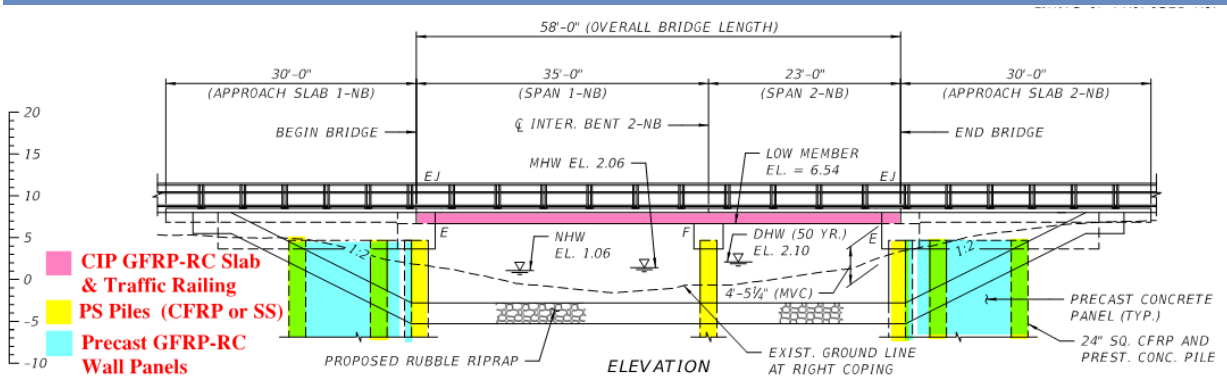
FDOT Transportation Innovation Initiative:

FRP – Design Innovation



Fast Facts:

Glass Fiber Reinforced Polymer

Project Location: FDOT District One
Sarasota County
Osprey, Florida

Agency: Florida Department of Transportation

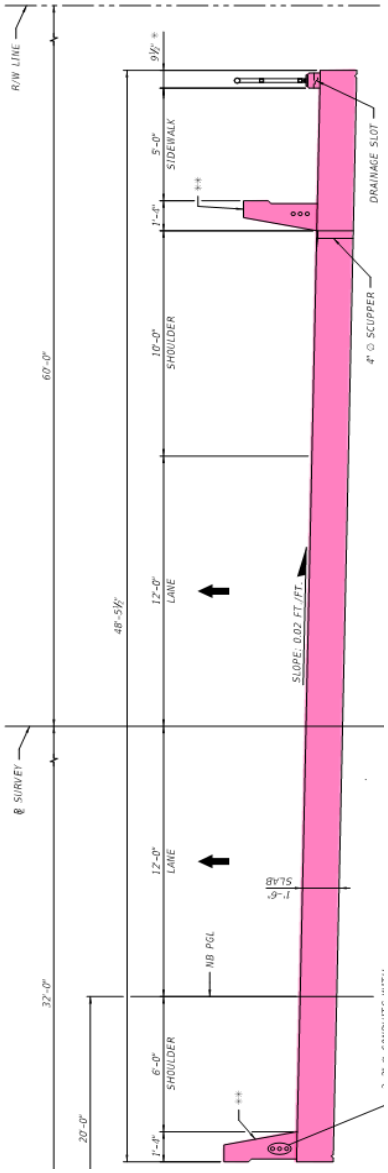
URL: http://www.fdot.gov/structures/innovation/FRP.shtm

Project Name: SR45 (US41) NB over North Creek
Bridge No. 170187
FPID: 433550-3-52-01

Project Description: Replacement of two-span low-level highway bridge and abutment bulkheads

Project Purpose & Need: Wider bridge typical section was needed to accommodate required bike lanes and sidewalk along project corridor. Bridge inspection reports identified deterioration, including evidence of corroded steel reinforcement. Design life of existing bridge has been exceeded (built 1927). Work activities include removal of the existing bridge and bulkhead cap and installation of a new GFRP-RC flat slab bridge and seawall-bulkhead with corrosion resistant soldier piles and GFRP-RC precast panels.

Overall Budget/Cost Estimate: $1,300,000 (Estimated Bridge Cost)



What was unique about this project?

First GFRP-RC 2-span continuous flat-slab highway bridge in Florida. Second soldier pile bulkhead-seawall with GFRP-RC precast panels.

Describe Traditional Approach:

Traditional approach includes installation of Grade 60 carbon-steel rebar with 3-inches underside concrete slab cover and 4" for substructure, using Class IV concrete with additional pozzolan material (silica fume, metakaoline or ultrafine flyash) in the splash zone.

Describe New Approach:

Utilization of GFRP bars in lieu of traditional Grade 60 carbon-steel rebar in most elements with reduced concrete cover and no added pozzolan material required in the concrete mix design.

Top Innovations Employed:

Utilization of GFRP bars within the splash zone/marine environment.

Primary Benefits Realized/Expected:

Longer service life of the bridge and bulkhead.

Comparison of performance of GFRP versus traditional carbon-steel rebar with nearby similar structure (Bridge No. 170186).

Project Estimated Start and Substantial Completion Date:

Nov 2019 – TBA

Affiliations:	PE Consultant:	Patel, Greene & Associates, PLLC.
	Construction Contractor:	TBA
	Construction Engineering Inspection:	TBA
Project Contact:	Engineer of Record:	Joseph Losaria, P.E. Patel, Greene & Associates, PLLC.
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