

# Second National Covered Bridges Conference

June 5-8, 2013

Crowne Plaza Dayton, Dayton, Ohio



*Second National Covered Bridge conference group photo at the Crowne Plaza Dayton.*

## **Final Conference Program**

**Wednesday June 5, 2013**

**8:00am-5:30pm Registration**

Crowne Plaza Dayton Ballroom level

**Pre Conference Tour**

**Dayton Aviation Heritage Tour**

10:00am-4:00pm

Tour Dayton's monuments to the birth of the aviation industry. Tour stops will include [Carillon Historical Park](#) (home to two historic bridges), the [Wright Cycle Company Complex](#), and the [Huffman Prairie](#) Flying Field Interpretive Center at Wright-Patterson Air Force Base.



*Dayton Aviation Heritage tour group at the Feedwire Road Bridge at Carillon Historical Park.*

**4:00--6:00pm Timber Framing Demonstration**

RiverScape Pavilion

Join timberframers Dave Kirwin and Will Truax, who will be constructing a Kingpost truss during the conference, and demonstrating historic construction techniques. This event is at the [RiverScape Pavilion](#) along the Miami River waterfront, a ten minute walk from the conference hotel, and only a block from the Engineers Club of Dayton. The hotel is providing a shuttle service for those who prefer a ride.



*Dave Kirwin and Will Truax led a timber framing demonstration of a kingpost truss at RiverScape Pavilion on Dayton's Miami River waterfront.*

## Opening Reception

The Engineers Club of Dayton

### 5:30-7:00pm Opening Reception & Buffet

Meet fellow conferees at the historic Engineers Club of Dayton. Enjoy refreshments and a buffet dinner and view historical displays of Dayton's ingenuity, from the Wright Brothers' engine to the cash register, and many other innovations. Registration will be available during the event.



*Conference chair Christopher Marston opens the Wednesday Evening Welcome Session at the Engineer's Club of Dayton. Dario Gasparini gave an insightful talk on "The Wright Brothers and the Pratt Truss."*

### 7:00-8:30pm Evening Welcome Session

Dayton History's **Brady Kress** will welcome you to Dayton and tell stories of its history. **Prof. Dario Gasparini** will discuss the ingenuity of wood Pratt trusses and how they were instrumental in the story of the Birth of Flight.

**Thursday June 6, 2013**

**7:00am-5:00pm Registration**

Crowne Plaza Dayton Ballroom level

**7:00-8:30am Continental Breakfast Salon B**



*The display area at the Crowne Plaza made for a energetic crossroads of conference goers.*

**8:30-9:15am Conference Welcome Salon A**

**Welcome and Introductions**

Christopher Marston (*Conference Chair*), Architect, NPS, Historic American Engineering Record, Washington, DC

**Welcoming Speakers**

Gary Leitzell, *Mayor, City of Dayton, OH*

Burt Logan, *Director, Ohio Historical Society and State Historic Preservation Officer, Columbus, OH*

**Tom Barrett**, *Historian, Office of Environmental Services, Ohio DOT, Columbus, OH*

Robert Griffith, *Assistant Administrator, FHWA, Ohio Division, Columbus, OH*

**Sheila Rimal Duwadi**, *PE, Team Leader, Hazard Mitigation, FHWA, Turner Fairbank, McLean, VA*

Steven LaTourette, *Ohio Congressman (retired), Washington, DC (live via video)*

**9:15-10:30am Plenary Session 1, Salon A & B: Traditional v Pragmatic Rehabilitation Strategies**

Moderator: Christopher Marston, *National Park Service, HAER, Washington, DC*

## **Rehabilitating 19<sup>th</sup> Century Bridges using 19<sup>th</sup> Century Solutions**

Timothy Andrews, *Barns & Bridges of New England, Gilford, NH*

## **Pragmatic Rehabilitation Strategies**

Robert Durfee, *PE, Vice President, Dubois & King, Laconia, NH*

## **10:30-11:00am Break**

## **11:00am-12:30pm Plenary Session 2, Salon A & B: Covered Bridge Research**

Moderator: Christopher Marston, *National Park Service, HAER, Washington DC*

## **Options for Evaluating Fire Damaged Components of Historic Covered Bridges**

Robert White, *PhD, USDA Forest Service, Forest Products Laboratory, Madison, WI*

James Wacker, *PE, USDA Forest Service, Forest Products Laboratory, Madison, WI*

Brian Kukay, *Montana Tech of the University of Montana, Butte, MT*

Jenson Sannon, *Montana Tech of the University of Montana, Butte, MT*

## **Guide for In-Place Preservative Treatment of Covered Bridges**

Stan Lebow, *USDA, Forest Service, Forest Products Laboratory, Madison, WI*

Jeffrey Morrell, *Department of Wood Science and Technology, Oregon State University*

## **Covered Bridges as Structural Art: Integrating Covered Bridges Into Civil Engineering Curriculum**

Rachel Sangree, *PhD, Johns Hopkins University, Baltimore, MD*

## **12:30-2:00pm Lunch**

Ballroom Salon A & B

Enjoy lunch with other attendees at the conference hotel. There will be a short program after lunch is served to acknowledge distinguished contributors to the preservation of covered bridges.

Rich O'Connor: Eric DeLony

**Bill Collins:** David Fischetti

**Bill Caswell:** NSPCB, David Wright, Joseph Conwill

Arnold Graton: Milton Graton, David Fischetti

## **2:00-3:30pm Concurrent Sessions**

### **Session 3, Salon C: Rehabilitation Guidelines I**

Moderator: Tom Vitanza, *National Park Service, Frederick, MD*

## **Applying the Secretary of Interior's Standards to the Rehabilitation of Historic Covered Bridges**

Tom Vitanza, *RA, Historical Architect, NPS, Historic Preservation Training Center, Frederick, MD*

### **Goodpasture Covered Bridge Rehabilitation, Oregon**

Greg Ausland, PE, Senior Project Manager, OBEC Consulting Engineers, Eugene, OR

Tony LaMorticella, PE, PS, Senior Project Engineer, OBEC Consulting Engineers, Eugene, OR

### **Adopting Design-Build Procurement Process for Covered Bridge Restoration Efforts in Kentucky**

Patrick Kennedy, Restoration Projects Consultant, Owenton, KY

Jen Williamson, AIA, Staff Architect, Kentucky Heritage Council, Frankfort, KY

### **Session 4, Salon D: Covered Bridge History**

Moderator: David Simmons, Ohio Historical Society, Columbus, OH

#### **1764 Connecticut Geometry Bridge**

Terry Miller, PhD, Kent State University (retired), Kent, OH

#### **Germany's Historic Wooden Covered Bridges Still Standing**

Philip Caston, PhD, Neubrandenburg University, Neubrandenburg, Germany

#### **The Howe Bridges on the Nikolaev Railway**

Kamil Nizamiev, Case Western Reserve University, Cleveland, OH

Dario Gasparini, PhD, Case Western Reserve University, Cleveland, OH

### **3:30-4:00pm Break**

### **4:00-5:30pm Concurrent Sessions**

#### **Session 5, Salon C: Rehabilitation Guidelines II, Salon C**

William Vermes, Jones Stuckey, Akron, OH

#### **Rehabilitation of a Two-Lane Covered Bridge**

Sean James, PE, Vice President, Hoyle, Tanner & Associates, Manchester, NH

Josif Bicja, PE, Project Manager, Hoyle, Tanner & Associates, Manchester, NH

#### **Kings Covered Bridge Rehabilitation, Somerset County, PA**

William Collins, RLA, Vice President, Simone Collins, Norristown, PA

Samer Petro, PE, Herbert, Rowland & Grubic, Morgantown, WV

#### **Considerations for Restoring Structural Integrity of Covered Bridge Members**

Ron Anthony, Wood Scientist, Anthony & Associates, Fort Collins, CO

### **Session 6, Salon D: Buckeye Bridges**

Moderator: Paul Graham, Paul Graham Consulting, Worthington, OH

#### **Historic Construction Practices and Procedures: How They Built our Covered Bridges**

Douglas Kramer, Kramer & Associates, Eaton, OH

#### **Historic Influence on Modern Covered Bridge – The Hueston Woods Covered Bridge Pays Tribute to the Covered Bridges of Preble County**

Kyle Cross, PE, PS, Preble County Engineer, Eaton, OH

#### **The Historic Eldean Covered Bridge, Troy, Ohio**

Douglas Christian, PE, PS, Miami County Engineer (retired), Troy, OH

**6:00-10:00pm Hog Roast Dinner at Preble County Historical Society**

Join conference goers to a social evening out at this historic landscape at the Sayler-Swartzel Farm. You will have the opportunity to tour the Brubaker Covered Bridge, 19<sup>th</sup> century farm buildings, and exhibit halls. Dine al fresco at the new amphitheater overlooking a wetland and forest that serve as a dramatic backdrop. Included with your evening: Puzzle of Light Ensemble with Michael and Sandy Bashaw will present their technically exciting and emotionally deep music ranging from jazz and rock to ethnic and world creative music.



*Conference goers received local hospitality at a hog roast hosted by the Preble County Historical Society at their amphitheatre, and enjoyed music by the ensemble "Puzzle of Light."*

## **Friday June 7, 2013**

### **7:00am-5:00pm Registration**

Ballroom level foyer

### **7:00-8:30am Continental Breakfast**

Ballroom Salon A & B

### **8:30-10:00am Concurrent Sessions**

#### **Session 7, Salon C: New Covered Bridges**

Moderator: Douglas Miller, *Jones Stuckey, Columbus, OH*

##### **Hueston Woods Covered Bridge**

John Smolen, *PE, Smolen Engineering, Jefferson, OH*

David Shields, *PE, Smolen Engineering, Jefferson, OH*

##### **Lessons from the Stutzman's Crossing Covered Bridge**

David Rinehart, *PE, Richland Engineering, Mansfield, OH*

##### **Replacing Bartonville: It Took Three to Yield One Covered Bridge**

Phil Pierce, *PE, Clough Harbour & Associates, Albany, NY*

#### **Session 8, Salon D: Howe Trusses**

##### **Moose Brook Bridge: Salvage, Documentation, and Reconstruction of a Howe Truss**

Moderator: David Simmons, *Ohio Historical Society, Columbus, OH*

Christopher Marston, *Architect, NPS, Historic American Engineering Record, Washington, DC*

Timothy Andrews, *Barns & Bridges of New England, Gilford, NH*

Vern Mesler, *VJM Metal Craftsman, Lansing, MI*

Dario Gasparini, *PhD, Case Western Reserve University, Cleveland, OH*

David Wright, *President, Natl Society for the Preservation of Covered Bridges, Westminster, VT*

##### **Moose Brook Bridge: Instrumenting, Post-tensioning, Recording, and Modeling a Howe Truss**

Dario Gasparini, *PhD, Case Western Reserve University, Cleveland, OH*

Kamil Nizamiev, *Case Western Reserve University, Cleveland, OH*

Neil Harnar, *Case Western Reserve University, Cleveland, OH*

Jim Berilla, *Case Western Reserve University, Cleveland, OH*

##### **Langley Covered Bridge Rehabilitation**

Tom Nehil, *PE, Nehil-Sivak Consulting Structural Engineers, Kalamazoo, MI*

### **10:00-10:30am Break**

### **10:30-12:00pm Concurrent Sessions**

#### **Session 9, Salon C: Structural Behavior of Trusses**

Moderator: Robert McCullough, *University of Vermont, Burlington, VT*



## **Structural Behavior and Design of Two Smith Trusses**

Stephen Buonopane, *PhD, Bucknell University, Lewisburg, PA*

Sarah Ebright, *Structural Designer, KL&A, Basalt, CO*

Alex Smith, *Structural Engineer, ARUP New York, NY*

## **Robert Smith's Trusses**

Matthew Reckard, *PE, MS, MKR Design, Ester, AK*

## **Regional Variations and Analysis of Town Lattice Trusses**

Sean James, *PE, Hoyle, Tanner & Associates, Manchester, NH*

## **Session 10, Salon D: Chinese Bridges I**

Moderator: Terry Miller, *Kent State University, Kent, OH*

### **Discovering China's Forgotten Bridges**

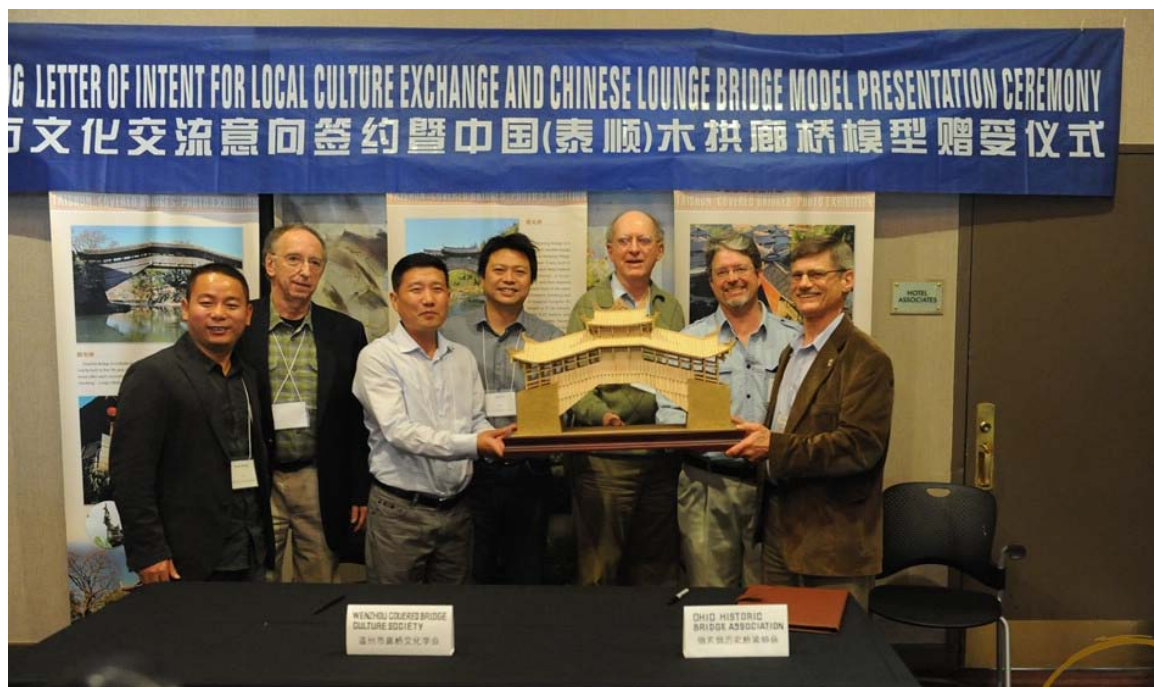
Ronald Knapp, *PhD, State University of New York at New Paltz, NY*

### **Structure, Construction, and Craftsmanship of the Timber Woven-Arch Bridge in China**

Yan Liu, *Technical University of Munich, Germany*

### **Sounds of a Covered Bridge: Music and Ritual Associated with Chinese "Corridor Bridges"**

Terry Miller, *PhD, Ethnomusicologist, Kent State University (retired), Kent, OH*



*Members of Taishun, China delegation present a Chinese bridge model to David Simmons of Ohio Historic Bridge Association. Pictured are (l to r): ZHONG Xiaobo, President, Wenzhou Lounge (Covered) Bridge Culture Society; Ron Knapp, Professor, SUNY New Paltz; ZHOU Xiusong, Minister of the Propaganda Department of the CPC Taishun County; Jack LIU, Associate Professor, Architecture, Jiaotong University, Shanghai; Terry Miller, Professor, Kent State University; Christopher Marston, HAER; David Simmons, Ohio Historical Society.*

### **Session 11, Harding Room: Documentation**

Moderator: Justine Christianson, *National Park Service, Washington, DC*

#### **Documenting Covered Bridges Through 3D Laser Scanning and 3D Modeling**

Jeremy Mauro, *Architect, NPS, Historic American Engineering Record, Washington, DC*

#### **Use of Laser Scanning Technology to Obtain As-Built Records of Historic Covered Bridges**

Brian Brashaw, *Natural Resources Research Institute, University of Minnesota, Duluth, MN*

Robert J. Ross, *USDA Forest Service, Forest Products Laboratory, Madison, WI*

Samuel Anderson, *(formerly) Natural Resources Research Institute, U of Minnesota, Duluth, MN*

#### **Theodore Burr Covered Bridge Resource Center**

Trish Kane, *Collections Curator, Theodore Burr Covered Bridge Resource Center, Oxford, NY*

### **12:00-1:30pm Lunch on your own**

The timber framing demonstration will still be ongoing at RiverScape Pavilion, where refreshments will be sold. The hotel is providing a shuttle service for those who prefer a ride. You may also take this opportunity to eat nearby at one of Dayton's restaurants.

### **1:30-3:00pm Concurrent Sessions**

#### **Session 12, Salon C: Loading/Design**

Moderator: Dario Gasparini, *Case Western Reserve University, Cleveland, OH*

#### **Wind Loading on Historic Covered Bridges**

Michael Bartlett, *PhD, Western University, London, Ontario, Canada*

Peter King, *Wind Tunnel Laboratory, Western University, London, Ontario, Canada*

#### **Load Rating Historic Covered Bridges Through Physical Load Testing**

James Wacker, *PE, USDA Forest Service, Forest Products Laboratory, Madison, WI*

Travis Hosteng, *Bridge Engineering Center, Institute for Transportation, Iowa State U, Ames, IA*

Brent Phares, *PE, PhD, Natl Center for Wood Transportation Structures, Iowa State U, Ames, IA*

#### **Lightweight Deck Systems for Historic Covered Bridge Rehabilitation**

Brian Brashaw, *Natural Resources Research Institute, University of Minnesota, Duluth, MN*

James Wacker, *PE, USDA Forest Service, Forest Products Laboratory, Madison, WI*

Kristoffer Ekholm, *PHD candidate, Chalmers University of Technology, Gothenburg, Sweden*

### **Session 13, Salon D: Chinese Bridges II**

Moderator: Ronald Knapp, *State University of New York, New Paltz, NY*

#### **Ancient Chinese Arch Covered Bridges**

Jack Liu, *PhD, Shanghai Jiao Tong University, China*

#### **Historic Cultures and Traditional Technology of Taishun Covered Bridges**

Haibo Ji, *President, Wenzhou Lounge Bridge Culture Society, Wenzhou, China*

### **Session 14, Harding Room: Security**

Moderator: Mary Ann Naber, *US Department of Transportation, Washington, DC*

#### **Improved Hydraulic Safety for Covered Bridges**

Frank Jalinoos, *PE, FHWA, Turner Fairbank Highway Research Center, McLean, VA*

Sheila Duwadi, *PE, Team Leader, Hazard Mitigation, FHWA, Turner Fairbank, McLean, VA*

Kornel Kerenyi, *PE, FHWA, Turner Fairbank Highway Research Center, McLean, VA*

Jerry Shen, *Program Manager, Genex Systems, McLean, VA*

#### **Burfordville Covered Bridge: Preserve, Protect, and Reconstruct**

Lesley McDaniel, *Historic Site Specialist, Missouri State Parks, Burfordville, MO*

### **3:00-3:30pm Break**

### **3:30-5:00pm, Closing Plenary Session, Salon A**

Moderator: Christopher Marston, *National Park Service, HAER, Washington DC*

#### **Development of a Security Manual for Historic Covered Bridges**

Brent Phares, *PE, PhD, Natl Center for Wood Transportation Structures, Iowa State U, Ames, IA*

#### **Tohickon Aqueduct Rehabilitation**

William Collins, *RLA, Simone Collins Landscape Architecture, Norristown, PA*

#### **Stretching the Envelope: How Bad Is “Repairable”?**

Jim Barker, *PE, JA Barker Engineering, Inc, Bloomington, IN*

### **5:00-6:30pm Closing Reception, Salon B**

Join fellow attendees to celebrate the end of the conference!

### **Dinner on your own**

Eat nearby at one of the Dayton’s restaurants. The timber framing demonstration will be still be ongoing at RiverScape Pavilion. A salsa dance performance will be shown at RiverScape starting at 7:00pm.

**Saturday, June 8, 2013**



*The Preble County Tour had lunch at Roberts Bridge, the only double-barreled and oldest covered bridge in Ohio (1829).*

**Covered Bridge Tour A**

8:00am-4:00pm

Tour the historic and newly constructed covered bridges in Preble County. The tour will also swing through Miami and Montgomery County. Truss types include: Childs, Multiple King, Burr Arch, Pony, Long, Inverted Bowstring, Warren with Arch. Knowledgeable builders, engineers, and officials will accompany the tour.

**Covered Bridge Tour B**

8:00am-3:00pm

This tour will focus on the covered bridges of Greene County. The tour will swing through Miami and Montgomery County. Truss types include: Howe, Smith, Long, Inverted Bowstring, Warren with Arch. Knowledgeable builders, engineers, and officials will accompany the tour.



*The Greene County tour group photo at the Ballard Road Bridge, an 1883 Howe truss.*