



SIKA AT WORK

REHABILITATION OF THE OHIO MISSOURI HISTORIC BRIDGE FLORIDA, U.S.A.

STRENGTHENING: Sika Carbodur® BC Rods

BUILDING TRUST



REHABILITATION OF THE OHIO MISSOURI HISTORIC BRIDGE

PROJECT DESCRIPTION

The Ohio Missouri Historic Bridge (1912) is one of the many railroad bridges that were constructed as a part of the infrastructure to connect the East Coast railroad network to Key West in Florida (USA). About a quarter of a century later in 1938, the bridge was converted for vehicular traffic and became part of U.S. Highway 1.

U.S. Highway 1 runs north to south on the east coast of the U.S. In 2001, this 100-year-old structure was once again transformed into a pedestrian traffic bridge because a new bridge had been constructed for vehicular traffic.

Florida Keys Overseas Heritage Trail (FKOHT) decided to restore this bridge and make it a part of the planned 60 mile long trail. The steel columns had severely corroded and the structure became a safety concern. Cracks and spalls had to be repaired to restore the structure.

CFRP rods were embedded in the structure to make it safe. This project represents the ideal example of sustainability in the construction industry: A century-old structure is repurposed after 30 years and then another 70 years later, it is remodeled once again to serve a new purpose, and preserved for many more years to come.

PROJECT REQUIREMENTS

During the conversion of the structures from train to vehicular use, the existing lanes had to be widened. Cantilever sections were added to the in-place structure to extend the width of the bridge. The main structural members were partially exposed steel H beams. Because the structure is located in a very aggressive coastal environment and subjected to salt water ingress and the wrath of severe storms, the steel H beams showed signs of corrosion and it became apparent that the integrity of the structure had been compromised.

The repair strategy was to use a non-corrosive structural strengthening method with minimal impact to the environment.



SIKA SOLUTIONS

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In addition to the potential environmental impact, the historical significance of the cantilevered sections would have been lost. The installation of the carbon fiber rods into the deck provided alternative support for the deteriorated H-beams in the cantilevered additions used to widen the bridge. This eliminated the intrusive and environmentally damaging effects of demolishing the cantilevered sections.

Sika® Carbodur® BC Rods were used in the spall repairs of the undersides of the severely damaged cantilevered sections. These were used to replace the small reinforcing bars that had been part of the original construction. The existing steel beams were not restored because some had experienced extensive section loss, while others were missing completely. The carbon fiber rods installed in the deck were designed to replace the support these H-beams had been providing. Structures such as the Ohio Missouri Historic Bridge are truly a classic example of sustainable concrete structures that have not only outlived their designed service life but continue to serve the community with a new and more beneficial purpose than originally intended.





PROJECT PARTICIPANTS

Owner: Florida DEP – Office of Greenways & Trails.
 Project Engineer/Designer: WilsonMiller Stantec.
 Repair Contractor: Intron Technologies, Inc.
 Sika Representative: Dave White, Sika Corporation

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