



Project Overview:

Garden State Parkway Structure #127.2, better known as one of the Driscoll Bridges, spans the Raritan River, carrying the Garden State Parkway in New Jersey. It is one of the major structures on a highway that carries a large portion of the New York and New Jersey southbound traffic in the middle of a busy confluence of other state roads.

This bridge, built in 1952 under the standards of 1941, consists of steel beam tower piers encased in concrete under deep steel beams carrying a concrete deck in two separate structures. Only two longitudinal girders carry the two nearly 70 ft wide decks.

In 2006, the New Jersey Highway Authority (the bridge owner) decided to completely overhaul the bridge to guarantee smooth traffic flow on the Garden State Parkway.

To manage current speeds and traffic loads, an upgrade in floor beam capacity was necessary. The main intent of the floor beam strengthening was to provide additional moment capacity to bring the moment resistance of the transverse floor beams back to the current codes and based on current loads. Multi-strand tendons were installed to ensure the necessary strengthening.

The design includes two custom anchorages that are bolted to the existing structure and a center deviator, which give the post-tensioning strand the eccentricity necessary to create the additional moment capacity.

Reduced working space above water and an exceptionally tight installation schedule were especially challenging during this project. Being easy and quick to install, the post-tensioning system was predestined to fulfill the owner's guidelines regarding bridge stability and a construction time of merely 1 year per bridge structure. The two structures of the bridge were returned to full traffic by the end of 2009.

Overall, the project presented an opportunity to develop innovative ways to install post-tensioning to strengthen a badly damaged transportation structure without damaging the existing structures and to effectively deal with current code constraints on a very old structure on a very tight schedule. It was also an opportunity to apply state-of-the-art monitoring systems of transportation assets.

Jury Comments:

- The project demonstrates the innovative use of post-tensioning to strengthen a badly damaged steel structure without damaging the existing structures.
- The project also features the use of electromagnetic sensors to monitor the long-term force in the cables.

Reinforcement of Driscoll Bridge

Location:	Over Raritan River, Keasbey, NJ
Submitted by:	DYWIDAG Systems International USA, Inc.
Owner:	New Jersey Highway Authority, NJ
Architect(s):	N/A
Engineer(s):	URS-Greiner JV and the DSI Engineering Staff
Contractor:	Conti Enterprises, South Plainfield, NJ
PT Supplier:	DYWIDAG Systems International USA, Inc