

Instrumentation and Monitoring Connecticut I-84 Superstructures

Client:

Northern Construction
Services, LLC

Location:

Southington, CT

Service Provided:

Instrumentation
and monitoring of
superstructures

Value Provided:

- Real-time data to ensure that stresses induced by moving operations did not exceed preset limits
- Ability to avoid damaging the superstructures by stopping the transportation if threshold stress values are exceeded
- Knowledge that moving operations did not induce any unanticipated stresses that may affect the long-term performance of the structures
- By evaluating real time data, the monitoring system allowed controlled transport and lifting operation to proceed without delays within the narrow time frame of planned weekend road closure

Background & Project Challenges

The two existing bridges carry I-84 eastbound & westbound over Marion Avenue, Southington, CT. On a scale of zero to nine, both bridges received a superstructure rating of 4. This was due to diagonal cracks as well as exposed reinforcement and tendons. In order to replace these superstructures, Self Propelled Motorized Transporter (SPMT) platform vehicles were used to lift out the existing structures and set the new structures. This procedure took place over 56 hours, minimizing road closure of I-84 and related public disruptions.



Geocomp Role & Accomplishments

In advance of the superstructure replacement using SPMT platform vehicles, Geocomp installed instrumentation to provide real-time strain, deflection, and rotation monitoring of the new I-84 eastbound & westbound superstructures during the transportation operations. Geocomp provided the following services during the moving operations:

- Real-time strain measurements via *iSiteCentral*TM to the design team during move operation to identify unanticipated stress on the new structures. Geocomp previously installed strain gages in the girders and deck.
- A set of intersecting wire lines (X pattern on the bridge deck) on both eastbound and westbound decks to determine twist of the deck. The wire was set to only touch if deck twist exceeds predicted value during move. Wire lines were electrified and controlled an alarm system.
- Real-time optical survey monitoring system for level monitoring during bridge move.