

Etihad Rail Stage 2 & 3 Package 2A

Abu Dhabi, United Arab Emirates

Keller improves ground for rail line in Abu Dhabi.



The project

The Etihad Rail Stage 2&3 Project C303 Package 2A is approximately 140km from the Saudi Arabian border starting from Ghweifat to Ruwais Junction (Abu Dhabi).

As part of the rail construction works, Keller was awarded the scope to improve 13km of rail line covering 660,000 m² area requiring ground densification reaching 10m in depth.

The challenge

Very heterogenous soil conditions.

High groundwater level, and in some locations, cohesive Sabkha soil occurring at shallow depth.

Remote site location, 25km from Saudi Border, with sections, fairly apart, requiring multiple shifting of equipment.

The solution

Successful application of optimized solution using the Dynamic Compaction (DC), Dynamic Replacement (DR) and Rapid Impact Compaction (RIC) techniques, densifying sandy soils up to 4.0 to 10m depth.

Additional backfill material was added to create safe platform for Ground Improvement work, Pre and Post testing Campaign.

Design of DC/DR was optimized based on the CPT tests and trial results confirming the energy required to achieve the desired ground improvement parameters.

Stringent design criteria successfully achieved, delivering Modulus of Deformation ranging from 30 to 100 MPa.

Project facts

Owner(s)

Etihad Rail

Keller business unit(s)

Keller Grundbau GMBH

Main contractor(s)

China State Construction Engineering & SK Engineering & Construction (CSSK JV)

Solutions

Bearing capacity / settlement control

Markets

Infrastructure

Techniques

Dynamic compaction
Dynamic replacement
Rapid impact compaction (RIC)