

FDOT Transportation Innovation Initiative: FRP – Design Innovation

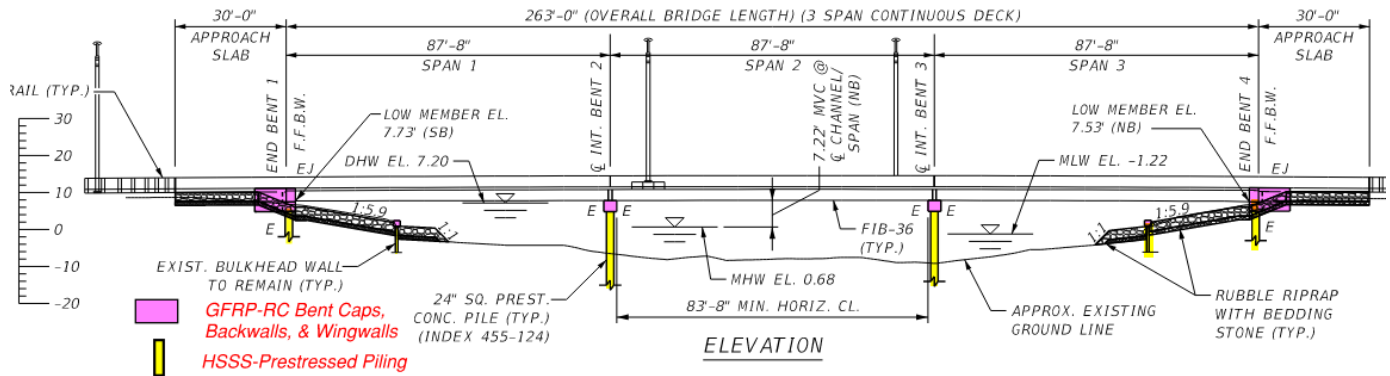


Fast Facts:

Glass Fiber
Reinforced
Polymer Bars
&
Carbon Fiber
Reinforced
Polymer/HSSS
strands



Project Location:	FDOT District Seven Pinellas County St. Petersburg, Florida
Agency:	Florida Department of Transportation
Project Name:	SR-687/4th St N over Big Island Gap Bridge Nos. 150308 & 150309 FPID: 430500-1-52-01 Contract: E7003
Project Description:	Bridge Replacement
Project Purpose & Need:	The existing bridge was functionally obsolete and listed on the Pinellas County Bridge Replacement Program. The purpose of this project is to increase capacity and improve safety of the existing transportation facility.
Construction Cost:	\$8,992,000



What was unique about this project?

Work activities included prestressed precast concrete square piles reinforced with either Stainless-Steel or CFRP strands & spirals (Contractor’s selected SS option); and Cast-in-place concrete pile caps, wing walls, and back walls reinforced with GFRP bars and stirrups.

Describe Traditional Approach:

Traditional approach includes larger concrete cover, reduced tensile stress at the concrete surface and addition of fly ash, blast furnace slag, silica fume and other corrosion inhibitors into cement rich concrete mixes to protect carbon steel prestressing strands and reinforcing with limited long-term success, especially in the presence of concrete cracking.

Describe New Approach:

The precast prestressed piles use SS or CFRP strands & spirals and the cast-in-place pile caps, back walls, and wing walls use GFRP bars & stirrups to help reduce the concrete cover, which replace the traditional carbon steel strands and steel rebars.

Top Innovations Employed:

Utilization of FRP and SS reinforcing materials in marine environment.

Primary Benefits Realized/Expected:

Longer service life of the bridge without major maintenance.

Project Start Date/Substantial Completion Date:

October 2022 / Early 2024

Affiliations:

PE Designer: FDOT District Seven
 Construction Contractor: Superior Construction Company Southeast, LLC
 Construction Engineering Inspection: AECOM

Project Contact:

Engineer of Record: Mamunur R. Siddiqui, P.E.
 FDOT District Seven
Mamunur.Siddiqui@dot.state.fl.us



FDOT Roadway Project Manager: Michael MacKinnon, P.E.
 FDOT District Seven
Michael.MacKinnon@dot.state.fl.us