

# CARBON FIBER BRIDGE PIER CAP STRENGTHENING

JASPER, INDIANA



## Fix it - Permanently

This approach led Luke Nordoff, owner of LAN Concrete Technology to look to CFRP, or carbon fiber reinforced polymer as a permanent solution for concrete repair work. For over a decade LAN has been utilizing carbon fiber on a vast array of projects from residential house foundations to civil infrastructure.

Looking for opportunities to utilize these materials to assist his county with the maintenance and preservation of their structures, Luke turned to the Dubois County Engineer to start the conversation regarding the uses and benefits of carbon fiber.

A local bridge that spans the Pakota River in Jasper Indiana, was experiencing vertical cracking in the piers which is a viable repair solution for carbon fiber. A year after that initial conversation and the CFRP project on the Dubois County Bridge #264 was awarded to LAN Construction who were the lowest bid on the publicly advertised project.

## Aging infrastructure is a pressing concern for many local governments across the US.

According to the American Road and Transportation Builders Association, there is an estimated 230,000 U.S bridges in need of repair, 46,000 of those deemed "Structurally Deficient" and in Poor Condition.

Dubois County was one of the many counties across North America to turn to carbon fiber as a permanent means to preserve its critical infrastructure.

The county enlisted the services of Bulter Fairman & Amp; Seufert Civil Engineers Engineering out of Indianapolis, IN to assist in the design of the repairs on this project. After a full investigation of the pier caps it was determined that the lap lengths of the horizontal steel in the cap may not have been sufficient to withstand the loading on the cantilever sections of the pier caps.



**Carbon Fiber is bridging the gap on America's aging infrastructure.**

# CARBON FIBER STRENGTHENING SYSTEMS

**Carbon Fiber fabric is easily tailored to fit any geometry and once cured with epoxy, becomes a an integral part of the structural element, acting as an externally bonded reinforcing system.**



The project not only consisted of the full encapsulation of the pier caps but as many projects of this type, required a full Indiana PE stamped design, required approvals of the contractor installing the material, and also the material supplier. Witness panels had to be made on each of the days that the material was being installed to ensure that the required strengths of the system were met. These panels were broken at a third-party laboratory in order to verify that the specified design strengths were met.



**Epoxy injection was utilized to fill the vertical cracks using the SRS-1000 Structural Epoxy Resin in conjunction with the SRS-2000 Epoxy Paste to seal the cracks and set the injection ports.**

Official authorities across North America have recognized many old bridges and buildings as structurally deficient by today's standards. Due to these reasons, structural strengthening has become an essential requirement. Carbon Fiber Reinforced Polymer (CFRP) strengthening techniques have been established as a preferred among other techniques, giving excellent structural results, low time required and moderate cost compared with the other techniques.

Learn more at [Structuralrs.com](http://Structuralrs.com)

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