



ALEXANDRIA CITY CENTER

ALEXANDRIA – EGYPT

DYNAMIC COMPACTION & VERTICAL DRAINS

Category: Residential & Commercial
Developer: Majid Al Futtaim Misr
Engineer: Majid Al Futtaim Misr
Contractor: N/A
Area / Quantity: 220,000 m² DR / 1,500,000 lm VD



PROJECT DESCRIPTION

Due to the economical opportunities of Alexandria the project's owner decided to construct a shopping mall composed of building and car parks area on the reclaimed lands near Mariout Lake.

The uniform loading of the project was estimated to be 20 kPa. Point loads at unknown locations were anticipated to be 700 kN.

SOIL CONDITION / GEOTECHNICAL PROBLEM

The project was located on 7 to 8 m of very soft clays followed by loose sands.

The project's area was rather famous for its geotechnical complications as there had already been cases where excessive settlements had pushed the buildings one floor into the ground.



MENARD SOLUTION

The complex ground and load conditions required Menard to propose an initiative solution which benefited from a combination of ground improvement techniques.

Hence, a combo solution of vertical drains and dynamic replacement was executed.

Based on this solution and after installing 1,500,000 linear meters of vertical drains, up to 1,250,000 m³ of fill as high as 6.2 meters was progressively placed over an area of 220,000 m² and maintained for a period of 5 to 7 months.



Also, the upper clay layer was further improved by executing dynamic replacement to reduce the settlement to acceptable limits.

QUALITY CONTROL

The soil's consolidation rate and settlements were monitored by placing 120 settlement plates within the treatment area.