Walt Whitman Bridge Structural Member
Strain Gage Instrumentation and Monitoring

**Background & Project Challenges**

Geocomp worked with HAKS under contract to the Delaware River Port Authority to extend the service life of the 57 year old suspension bridge over the Delaware River in Philadelphia.

Rusted gusset plates were discovered below the recently re-decked bridge structure during routine inspection. This prompted emergency repairs based on inspection and classification of the gusset plate deterioration. The repair schedule was built on classification importance from engineering calculations and verification through field instrumentation and data collection and evaluation.

**Geocomp Role & Accomplishments**

Geocomp’s work included strain gage installation on select members surrounding gusset plates and monitoring peak strains under ambient traffic conditions over six months. The information was used to measure actual stress from live loads to compare with predicted stress in the members. Geocomp also provided:

- Installation of spot weldable strain gages and a temperature sensor at multiple gusset plate panel points. Each panel point had five framing structural elements instrumented and wired into a remotely positioned high-speed data acquisition system.
- Remote data logging systems that collected data near continuously at rates up to 250 Hz during the first week to establish threshold response values for subsequent data collection. Data was reduced to engineering units and made available through an FTP site.
- Remote loggers programmed to continuously collect data based on triggered response from pre-established thresholds determined in the first week of baseline data collection.

In addition, Geocomp provided all instrumentation, installation, and system programming and operated and maintained the system for six months.