Project Brief

Middlebury Monitoring Phase 1-3
Construction Inspection & Monitoring

Project Background & Challenges
The Vermont Agency of Transportation (VTrans) in collaboration with the Town of Middlebury is undertaking a project to replace two almost 100-year old rail bridges with a tunnel. The two bridges are about 300 feet apart and will be disassembled and removed as the tunnel excavation continues. The project takes place in busy downtown Middlebury, VT with many local businesses and historical structures located nearby. Replacing the rail bridges with a tunnel will change the town landscape by overlaying the depressed, walled rail bed that cuts through the town with green space that will connect with other existing green space. There are three phases to this ongoing project and construction is currently in the final phase with project completion estimated for 2021.

Geocomp Role & Accomplishment
Geocomp has been working as a sub consultant for Kubricky Construction Corp throughout all three phases of the Middlebury Bridge and Rail Project. During the course of the project, we have performed preconstruction surveys, vibration and blast monitoring, and deformation monitoring. Phase III of the project which is currently ongoing, includes twenty six preconstruction surveys for historical properties deemed as sensitive by the Vermont DOT. Many of these properties are also being monitored for potential deformation and vibration effects.

Eight vibration monitors were installed to monitor vibrations due to construction activities at the most sensitive structures located adjacent to the project site. Air overpressure microphones were also included with the vibration monitors. The blasting operations were monitored remotely in real-time by Geocomp personnel using our iSiteCentral data management system. If the vibration or air overpressure limit levels were reached, notifications were sent to all essential personnel via iSiteCentral.

Over 100 survey prisms were installed on the structures closest to the project site and the temporary support of excavation system. Three automated total stations were used to periodically take readings on each of the survey monitoring points and report changes in real time. If any point reached the predetermined limit levels, an automated alert was sent to all essential personnel via iSiteCentral to ensure that the appropriate actions could be taken by the construction team before damage took place.

Value Provided:
• Alerts from automated equipment notify all essential personnel immediately if an instrument reaches a predetermined limit level. This allows the project team to respond quickly and make necessary construction changes helping to keep the project on schedule.
• Remotely adjusting trigger levels and using the same vibration monitors for blast monitoring reduced the need for additional trips to the project site saving the client money and allowing them to make quick decisions.

Client:
Kubricky Construction

Location:
Middlebury, VT

Total Project Amount:
$320,000

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