Materials of the Future: Fiber Reinforced Polymer for Long Lasting Infrastructure
Scott Reeve, Owner and President of Composite Advantage
4:00pm in 129 Debarlo

Abstract:
Fiber Reinforced Polymer (FRP) composite materials provide many benefits when used in civil engineering infrastructure applications. The material resists corrosion from water and chemicals, resulting in structures that are long lasting and require very little maintenance. As an engineered material, the mechanical properties can be tailored to optimize structural efficiency. Molding processes allow for flexibility in size and shape of parts. Case studies in two application areas highlight how the material offers benefits and solutions for owners and design engineers.

Bridge Decks
FRP bridge decks are used in vehicle, pedestrian and trail bridges. The decks are long lasting and reduce maintenance costs for the owners. For vehicle bridges, the light weight deck is a great fit for movable bridges and historic steel truss bridges. For pedestrian bridges, the prefabricated panels are delivered to the job site with built-in design features such as crowns, curbs, drains, non-slip surface and attachment points. Cantilever sidewalks add shared-use paths to vehicle bridges.

Protection Fenders and Guide Walls
The combination of corrosion resistance and structural properties makes FRP materials a popular choice for guide walls at ferry terminals and protection fenders. The fenders are a fence around bridge piers and transmission towers to protect them from ship impacts. Guide walls are used at ferry terminals to funnel the ships to the dock. In both cases, the high strength and low stiffness of FRP allow the structure to “bend, but not break” under impact.

Scott Reeve is owner and President of Composite Advantage; a design and manufacturing company which provides innovative fiber reinforced polymer products. Prior to that, Scott successfully managed technical projects for Lockheed Martin and the National Composite Center. He holds a Master’s Degree in Engineering Management from Washington University and Master and Bachelor of Science degrees in Aeronautical Engineering from Purdue University.