



Project Overview

FRP RETROFIT OF RECTANGULAR BRIDGE PIERS

Name: Interstate 90 Highway Bridge at Cline Ave.
Type: Highway Bridge Piers
Location: Gary, Indiana
Completed: June, 2006

PROBLEM

Several rectangular bridge piers in a couple of highway overpasses suffered damage from water erosion due to deficient storm drains. The erosion exposed the main reinforcement which was severely corroded as a result.

Indiana DOT needed a solution to repair the damage on the piers, as well as to provide an effective corrosion and erosion barrier, while the bridges remained open to traffic.



SOLUTION

QuakeWrap® FRP Retrofit System was selected since it allowed the repair to take place while the bridge was under operation. Once patch up work was completed to repair the concrete erosion damage, the piers were completely wrapped with two layers of FRP fiberglass composite fabric.

This provided a permanent corrosion and erosion barrier by completely encasing the piers, as well as an upgrade in their seismic capabilities by increasing the compressive strength of the concrete, the amount of hoop reinforcement and the ductility of the damaged piers.



Technical Highlights

- FRP retrofit of rectangular bridge piers to repair severe erosion and corrosion damage.
- FRP retrofit work was done while bridge remained in operation.
- Permanent barrier developed with two layers of FRP fiberglass composite fabric.
- Seismic upgrade by increasing hoop reinforcement, compressive strength of concrete and ductility of piers.
- Each 32 ft high column was wrapped in 5 hours with a 4 man crew and 2 man lifts.



Credits

Structural Engineer: Indiana Department of Transportation
General Contractor: Ellas Construction Company, Inc., Gary, Indiana

“The FRP Retrofit Experts”