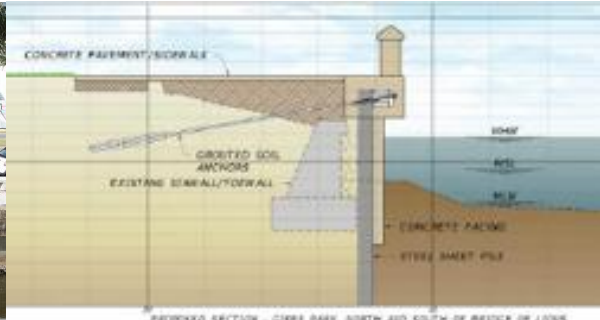


FDOT Transportation Innovation Initiative: FRP – Design Innovation



Fast Facts:

Glass Fiber- Reinforced Polymer Bars



Project Location:

FDOT District Two
St. Johns County
St. Augustine, Florida

Agency:

Florida Department of Transportation

URL:

<http://www.fdot.gov/structures/innovation/FRP.shtm>

Project Name:

SR-A1A (SR 5A) from Bridge of Lions
to Charlotte Street
FPID: 428271-2 (T2A53)

Project Description:

Seawall Replacement

Project Purpose & Need:

District Two inspection of the seawall identified extensive deterioration of the concrete face and cap, and that the seawall was nearing the end of its service life. The chain and post pedestrian barrier on top of the seawall did not meet current life-safety codes, and the seawall needed to be raised to enhance storm protection. Work activities included replacing the existing seawall with a steel sheet pile wall system that included a reinforced concrete cap, a protective CIP GFRP-RC concrete fascia over the steel sheets, and a solid 42 inch high GFRP-RC parapet wall that would replace the post and chain barrier. GFRP reinforcement was used in the concrete cap, fascia panels and parapet wall system.

Overall Budget/Cost Estimate:

\$20M (Contract: T2A53 [Bid Tabulations](#))

What was unique about this project?



The unique features of this project include the use of GFRP reinforcement in the concrete cap, protective concrete fascia panels, parapet wall, and parapet posts known as merlins. #4 and #6 GFRP bars were used as reinforcement in these concrete elements. The fascia panels were prefabricated, similar to concrete sheet piles, thereby minimizing concrete construction work directly exposed to seawater. The parapets and merlins replaced a post and chain guardrail which increased public safety, enhanced storm protection of the adjacent SR-A1A without raising the seawall, and added to the historical features of the City of St. Augustine.

Describe Traditional Approach:

The traditional approach would have used the conventional carbon steel reinforcement with thick concrete cover and special mix design. Given the highly corrosive marine environment, future corrosion and concrete delamination would likely occur within the service life, leading to costly maintenance repairs.

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 reduced concrete cover with elimination of highly reactive pozzolans in the concrete mix, reducing cracking, eliminating corrosion, and saving future maintenance cost.

Project Start Date/Substantial Completion Date:

6/15/2026 – 7/23/2027

Affiliations:

Prime Consultant:

Jacobs

Construction Contractor:

Vecellio & Grogan

Construction Engineering Inspection:

Parsons

Project Contact:

Engineer of Record (Seawall):

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