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## Modular FRP Composite Bridge Deck

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## MODULAR FRP COMPOSITE BRIDGE DECK

### THE NEED

The bridge infrastructure of the United States is in constant need of repair and rehabilitation. It is reported that 43% of the bridges in the USA have been identified as being structurally deficient or functionally obsolete due to corrosion. Corrosion is a major problem especially when deicing has to be done. The repair of concrete and timber bridge decks is a time consuming and costly exercise. Bridge repairs also causes safety hazards and traffic delays. The need for a cost effective and efficient method for replacing and repairing bridges cannot be overemphasized.



FIGURE 1 BEAMS ARE INSTALLED AT SITE

### THE TECHNOLOGY

Superdeck™, a non-corrosive fiber reinforced polymer (FRP) composite bridge deck. The Deck is designed and engineered into a lightweight, strong and rigid structure that will not corrode. The deck sections, composed of hexagon and double-trapezoid profiles, are bonded with a high-strength adhesive under controlled conditions in the manufacturing plant.

The H-deck components are placed transversely to the traffic direction and supported by longitudinal steel or composite beams. Beams can be spaced up to nine feet apart.

### THE BENEFITS

- It can replace deteriorated concrete or timber bridge deck.
- Cost effective on an installed cost basis.
- Field assembly of deck modules takes only hours to complete.
- Safety is enhanced as minimal equipment and formwork is needed, and long traffic delays are eliminated.





- Good fatigue resistance and high strength-to-weight ratios yield high durability.
- Corrosion-resistant and maintenance free material eliminates the number of future replacements.
- Contains zero metal reinforcements eliminating corrosion due to deicing materials.
- Complies with the American Association of State Highway & Transportation Officials (AASHTO) HS 25 Highway Bridge Design.



**Benefit 1.** High performance adhesive bonding is applied to beam surface.



**Benefit 2.** Prefabricated Superdeck™ is installed using minimal equipment.



**Benefit 3.** On-site assembly takes only a few hours.

**FIGURE 2** BENEFITS OF MODULAR FRP COMPOSITE BRIDGE DECK

## STATUS

This technology was honored as one of 1999 Nova Award Finalists by [Construction Industry Forum](#). It won the Industry Recognition Awards as finalist, the CERF Charles Pankow Award for Innovation in 1997, and the Market Viability Award from the Composite Fabricators Association in 1997. It has been installed in



many locations: County Road 26/6, Lewis County, Virginia; The Ohio to Erie trail, Xenia, Ohio; County Road 26, Taylor County, West Virginia; Route 4003, off Route 31, Somerset County, Pennsylvania. Superdeck™ is currently undergoing a Highway Innovative Technology Evaluation Center (HITEC) product evaluation. HITEC is Civil Engineering Research Foundation (CERF)'s service center and clearinghouse for implementing highway innovation.

## **BARRIERS**

There are no long-term studies on the performance of the bridge since it is a new construction material and technology.

## **POINTS OF CONTACT**

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## **REFERENCES**

1. Stainless Steel Dowel Bars - product brochure, Specialty Steel Industry of North America (SSINA).
2. Civil Engineering Research Foundation(CERF), Highway Innovative Technology Evaluation Center (HITEC), Alternative Material Dowel Bars for Rigid Pavement Joints, <<http://www.cerf.org/hitec/eval/ongoing/dowel.htm>>.

## **REVIEWERS**

Peer reviewed as an emerging construction technology

## **DISCLAIMER**

Purdue University does not endorse this technology or represents that the information presented can be relied upon without further investigation.

## **PUBLISHER**

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