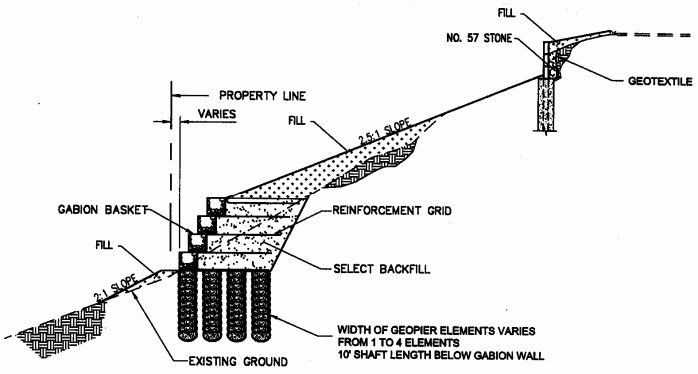
Target Store, Slope Repair

Raleigh, NC

Geopier Vertical Soil Reinforcement used for Landslide Repair

At a commercial development in Raleigh, North Carolina, the combination of heavy rains and an overly steepened fill slope resulted in a landslide in the winter of 1997-1998. The fill slope that was up to 65 feet high supported a parking and loading dock area for a large commercial super store. The compacted fill slopes consisted of on-site residual silty sands and sandy silts from the Piedmont physiographic Province. These soils typically have long term effective friction angles on the order of 28 to 30 degrees. However, the compacted soil slopes were built at slope angles ranging from 26.5 degrees (2(H): 1(V)), to as steep as 33.7 degrees (1.5(H): 1(V)). The resulting slides consisted of a series of shallow veneer compound slides which encroached on the parking area at the crest and the adjacent property and roadway at the toe.

The Solution: Geopier Soil Reinforcements, and MSE and Cantilever Post and Panel Walls



The initial repair schemes consisted of conventional methods of excavating a trench below the slide mass and backfilling with a toe buttress consisting of riprap and a gravity gabion wall. The planned depth of the excavation required staged construction, and/or shoring, and removal of a significant amount of soil. An alternative solution, consisting of aggregate pier soil reinforcement of the slope failure plane, use of a gabion-faced MSE wall as a toe buttress and a low height H-pile and concrete lagging wall at the crest of 2.5(H): 1(V) slope was proposed and accepted.

Project Information:

General Contractor:
Ashland Construction, Raleigh, NC

Geotechnical Consultants:
Langan Engineering, Elmwood Park, NJ
GeoTechnologies, Inc., Raleigh, NC

Geopier Installer:
GeoConstructors, Inc.

GeoStructures, Inc.
Engineered Earth Structures & Foundations