



# Interstate 78 & Garden State Parkway

Union County, NJ



## Project Summary

Interchange 142 of the Garden State Parkway at Interstate 78 is a \$149 million rehabilitation and reconstruction project undertaken to complete the links between the road systems, and improve traffic flow and safety for local communities by allowing a more rapid access to the highways.

This project involved the construction of two new ramps, a bridge approach and a new underpass to allow access to the highways from local communities. The project specified several sections of Mechanically Stabilized Earth (MSE) retaining walls, and embankments supported by Controlled Modulus Columns (CMCs). Working with the general contractor for the project (owned and operated by the New Jersey Department of Transportation – NJDOT), Menard provided ground improvement using CMCs to help support the bridge approach embankments.

## Ground Conditions

The MSE approaches were underlain by a highly variable fill consisting of silty and clayey sands with gravel, over bedrock. The fill thickness ranged from five to twenty feet in depth. The average depth to bedrock ranged from 15-35 feet. The fine to coarse sand fill layer included debris consisting of brick, concrete fragments, cinders, wood, metal, and glass. Due to the high variability of the fill, the predicted differential settlement of shallow foundations was not desirable.

## Ground Improvement Solution

CMCs were proposed for the project to improve the soil prior to construction of the embankments and MSE wall sections. The semi-rigid inclusions were installed under the embankments and the MSE wall sections to distribute the load from the roadway embankment, allowing for a sharing of the load between the CMCs and the surrounding soil. To support the embankments and MSE wall sections, over 400 CMCs were installed for a total of 8,460 linear feet of grouted column. The maximum depth required for the CMCs was 35 feet.

Several ground improvement options were considered for the project. CMCs were selected as the most appropriate solution for the job based on the construction schedule, total settlement and overall cost.

*Over 400 CMCs were installed to support several MSE retaining wall sections on a major highway project.*

***As part of a major highway improvement project in New Jersey, Menard installed Controlled Modulus Columns (CMCs) to support MSE retaining wall bridge approaches.***

*Client / Owner: New Jersey Department of Transportation  
General Contractor: Union Paving & Construction Company  
Ground Improvement Contractor: Menard*

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