FDOT Transportation Innovation Initiative:

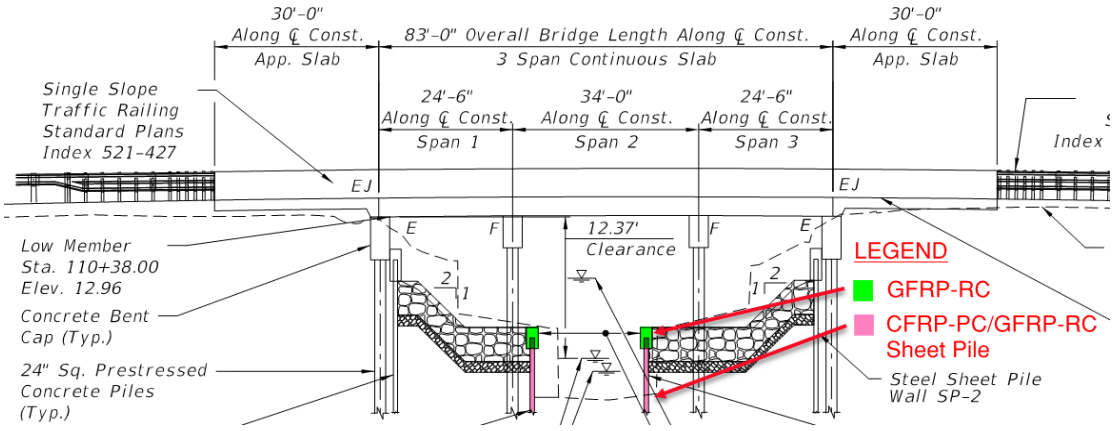
FRP – Design Innovation

Fast Facts:

Glass & Carbon Fiber Reinforced Polymer

Project Location:	FDOT District Three Port St Joe, Florida
Agency:	Florida Department of Transportation
URL:	http://www.fdot.gov/structures/innovation/FRP.shtm
Project Name:	SR 30 over St Joe Inlet Bridge No. 510014 (old), 510075 (new) FPID: 435815-1
Project Description:	Replace bridge and bulkhead seawalls
Project Purpose & Need:	Bridge Inspection Reports identified poor condition rating (4) of the substructure, superstructure, and deck due to corrosion. Additional steel sheet pile and rubble for wave scour protection on the bay side was added in 2013. Work activities included roadway approaches, replacement of existing bridge and bulkheads. New seawall-bulkhead CFRP-PC sheet piles and GFRP-RC cap.
Budget/Cost Estimate:	$4,360,516 (Proposed Budget Estimate)

What was unique about this project? GFRP reinforcement is used in the bulkhead cap, and CFRP/GFRP or HSSS/GFRP in the prestressed concrete sheet piles located in the splash zone, to reduce future maintenance requirements.



ELEVATION VIEW

Describe Traditional Approach: Traditional approach includes installation of grade 60 steel rebar in a cast-in-place bulkhead cap and precast sheet pile stirrups, and prestressing with ASTM A416 carbon-steel strands.

Describe New Approach: Utilization of GFRP bars in lieu of traditional carbon-steel rebar in the bulkhead cap and precast sheet pile stirrups, and prestressing with CFRP strands or HSSS strands.

Top Innovations Employed: Utilization of GFRP bars and corrosion-resistant prestressing within the splash zone/marine environment.

Primary Benefits Realized/Expected: Longer service life of the bulkhead-seawall.

Project Start Date/Substantial Completion Date: 1/1/2020 – 12/12/2020 (estimated)

TABLE OF FRP RELATED QUANTITIES:

	0455 14 23	CONCRETE SHEET PILING, CFRP/GFRP 10"X30" W/FRP STRAND & REINFORCING	CSP-1 (PHASE II)	LF	516.0		2495
			CSP-2 (PHASE II)	LF	538.0		
			CSP-1 (PHASE III)	LF	667.0		
			CSP-2 (PHASE III)	LF	774.0		
SUBSTRUCTURE	0415 10 5	FIBER REINFORCED POLYMER BAR, #5 BAR	CSP-1 CAP (PHASE II)	LF	1326.9		6973
			CSP-1 ANCHOR CAP (PHASE II)	LF	191.8		
			CSP-2 CAP (PHASE II)	LF	1377.8		
			CSP-2 ANCHOR CAP (PHASE II)	LF	191.8		
			CSP-1 CAP (PHASE III)	LF	1582.0		
			CSP-1 ANCHOR CAP (PHASE III)	LF	191.8		
			CSP-2 CAP (PHASE III)	LF	1919.5		
			CSP-2 ANCHOR CAP (PHASE III)	LF	191.8		

Affiliations:
PE Consultant: Registe, Sliger Engineering, Inc.
Construction Contractor: TBA
Construction Engineering Inspection: TBA

Project Contacts:
Engineer of Record: Jacques Registe, P.E.
Registe, Sliger Engineering, Inc.

FDOT Project Manager: Eric Saggars, P.E.
FDOT District 3 GEC (HNTB)
esaggars@hntb.com