

Woodrow Wilson Bridge

Client:

State of Maryland and the
Commonwealth of Virginia

Location:

Washington, DC

Services Provided:

- Installed automated data logging to allow multiple daily readings in critical areas of construction
- Installed wireless network of 25 data loggers

Value Provided:

- Elimination of trenching wires increased the longevity and reliability of the instruments

Background & Project Challenges

Located in the Washington D.C. Metropolitan Area, the Woodrow Wilson Bridge is one of the busiest east coast interstate highways. The original bridge – a drawbridge – was constructed in 1961, and was designed to carry up to 75,000 vehicles a day; today it carries nearly 200,000 vehicles a day.

Traffic congestion is exaggerated by one of the worst bottlenecks in the U.S. where the eight-lane Capital Beltway narrows to six lanes, and the fact that the bridge is raised for river traffic 260 times each year. The new 12-lane box girder bascule draw bridge project area covers 7.5 miles and involves constructing a replacement draw bridge and improving 4 major interchanges to increase traffic flow. Raising of the new bridge will be reduced to 60 times each year.

Rosalie Island Pre-Consolidation, part of the improvements to the I-295 interchange and approach ramp to the new bridge, includes mass grading, pre-consolidation of existing soft soils, and construction of retaining walls (both permanent and temporary).

The work includes installation of thousands of wick drains, placement of earth surcharges at various elevations, and installation of multiple layers of high strength geotextile fabrics. The retaining walls are mechanically stabilized earth structures varying in height from 10 to 40 feet and are constructed in several stages.

The underlying soils are extremely soft and the construction of the new retaining structures required monitoring to validate stability and performance. Geocomp installed instruments and operated the automated monitoring system.



Geocomp Role & Accomplishments

Geocomp installed a wireless network of 25 data loggers in 2002 to collect and transmit data from piezometers in the soft soils, and from strain gauge and rod extensometer instruments mounted on the reinforcing geotextiles at the embankment base. These automated instruments are complemented by manually-read inclinometers, probe extensometers, and settlement plates used to monitor vertical and horizontal movements. The auto-logged data are collected automatically through two cellular modems on site, using Geocomp's *iSiteCentral*™ web-based data management service making the results available to all relevant parties in near real-time.