



MACAO INTERNATIONAL AIRPORT MACAO – CHINA

DYNAMIC COMPACTION & DYNAMIC REPLACEMENT

Category: Infrastructure / Reclamation
Developer: Sociedad de Aeroporto Inter de Macao
Engineer: TAMS
Contractor: N/A
Area / Quantity: 1,500,000 m3 of fill improved



PROJECT DESCRIPTION

The Macao International Airport was built on the Taipah island extended thanks to reclamation obtained by hydraulic fill.



View of the Runway at Macao Airport

SOIL CONDITION / GEOTECHNICAL PROBLEM

The soil profile is:

- A first layer of hydraulic sand fill, 8 to 11 m thick,
- A soft marine clay layer, 5 to 10 m thick,
- A stiff clay layer 5 to 10 m thick

As a result of hydraulic filling, the soil remains in very loose state and did not allow the construction of the runway, taxiway and buildings, due to low bearing capacity of the surface, and excessive total and differential settlement during operation.

Due to the seismicity of the area, the soil had to be treated so as to mitigate liquefaction too.



MACAO INTERNATIONAL AIRPORT MACAO – CHINA

DYNAMIC COMPACTION & DYNAMIC REPLACEMENT

Category: Infrastructure / Reclamation
Developer: Sociedad de Aeroporto Inter de Macao
Engineer: TAMS
Contractor: N/A
Area / Quantity: 1,500,000 m3 of fill improved



MENARD SOLUTION

Menard was selected to design and execute the Soil Improvement works using Dynamic Compaction and Dynamic Replacement in the soft marine clay areas.

Those treatments resulted in:

- An increase of the bearing capacity of the soil up to allowable values,
- Limitation of the post construction settlements to acceptable value
- Mitigation of liquefaction of the soil



View of the DR operation - 700 tm rig and Classical rig

GENERAL

The 1,500,000 m3 were improved in 6 months using a classical rig and a specially designed machine.