

Menard Vacuum Consolidation

Introduction

The Menard Vacuum Consolidation method is an atmospheric consolidation system used for preloading soft saturated fine grained soils such as clays, silts or peat.

This innovative procedure consists of installing a vertical and horizontal draining and vacuum pumping system under an airtight impervious membrane. The treatment area is sealed by sealing the membrane into a network of peripheral trenches. These trenches are continuously recharged and filled with water to maintain full saturation of the soils and to avoid a general lowering of the ground water table within the treatment area.

This system has been successfully applied since the late 1980's to a variety of projects including Power Plants, Sewage Treatment Plants, Highway Embankments, and Airport Runways.



Menard Vacuum Consolidation Process



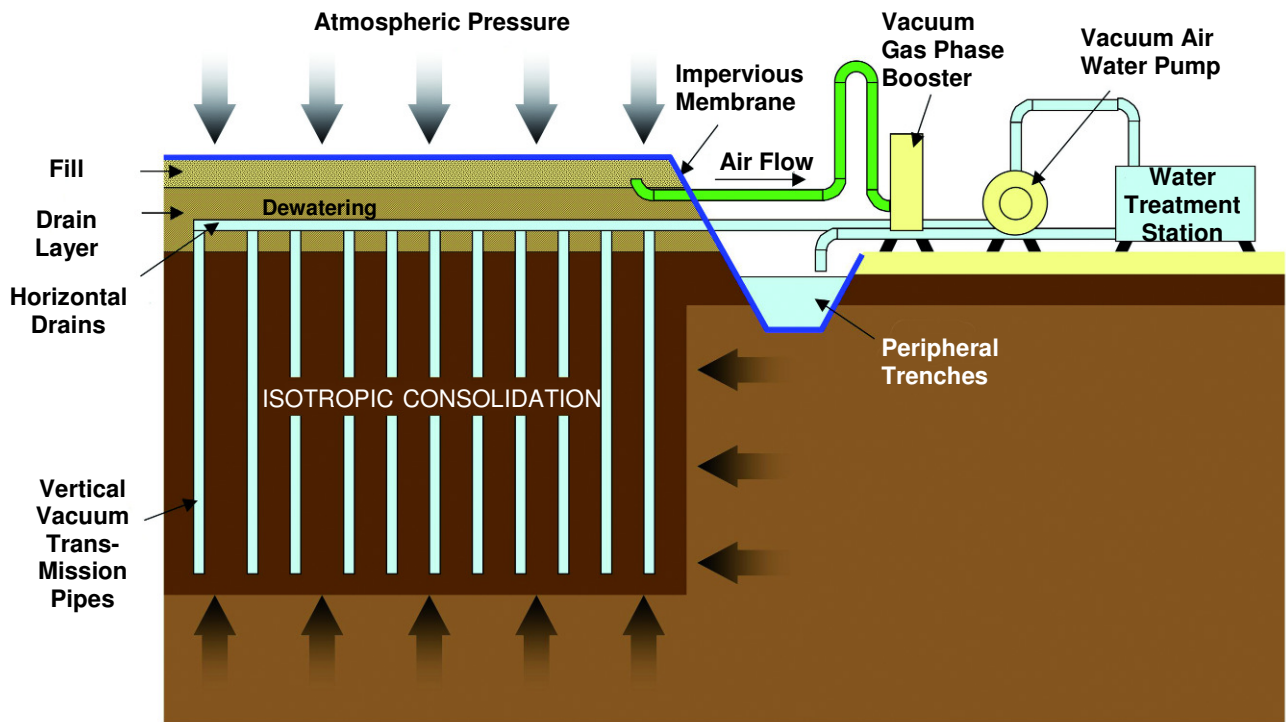
Advantages:

- Time savings compared to other systems
- Reduced quantities of surcharge fill
- Risk of surcharge slip failure eliminated
- Reduced lorry movements

Applications

- Power & Sewage Treatment Plants
- Airport Runways
- Road & Rail Embankments

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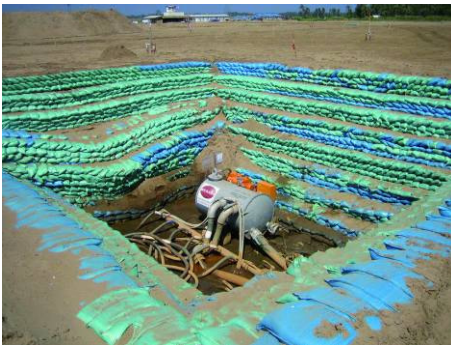


Procedure :

An air/water pumping system is installed and creates a vacuum in the soil below the impervious membrane equivalent to a depression of between 60-80 KPa, depending on the global efficiency of the system.



This pressure is equivalent to that exerted by a 3-4m high surcharge embankment. This preloading through the application of an atmospheric pressure creates an isotropic accelerated consolidation of the compressible soils. Settlement is then achieved without a surcharge load, in a greatly reduced time, than is normal.



While the area is under vacuum consolidation, normally 4-6 months, no activity that can puncture the membrane is allowed on the vacuum area without proper protection. However heavy plant and filling can usually proceed in the adjacent areas.



A monitoring system is usually installed and operated during the consolidation period to record settlement, displacement & pressures.