



PILOT FIELD TRIAL ON THE APPLICATION OF SOFT MATERIALS AS RECLAMATION FILL USING MENARD VACUUM CONSOLIDATION

JURONG ISLAND – SINGAPORE

MENARD VACUUM CONSOLIDATION (MV)

Category:	Research
Owner:	Jurong Town Corporation
Consultant:	Surbana International Consultants
Research Institute:	Nanyang Technological University
Area / Quantity:	26,000 m ²
Year:	2015-2017



PROJECT DESCRIPTION

JTC is desirous to embark on a full-scale research and development (R&D) project where soft cohesive material consisting of clay and mud is to be used as reclamation fill material instead of the conventional granular sandy fill material. This project is deemed to be of national-interest due to the current acute shortage of sand for reclamation projects.

However, this alternative fill material has poor engineering properties. It has low load bearing capacity and large consolidation settlement. Therefore, it is necessary to improve the inherent poor engineering properties of this soft cohesive fill material before permanent construction can take place.

A trial for improvement of the soft cohesive fill material shall be carried out using the Menard Vacuum Consolidation (MV) technique.



Figure 1: View of the Vacuum Pit Under Filling

SOIL CONDITION / GEOTECHNICAL PROBLEM

The Trial Pit was filled with Dredged Clay and Slurry ($w=250\%$ in average). These ultra-soft materials undertake sedimentation and large strain consolidation before behaving as a "Terzaghi soil". Standard design consolidation theories have been adapted to the specificity of the project.

MENARD SOLUTION

Menard implemented Menard Vacuum Consolidation (MV).

QUALITY CONTROL

A combined Soil Investigation and Instrumentation scope of works was carried-out with NTU/Menard in order to increase the representativity and quality of the collected data.