

GeoTree and Structures, Inc work together on bridge strengthening project

OVERVIEW

GeoTree Solutions is working to grow business across the USA. After identifying a bridge strengthening project in Colorado, the organization reached out to Structures, Inc and offered the company the opportunity to work together to secure the project.

The two companies worked together to engineer the rehabilitation which included an FRP design and in-depth material proposal. Structures was awarded the project with GeoTree Solutions product experts and trainers delivering pre and on-site application training and support.

The project itself included the rehabilitation of 15 bridge pier caps that were experiencing concrete deterioration and corroded rebar. This had led to flexural and shear deficiencies in the pier caps and pier columns. The bridge was in such a poor condition that should strengthening not have been available, it would have required demolition.

SOLUTION

After winning the project, GeoTree Solutions delivered training to the 20-person Structures, Inc installation crew. This included one day of on-site training delivered by two GeoTree product experts where the installers were taken through the entire installation process. The GeoTree team then supported the Structures, Inc installers during a second day while the RenewWrap was installed on the pier caps and columns. Once the GeoTree team left the site, they were available for follow up calls to address any issues that arose.

The project scope called for the application of two layers of RenewWrap CF600 4x6 carbon fiber fabric system which was saturated with RenewWrap LPL Saturant. EZ Paste epoxy was used to level the surface of the concrete substrate and fill any small voids and bug holes. Three-sided U-wraps were applied to the pier caps for shear strengthening. Longitudinal wraps were applied to the bottom and tops of pier caps for flexural strengthening. And vertical wraps were applied on each face of the pier columns for flexural strengthening.

Scaffold platforms were constructed around each pier to enable the contractors to have full access to the required areas and also to ensure they were out of the water flowing under the bridge. In areas too high for scaffolding, a cherry picker was used during low river flow opportunities.

The piers were then prepared for the FRP application with surface corrosion removed.

PROJECT DETAILS

Location: La Junta, Colorado

Application: Flexural and Shear Strengthening of Pier Caps and Pier Columns.

Installation: April to December 2023

Client: Colorado DOT

Installer: Structures, Inc



Scaffolding in place to enable pier access.



Surface preparation.

RENEWWRAP®

Fiber Reinforced Polymers

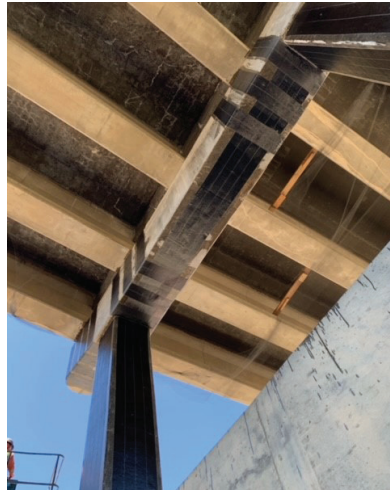


The RenewWrap was applied using the wet layup method, which sees the FRP fabric saturated with epoxy while laid on a table. It is then transferred to the concrete and securely fitted in place following engineer drawings.

The bridge being repaired is the only major route into the local city from the North. Repairs needed to be conducted efficiently and effectively to ensure minimal effect to local traffic. The bridge remained open during the project as it was the only major route into a nearby city from the North. Repairs were carried out efficiently and effectively to ensure minimal effect to local traffic.



Cherry picker used to apply FRP at height.



Completed application of RenewWrap FRP.



Onsite training taking place.

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