



Project Overview

CARBON FRP REPAIR OF UNDERWATER BRIDGE PIERS

Name: Bay View Bridge

Type: Bridge Structure

Location: 5151 Bay View Drive, Ft. Lauderdale, FL 33308

Completed: June, 2007

PROBLEM

Partially submerged bridge piers have a tendency to present severe corrosion problems at the splash zone, where several wet/dry cycles occur daily due to natural ocean tides.

Patching the concrete at this elevation only provided a temporary fix, since concrete and steel deterioration reappeared in the short term. A long term and maintenance free solution was desired.



SOLUTION

QuakeWrap® FRP Repair System was selected to provide the desired solution. QuakeWrap® FRP carbon fabric was applied from the pier cap elevation to a couple of feet below the low tide water elevation on all the bridge piers.

A special epoxy resin AquaWrap™ was developed that allowed the FRP fabric to completely cure underwater and remain in full contact with the concrete pier surface even when subjected to strong underwater currents.

After retrofit work was completed, the piers were painted to obtain the final architectural finish.



Technical Highlights

- The Bridge presented severe corrosion in the piers.
- Corrosion was due to natural ocean tide action that generated several daily wet/dry cycles at the pier splash line.
- All piers were retrofitted with QuakeWrap® FRP carbon fabric.
- Special epoxy resin (AquaWrap™) was developed for underwater FRP fabric applications.

Credits

Engineering and Materials: QuakeWrap, Inc., Tucson, AZ

Installation Contractor: Premier Corrosion Protection Services, Tampa, FL



“The FRP Retrofit Experts”

Follow-Up

While QuakeWrap was repairing a seawall nearby, this bridge was visited on April 8, 2012. The condition of bridge **after five years in service** is shown here.

There is marine and algae growth in the submerged portion of the bridge and some of the paint has come loose. The same condition can be seen on the adjacent concrete wing walls. However, no damaged to the FRP was observed. The paint in the dry portion of the piles looked in excellent condition.

