

FiberSPAN Decking for Pedestrian Bridges

One Year Inspection of Wolf Trap Pedestrian Bridge Deck Looks Great

Featured Project

Pedestrian Bridge Deck

Wolf Trap National Park

Vienna, Va.

Owner:
VDOT

Size Three Spans:
150 feet
170 feet
138 feet

Area:
7100 sf

Width:
15.5 feet

Depth:
3.5 inches

Weight:
6.85 psf

Superstructure:
Truss with longitudinal stringers at 4.25 ft spacing

Wear Surface:
Non-slip epoxy

Color:
Gray

Special Features:
Curbs
Expansion Plates

Skew:
34 degrees

Exactly one year after installation, an inspection of FiberSPAN™ decking on Wolf Trap National Park's pedestrian bridge showed the Composite Advantage FRP product's performance is perfect. CA conducted the check-up as part of an inspection of four bridges in the Washington D.C. area with its FiberSPAN product. The FRP decking was sourced for the steel truss pedestrian bridge which connects two main facilities at the park's Wolf Trap Performing Arts Center located near Vienna, Va. The 3-span bridge provides safe crossing over the 10-lane Dulles Airport Access Road. The bridge was designed by the Federal Highway Administration (FHWA) to meet accelerated construction requirements and reduce lane closures that could hamper access to the busy airport. FiberSPAN FRP bridge decks offered the ideal solution. The deck panels were prefabricated including the wear surface, curbs and expansion joint to reduce on-site construction time. More importantly, the FRP bridge deck is 80 percent lighter than a concrete deck making it faster to lift and move. The fully assembled bridge also was easy to move by crane.



FRP Deck Performing Well



Expansion Joint Between Truss Spans and Panel-to-Panel Joints

Composite Advantage supplied 57 prefabricated deck panels measuring 15.5 feet by 8.3 feet. Each panel weighed only 880 pounds. The panels were assembled on three spans ranging from 138 feet to 170 feet long near the construction site. FRP decking reduced the weight of the largest span by 200,000 pounds making bridge spans safer and faster to lift. Erection of the spans took place on three consecutive nights at 1 a.m. when traffic was light. Each assembled truss – including the steel, FRP deck and fencing – was towed to its position on the adjacent vehicle bridge. Contractors stopped traffic while two cranes lifted the truss into place and workers bolted it down. The highway was closed for just 15 minutes each evening.

After one year of service, the performance of the FiberSPAN decking is meeting and exceeding owner and designer requirements. Key inspection items included the user surface, connections and joints. The non-slip wear surface showed no damage or chipped edges. The FRP curbs revealed no problems handling pedestrian, bicycle or skateboards. The expansion joint plates were sliding on the deck panels without any evidence of wear or binding. Since the deck is connected to the steel superstructure using clips, the underside of the bridge was inspected also. Clips were tight and there was no sign of movement.

Standard Product Forms for Pedestrian Bridges

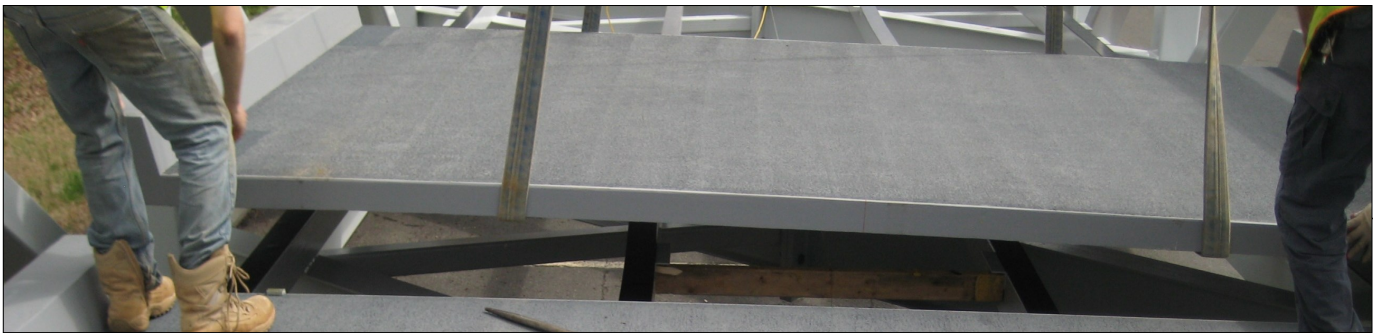
FiberSPAN Fiber Reinforced Polymer (FRP) decking is available in standard product types for pedestrian truss bridges. Over the past year FRP decking has become a valuable option for replacing concrete decking on traditional steel truss bridges used for pedestrian walkways and bicycle paths.

A series of standard deck configurations have been established using AASHTO pedestrian bridge requirements and typical stringer support spacing. Standard deck depths are 3, 3.5, 4 and 5 inches. These depths fit with typical support spacing of floor beams or stringers used in steel truss bridges. The standard

product forms provide designers with the information that they need to incorporate the decking in their bridge designs. The information includes bending stiffness, weight and maximum support spacing. This is provided for two different deflection criteria. The information is available at

www.compositeadvantage.com/resource-center.php

Since FiberSPAN decking can be manufactured in any depth, other deck configurations are available if a different depth provides a more optimized design. CA can easily provide estimates of deck sizing, weight and budget costs for any configuration using its design and cost models.



Accelerated Bridge Construction

FiberSPAN FRP decking supports the prefabricated bridge element of Accelerated Bridge Construction (ABC). ABC is a major initiative of the Federal Highway Administration. ABC is bridge construction that uses innovative planning, design, materials, and construction methods in a safe and cost-effective manner to reduce the onsite construction time that occurs when building new bridges or replacing and rehabilitating existing bridges.

- ABC improves:
 - Site constructability
 - Total project delivery time
 - Work-zone safety for the traveling public
- ABC reduces:
 - Traffic impacts
 - Onsite construction time
 - Weather-related time delays

A common reason to use ABC is to reduce traffic impacts because the safety of the traveling public and the flow of the transportation network are directly impacted by on-site construction related activities.

This summary along with additional information is found at <http://www.fhwa.dot.gov/bridge/abc>.

Upcoming Events

May 15 - 16: ACMA Corrosion, Mining, Infrastructure Conference: Denver, Colo.

Presentations:

- *FRP Bridge Elements to Meet Current Market Needs*
- *How FRP Composites Connect and Co-exist with Traditional Materials*

June 3 - 6: International Bridge Conference: Pittsburgh, Pa.

Presentations:

- *Swing Span Bridge Uses FRP Decking for Light Weight and Accelerated Construction*

June 18 - 20: Alabama Composites Conference: Birmingham, Ala.

Presentation:

- *FRP Bridge Decks: Current Technology and Market Value*

August 14: Ohio Bridge Conference: Columbus, Ohio

August 26 - 29: PORTS 2013: Seattle, Wash.

October 1 - 3: International Construction and Utility Equipment Exposition (ICUEE): Louisville, Ky.

October 22 - 23: OTEC: Ohio Transportation Engineering Conference Columbus, Ohio

If you are attending any of these events and would like to schedule a meeting with Composite Advantage, please call Scott Reeve at 937-723-9031 or email info@compositeadvantage.com.