



PROJECT BRIEF

Walt Whitman Bridge Instrumentation & Monitoring

PROJECT PROFILE

CLIENT:
HAKS

LOCATION:
Philadelphia, PA

VALUE:

- Structural model validation to prioritize scheduling of gusset plate repairs
- Real-time data collection and evaluation of member stresses without disruption to traffic or load testing
- Results used to prioritize decisions for Asset Management

SERVICES PROVIDED:

- Panel point strain gage instrumentation installation to monitor load paths near and through gusset plate connections
- Development of software algorithms for triggered data collection providing preliminary assessment of data instantaneously

“Each panel point had five framing structural elements instrumented and wired into a remotely positioned high-speed data acquisition system. The remote data logging system collected data continuously at rates up to 250 Hz.”



STRUCTURAL HEALTH MONITORING

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. The remote data logging systems collected data continuously at rates up to 250 Hz, programmed to continuously collect data based on triggered response from pre-established thresholds.



BACKGROUND

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.