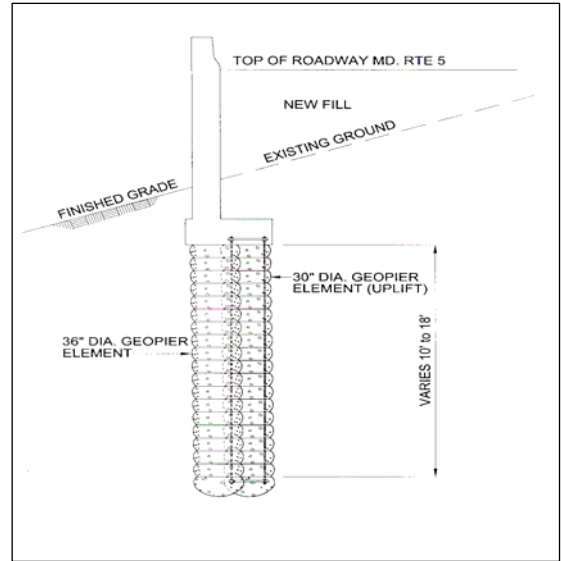


# Maryland Route 5 Retaining Walls

Clinton, MD



**Completed Retaining Wall Supported on Geopier Compression and Uplift Elements**

**Approved Geopier Foundation System**

**Project Description:** In order to widen Maryland Route 5 over a stretch of approximately 500 feet new retaining walls were needed to meet the grade separation and right of way limits on either side of the roadway. Cast in place walls supported by minipiles were designed to support walls overlying the very soft Coastal Plain soils. The Maryland State Highway Administration (MDSHA) approved Facchina Construction's request to use Geopier Foundations as a substitute for grouted minipiles. Geopier elements were designed to meet the performance criteria of 1-inch total settlement, ½ inch differential settlement and compression loads of 65 kips and uplift loads of 25 kips per pier. The Coastal Plain soils at the site varied considerably from a thin upper layer of dense gravel to very soft silt and clay soils with N values as low as N= 2 to 3 and weight of hammer. Geopier elements varied in length from 10 to 18 feet to support wall heights ranging from 5 to 13 feet tall. When high groundwater and caving soils were encountered steel casings were utilized to install the Geopier elements. Compression and uplift load tests were performed to confirm the piers met the design criteria. The MDSHA reported that it saved over \$ 250,000 by using Geopier elements for this project.

**Owner:** Maryland State Highway Administration

**Review Engineer:** Dr. M. Sherif Aggour, University of Maryland

**General Contractor:** Facchina Construction Company, Inc.

**Architect/Engineer:** KCI Technologies, Hunt Valley, MD

**Geopier Designer:** Dr. James Collin, The Collin Group, N. Bethesda, MD