

FRP Institute:

2025 FRP Workshop

FDOT District 4 **Fort Lauderdale, FL**

December 3, 2025



FRP for Transportation Structures Engineers

Agenda - Part 1

Morning: (8.30 am to 12.30 pm) Discussion topics/presenters:

- Welcome and Orientation – D4 (FDOT)
- FRP Institute Introduction – Richard Krolewski (FRPICI)
- 1. AASHTO Guide Specifications Along with Michigan DOT Specific Research & Resulting Design Aids – Matt Chynoweth, RS&H (Keynote) (1-hr)
- 2. History of Externally Bonded FRP in DOT applications (Structural testing and applications) – Scott Arnold, Fyfe (@ (9:30am 1-hr)
- 3. FRP Strengthening of Concrete Highway Bridge Elements Using AASHTO Guide Specifications – Tarek Alkhrdaji, Structural Technologies (Keynote Speaker) (@ 10:30am 1-hr)
- 4. Workforce Development Installation of GFRP Bars – Jack Nix, JN Distribution & Don Ayres, Encore-Hartco (@ 11:00am 30-min)
- 5. Manufacturing & Design of GFRP Reinforcing Bar Application GFRP Reinforcing Bar Quality Control Requirement – Gene Latour, V-ROD (30-min)



2025 FRP Workshop

FDOT District 4

Fort Lauderdale, FL, December 3, 2025

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FRP for Transportation Structures Engineers

Agenda – Part 2

Afternoon: (1:00 pm to 4:30 pm) Discussion topics/presenters:

6. Design and Construction of Bridges with GFRP & BFRP Rebar – Steven Nolan (30-min)
7. Example 1 Case Studies for FRP-RC/PC Bridge Project: District 6 – Steve Nolan/Hailing Zhang (30-min)
8. Example 2 Case Studies for FRP-RC/PC Bridge Project: District 4 – David De Torres (30-min)
9. Introduction to Carbon Fiber Composite Cable & Applications – Sho Nakahama, Tokyo Rope (30-min)
10. The Future of Reinforcing in Critical Infrastructure Project – Danielle Kleinhans, Mateenbar (30-min)
11. FRP Reinforcement Options & Use in New Construction – Trevor Gundberg, Vectorply Corp. (30-min)
12. Design & Construction of Buildings & Bridges with GFRP Bar – Jesse Curtis, MST Bar (30-min)
13. T-Biscuit: An Alternative to Steel Shear Connections – Anthony Noto, Scott Hemphill, V2 Composites (30 min)
- Closing - Richard Krolewski and Steven Nolan



FRP for Transportation Structures Engineers

6. FDOT Design and Construction of Bridges with GFRP & BFRP Rebar Overview (Steven Nolan P.E.)



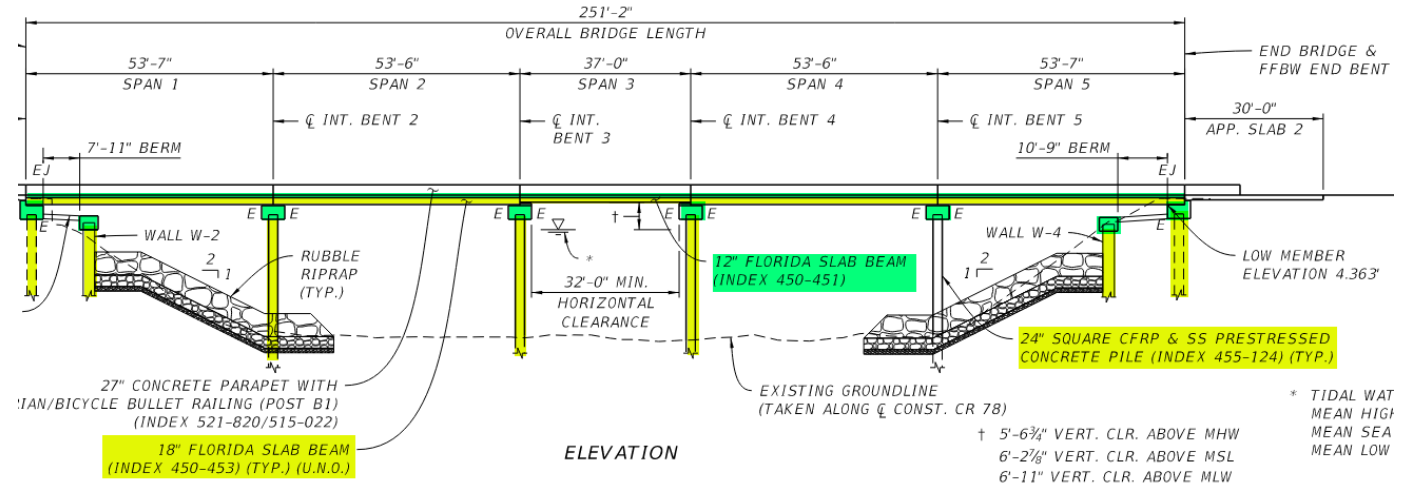
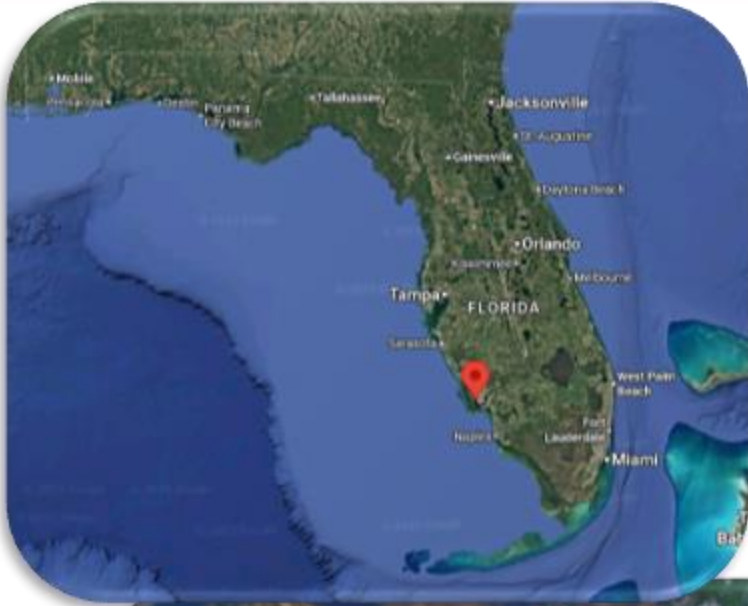
2025 FRP Workshop
FDOT District 4
Fort Lauderdale, FL, December 3, 2025



AGENDA

- **Introduction**
- **District 1: Pine Island Road – Bridge Replacement**
- **District 2: Aucilla River Bridge Repair – Crutch Bents**
- **District 3:**
- **District 4: Earman River,**
- **District 5:**
- **District 6: Channel 5 Rehab, Cow Key, Duck Key**
- **District 7:**
- **FDOT New FRP Research of Interest**

D1: PINE ISLAND RD BRIDGE REPLACEMENT



D1: PINE ISLAND ROAD BRIDGE REPLACEMENT

Project Details *(Jesse Curtis will present more details in Part 12)*

Little Pine Island Bridge Replacement

- FPID [451937-2](#)
- Contract No: H1I24 (Design-Build)
- EOR: RS&H
- Details: FRP-PC Piles & FSB's, GFRP-RC Bent Caps, GFRP Bulkhead Cap, *(MST bars)*
- Letting 9/29/2023
- *Status: Concrete Topping (Phase II) completed 11/18/25 now open to traffic.*



D1: Other FRP-RC/PC Projects

Active Project Summaries

1. **Sanibel Island Causeway Restoration** ([452819-1](#)) \$6.6M CG H1719, GFRP-RC Bulkhead Seawall Caps, Phased Design-Build, Letting 9/29/2023. **status:** *Under construction, Contract end 12/20/2025.*
2. **Caxambas Ct/Roberts Bay, Marco Island xCR low-level bridge.** PD&E under [445460-1](#) Letting date *02/24/2027* - **status:** *Phase II CO review 7/2/2025.*
3. **East Periwinkle Bridge Replacement** (City of Sanibel) ([452819-1](#)) \$0.75M PEG [G2W66](#), \$2.5M CG [G3E92](#), Low-level bridge replacement. **status:** *Preliminary*

D1: Other FRP-RC/PC Projects

Completed Project Summaries

- 1. Skyway Rest Area** (Design-Build: 437635-1, 437973-1 & 438528-1), E1P44, Fast-Facts: bulkhead cap replacement; xCR-sheet pile wall extension & traffic railings – complete.
- 2. US41 over Morning Star & Sunset Waterways** (435390-1), T1742, Fast-Facts: Link-slab details (GFRP & BFRP) – 2/27/19 letting, (Bid Tabs) – **status**: completed 10/30/20.
- 3. US41 over North Creek** (433550-3), T1747, Fast-Facts: piles (HSSS-PC), wall panels, flat-slab, traffic railings, 8/28/19 letting (Bid Tabs) – **status**: completed 7/7/21.

D2: AUCILLA RIVER BRIDGE

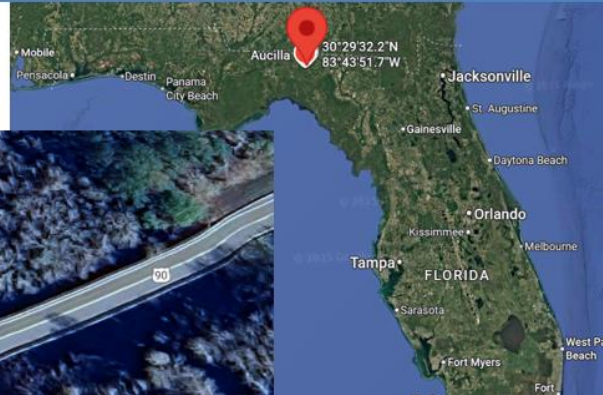
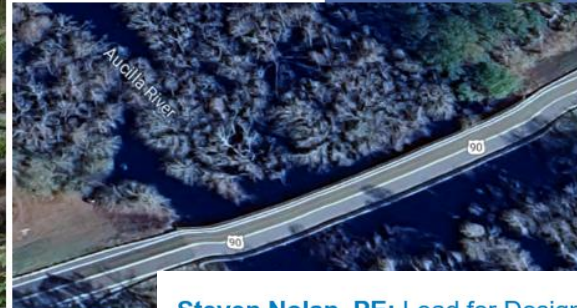
Project Details *(Jesse Curtis will present more details in Part 12)*

- ***Recent presentation at ACI Fall Convention available at ACI University online)***

#11 GFRP Bars Restoring Support for Aucilla River Bridge

Slide 3

Location:



Steven Nolan, PE: Lead for Design Innovation and Implementation of FRP in Structural Applications,
FDOT State Structures Design Office



Francisco De Caso, PhD, PE: Principal Scientist at Structures and Materials Laboratory,
University of Miami



Baltimore, MD, October 29, 2025

New Advancements in FRP & FRCM Materials for Repair and Rehabilitation of Concrete Structures



D2: AUCILLA RIVER BRIDGE

Project Details (*Jesse Curtis will present more details in Part 12*)

- *Recent presentation at ACI Fall Convention available at ACI University online)*

US90 over Aucilla River Crutch Bents

- [FPID 447346-1](#)
- *Contract No. T2984*
- Contractors EOR: Garcia Bridge Engineers
- Details: Crutch Bents on 2,3, & 4 with 36~#11 GFRP rebar/cap CSI proposal to replace post-tension cap design.
- Letting 02/28/24, [Bid Tabs](#)
- ***Status: Construction started Nov. 2025***

D2: Other FRP-RC/PC Projects

Active Project Summaries

1. [US1/King St over San Sebastian River \(437428-1\)](#), T2A28, [GoMap](#): Using GFRP-RC overlay for FSBs, bent caps and xCR-piles, *4/30/25 new letting, [BidTabs](#) - status: Bids received.*
2. **CR 357 over Shired Creek** ([437402-1](#)) T2A21, [GoMap](#): xCR-FSB Topping, Piling, FRP Caps, \$16M letting ~~4/30/25~~ [BSN](#) - *status: All bids rejected, Reduced scope and rescheduled for 5/20/26 letting.*
3. **SR105(Hecksher Dr) over Browns Ck** ([448825-1](#)) [GoMap](#): xCR-Piles, FIB36, Deck, B/GFRP Caps, letting 10/28/26 - *status: 90% plans due 12/8/2025.*
4. **[St. Augustine A1A/Avenida Menendez Seawall replacement \(428271-2\)](#)**. \$45M. (Videos: [Constr. Sequence](#), 1/23/24 [Public Meeting](#), 9/24/25 letting. GFRP-RC Parapet, Bulkhead Cap & Wall Facing on **soil nail** tied-back Steel Sheet pile seawall. 331,316 LF #4,5,6,9's. *Letting 12/3/2025 - Status: Production 7/16/2025. [Notice of Lions Temporary Removal](#) during construction.*

D2: Other FRP-RC/PC Projects

Completed Project Summaries

1. **Cedar Key: SR24/Channel #3 (432194-1) E2T70, Fast-Facts:** Test Blocks 1-yr baseline (Knight), Letting 7-15-2015 – benchmarking complete. Waiting for next sampling date (2026?)
2. **SR117 (Norwood Ave) over Moncrief Ck (437438-1), T2810**, letting 5/26/21. Bid Tabs: CFRP-PC 24” piles casting at Gate – **status**: Pile type changed to conventional steel strands and silica fume in concrete. NTP: 8/12/21 Time Began: 11/08/21. Project is 88% paid with 96% time utilized. Project Completion: Spring 2023.
3. **SR-A1A/Myrtle & Simpson Creeks (434041-1 & 434042-1), T2772, Fast-Facts**, GFRP-RC link slabs 5/20/20 letting (Bid Tabs) – **status**: Final accepted 12/6/2023
4. **Various Bridges over Sante Fe & Suwanee Rivers (437442-1), E20W3**, GoMap-260006, 310007, 370023 & 370030: Pile Jackets with GFRP rebar (*Tuf-N-Lite*) (8,715 LF), 6/8/2022 letting, Bid Tabs – **status**: Completion was anticipated 1/26/24.
5. **SR5A/King St from SR-A1A to Baywall 430897-1, E20T7**, GFRP-RC Bulkhead Cap (#6 bars) on steel king pile sheet pile wall. 9/14/2022 Letting (Bid Tabs) – **status**: Completed 3/1/2024.
6. **SR5 over Oyster Creek (433843-2), T2819, GoMap**: weir/bulkhead rebar (D2-PD&E-Rito Rodriguez/IEI), 10/27/21 letting, Bid Tabs – **status**: Construction on 800 ft. stretch of U.S. 1 in St. Augustine now going on for 3 years. Substantially completed

D3: Other FRP-RC/PC Projects

Project Summaries

1. **CR30A/Western Lake** ([443331-1](#)) [GoMap](#), xCR-FSBs & xCR-PC Piles & Bulkheads; GFRP-RC Caps, letting 8/30/23 – **status:** Driving test piles. 
2. **CR30B/Indian Lagoon** ([441185-2](#)) [GoMap](#), Design now by County's consultant (Dewberry FPN [441185-1](#)). xCR-FSBs & xCR-PC Piles; GFRP-RC Caps, letting 11/12/25 – **status:** ???
3. **CR 372/Surf Road over Otter Creek Rise** ([442951-1](#) LAP), [GoMap](#), xCR-FSBs & xCR-PC Piles & Bulkheads; GFRP-RC Caps, letting 2/25/26 – **status:** 100% Plans on shelf.
4. **Victoria Ave over Tidal Branch** (Port St Joe) ([441179-1](#)), [GoMap](#), GFRP Box Culvert to replace railroad flatcar bridge; letting 12/3/25 – **status:** Advertised.
5. **SR 30 (US 98) from S. Franklin St to Carrabelle River Bridge** [445761-1](#): GFRP-Box Culvert, Letting 6/1/2025 – **status:** Final Plans 4/4/2025.
6. **CR2302/Bridge St over Fanning Bayou** ([442917-1](#)) [GoMap](#), (Ardurra-T.Bevilacqua) GFRP-RC CIP Flat-Slab with xCR-PC Piles & Bulkheads; GFRP-RC Caps & TR, letting 7/28/27 – **status:** 90% Plans 1/17/25.
7. **Rocky Comfort Creek** ([454309-1](#)) (PGA-M.Lauckner) Structural Pile Jackets with GFRP rebar, letting 8/14/25 – **status:** Production 4/11/25.
8. **SR 390 EB Bridge over Mill Bayou** ([421225-2](#)) (STV-B.Goble xCR-FIB36 & xCR-PC Piles & Bulkheads; GFRP-RC Caps, letting TBA – **status:** 60% Plans, BDR, BHR 4/14/25.



D3: Other FRP-RC/PC Projects

Completed Project Summaries

- *SR30 over St Joe Bay Inlet (435815-1), T3632, bulkhead cap and sheet piles – 10/30/19 letting Bid Tabs; Began 1/23/2020*

D4: FRP-RC/PC Projects

Active Project Summaries (1 of 2)

1. **US 1/Jupiter Federal Observation Platform** ([428400-2](#)) **T4564** – 06/9/21 letting, [Bid Tabs](#), HSSS/CFRP-PC(?) FSB's LF, xCR-18" Piles, (H&H/Nolan), <https://www.fdot.gov/projects/jupiterus1bridge/construction-updates> – **status: Under construction – 100% construction.** [U.S. 1 bridge in Jupiter opens with more lanes, sidewalks, bikeways](#)
2. **SR-A1A North Causeway Bridge Observation Platform** ([429936-2](#)) **T4583**– 1/12/22 letting, [Bid Tabs](#), HSSS/CFRP-PC FSB's([@CDS](#), [MST bars](#))=1421'; CFRP-18" piles=1676'+1079' (@CDS); HSSS-24" piles=120'; CFRP-10"x30" Sheet Piles = 621', (H&H/Nolan), [D4 Construction webpage](#) – **status: 50% construction - Beams installed for the new Observation Walkway on the west side of the bridge.**
3. **Sebastian Inlet** ([445618-1](#)) **T4729** (Transystems) Observation Walks as part of bridge replacement only xCR piles, FSB & topping coping, but not bent caps in the Splash-Zone? - [Public Meeting](#), Letting 12/3/25, [BSN](#) – **status: Bids pending.**
4. **SR 5/US 1 Over Earman River** ([442891-1](#)) **T4714** – xCR-FSB's, GFRP Bent Caps & xCR-Piling, 09/25/24 letting, [BidTabs](#) - **status: Construction began 2/10/2025. Piles driven Phase 1.**



D4: FRP-RC/PC Projects

Active Project Summaries (2 of 2)

1. [17th St/Indian River, East End-Vero Beach](#) ([446106-2](#)) **E4W37** - Replace east end spans (56 to 64) with xCR-Beams (1-span) + CFRP/GFRP-FSB's (7-spans), SSRC deck Span 56, CS-Barrier, xCR-piling, (GFRP-Bent Caps w/ SS-couplers) – 3/3/23 letting - **status: 50% construction.**
2. **I-95 NB Off-Ramp at Indiantown Rd** ([439758-1](#)) **E4W59** – xCR-Piling 18"x18" (1277 LF) – 5/5/2023 letting- **status: 86% Construction.**
3. **SE Martin County Line Bridge Replacement** (L. Rodriguez/DRMP) [maplink](#) – FRP-PC/RC foundation and superstructure - **status: 60% Plans 2023?**
4. **SR-A1A over Big Mud Creek & Blind Creek** ([449179-1](#)) – xCR-FIB/FSB's, -Bents, Piles, and deck. **07/31/30** letting - **status: D4 in-house. Pushed out 5-yrs.**
5. **NE 36th St/Sample Road over Cap Knight Bayou Waterway** (LAP-City Lighthouse Point) ([453177-1](#)) – \$1M [Congressional CPFR: Candidate xCR-FSB](#) - **status: In design.**
6. **NE 31st Court over Heron WW** (LAP-City Lighthouse Point) ([453176-1](#)) – \$1M Congressional CPFR: [Candidate xCR-FSB](#) - **status: In design.**
7. **Seawall & Pump Station Resiliency Project** ([448576-1](#), 448577-1, 448574-1) – Letting 9/25/24 - **status:**

D4: FRP-RC/PC Projects

Completed Project Summaries

- NE 23rd Ave/Ibis Waterway (434359-1) T4500 (LAP),
Fast-Facts: GFRP-RC Flat-Slab (*Bayard*) – 02/27/19
*letting (Bid Tabs) – Began 11/04/19 – **status:***
Construction completed 4/26/21. NDT vibration
monitoring testing completed by UM/FIU on 5/1/21.

D5: Other FRP-RC/PC Projects

Active Project Summaries

1. **SR-A1A Seawall #3 & #4** ([452443-1](#) & [452444-1](#)) [H5461](#), \$82.5M (4.0 lane miles) + \$21.4M (13.2 lane miles), incl. \$25.5M PROTECT + \$87.6M ER (incl. \$61.3M+\$24.5 ER01-2022 + \$1.8M ER03-2022/23), **Fast-Facts:** GFRP-RC [Secant Pile wall](#) for protection, Hurricanes Ian & Nicole permanent repairs. *Construction Video* #3 began May 24; #3 began 9/10/24, *V-ROD bars* - **Status: Under construction.** [Construction of Ormond-by-the-Sea Progressing](#) *Northern wall:* www.cflroads.com/project/452444-1; *Southern wall:* www.cflroads.com/project/452443-1
2. **SR-404 over Indian & Banana Rivers** ([445395-1](#)) **E55A2**, CP Pile Jackets with GFRP bars (contractor proposal), 5/3/22 letting [BidTabs](#) - **Status: completed 1/3/2024.**
3. **N. Banana Rv Dr. Merritt Island** (LAP-Atkins) [Map](#) – 18” Sq. xCR-Piles optional CFRP or HSSS, xCR-FSB’s or GFRP-RC Flat-Slab & Soldier Pile Walls. **Status: Preliminary Cost study.**
4. **US1 over Pellicer Ck** ([447118-1](#)); *Potential xCR bridge in splash zone; letting 1/25/2026.* **Status: 90% 2025**
5. **SR44 Sth Cswy over Indian River** ([450561-1](#)) *Bulkhead Rehab* ([Map](#)), GFRP rebar in cap and 62’ xCR Sheet Piles, Letting 5/7/2024, BSN. **Status: Advertised.**

D5: FRP-RC/PC Projects

Completed Project Summaries

1. **Barracuda Blvd New Smyrna** ([437935-1](#)) **T5743**, Bent Caps, CFRP-18" Piles=1508'+224' (@CDS); 73~CFRP-12"x30" Sheet piles=2269', 8~corner piles, [BSN](#), [Bid Tabs](#), Letting 2/23/2022. 4 new sheet pile walls to be added to this project ~\$1.5M to address existing wall damage (Phase 2). **Status: 100% completed 10/28/2024.**
2. **5th Street over Yacht Club Cut** ([437936-1](#)) (LAP-DRMP) [Map](#) – 24" Sq. xCR-Piles optional CFRP or HSSS. **Status: Completed 1/31/2025.**
3. **SR5/US1 NB Over Turnbull Creek** ([447117-1](#)), **T5830** Bridge Replacement, xCR-Piles, Superstructure TBA, Letting 8/28/24, [BidTab](#). **Status: Construction began 11/13/2024. Est completion 10/27/2025.**
4. **SR-A1A Seawall #1** ([440557-7](#)) **T5641**, **Fast-Facts**: Secant wall for revetment – complete. 2.1 lane miles improved, \$13.6M const. **status: Hurricanes Ian & Nicole exposed wall face approx. 10-feet height.**
5. **SR 520 over Indian River** ([440969-1](#)) **E5Z68**, **Fast-Facts**: Bulkhead Cap Replacement - 3/5/19 letting ([Bid Tabs](#)) – no issues with the GFRP in the bulkheads that made it back to the EOR.
6. **SR 404 /Indian & Banana Rivers** ([439275-1](#)) **E5Z32**, Bulkhead Rehab xCR-Sheet piles only – 2/26/18 letting.
7. **SR 528 /Indian & Banana Rivers** ([441166-1](#)) **E5Z96**,

D6: Channel 5 Pier Rehabilitation

Project Details

- Monroe County, Florida:



D6: FRP-RC/PC Projects

Active Project Summaries

1. **SR /Channel 5 ([436523-1](#)) E6K61** - Precast/PT Pier rehab, Letting 8/27/2020. BSN. *status: Under construction, FRP-RC repair proposed (Revision 3).*
2. **117th St/Vaca Channel #2 ([448208-1](#))** LAP – xCR substructure consideration. Design with grant to City of Marathon, letting Nov. 2027. *Status: 90% Plans due 12/6/24.*
3. **FKOHT over Bow Channel Old Bridge Rehab.** for SUNTRAIL ([440909-2](#) & [3](#)) – Grant to FDEP \$0.6M design, \$10M construction in 2027/28. *Status: Kickoff meeting 12/6/2024.*
4. **SR 907/Alton Rd ([430444-2](#))** Raising Road and adding pump stations. \$60M with \$18M PROTECT Grant. Structures should be GFRP-RC due to saltwater. New letting 2029 – *Status: Shelved for now.*
5. **Snake Creek Bridge PD&E Study ([442670-2](#))** New high-level bridge to replace Bascule. XCR foundations will be required. *Status: PD&E Kickoff 2/3/2026. Construction 2035.*
6. **Atlantic Isle Lagoon Historic Bridge Replacement ([430029-2](#)),** LAP – xCR end bents & arched FSB's, upper drilled shaft connection? \$2M, Letting 12/22/2027 – *Status: 60% Plans 6/4/2025.*

D6: FRP-RC/PC Projects

Future Projects ???

1. [Long Key Bridge Replacement](#) ([448206-1](#)) – xCR substructure considerations, letting 03/15/2027. **Status:** *PD&E underway - [Public Kickoff Meeting](#) 2/16/2023, [Alternatives Meeting](#) 9/12/2023. Pushing out construction to 2040?*
2. [Seven Mile Bridge Replacement](#) ([448207-1](#)) - xCR substructure considerations, letting 03/15/2027 – **Status:** *PD&E. Public Kickoff Meeting 5/16/2024, 30% Plans 12/9/2024. Design-Build Advertisement 5/18/2026*
3. [Snake Creek Bridge PD&E Study](#) ([442670-2](#)) New high-level bridge to replace Bascule. XCR foundations will be required. **Status:** *PD&E Kickoff 2/3/2026. Construction 2035.*
4. **Julia Tuttle Causeway over ICWW** ([449664-1](#)), Rehab project includes and Integral Pile Jacket Cathodic Protection with GFRP bars, Letting 1/28/2027 – **Status:** *60% Plans 9/18/2025*

D6: FRP-RC/PC Projects

Completed Project Summaries

1. **City of Key West Bight Ferry Dock Extension** ([412194-1](#) LAP Grant), ***Fast-Facts:*** CFRP-PC Piles.
2. **Bakers Haulover Cut** ([433378-1](#)), ***Fast-Facts:*** bulkhead cap and facing.
3. **US-1 over Cow Key Channel** ([441740-1](#)), ***E6L95, Fast-Facts:*** 6 spans (3 per bridge) replacement (*Luis Vargas/BPA*) – 10/31/19 letting ([BidTabs](#)) – complete (Nov 2020).
4. **SR-112/I-195 Westshore waterway** ([441967-1](#)) ***E6M50, Fast-Facts*** - bridge rehab: piles, bent cap & bulkhead cap repairs – 11/19/2020 letting [BSN](#) - complete 8/30/22.
5. **SRA1A/Indian Creek Drive Drainage Mitigation** ([439228-2](#)) **AS343**-City of Miami Beach. GFRP-RC Pump Station Pile Cap and Bulkhead Caps.

D7: Other FRP-RC/PC Projects

Active Project Summaries

1. **Halls River Bridge Research** ([430021-1](#)) [T7386](#), [Fast-Facts](#): Bulkhead cap (D7-Nolan) – **Status: +7-year Durability FRP-RC Bulkhead Beam Extraction and Testing pending (UM), December.**
2. **I-275 over Big Island Gap** ([449109-1](#)) **E7U17** - Bridge Substructures – (HDR Jos van Dijk), xCR piling and caps; Bridge Superstructure 1 (LHS) – xCR beams and deck for SUP; Bridge Superstructure 2 (RHS) – Conventional materials; Bulkhead Extensions using xCR Sheetpiles and Caps, Letting 3/31/25, [BidTabs](#) - **Status: Awarded 5/2/2025.**

D7: Other FRP-RC/PC Projects

Completed Project Summaries

- 1. Halls River Bridge** ([430021-1](#)) [T7386](#), [Fast-Facts](#): bridge & bulkhead – Completed 1/21/2020). Load Testing performed by FDOT-SRC in Oct 2021; Monitoring (FAMU-FSU):
- 2. Bayway Structure E Seawalls** - ([427143-2](#)) **E7R20**, Design-Build: GFRP-RC Cap and Deadman for anchored Steel Sheet pile wall. [drone footage](#) – Completed 1/30/2023.
- 3. 4th St at Big Island Gap** – ([430500-1](#)) **E7O03**, letting 7/21/21 (Siddiqui) – Bent caps are GFRP (Piles are SS-PC), [Bid Tabs](#) **40th Ave. NE/Placido Bayou**, City of St Pete ([443600-1](#)), [Fast-Facts](#) (Siddiqui/Cardno) 9/15/20 letting: full bridge.

FDOT FRP NEW RESEARCH OF INTEREST

BEE77-977-01 (UM)

- Completed May 2025
- TRB TRD database: <https://trid.trb.org/View/2601703>

Waterline Pile Cap Footings for Bridges using Large Diameter FRP Reinforcing – Material Characterization and Design

Contract Number: BEE76-977-01

Final Report

Prepared by:

Principal Investigator: Antonio Nanni, Ph.D., P.E.

Co-Principal Investigator: Francisco De Caso, Ph.D., LEED A.P.

Postdoctoral Associate: Alvaro Ruiz Emparanza, Ph.D., P.E.

Research Associate: Juan Manuel Palacios

Graduate Student: Mattia Mairone

Graduate Student: Khashayar Heydarpour

Project Manager:

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Record URL:

- <https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/research/reports/fdot-bee76-977-01-rpt.pdf>

THANK YOU FOR ATTENDING

Steven Nolan, P.E.

Assistant State Structures Design Engineer
FDOT State Structures Design Office

Steven.nolan@dot.state.fl.us



Member:

- ACI 440C, Code Committee – GFRP Reinforced Concrete for Building Specifications