
Throgs Neck Bridge, TN-82

Orthotropic Deck



Client/Owner: Triborough Bridge & Tunnel Authority

Project Location: Bronx, NY

From 1983 to 1986 6,487 ft of Queens and Bronx viaduct was retrofitted with closed rib orthotropic deck to replace the original non-composite concrete deck. The retrofit project successfully completed the installation of approximately 440,000 sq ft of orthotropic deck during night shift construction. However, within three years of service, due to the redistribution of stresses, several supporting elements in the main girder to floorbeam connection area began showing signs of overstress.

Under project TN-82, Phase A, the TBTA hopes to test the constructibility, serviceability and performance of the design consultant's solution to the chronic structural problems that have plagued the retrofitted spans since 1989.

GPI is providing construction engineering and inspection services on this project. The work to be completed is summarized below:

- Survey existing conditions within spans 34, 35, 36 and 45.
- Furnish and install beginning and end sub-floorbeam pairs within spans 36 and 45.
- Replace connection bolts and shims between deck ribs and remaining sub-floorbeams in spans 36 and 45.
- Furnish and install 12 new longitudinal shear connectors in the beginning and end bays of spans 34, 36 and 45.
- Perform dye penetration testing to locate the leading edge of cracks in floorbeams. Drill holes in crack tip to arrest propagation.
- Furnish and install floorbeam web repairs in two retrofit spans.
- Remove and replace horizontal gusset plates in spans 35, 36, and 45.
- Provide lead abatement at the areas affected by rehabilitation.
- Shop and field painting of new and existing steel.
- Furnish, install, maintain and remove temporary work platforms.
- Maintain traffic during construction according to contract documents and referenced standards.

It is envisioned that this work will be staged during both night and day work and weekend shifts over the course of a ten-month construction schedule.

Once construction is complete, our team will also communicate to the TBTA, in the form of a written report, a final constructibility review that highlights what worked during the prototype construction, what didn't work and ways to improve the Phase B project, which will be the full rehabilitation of the remaining 30+ spans. This information will be a critical piece to the refinement of the final Phase B construction documents.