FDOT Transportation Innovation Initiative: FRP – Design Innovation

Project Location: FDOT District Five
Flagler Beach, Florida

Agency: Florida Department of Transportation

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

Project Name: SR A1A – Flagler Beach Seawall
FPID: 440557-7-52-01
Contract: T5641

Project Description: Construction of secant pile seawall behind beach dunes to protect SR A1A

Project Purpose & Need: Severe corrosion damage of existing steel sheet pile bulkhead and extensive damage and erosion of adjacent sand dune systems, most recently from hurricane Matthew, which undermined SR A1A.

Overall Budget/Cost Estimate: $12,000,000
Project Start Date/Substantial Completion Date: 2/4/2019 – Oct. 2019

What was unique about this project?
- 4920’ length of Secant Pile seawall with GFRP reinforcement long-term durability and additional corrosion protection in an extremely aggressive environment.
- First FDOT project with greater than one million linear feet of GFRP reinforcing bar.

Describe Traditional Approach: Traditional approach includes installation of Grade 60 steel rebar with supplemental cementitious material or ternary blends for additional concrete durability.

Describe New Approach: Utilization of GFRP bars in lieu of traditional Grade 60 steel rebar in the secant pile which are tipped in a high chloride content sand and water table, and periodically exposed to salt spray when exposed.

Innovations Employed: Utilization of GFRP bars within a coastal marine environment.

Primary Benefits: Longer service life of the secant pile wall.

Affiliations:
- PE Consultants: RS&H, Mott MacDonald Florida, LLC
- Construction Contractor: Superior Construction Southeast
- Drilling Contractor: Malcom Drilling Co., Inc.
- Construction Engineering Inspection: Atkins

Project Contacts:
- Seawall Engineer of Record: Lowry J. Denty, P.E. (Mott MacDonald Florida, LLC)
- FDOT Project Manager: Ty Garner (HNTB)
- FDOT District Five: Ty.Garner@dot.state.fl.us

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