National Historic Covered Bridge Preservation Program

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Covered Bridges in the US

- Only ~880 remain today
- Majority are in 6 states
  - Pennsylvania - 227
  - Indiana – 93
  - Ohio – 143
  - Vermont – 100
  - New Hampshire – 57
  - Oregon 51

Historic Preservation Effort - Legislation

• All structures
  – Historic Sites Act of 1935
  – National Historic Preservation Act of 1966
  – Surface Transportation & Uniform Relocation Assistance Act of 1987

• Covered Bridges
  – Transportation Equity Act for the 21st Century (TEA-21)
  – Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU)

  • NHCBP Program
    – Preservation, rehabilitation, or restoration of historic covered bridges
      » Bridges must be on the National Register of Historic Places or be eligible
    – Research, education & technology transfer
## National Historic Covered Bridge Preservation Program

### Funding Levels 1999 thru 2009

<table>
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<th>Year</th>
<th>99</th>
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<th>01</th>
<th>02</th>
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*Original appropriation of $10 million per year*
Restoration Projects

FHWA website [www.fhwa.dot.gov/bridge/covered.cfm](http://www.fhwa.dot.gov/bridge/covered.cfm)
Overview – RD&T Program

• Emphasis
  – Repair, strengthening, and treatment methods
  – Historic documentation
  – Educational videos and manuals
  – Workshops and seminars
Past Covered Bridge RD&T Effort

- Development of a covered bridge manual
- Strengthening historic covered bridges to carry modern traffic
- Fire retardant treatments for historic covered bridges
- Educational guide on the history of covered bridges in the United States
- “A bridge to the past” documentary
- Identification of preservative treatments and fumigants for treating historic covered bridges
- Seminars on the covered bridge manual
  - Indianapolis, Indiana - 8/2/05
  - Eugene, Oregon – 8/24-25/05
Past Covered Bridge RD&T Effort (cont.)

- HAER Level I Documentation
- Update of the World Guide to Covered Bridges
- Covered Bridges Vernacular Construction Practices
- National Historic Landmark Theme Study
- Traveling Exhibition on Covered Bridges
- Best Practices Workshop
- Covered Bridge Preservation Guide
Covered Bridge Manual

- An all inclusive manual on inspection, repair, rehabilitation & restoration
- Engineer’s Manual of Practice
- Online version – 
  - www.tfhrc.gov/structur/pubs/04098/index.htm
Strengthening Historic Covered Bridges to Carry Modern Traffic

- Develop means & methodologies to strengthen without compromising historic fabric of the structure
A Bridge to the Past -documentary

Develop a television ready documentary on the preservation of historic covered bridges

Information on this documentary may be obtained by contacting WTIU/Indiana University Television at www.wtiu.indiana.edu.
K-12 Educational Guide on the History of Covered Bridges in the United States

- ..\..\WVU - Educational Guide\CB-Kemp-InteractiveCD\cb.exe
Documentation for the Historic American Engineering Record

- Most historically significant bridges in the US
- Inclusion into the Historic American Engineering Record, Library of Congress
- Level I documentation
  - Interpretive drawings
  - Large-format photographs
  - Written historical reports
- Availability
  - Library of Congress
SAFETEA-LU RD&T Program

- Working with the National Park Service – Historic American Engineering Record
- Working with the Forest Service – Forest Products Laboratory
  - Multiple studies over a 5 year period
Project Descriptions

• Research Studies
  – HAER Covered Bridge Documentation
    • 8-10 bridges documented with measured drawings, historical reports and large format photographs.
  – Covered Bridge Rating Through Load Testing
    • Develop and establish procedures by physical testing & analytical evaluation
  – Development of Lightweight Floor Replacement Systems
    • Report on the types of systems commonly used and provide recommendations on a new lightweight replacement system
  – Improved Analytical Techniques for Historic Covered Bridges
    • Based on behavioral information develop analytical techniques to determine load carrying capacity for loading rating these bridges
Project Descriptions

- Research Studies (Cont)
  - Corrosion of Fasteners in Wood Treated with Newer Wood Preservatives
    - Research nonmetallic and/or non corrosive fasteners
  - Covered Bridges – Development of Rehabilitation Techniques to Restore Structural Integrity of Members
    - Develop and test various repair techniques to support rehabilitation, restoration and replacement decisions
  - Howe Truss Bridges Design and Performance
    - Determine behavior through testing and develop calibrated models on design and behavior of Howe truss bridges
Project Descriptions

• Research Studies (Cont)
  – Determination of Residual Capacity of Structural Wood Members in Historic Covered Bridges
    • Relating inspection information to material properties, refine single member and connection analysis procedures to determine capacity for rating covered bridges
  – Use of Laser Scanning Technology to obtain As-Built Records
    • Complement the HAER Level I documentation by assessing the feasibility of using laser scanning technology
  – Species Identification and Field-Grading
    • Field manual for species and grade identification
Project Descriptions

• Research Studies (Cont.)
  – Development of Best Practices Guide on Security of Historic Covered Bridges
    • Guide on cost-effective systems for protection against vandalism
  – Use of Embedded Sensors to Measure In-Situ Wood Moisture of Load-Carrying Members
    • Identification or development of suitable sensors and web-based monitoring to detect decay at critical locations
  – Evaluating Naturally Durable Wood Species for Repair and Rehabilitation of Above Ground Components in Covered Bridges
    • Recommendations for use and application of naturally durable woods as replacement components in covered bridges
Project Descriptions

• Education & Technology Transfer Activities
  – Steering Committee Meeting
    • One time focus group meeting by HAER to redefine goals and discuss projects in the proposal
  – Wood Preservative Treatment Guide for Historic Covered Bridges
    • Review outcomes of previous projects and develop a how-to guide
  – 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
Project Descriptions

• Education & Technology Transfer Activities (Cont)
  – World Guide to Covered Bridges Database/GIS/Website
    • Update the World Guide and develop an interactive geo-referenced and updatable website
  – Preservation Guidelines
    • Standards for the Treatment of Historic Covered Bridges and Illustrated Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Bridges similar to the Secretary of Interior’s standards for treatment of historic properties.
Project Descriptions

• Education & Technology Transfer Activities (Cont)
  – 2nd Covered Bridges Best Practices Conference
  – HAER Book on Covered Bridges
    • Illustrated history book on covered bridges for the informed lay person
  – Review and publication of existing reports
    • Spanning Time - America’s Covered Bridges (DVD)
    • Development of an Educational Guide on the History of Covered Bridges in the United States
SAFETEA-LU - RD&T Program

- Roadmap
<table>
<thead>
<tr>
<th>NEW RESEARCH STUDIES</th>
<th>Interagency Agreement</th>
<th>FUNDING SOURCE</th>
<th>FY 07</th>
<th>FY 08</th>
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<th>Total FHWA</th>
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Summary

- **Preservation/Restoration**
  - To date, 147 covered bridges in 22 states have been funded for preservation, restoration or rehabilitation

- **RD&T**
  - A number of projects completed
  - Historic structure documentation work continues
  - Additional research projects being initiated
Thank you