



PROJECT BRIEF

MBTA Gloucester Commuter Rail Bridge Replacement

PROJECT PROFILE

CLIENT:
JF Whiting Contracting Co.

LOCATION:
Gloucester, MA

- VALUE:
- Automated data system resulted in 80% cost savings to the client when compared to manual survey work
 - Automated text message and email alerts to stop trains if excessive movement is detected

- SERVICES PROVIDED:
- Real-time 24/7 automated monitoring of bridge and train tracks to measure bridge and track stability
 - Geotechnical instrumentation and monitoring of bridge and rail track

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INSTALLATION OF GEOTECHNICAL INSTRUMENTS & DATA AUTOMATION

Geocomp provided automated rail track and bridge deformation monitoring for the stability of the existing bridge while trains continue to run over the remaining working half of the structure. Automated motorized total stations (AMTS) were installed to measure the position of survey prisms that are clamped to the rail tracks while other AMTS units monitor the drawbridge, timber trestle, and abutements during partial demolition of the bridge and adjacent construction activities. Additionally, to help quantify the impact of removing the south half of the bridge, Geocomp was asked to measure the deflection of certain structural elements when a train passed above them. Readings were taken before and after the partial bridge demolition to ensure that the bridge structure and reinforcements were performing as designed. Geocomp also added monitoring points to measure the performance of the reinforcing system installed on the bridge that helps to stabilize the wooden trestle. The monitoring points were measured every 15 minutes, and text message alerts were triggered if movement exceeded a threshold value or if any sudden changes were detected from one reading to the next.



BACKGROUND

The Massachusetts Bay Transportation Authority (MBTA) is working on a four year drawbridge replacement project in Gloucester. The first two phases of the project involve demolishing half of the existing bridge while the other side remains open to trains. A new single-track bridge will be built parallel to the remaining structure, after which the new bridge will carry train traffic and the rest of the 110-year old structure will be removed. The Gloucester Drawbridge is used by Rockport Line trains to cross the Annisquam River in Gloucester, MA. When completed, the new drawbridge will feature two side-by-side moveable track bridges expected to provide more resilient and reliable commuter rail service and eliminate bridge related speed restrictions.