Main contractor(s)
AF Wood

Solutions
Heavy foundations

Markets
Industrial

Techniques
Franki (DCIS) piles

Email address
info.za@keller.com