



Memphis Area Transit Authority implements use of high-tech composites in its service ramps for disabled trolley customers

MEMPHIS, Tenn. and TUCSON, Ariz. (Dec. 3, 2020) -- The Memphis Area Transit Authority (MATA) is immediately deploying new service ramps on its rail trolley cars that are made of a lightweight, super strong composite material traditionally used to reinforce concrete buildings and bridges.

These new composite ramps bridge the gap between the rail trolley and station boarding platform area, and are easily lifted and put into place by trolley operators at specific stops. The composite ramps are more than 60 percent lighter than the traditional metal ramps, and are three times stronger.

The material, referred to as carbon fiber reinforced polymer (FRP), is popular with structural engineers tasked with repairing the nation's aging infrastructure. FRP is used for strengthening buildings, bridges and bridge columns, marine ports, and other vital structural repairs.

"The use of carbon fiber instead of glass fiber will provide the rail trolley ramps even more strength and durability over other standard materials while remaining a lighter weight solution as compared to traditional metal service ramps," said Fran Sosa, Supervising Bridge Engineer for Nashville-based WSP USA, the consulting engineers on the project.

The ease of handling for the ramps when the rail trolleys stop to board customers promotes both employee and public safety and represents a safer way to load and offload. The ramps are also compliant with the Americans with Disabilities Act (ADA) and allow for safer, more secure loading of wheelchairs, walkers and other assistance devices.

"This is another application of FRP that benefits the public," said Mo Ehsani, President and CEO of Tucson-based QuakeWrap Inc. and Centennial Professor Emeritus of Civil Engineering at the University of Arizona. "The weight of these ramps was a primary concern to MATA. Our unique design led to each ramp weighing only 25 pounds, while exceeding the strength and deflection requirements set by the client."

The first carbon FRP ramp used by MATA is designed specifically for rail Trolley Car 453, a double-truck replica of a Birney, a type of streetcar that was manufactured in the United States in the 1910s and 1920s. The original design was small and light, intended as an economical means of providing frequent service at a lower infrastructure and labor cost than conventional streetcars.

Serving as an on-call engineering consultant to the MATA Trolley Division, WSP USA reached out to QuakeWrap, Inc. for the design and fabrication of the carbon FRP ramps. QuakeWrap is the original company to patent the use of FRP for structural engineering rehabilitation, and the ramps are made at its 8,000 square-foot manufacturing site in Arizona.

Ehsani has spent more than 25 years pioneering use of FRP for reinforcement and strengthening of columns and buildings to prevent their catastrophic failure during earthquakes, which led to the founding of QuakeWrap in 1994.

Since then, Ehsani and QuakeWrap have become the authority on using FRP for infrastructure repair, including its use on large underground pipelines for storm and sewers, at major commercial ports for concrete piers and commercial seawalls, in mines and other highly corrosive environments, and more.

FRP's ease of installation relative to the cost and energy of replacing an entire structure represents an economical means of repairing or rehabilitating infrastructure with minimal service interruption.

More information on QuakeWrap including the many structural applications of FRP can be found at <https://quakewrap.com/>

(NOTE TO EDITORS: Print and web resolution photos available. Please see pictures and captions below.)

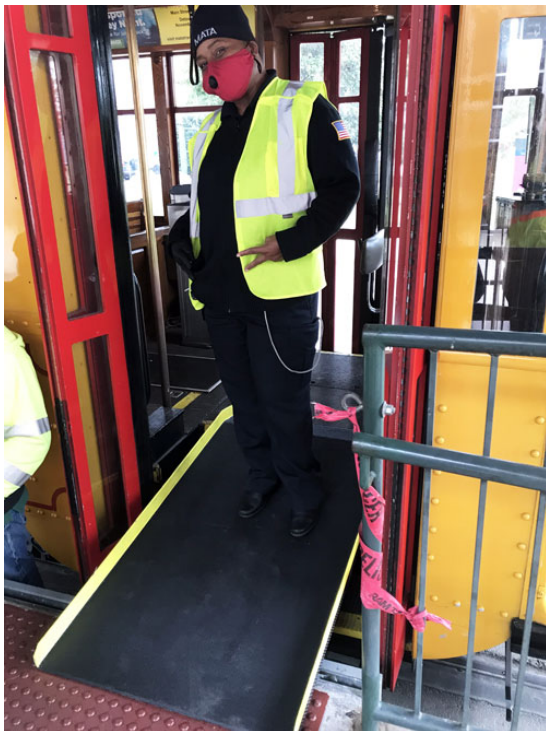
About MATA

The Memphis Area Transit Authority (MATA) is the public transportation provider for the Memphis area. As one of the largest public transit operators in the state of Tennessee, MATA transports customers in the City of Memphis and parts of Shelby County on fixed-route buses, paratransit vehicles and vintage rail trolleys. For more information visit matatransit.com.

About QuakeWrap

QuakeWrap Inc. is the original innovator and developer of Fiber Reinforced Polymer (FRP) products for infrastructure repair and renewal, providing engineering services, sealed drawings, tested materials, and installation by its in-house company, FRP Construction. More can be found at QuakeWrap.com

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Rail-Trolley-Composite-Service-Ramp.jpg

Pictured: A MATA employee stands on one of the new rail trolley car service ramps that is made of a lightweight, super strong composite material traditionally used to reinforce concrete buildings and bridges. Photo courtesy of MATA via WSP USA.

Plate tab in the bumper tray.jpg

Side view of MATA's new rail trolley service ramp made of a lightweight, super strong composite material and showing how the ramp remains in place during passenger onloading and offloading. Photo courtesy of MATA via WSP USA.



Plate with no load.jpg

View of MATA's new rail trolley service ramp in passenger loading position on rail Trolley 453. The use of carbon fiber instead of glass fiber gives the ramps more strength and durability over other standard materials, while retaining a lighter weight that's easier handle when compared to traditional metal service ramps. Photo courtesy of MATA via WSP USA.



QuakeWrap ADA plates.jpg

View of MATA ADA rail trolley ramps as manufactured by QuakeWrap Inc. The new service ramps are made of a lightweight, super strong carbon fiber, a composite material traditionally used by QuakeWrap to reinforce concrete buildings, bridges, pipes and columns. Photo courtesy of MATA via WSP USA.