



# Burned Bridge Returns in 22 Days

**Emphasis on constructability rehabilitates precast concrete bridge quickly**

**by H. Simon Hagedoorn, FINLEY Engineering Group, and Chris DuBois, Lane Construction Corporation**



A fatal accident involving an 8200-gal. gasoline tanker badly damaged the Beachline Expressway/SR 528 overpass in Brevard County, Fla. The bridge was repaired with precast concrete girders in approximately 3 weeks. All photos: Lane Construction Corp.

On January 21, 2011, a fatal accident involving an 8200-gal. gasoline tanker badly damaged the Beachline Expressway/SR 528 overpass at Courtenay Parkway/SR 3 in Brevard County, Fla. Restoring the bridge to service required only 22 days, thanks to close cooperation and a focus on constructability.

Florida Department of Transportation (FDOT) officials concluded that the two easternmost of three spans on each of the side-by-side bridges were beyond repair. Because the overpass provides critical access to the Kennedy Space Center and nearby towns, the bridge had to reopen quickly.

Within 24 hours, FDOT summoned three contractors to a prebid conference at the site. The FDOT emergency-response team developed the project's scope, acquired the original plans, and established a maintenance-of-traffic plan. The job was awarded to Lane Construction Corporation in Maitland, Fla., with a bid of \$2,191,000 and a schedule of 25 days.

“The ability to meet our schedule was the most important factor in our selection of subconsultants and suppliers,” said Gary F. Jera-bek, district manager for Lane Construction Corporation. FINLEY Engineering Group in Orlando was selected to design the repair and reconstruction work.

FINLEY submitted the initial precast, prestressed concrete AASHTO I-beam design to Lane within 12 hours after receiving the contract. The first beam was cast within 24 hours of the notice to proceed by Standard Concrete Products, Tampa, Fla. Final beam designs were complete within 36 hours.

The original design was adhered to as closely as possible while updating to current construction practices. For example, the original AASHTO I-beams had harped strands, but local precast plants were not equipped to fabricate beams that way. Straight strands with end debonding were specified instead.

The bridge features two multi-column piers on driven pile foundations—one on each bridge—including column and cap. The piers were reconstructed to the top of the footing elevation, while the existing footings and piles were reused. Demolition crews took only 2 days to remove the damaged portions. Lane saved 3 days by using monolithic placements for the columns and pier caps, finishing in 4 days. The crew took 1 day to set the beams, which occurred 2 days after they placed the substructure. Seven days after the beams were erected, the bridge deck concrete was cast replacing a total area of 9,628 ft.<sup>2</sup>

Two days after the decks were placed, barrier walls were slip-formed. Simultaneously, crews milled the pavement. Milling of SR 3 and paving of both roadways followed.

The bridge was completed 3 days ahead of schedule, providing welcome news to a community hit hard by the tragedy. “Fast-track projects require exceptional coordination, cooperation, and understanding,” says FINLEY’s Managing Principal Craig Finley. “Everyone accepted the responsibility to do what it took.”



The repaired bridge was completed 3 days ahead of schedule, restoring critical access to key areas, including the Kennedy Space Center, Port Canaveral, and Cocoa Beach.



High-strength concrete with an 8500 psi design compressive strength was used to facilitate fabrication and delivery of the precast, prestressed concrete AASHTO I-beams, including 16 Type IV beams (12 at 99.5 ft long and four at 36.75 ft long) and four Type II beams (at 36.75 ft long).



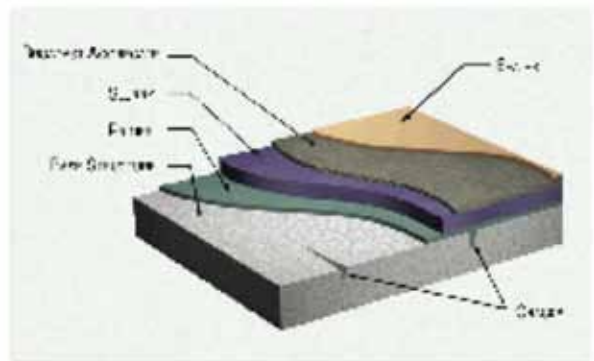
The replacement beams were designed within 12 hours, and the first beam was cast within 24 hours. Final beam designs were complete within 36 hours. Erection continued at night to ensure the deadline was met.

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