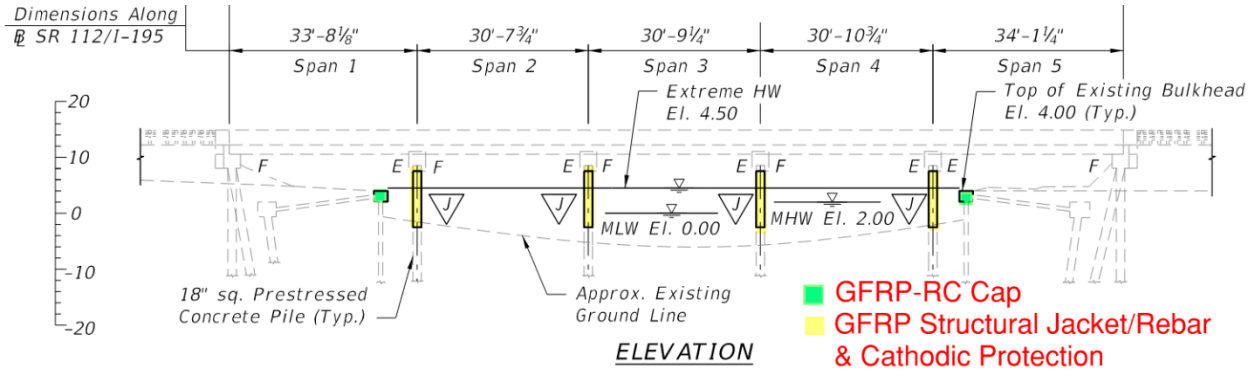
FDOT Transportation Innovation Initiative:

FRP – Design Innovation



Fast Facts:

Glass Fiber Reinforced Polymer (GFRP)

Project Location: FDOT District Six
Miami-Dade County

Agency: Florida Department of Transportation

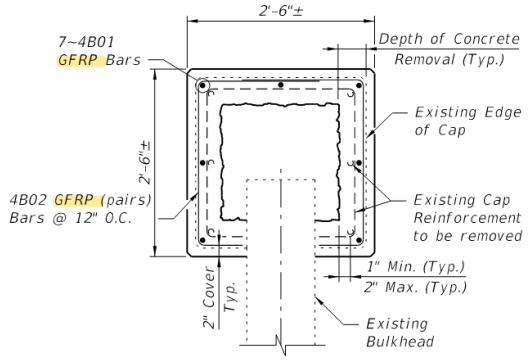
URL: http://www.fdot.gov/structures/innovation/FRP.shtm

Project Name: SR 112/I-195 over Westshore Waterway
Bridge Nos. 870314
FPID: 441967-1

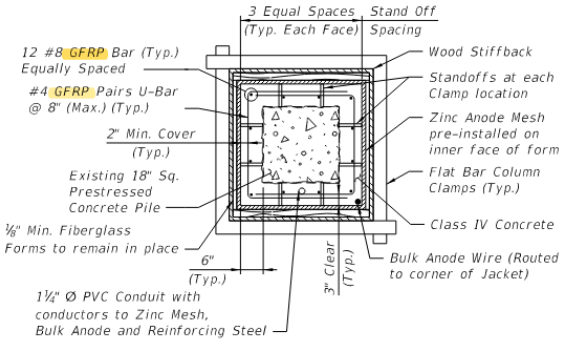
Project Description: Rehabilitation of bridge including piling, bents, and replacement of bulkhead-seawalls caps.

Project Purpose & Need: Bridge Inspection Reports identified deterioration, including evidence of corroded steel reinforcement in the bulkhead cap, bridge pile caps and prestressed pile. Work activities included removal of the existing bulkhead cap and installation of a new bulkhead cap with GFRP reinforcement, repair of piling with GFRP rebar and addition of galvanic cathodic protection. Other rehabilitation work is also being conducted on the bridge, unrelated to FRP-RC/PC.

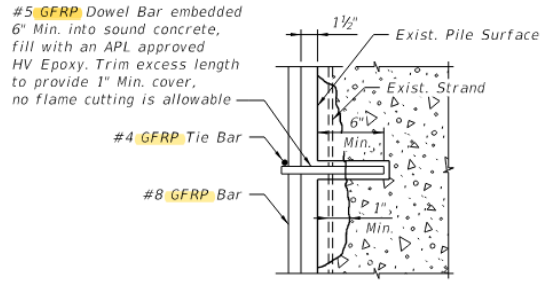
Overall Budget/Cost Estimate: $920,000 (Est. Construction)



SECTION A-A



SECTION A-A



REINFORCING CAGE DOWEL DETAIL

(Two Dowels each face at top and bottom)
(Tie Bars and one at intermediate Tie Bar)

What was unique about this project? GFRP reinforcement is used in the bulkhead cap and pile jacket structural repairs, which is within the splash zone, to avoid corrosion and reduce future maintenance requirements.

Describe Traditional Approach: Traditional approach includes installation of Grade 60 carbon-steel rebar, large concrete cover and concrete additives.

Describe New Approach: Utilization of GFRP bars in lieu of traditional grade 60 steel rebar eliminates future corrosion of the repairs.

Top Innovations Employed: Utilization of GFRP bars within the splash zone/marine environment. Also innovative is the use of GFRP bars in combination with cathodic protection.

Primary Benefits Realized/Expected: Longer service life of the bulkhead cap and pile jackets, especially at vulnerable corners where cracking and more severe exposure occurs. Enhances the CP system by reducing the amount of current needed to protect the piling reinforcement.

Project Start Date/Substantial Completion Date: Feb. 2021 – Nov. 2021

SUMMARY OF STRUCTURE QUANTITIES - BRIDGE 870314

SECTION	PAY ITEM NO.	PAY ITEM DESCRIPTION	LOCATION	UNIT
	0110-3	Removal of Existing Structures / Bridges		LS
SUBSTRUCTURE	0400-4-5	Concrete Class IV, Bridge Substructure	Bents 2 thru 5	CY
	0411-1	Epoxy Material for Crack Injection - Structures Rehab	Bents 2 thru 5	GA
	0411-2	Cracks Inject & Seal - Structures Rehab	Bents 2 thru 5	LF
	0457-2-221	Cathodic Protection Integral Pile Jacket, Structural, 16.1-30.", Galvanic System	Piles in Bents 2 thru 5	LF
	0400-4-4	Concrete Class IV, Superstructure	Deck Underside	CY
	0458-2	Polymer Nosing for Bridge Deck Expansion Joint	Expansion Joint	CF
RETAINING WALLS	0400-4-8	Conc Class IV, Bulkhead	Bulkhead Caps	CY
	0415-10-4	Fiber Reinforced Polymer Bars, #4 Bar	Bulkhead Caps	LF

Affiliations:	PE Consultant:	Bolton Perez & Associates
	Construction Contractor:	TBA.
	CEI:	TBA
Project Contacts:	Engineer of Record:	Luis Vargas, P.E. (BPA)
	Project Manager:	Giedy Coello, P.E (FDOT-D6)