

Sheetz Convenience Store

Canton, OH

Dynamic Compaction

To construct a new convenience store with a gas station and car wash, ground improvement was required to support the building loads. Menard implemented a Dynamic Compaction™ solution to compact the loose fill soils.



Compaction of the fill was achieved using a 30,000 lb. weight dropped from 60-70 feet.

Client/Owner: Sheetz, Inc.
Geotechnical Engineer: Timmerman Geotechnical Group, Inc.
Ground Improvement Contractor: Menard

Project Summary

This project involved the construction of a Sheetz convenience store in the North Canton area of Ohio. A geotechnical report revealed that before construction could begin, soil improvement was necessary to support the new building loads. A layer of up to 15 feet of loose fills was encountered across the site and classified as unreliable to support the loads of the store foundation, fuel islands with canopies and car wash.

Before constructing the 5,600 square foot single story convenience store, car wash and fuel islands with slabs-on-grade and spread footings, one of the recommended site solutions was to over-excavate the loose fills to the natural subgrade and replace them with structural fill. A second option was to overdig the fill soils below the foundations. A third option was to support the foundations on caissons or auger-cast piles. As an alternative to the recommended solutions to improve the soil, Menard proposed a ground improvement approach using a combination of Dynamic Compaction and Dynamic Replacement (DC/DR) to compact the loose fill soils in the upper 15 feet, providing a homogenized foundation layer.

Ground Conditions

The site was a vacant lot sloping from a low of 1,090 feet in the southwest corner to a high of 1,111 feet in the northeast corner; although for most of the developed areas, the site grades needed to be raised by 1 to 2.5 feet. The test boring data indicated that the subsurface was composed of loose fill (sand and silts) over stiff natural deposits. This fill layer extended through the upper 15 feet. The natural deposits were stiff to very stiff and consisted of clay, silty clay, and sand/silt, sand/gravel mixtures. The bedrock was found at a depth of about 35 feet.

Ground Improvement Solution

The total area improved using Menard's DC/DR solution was 14,400 square feet. Based on Menard's design, a 30,000 lb. steel weight was dropped from a height of 60-70 feet under the slab areas and the footing locations. The DC/DR program was completed on schedule, allowing Sheetz to proceed with site construction without delay. Menard delivered value to the client by providing a cost-effective reliable method of ground improvement appropriate for the project and for the site.



menARD

Ground Improvement Specialists

412-257-2750 • www.menardusa.com