

# FDOT Transportation Innovation Initiative: FRP – Design Innovation



## Fast Facts:

Glass  
Fiber Reinforced  
Polymer  
&  
Carbon  
Fiber  
Reinforced  
Polymer



**Project Location:** FDOT District Three  
Bay County  
Lynn Haven, Florida

**Agency:** Florida Department of Transportation

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

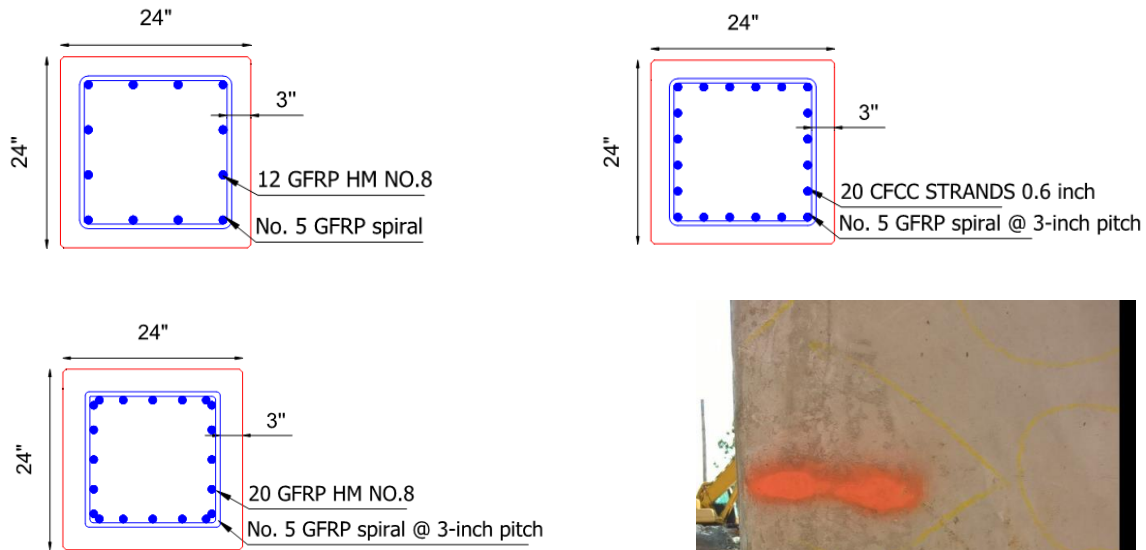
**Project Name:** Arthur Drive over Lynn Haven Bayou  
Bridge No.: 464143  
FPID: 430463-1

**Project Description:** Field testing of GFRP and CFRP reinforced concrete piles.

**Project Purpose & Need:**

Three FRP reinforced precast concrete demonstration piles were manufactured and driven to test performance. One pile was prestressed with CFRP tendons, and two piles were non-prestressed with GFRP bars.

**Overall Budget/Cost Estimate:** 180 linear feet of precast pile for a lump sum cost of \$28,904.00 + Tax. Cost of driving piles by contractor and FRP reinforcement unknown.



**What was unique about this project?**

Three demonstration piles were driven at a project site to assess the driving axial capacity of full-scale square FRP reinforced concrete precast piles in the field. The piles were not production piles, but were allowed to remain in place behind the backwall, under the approach slab.

**Describe Traditional Approach:**

Precast concrete piles with prestressed steel strand and mild steel stirrups is common for bridge deep foundations.

**Describe New Approach:**

Two of the demonstration piles contained non-prestressed GFRP reinforcement with GFRP stirrups. One pile was prestressed with CFRP strand with GFRP stirrups.

**Top Innovations Employed:**

Use of non-prestressed concrete piles, reinforced with GFRP bars.

**Primary Benefits Realized/Expected:**

**Project Start Date/Substantial Completion Date:**

FRP Pile Driving: 3/2/2017 – 3/3/2017



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Precast Pile Supplier:

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CFCC Strand:

Tokyo Rope  
Tokyo, Japan

GFRP Reinforcement:

Pultrall  
Quebec, Canada

Contractor:

F&W Construction Company

Project Contact:

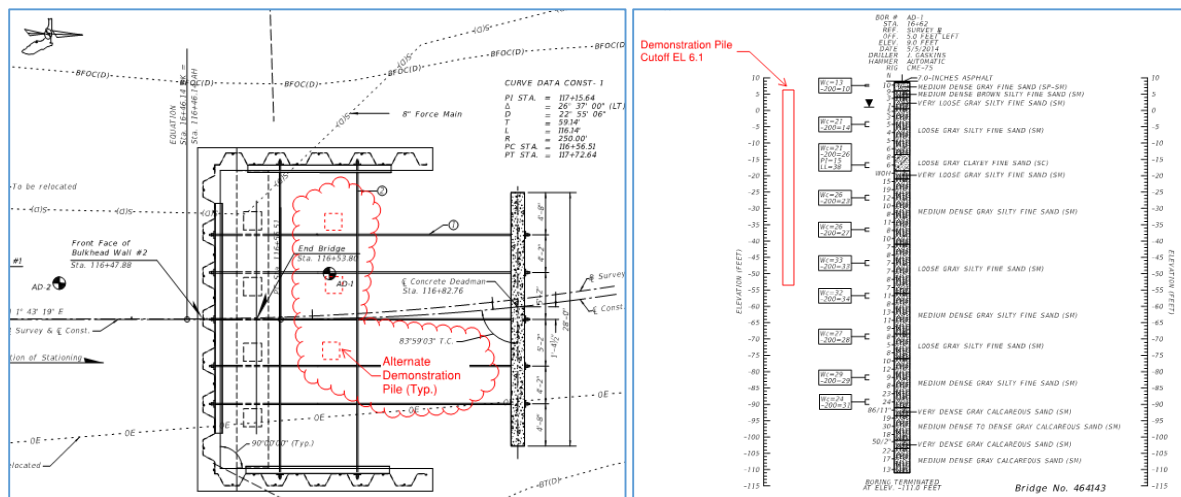
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Research Project:

A Laboratory and Field Study of Precast Concrete Piles Reinforced with GFRP Bars, Ties, and Spirals



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