

**DSI References****Reference Details**

**Owner** New Jersey Highway Authority, NJ, USA +++ **General Contractor** Conti Enterprises, South Plainfield, NJ, USA

**DSI Unit** DSI USA, BU Post-Tensioning Systems, Pompton Lakes, NJ & Washington, DC, USA  
**DSI Scope** Planning, supply and installation of DYWIDAG Multistrand Post-Tensioning Tendons and DYWIDAG THREADBAR®s; supply and installation of DYNA Force Sensors

**DYWIDAG Post-Tensioning System Stabilizes Important Highway Bridge**

**Reinforcement of Driscoll Bridge over Raritan River, Keasbey, NJ, USA**

**Garden State Parkway Structure #127.2, better known as the “Driscoll Bridge”, 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.**

This bridge, built in 1952, consists of concrete and steel piers under deep steel beams carrying a concrete deck in two separate structures. Only two longitudinal girders carry the two nearly 70'-wide decks, which were widened several times to bring the width to its current size. Transverse floor beams, diaphragms and crossbracing complete the steel superstructure.


In 2006, the bridge owner, the New Jersey Highway Authority, decided to completely overhaul the bridge in order to guarantee smooth traffic flows on the Garden State Parkway. Construction works included a complete redecking of both structures, the repair of the most critically deteriorated steel members and the replacement of its bearing pads as well as some of the stringers, diaphragms and bolsters. In order to manage current speeds and traffic loads, an upgrade in floor beam capacity was necessary. DSI USA was entrusted with the planning, supply and installation of the new structural elements.

DYWIDAG Multistrand Tendons, which were newly installed, now ensure the necessary strengthening for absorbing additional moment loads. The design includes two custom DYWIDAG anchorages, bolted to the existing structure, and a center deviator, to give the post-tensioning strand the eccentricity necessary to create the additional moment capacity. The DYWIDAG Post-Tensioning System, which was used because of its high quality and reliability, was applied to each of the 201 floor beams comprising the 29 spans of the bridge. All in all, DSI installed 201 DYWIDAG Multistrand Tendons with nominal diameters of 0.6", 270ksi, with 3 to 5 strands each.

DSI also provided their expertise in mitigating the effects of lateral-torsional buckling of the floor beams under temporary loads by supplying and installing 2,700lf (810m) of #10 epoxycoated THREADBAR®s, with associated hex nuts, along the centerline of the bridge, connecting and stabilizing the floor beams. In addition, DSI USA installed 24 units of the newly developed electromagnetic DYNA Force sensors, which guarantee easy long-term inspection on site and simultaneous monitoring of the force in the tendons. For monitoring, DYNA Force sensors are attached to individual strands during tensioning and linked to a central readout box.

Reduced working space above water and an exceptionally tight schedule for installation were especially challenging during this project. Being easy and quick to install, the DYWIDAG Post-Tensioning System was predestined for fulfilling the owner's guidelines regarding bridge stability and construction time of merely one year per bridge structure.

DSI project manager and superintendents worked in close collaboration with the local units, sometimes in two daily shifts, to stay on the aggressive schedule. DSI work was successfully completed at the end of 2007. The bridge is to be returned to full traffic by the end of 2009.

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