

NORTH SOUTH RAILWAY PROJECT CTW 100

AL NUAIRIYAH – SAUDI ARABIA

DYNAMIC REPLACEMENT

Category: Platforms & Infrastructure
Developer: Saudi Railway Company
Engineer: I.S.C
Contractor: Saudi BinLadin Group PBAD
Area / Quantity: 60,000 m²



PROJECT DESCRIPTION

CTW100 was a fast track project (2 months) located at the eastern end of the global project which consists of the construction of an industrial railway. Menard performed soil improvement works under the railway's embankment over an area of 60,000 m².

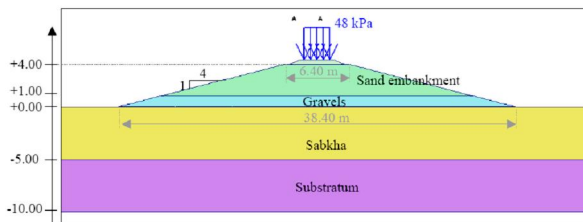
SOIL CONDITION / GEOTECHNICAL PROBLEM

Project soil profile:

The soil profile was composed of Sabkha with a thickness varying from 2 to 6m. This soil is often encountered in the region and is composed of silty SAND mixed with gypsum, salt, silt and clay.

This layer was followed by the substratum (Very dense SAND)

Ground Water Table was encountered at depths ranging from 0.4 to 1.6m below Existing Ground Level (EGL).



Project specifications:

The below specifications had to be achieved:

Minimum allowable Bearing Capacity of 138 kPa at base of embankment.

A long term (10 years) settlement not exceeding 50 mm

A maximum longitudinal differential settlement of 25 mm over 25m

MENARD SOLUTION

Due to the presence of the Sabkha layer, Menard implemented Dynamic Replacement technique combined with pre-excavations in order to safely support the future embankment.



In order to complete the 60,000 m² of treatment on time, Menard used 3 cranes working 7 days a week in two shifts.

QUALITY CONTROL

As part of the QA/QC process, a total number of 27 Pressuremeter tests were performed to control the performance of the work.

Both Limit Pressure and Pressuremeter Modulus results showed that soil improvement works successfully achieved project's criteria.