National Historic Covered Bridge Preservation Program Research, Education & Technology Transfer – Update 2014

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Team Leader, Hazard Mitigation
• Research, education & technology transfer
  – Emphasis
    • Repair, strengthening, and treatment methods
    • Historic documentation
    • Educational videos and manuals
    • Workshops and seminars

  – A report on completed projects
HAER Covered Bridge Documentation

- Bridges documented with measured drawings, historical reports and large format photographs.
- Chosen based on historical significance

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**Gilpin Falls Covered Bridge**

North East, Maryland
Spanning North East Creek
Burr Arch, 1860

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**Gilpin Falls Bridge (Burr Arch Truss) – HAER MD-174**
Completed

- Gilpin Falls Bridge (Burr Arch Truss) – HAER MD-174
- Moose Brook (Howe Boxed Pony Truss) – HAER NH-48
- Snyder Brook Bridge (Howe Boxed Pony Truss) - HAER NH-49
- Whittier Bridge (Paddleford Truss) HAER NH-50
- Hall Bridge (Town) HAER VT-40
- Smith Truss Study: Kidd's Mill Bridge, HAER PA-622
- Rinard Bridge, HAER OH-130
- Honey Run Bridge (Pratt) HAER CA-312.

HAER Covered Bridge Documentation

- Powder Works Bridge (Smith type 4) HAER CA-313
- Knight's Ferry Bridge (Howe) HAER CA-314, Graton rehab
- Harpole (RR boxed through) WA-133
- Duck Creek Aqueduct. HAER IN-108
- Structural Study of Smith Trusses. HAER No. PA-645

Completed

- Covered Bridges Context Study/National Historic Landmark (NHL) Nomination
  - Conduct context study to assess national significance as a first step in the development of NHL nominations for the historic properties designation
  - Granted NHL status
    - Knight’s Ferry, CA (1864, Howe)
    - Humpback, VA (1857, multiple kingpost, early turnpike era)
  - Two more bridges nominated in 2013 and awaiting Secretary of Interior’s final approval
    - Brown Bridge, VT (1880, Town Lattice)
    - Duck Creek Aqueduct, IN (only surviving covered timber aqueduct in U.S.)
Completed

- Evaluating Naturally Durable Wood Species for Repair and Rehabilitation of Above Ground Components in Covered Bridges
- Evaluated 7 wood species for their durability in above-ground field exposure.
  - Alaska yellow cedar, Black locust, Catalpa, Eastern red cedar, Honey mesquite, Paulownia, princess-tree, West Coast juniper
  - Southern pine & Western red cedar (controls)
Completed

- Guide for In-Place Preservative Treatment of Covered Bridges

- Describes procedures for selecting and applying in-place treatments
- Types of field applications discussed
  - Liquids, rods, pastes, fumigants, & coatings
Completed

- Corrosion of fasteners in wood treated with newer wood preservatives

- Guide for materials selection and design for metals used in contact with copper-treated wood.

- Compiles research findings related to corrosion on metals in preservative treated wood.

- Provides a guide for material selection
Completed

• Use of laser scanning technology to obtain as-built records of historic covered bridges
  – Ross, R.J.; Brashaw, B.K.; Anderson, S.
  – Res. Paper. FPL-RP-669

• FARO LS 880 model and Photon 120 model laser scanner used

• Point cloud image and a 3D AutoCAD image of the Imes Bridge
Completed

- Covered bridge security manual
  - Phares, B.; Wipf, T.; Sievers, R.; Hosteng, T. 2013

- To be used as a guide to best practices, techniques and equipment in designing an integrated security system

- Case study – five covered bridges in Madison County, Iowa
World Guide to Covered Bridges in the US Database/GIS/Website

http://www.woodcenter.org/CoveredBridges/
Completed

• 2nd National Covered Bridges Best Practices Conference
  • Dayton, Ohio
  • June 5-8, 2013
  • 200 covered bridge experts and enthusiasts

• Presentations at:

Eldean Bridge, an 1860 Long Truss, a featured site at the conference. HAER photo by Jet Lowe.
Summary

• National Historic Covered Bridge Program – Research, Education and Technology Transfer
  - Over 50 projects have been funded
  - A number of studies have been completed
  - Significant number of studies are underway

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