

FDOT Transportation Innovation Initiative: FRP – Design Innovation



Fast
Facts:
Glass
Fiber
Reinforced
Polymer



Project Location:	FDOT District Six Miami-Dade County Bal Harbour, Florida
Agency:	Florida Department of Transportation
URL:	http://www.fdot.gov/structures/innovation/FRP.shtm
Project Name:	SR-A1A/Collins Avenue over Haulover Cut Bridge Rehabilitation Bridge No. 870071 FPID: 433378-1
Project Description:	Bridge and Bulkhead Rehabilitation
Project Purpose & Need:	District Six Bridge Maintenance identified repairs that included bridge coatings and replacing the deteriorated concrete bulkhead retaining wall on both sides of the Haulover Cut channel. Work activities included replacing the existing bulkhead walls with a steel sheet pile wall system that included a reinforced concrete cap and a protective concrete fascia panel over the steel sheets. GFRP reinforcement was used in the concrete cap and fascia panels.

Overall Budget/Cost Estimate: \$8,960,957.50 – Bridge and bulkhead wall rehabilitation

What was unique about this project?



The unique features of this project include the use of GFRP reinforcement in the concrete cap and protective concrete fascia panel. No. 4 and No. 5 GFRP bars were used as reinforcement in the cap and fascia panel. The fascia panel was built partially submerged below the tidal water level. The formwork and reinforcement were placed below the water level, while the drilled shaft concrete mix was pumped beginning from the bottom of the form up to the top, displacing the water.

Describe Traditional Approach:

The traditional approach would have used the conventional carbon steel reinforcement. Given the highly corrosive marine environment, future corrosion and concrete delamination would likely occur within a short period of time, leading to costly maintenance repairs throughout the life of the walls.

Describe New Approach:

The new approach employs the use of GFRP reinforcement, eliminating future corrosion and concrete delamination, and saving costly maintenance repairs.

Top Innovations Employed:

Use of GFRP reinforcing bars.

Primary Benefits Realized/Expected:

Top benefits realized with the use of GFRP reinforcement is the elimination of future corrosion and concrete delamination, and saving future maintenance cost.

Project Start Date/Substantial Completion Date: 1/9/2017 – 11/27/2018

Affiliations: Prime Consultant: Transystems
Construction Contractor: Kiewit Southern
Construction Engineering Inspection: Bolton Perez & Associates

Project Contact: Engineer of Record (Bulkhead Wall): Joaquin Perez, P.E.
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