

RENEWWRAP®

Fiber Reinforced Polymers



STRUCTURAL STRENGTHENING

CASE STUDY:

Bridge Strengthening Miramar, FL

OVERVIEW

In 2018, an inspection of a Broward County-owned bridge on Flamingo Rd. in Miramar identified structural issues. The Florida Department of Transportation bridge inspection report identified issues including concrete spalling and cracks. The structure, which was constructed in 1956 and experiences approximately 1,800 crossings a day showed signs of deterioration and Broward County expedited design improvements to the bridge well in advance of conditions becoming unsafe. The task of making the bridge repair was part of the County's Mobility Advancement Program and was managed through the Highway and Bridge Maintenance Division (HBMD).

SOLUTION

HBMD used an innovative design and construction method which minimized the construction impacts to the public by mainly working on the underside of the bridge. This methodology included the use of fiber reinforced polymers (FRP) to strengthen the bottom side of the bridge slab. The project was put out for proposal and FG Construction of Tamarac, FL was selected by the general contractors for the project. With a long presence in the area and experience with FRP repairs, FG was a strong choice to execute the repairs. Originally FG reached out to their normal supplier of construction materials, but in the midst of a global supply chain crunch, the long lead times for product created an issue with completion of the project in the desired timeframe. Fortunately, GeoTree, a company focused on providing solutions for the repair of critical civil infrastructure, had foreseen the supply bottleneck and was able to answer the call by providing the FRP materials within days.

GeoTree's RenewWrap CF600 fabric was chosen to complete the challenging project which saw the fabric applied perpendicular to the direction of the bridge to provide flexural slab strengthening to the structure. Installation was to the underside of the active bridge, so it had to be completed from a fixed platform from below with the installation team working overhead.

The fabric was hand saturated and applied using the wet lay-up technique. To reduce the need to regularly mix resin, RenewWrap LPL (long pot life) epoxy was utilized. This led to a more efficient application process which meant the six-person installation team took just a week to complete the project. In all, 3600 square feet of material was used to complete the project.

PROJECT DETAILS

Location: Miramar, Florida

Application: Flexural strengthening bottom of slab

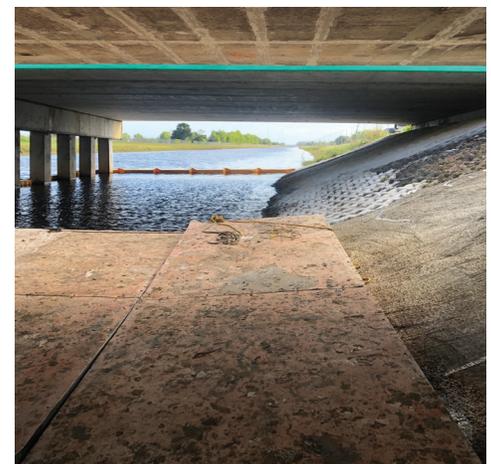
Installation: January 2022

Client: Highway & Bridge Maintenance Division (HBMD)

Installer: FG Construction



Spalling and deteriorated concrete bridge structure before repair



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GeoTree trainer Todd Lyda was on-site throughout the application to supply on-the-go support and to answer questions as needed.

GeoTree Solutions President John Hepfinger said: “We’re delighted that this project has enabled us to build a strong working relationship with FG Construction and that the company is now familiar with our range of products and solutions.

“Supply chain issues have been wreaking havoc on lead times across the industry but thanks to our planning and foresight GeoTree was able to provide the materials needed for this project in a timely manner.

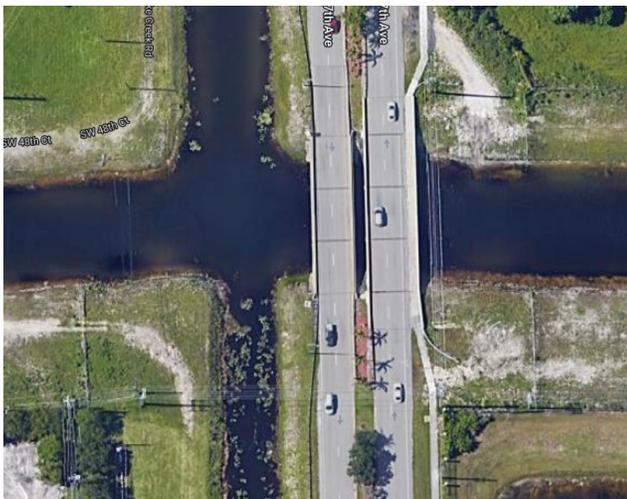
“We are hearing that many supplier lead times are stretching to weeks and even months, but GeoTree can often provide material in a matter of days. It is our intention to be in a position to support contractors and installers in meeting their project timelines. We understand that time is money, and helping partners achieve their goals is job number one.”



Fixed platform moved into place under the bridge



RenewWrap CF600 fabric applied perpendicular to the direction of the bridge to provide flexural slab strengthening



Aerial view of project location



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