Geocomp
Trusted to help mitigate risk

PROJECT BRIEF

Parallel Thimble Shoal Tunnel Instrumentation & Monitoring

PROJECT PROFILE

CLIENTS:
Dragados USA
Schiavone Construction

LOCATION:
Annaplois, MD

VALUE:

- Provide real-time data to evaluate construction effects on existing tunnel and minimize risk of damage

SERVICES PROVIDED:

- Establish baseline performance of existing facilities prior to construction in order to differentiate seasonal movement versus construction impacts on the existing tunnel

- Verify performance assumptions used in the design of the support of excavation system

"The instrumentation and monitoring system was vital to ensure the stability of the existing tunnel during construction, veryfying the design performance assumptions of various components, and minimizing the risk of project delay."

REAL-TIME INSTRUMENTATION & MONITORING AND DATA MANAGEMENT COLLECTION

Geocomp provided the instrumentation and monitoring of the existing facilities, as well as the temporary construction element needed to perform the tunneling in this unique environment. The first role was to monitor the existing man-made portal island and tunnel before construction. This baseline monitoring specified the performance of the existing facilities. The monitoring system consists of 16 Robotic Total Stations (RTS) installed on the portal islands and within the existing tunnel, as well as numerous tilt meters, piezometers, crack meters, and seismographs. Geocomp's second role, during the construction of the new tunnel, included the instrumentation and monitoring of the temporary facilities necessary for the construction of the TBM launch and retrieval shafts. For both roles, we used our geographic information system (GIS) web-based software, *i*SiteCentral, to provide real-time assessment of construction-related activity. *i*SiteCentral integrates data from more than 500 sensors, including automated MPBXs, inclinometers, strain gages, and tilt meters. The instrumentation and monitoring system was vital to ensure the stability of the existing tunnel during construction, verifying the design performance assumptions of various components, and minimizing the risk of project delay.

BACKGROUND

The Parallel Thimble Shoal Tunnel Project in Chesapeake Bay (CBBT), involves the construction of a new bored 1-mile, two lane tunnel under Thimble Shoal Channel next to the existing two-lane tunnel. The new tunnel, 42 feet in diameter, will expand capacity and improve safety for travelers who use the CBBT. The new tunnel will be constructed using a tunnel boring machine (TBM) that will advance from the new man-made portal island.