

UNITED STATES

Woodbury 123

Woodbury County, IA



Owner
Iowa Department of Transportation

Engineer
Iowa Department of Transportation

General contractor
Ames Construction, Inc.

Dates of work
2016/05 2016/06

Description

The Iowa Department of Transportation wanted to expand a four-mile section of U.S. Route 20 located in Woodbury County, IA, from two to four lanes. A geotechnical investigation found that some of the site soils were not suitable to support the new construction – particularly in areas where the road crossed over utility lines.

Excessive settlement was also expected to occur over time as the layers of compressible clay consolidated. Additionally, the planned construction of a large culvert raised short-term global stability concerns during the excavation stage.

Menard implemented a dual ground improvement solution of Wick Drains to accelerate consolidation and Vibro Stone Columns to support the slope in two areas surrounding the culvert.

Main figures

Wick drains
214900 LF

Stone columns
45 EA.

Ground conditions

The site soils consist of native soft to stiff clay to depths ranging from 20 to 40 ft below existing grades. This compressible layer was underlain by firm to very firm glacial clays.

Solution

To expedite consolidation of the soft clay, Menard installed Wick Drains over 25 distinct areas spanning across 4 miles of U.S. Route 20. The frequent moves of the wick rig and Menard crew required the general contractor to have each subsequent site ready for installation prior to Menard arrival. Coordination between Menard and the general contractor was paramount to keeping production moving smoothly.

In the area of the culvert, Menard designed and installed Vibro Stone Columns to reinforce the soft soil and improve global stability. A total of approximately 214,900 LF of Wick Drains were installed to average depths of 25 ft, and a total of 45 Vibro Stone Columns were installed to average depths of 23 ft. The project was completed on schedule and budget and resulted in cost-savings for the client.