

# DAMMAM YARD SETUP PROJECT

## DAMMAM – KSA

### DYNAMIC REPLACEMENT



Category: **Industrial**  
 Developer: **Saudi Aramco**  
 Engineer: **Saipem**  
 Contractor: **Saipem**  
 Area / Quantity: **33,000 m<sup>2</sup> DR**



#### PROJECT DESCRIPTION

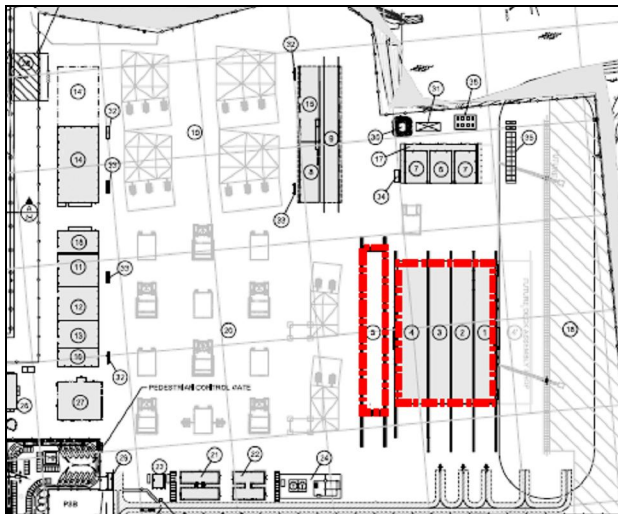
East small craft harbour has been used since its date of construction (1984) as a container terminal located inside the port of Dammam.

Saudi Aramco intends to turn it into a yard for construction of drilling jackets that is to say for very large elements which can be as heavy as 2,200 Tons.

Due to type of loads to be applied during construction erection or handling, it is necessary to improve existing ground.

#### Project specifications:

- Minimum allowable bearing Capacity of 150kPa below foundation levels.
- Maximum differential settlement of 10mm between 10m distance.



**Site Layout**

#### SOIL CONDITION / GEOTECHNICAL PROBLEM

#### Project soil profile:

Description	Thickness (m)	Nspt blows
Medium Dense, silty sand	1	6<N<16
Medium Dense to Loose, Sand with Silt	2	2<N<6
Loose to Very Loose, Sand with Silt	4	1<N<2
Very Loose to Medium Dense Silty Sand	3	4<N<20
Hard Sandy Silt	N/A	30<N

#### Associated problem:

Due to the proximity of Existing structures, Vibrations cut-off trenches were implemented between the treated area and the existing buildings.

#### MENARD SOLUTION

Due to high fines content in excess of 30% and in order to safely support the foundations, Dynamic Replacement has been carried out.

#### QUALITY CONTROL

Pressuremeter tests were carried out for quality control, and finite element analysis was performed to ensure the settlement criterion was satisfied.