National Peer Exchange

Advances in FRP Composites in Transportation Infrastructure

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NCHRP 20-68A Domestic Scan 13-03
Scan Team

Figure 1. The Scan Team: Melissa Jiang (Coordinator), DeWayne Wilson, David Rister, Wayne Frankhauser, Jr. (Chair), Stacy McMillan, Will Potter, Jerome O’Connor (SME), Steven Kahl, Jamal Elkaissi.
What’s Next

• Final Report- FRP Domestic Scan (NCHRP 20-68A)
• Final Report- Use of Fiber Reinforced Polymer in Highway Structures (NCHRP Synthesis Project 20-05)
• FRP Peer to Peer Exchange (Academia, Dots, Industry & FHWA)
• Update AASHTO LRFD Bridge Design Guide Specification For FRP
• AASHTO LRFD Guide for Carbon Fiber Reinforced Polymers for Prestressing Concrete Bridge Elements
• Training- Workshops and Webinars
National Peer Exchange

- Formulate a Strategy to better Capitalize on the benefit of FRP to help advance more widespread use.

- Support the Objectives of AASHTO SCOB5 T-6 Strategic Action Plan

- Input from Stakeholders:
  A. State DOTS
  B. Academia
  C. FRP Industry
  D. FHWA
Peer Exchange Outcomes

- **Outcome 1**: Sharing of Best Practices
- **Outcome 2**: Design Guide Specifications Development and Studies
- **Outcome 3**: Development of Training Material and Delivery
- **Outcome 4**: Performance of FRP Composite
- **Outcome 5**: Marketing and Outreach for the Advancement of the FRP Technology
- **Outcome 6**: Bridge Inspection Guidelines for FRP Bridge Elements
- **Outcome 7**: Create Virtual Team
- **Outcome 8**: Summary Report
Outcome 1- Sharing of Best Practices

New Construction

Existing Structures

Figure 24 Bonding pre-cured CFRP strips to the underside of a concrete slab to increase its flexural capacity
**Outcome 2 - Design Guide Specifications Development and Studies**

- Update AASHTO LRFD Bridge Design Guide Specification For FRP
- AASHTO LRFD Guide for Carbon Fiber Reinforced Polymers for Prestressing Concrete Bridge Element
- Final Report - FRP Domestic Scan (NCHRP 20-68A)
- Final Report - Use of Fiber Reinforced Polymer in Highway Structures (NCHRP Synthesis Project 20-05)
**Outcome 3 - Development of Training Material and Delivery**

- Development of training material including example problems
- Delivery of training - Instructor Led or Web-based training
- Webinars and Workshops on Case Studies

- **NHI-130105A**: Introduction to FRP Materials and Applications for Concrete Structures
- **NHI-130105B**: Construction Procedures and Specifications for Bonded Repair and Retrofit of Concrete Structures
- **NHI-130105C**: Quality Control of Repair and Retrofit of Concrete Structures Using FRP Composites
**Outcome 4- Performance of FRP Composite Applications**

- FAST ACT 2015, Section 1422 of the Law, entitled Study on Performance of Bridges (300+)

- ACI Foundation-Strategic Development Council (SDC)/Owens Coring “Durability of GFRP Bars Extracted From 10+ Years- Old Concrete Structures”
Outcome 5 – Marketing and Outreach for the Advancement of the FRP Technology

• Federal Level - EDC, Research, AID Program

• State Level - Demonstration Projects, Standards

• Industry – Collaborate with State and federal Efforts
Outcome 6- Bridge Inspection Guidelines for FRP Bridge Elements

• Meets the National Bridge Inspection (NBI) program

• Several states have in house procedures to perform performance Inspection

• No approved national method of reporting FRP bridge elements.
Outcome 7- Create Virtual Team

- Create virtual team from State DOTS, FHWA, Industry, and Academia

- Share the advances of the FRP technology
**Outcome 8-** Summary Report

- Documents the results

- Chart a Map (Strategy) for Advancement of the FRP Technology
Funding Sources

• funds from the Domestic Scan program (NCHRP project 20-68A)

• and NCHRP 20-44 Accelerating the Application of NCHRP Research Results

• FHWA
Location, Timing, and Duration

- **Location** – Portland, Maine (airline hub locations)
- **Timing** – August 2017.
- **Duration** – 2 days.