



menARD

## YOUR LOCAL SPECIALIST IN GROUND IMPROVEMENT

Menard offers a wide range of ground improvement solutions for the benefit of your projects. Our geotechnical experts and broad range of ground improvement techniques allow us to bespoke the optimum solution for our clients. We design, build and remediate all types of ports, airports, highways, railways, buildings, process and energy infrastructure.

Menard is part of Soletanche Freyssinet, a group of world leaders in soil, structural and nuclear engineering. Its dynamic culture is backed by the security and strength of belonging to an international group.



### We solve soil and ground problems

The need to treat the ground arises when the existing ground is unable to adequately sustain the load that is to be applied as assessed by the design criteria:

- Bearing capacity & stability
- Settlement & rate of settlement
- Liquefaction potential

### Menard's know-how

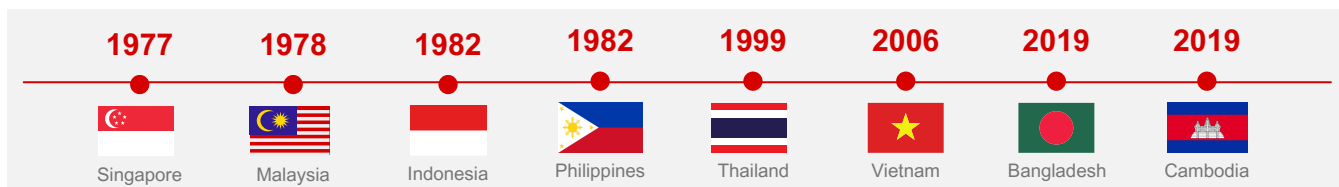
From design to construction, Menard proposes and implements innovative foundation solutions based on high-performance ground improvement and reinforcement techniques.

1,850 amazing people      +80 countries

+1,200 site each year

### A local partner that you can rely on

A project is more than choosing the right solution, it is about the total value you receive from a partner that is committed to making your project a big success.



\*The graphic above shows Menard's milestones in Asia, based on the year of the first project operation in each respective country.



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## Discover Our Sectors

Menard delivers the full range of ground improvement techniques to provide effective, innovative and economical solutions for ports, airports, highways, railways, buildings, process and energy infrastructure.

### Ports & Airports

Menard understands the key challenges of port and airport projects and can deliver adapted ground improvement solutions.

### Rails & Roads

From a suburban road to a key high-speed train line, Menard masters the full range of ground improvement solutions to deliver your project.

### Process & Energy

Menard provides ground improvement solutions for all types of process and energy projects, from small to large.

### Buildings

Menard provides ground improvement solutions for all type of building projects, from small to large.

## Project References



### International Airport in Jakarta, Indonesia

Menard has completed ground improvement works for Phase 2 of the Terminal 3 apron extension at Soekarno Hatta International Airport in Jakarta. The ground improvement was designed to reinforce a surface area of about 345,000 m<sup>2</sup> by installing **Controlled Modulus Columns**.



### EDT Railway Project in Johor, Malaysia

Menard has participated in section 2 and section 5 of the Gemas-Johor Bahru Electrified Double Track (EDT) Railway in Johor, Malaysia. The **Stone Column** technique has been chosen to improve the soil between 5 and up to 15 m in depth so that the embankment, to support the new railway line, could be built. The height of the embankment was up to 7 m.



### Ca Mau Power Plant, Vietnam

Menard consolidated a 240,000 m<sup>2</sup> platform on which the Ca Mau power plant (2 x 750 MW units) using a combination of two Menard techniques, the **Menard Vacuum™ Consolidation** system and vertical drains. 465,000 m<sup>3</sup> of water were extracted from the compressible clays with the help of 27 pumps, inducing 3 m to 4 m of settlement in some areas.



### Zuellig Pharma Warehouse, Cambodia

Menard completed a ground improvement project for the Zuellig Pharma Warehouse in Cambodia using **Controlled Modulus Columns (CMCs)** installed under the building's columns and slab on the ground. This solution was offered as an alternative to the pile-slab solution that the client was starting to consider. CMC solution allowed time-saving, and cost optimization compared to conventional pile-slab solution.