

Fast track replacement of deteriorated span quickly gets vehicles back on the road.

Steel Solution Speeds Bridge Repair

BY CHUCK MERYDITH

High Steel Structures, Inc.

WHEN A ROUTINE INSPECTION of the Route 90 Bridge over the Assawoman Bay in Ocean City, Md., revealed previously undetected structural damage at the bridge's navigational span, the Maryland State Highway Administration (SHA) closed the bridge for emergency repairs.

Work on the 85-ft portion of the bridge, which carries 18,000 vehicles into the popular beach resort each day, was anticipated to finish in mid-December. But the bridge reopened on November 24, three weeks early and just in time for the Thanksgiving holiday.

"We were delighted that repairs were completed not only on time, but ahead of time," said Ocean City mayor Rick Meehan. "This benefits the business community and is a vital safety improvement."

The damaged section of the bridge was discovered during a

biannual inspection that showed serious deterioration of the concrete of one of the girders, exposing the reinforcing steel to corrosion.

Concern about the ability of the bridge to carry truck loads initially prompted the restriction of vehicles over 6,000 lb. It was quickly determined that the one span of the 38-year-old bridge could not be repaired. Instead, it needed to be closed and the section replaced immediately in order to restore the bridge's capability to carry truck loads as soon as possible.

"A steel girder superstructure was selected for the span replacement, because it weighed less than other replacement alternatives," said Will Pines, P.E., Maryland SHA's project manager. "This weight reduction onto the existing bridge allowed for more of the bridge to be preserved, thus cutting back on repair costs."

Fabricator High Steel Structures, Inc., Lancaster, Pa., expedited procurement for steel fabrication and delivery of the replacement girders. High Steel was given notice to proceed on October 6, while the design was being finalized and the contractor was mobilizing. Due to the fast track approach, the first shipment of steel arrived at the jobsite on October 27.

"High Steel had the resources available in both material needs and manpower to fit this project into the shop flow, waiving the standard lead times," said Paul Lipinsky, High Steel project manager. "Having the material already on hand allowed us to dramatically cut fabrication time and begin delivery of the steel only three weeks after we were given notice to proceed."

High Steel's engineering department worked closely with the designers and the Maryland SHA to expedite the design and detail



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Opposite page: The first shipment of steel arrived on the job just three weeks after the fabricator was given the notice to proceed, and two months later the bridge was back in service.

Right: Deterioration of concrete girders forced the closing of one of only two bridges crossing from the mainland to Ocean City, Md. Using a steel superstructure enabled its quick replacement and reduced the cost of repairs.

drawings approval process. A fabrication project manager was assigned to shepherd the project through fabrication.

In addition to the quick fabrication and delivery of the replacement superstructure, the SHA credits several additional factors for the project's early turnaround, including the contract's incentive/disincentive clause and a powerful nor'easter that tore through the area in early November. The crew raced to place the concrete deck a day before the storm struck, averting a potential one-week delay.

The contractor built the replacement span using the "Cape Fear," a 150-ton water rig friction crane. The crane, mounted on a 68-ft-wide barge, accessed the bay through careful navigation through the 78-ft draw-bridge span of the Route 50 Harry Kelley Memorial Bridge, the only other bridge access to the Ocean City barrier island from the mainland. The strong currents and meandering channel at the Route 50 Bridge provided even more of a challenge than the narrow clearance.

By mobilizing the large floating crane, the contractor was able to expedite removal of the span by lifting it out in just five pieces. Its high capacity allowed removal of pieces with girders, deck and parapets still intact. The crane also allowed erection of the fascia girders in pairs with all of the deck overhang formwork pre-installed.

In a letter to High Steel's president, Jeffrey Sterner, P.E., Earle Freedman, director of SHA's Office of Structures, thanked High Steel for its fast response, citing a similar situation on the Old Severn River Bridge that occurred in 1979.

"It is extremely comforting to have a relationship with a firm like yours," wrote Freedman. "We called upon High Steel then, as we did now. A positive reaction by your firm to a similar problem, 30 years later, is a true example of why your firm continues to have such a fine reputation." MSC

Owner

State of Maryland

Steel Fabricator

High Steel Structures Inc., Lancaster, Pa.
(AISC and NSBA Member)



images courtesy of High Steel Structures, Inc.



The contractor's use of a large crane expedited removal of the deteriorated span and allowed placement of the steel fascia girders in pairs with the deck overhang formwork pre-installed.