Buildings

River Bend Business Park

UNITED STATES

St. Paul, MN

Owner
Wellington Management, Inc.

Engineer
/

General contractor
Veit Companies

Dates of work
2004/06 2004/06

Main figures

Wick drains
600 EA.

Description

The proposed River Bend Business Park in St. Paul, MN, was being constructed on a site with poor soil conditions. The buildings were expected to generate sufficient load and cause significant settlement of compressible material below the rubble and sand fill.

Menard was hired to accelerate the consolidation of these soft materials and increase the overall strength of the underlying soils to support the construction of the commercial buildings. Detailed soil analysis was conducted to verify the need for wick drains along with the amount of total settlement and the corresponding time to induce such settlement.

Ground conditions

The future building site had an underlying series of alternating soils, each with variable thickness and composition. Soft compressible soils consisting of organic and lean clays in layers up to 15 feet thick were located between layers of silty sand and sandy silt that ranged from 1 to 13 ft thick. With the exception of heterogeneous fill material at the top which was comprised of concrete fragments in a sandy silty matrix, blow count values of both layers varied between 1 and 17.

Solution

Due to the presence of obstructions in the overlying material, it was anticipated that 85% of the wick drain area would require pre-drilling. In order to minimize the amount of pre-drilling required, specific measures were taken in planning the installation progression.

Using a special static-vibro wick drain installation unit and working from a lowered bench elevation, Menard was able to install all of the 600 wick drains on the final phase without any pre-drilling. This saved the client more than 25% of the anticipated installation cost.

The final phase of the project involved a 6-ft square spacing of drains with depths up to 50 ft. Much of the project involved installing the wick drains at two different elevations instead of sloping ground.