THE PALM JUMEIRAH TIP OF FROND E
DUBAI – UAE
DYNAMIC COMPACTION

Category:	**Residential & Commercial**
Developer:	**Mr. Hamad Al Medfa**
Engineer:	**Model Engineering**
Contractor:	**N/A**
Area / Quantity:	**7,200 m²**

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PROJECT DESCRIPTION

The project was the construction of a luxurious G+1 story villa on the tip plot of Frond E on The Palm Jumeirah, and included the main building, the majlis and the service block.

150 columns transferred the structural loads of the main building to the foundation system.

SOIL CONDITION / GEOTECHNICAL PROBLEM

Although the project's site had already been treated before, the soil investigation report indicated that the upper 12 m of the shelly slightly silty sand was in a loose to medium dense state with SPT blow counts in the range of 4 to 17.

Ground water was encountered at the depth of 2.3 m.

The soil report recommended piling or implementation of shallow foundations only after another soil improvement program.

MENARD SOLUTION

Menard assessed the project, and proposed to use Dynamic Compaction as the optimal ground improvement technique.

The design criteria were set as:

- Safe bearing capacity: 250 kPa with a safety factor of 3
- Total settlement: 25 mm
- Differential settlement: 1/500

The implementation of Dynamic Compaction was so effective that the improved ground settled an additional 35 cm from the initial working platform level.

Vibration monitoring showed that the particle velocity at the location of the closest existing structures some 50 m away was many times less than what had been stipulated.

QUALITY CONTROL

Pressuremeter tests were carried out to confirm that the acceptance criteria had been met.

Measurement of the modulus of deformation and pressure limit, and calculations proved that the project's objectives were readily met.