



FRP COMPOSITE ARCH BRIDGE

“BRIDGE IN A BACKPACK”

IMPACT

LIGHTWEIGHT

Bridge-in-a-Backpack™ tubes are 1/125th the weight of a 60ft concrete arch.

LONGER LASTING

Composite structural members require no painting, will not rust, crack or spall and are designed to support 100+ years of truck traffic with no loss in strength.

SAFE

Extensive laboratory testing demonstrates that Bridge-in-a-Backpack™ exceeds code requirements.

CONGESTION RELIEF

Lighter, modular bridges allow for “Accelerated Bridge Construction” resulting in a shortened construction schedule and reduces traffic congestion. The Arches can be made on-site with much lighter equipment than traditionally required with less trucking and lower cost.

The GArch, developed by the University of Maine and licensed to AIT Composites, is a lightweight, non-corrosive FRP arch for short to medium-span bridges. It speeds up construction, lowers life cycle costs, and has won awards including the 2010 Most Creative Product Award and the 2015 White House Transportation Champion of Change Award. The easily transportable arches are rapidly deployable and require minimal equipment and crews, being 1/250th the weight of a 70 ft. concrete girder. This results in a more sustainable construction process for bridge installation.



TRANSPORTATION INFRASTRUCTURE INNOVATION



DEMONSTRATED

FRP GArchs are approved for construction in all 50 U.S. states and have now been installed in 28 locations in the U.S. and beyond. Technologies developed as part of this successful research and development have now also been utilized for other high-impact ASCC projects including aerospace deceleration technology and the FRP Composite bridge tub girder.

REVOLUTIONIZING BRIDGE CONSTRUCTION

During construction, the FRP GArchs are lifted into place and injected with concrete, requiring only 1/5 the concrete used in a traditional concrete bridge construction. Once installed, GArch bridges have a 100+ year service life with minimal to no maintenance, conserving funds and resources. Further, the GArch's carbon footprint is 1/3 less than a typical concrete bridge, 1/4 less than a steel bridge and lasts longer than either. A recent report by the Federal Highway Administration concluded that 25.4% (152,316) of all bridges are either structurally deficient, in need of repair, or functionally obsolete. If GArch technology replaced just 20% of these bridges, the equivalent amount of CO2 emissions reduction would equal taking 230,000 cars off the road.



BRIDGE-IN-A-BACKPACK™ CARBON FOOTPRINT ANALYSIS

- Emits 45.71 kg CO2e/year/sq m, one third less than concrete bridges and one fourth less than steel bridges.
- Replacing 20% of structurally deficient or obsolete bridges with this technology would cut CO2 emissions equivalent to removing 230,000 cars from the road.



2015 White House Transportation Champion of Change Award by the U.S. Department of Transportation and the White House Office of Public Engagement



2011 Charles Pankow Award for Innovation by the American Society of Civil Engineers (ASCE)



2011 Engineering Excellence Awards by the American Council of Engineering Companies (ACEC)



2010 Most Creative Product Award by the American Composites Manufacturers Association (ACMA)

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