



NuStar Linden Nutop Terminal Linden, NJ

UNITED STATES



Owner

NuStar Energy L.P.

Engineer

Saulsbury Industries

General contractor

Krutis Excavating, Simpson & Brown

Dates of work

2017/04 2017/05

Description

As part of an expansion of the Linden Nutop Terminal, NuStar Energy L.P. wanted to construct three new 128-ft diameter tanks. The proposed site for the new tanks, which is located alongside the New Jersey Turnpike in Linden, NJ, was the site of a retention pond. The pond was full of water and had sediment at the bottom.

Menard Group USA designed and installed Controlled Modulus Column (CMC)[®] rigid inclusions to support the foundations of the three new tanks. This is the ninth project on which Menard Group USA has performed ground improvement for NuStar.

Main figures

Controlled Modulus Columns

1,125 EA.

Ground conditions

Initially, the project team thought that it was necessary to remove the sediment from the pond before ground improvement elements could be installed. Based on Menard Group USA's consultation, the retention pond could be backfilled without removing the sediment, resulting in significant savings for the project.

Following pond filling with sand, the subsurface investigation contractor, ConeTec, performed 42 Cone Penetration Tests (CPTs) to verify the soil profile. Menard Group USA also directed the completion of two additional soil borings within the tank footprint.

The site soils are characterized by 5 to 8 ½ ft of loose, clean sand fill, underlain by 5 ft of organic silt, which is underlain by 13 to 22 ft of silty sand or stiff silt.

Solution

NuStar required that Menard Group USA crews receive additional training so they could safely operate within the terminal. Additionally, a Menard Group USA safety representative was in frequent contact with the site superintendent throughout the duration of the project.

Significant savings were realized by not removing the sediment from the pond. To keep the total settlement within project requirements, Menard Group USA installed a total of 1,125 CMC rigid inclusions to an average depth of 19 ft.