Project Overview

FRP REPAIR OF CIRCULAR BRIDGE PIERS

Name: Interstate 94 Highway Bridge at S.R. 49
Type: Highway Bridge Piers
Location: Chesterton, Indiana
Completed: July 2006

PROBLEM

10 circular piers in a bridge bent suffered severe corrosion of spiral hoop reinforcement due to spalling of concrete cover. The concrete cover was too thin due to construction error and spalling occurred due to weathering. As a result, hoop reinforcement was exposed and severe corrosion occurred.

Given the severity of the damage, Indiana DOT considered demolition and replacement of entire bent which would have placed the bridge out of operation for a long period of time.

SOLUTION

QuakeWrap® FRP Repair System was selected since it allowed for the repair of the piers without taking the bridge out of operation.

Once patch work was completed on damaged areas, all 10 circular bridge piers were completely wrapped with two layers of FRP fiberglass composite fabric. The FRP repair system not only provided a permanent barrier against future weathering damage by completely encasing the piers, but also upgraded their seismic capabilities by providing additional hoop reinforcement, ductility and compressive strength to the concrete.

Technical Highlights

- FRP repair provided to circular bridge piers to correct severe spalling of concrete cover and hoop reinforcement corrosion.
- FRP repair work done while the bridge remained in operation.
  - Wrapped in two layers of QuakeWrap® glass fabric.
  - Each column was wrapped in 2 hours with a 4 man crew and two man lifts.

Credits

Structural Engineer: Indiana Department of Transportation.
General Contractor: Superior Construction Co., Inc., Gary, Indiana