

Ultra High Performance Concrete for Bridge Repair



OVERVIEW OF INNOVATION

An NJDOT pilot project demonstrated that UHPC overlay will provide durable bridge decks that will extend the service life of the structures. Additionally, the project showed that UHPC overlay construction methods can minimize traffic interruptions and shorten the total construction time.

NJDOT installed three UHPC bridge deck overlays as pilot projects. One of these projects, completed on a bridge spanning the Newark Turnpike, included both a UHPC bridge deck overlay and field-cast UHPC joint headers.

This curved 3-span bridge, originally built in 1979, feeds nearly 30,000 vehicles per day from the New Jersey Turnpike onto I-280. The heavy traffic and the impact of de-icing salts resulted in corrosion of the reinforcing steel in the existing bridge deck, as well as the deterioration of all abutment and pier expansion joints.

Prior to installation of the UHPC overlay and field cast UHPC headers, the existing asphalt overlay and deteriorated expansion joints were removed. A new UHPC header expansion joint solution was installed, and after installation the finished UHPC overlay was covered with asphalt.

The resulting 340-foot UHPC overlay is currently the longest continuous overlay installation in North America.



Source: New Jersey Department of Transportation

BENEFITS

UHPC bridge overlays offer superior bond strength, compressive strength, lower permeability, more resistance to freeze thaw-damage, good abrasion resistance, and rapid cure times, among other benefits.

Increases safety and efficiency due to fewer days required for construction, and less impact on the traveling public due to traffic interruptions.

FIND OUT MORE . . .

NJ STIC, UHPC for Bridge Preservation and Repair in NJ

<https://www.njdottechtransfer.net/UHPC-bridge>

UHPC Overlays for Bridge Preservation—Lessons Learned, NJDOT

<https://www.njdottechtransfer.net/UHPC-workshop>

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