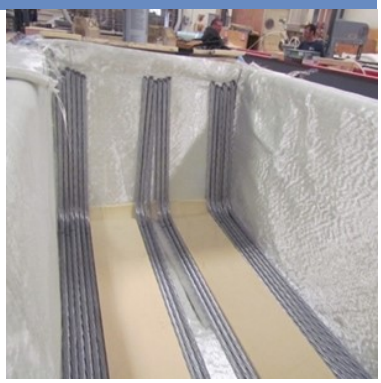
# FDOT Transportation Innovation Initiative:

# FRPM&S – Design Innovation



## Fast Facts:

### Hybrid Composite Beam

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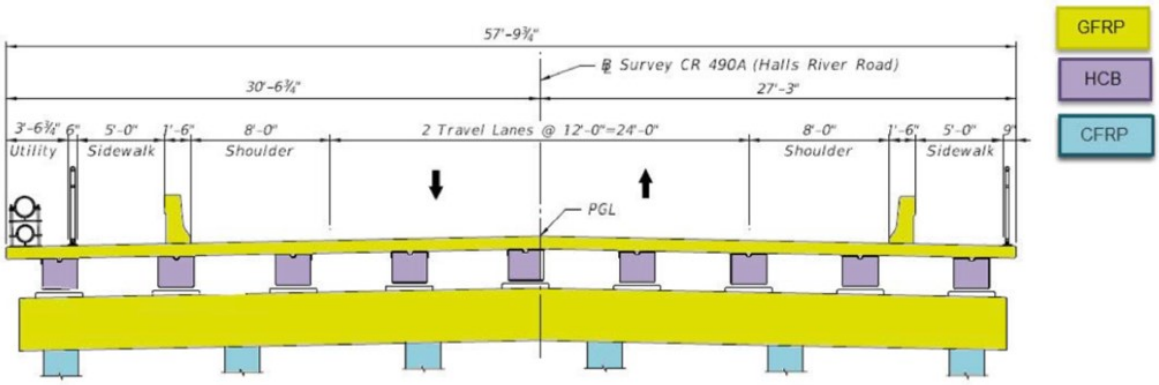
| Project Location: | FDOT District Seven<br>Citrus County<br>Homosassa Spring, Florida |
| Agency: | Florida Department of Transportation |
| URL: | http://www.fdot.gov/structures/innovation/FRPMS.shtm |
| Project Name: | CR-490A/West Halls River Road over Halls River<br>Bridge No. 024054<br>FPID: 430021-1-52-01 |
| Project Description: | Bridge Replacement |
| Project Purpose & Need: | The existing bridge was functionally obsolete and listed on the Citrus County Bridge Replacement Program. The purpose of this project is to increase capacity and improve safety of the existing transportation facility. |
| Overall Budget/Cost Estimate: | $6,015,645.00 (Construction Contract) |




*Typical Section showing different FRP composite components in the bridge*

Describe Traditional Approach: Traditional approach includes larger concrete cover, reduced tensile stress at the concrete surface and the addition of flyash, 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: HCB uses galvanized steel strands (as tension reinforcement) encased in polymer resin with Glass fiber-reinforced polymer beam shell and SCC concrete arch core.

Top Innovations Employed: Utilization of FRP materials in marine environment.

Primary Benefits Realized/Expected: Longer service life of the bridge without major maintenance.

Project Start Date/Substantial Completion Date: 1/9/2017 – 2018

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| Affiliations: | PE Designer: | FDOT District Seven |
| | Construction Contractor: | Astaldi Construction Corp./Leware Construction Co. |
| | Construction Engineering Inspection: | FDOT/Brooksville Operation, JACOBS Engineering, and Cardno TBE. |
| Project Contact: | Engineer of Record: | Mamunur R. Siddiqui, P.E.<br>FDOT District Seven<br>mamunur.siddiqui@dot.state.fl.us |
| | FDOT Roadway Project Manager: | Michael Ojo. P.E.<br>FDOT District Seven<br>michael.ojo@dot.state.fl.us |
| | FDOT State Materials Office: | Chase C. Knight, Ph.D.<br>FDOT State Materials Office<br>Chase.Knight@dot.state.fl.us |