



# CROSSINGS

NEWSLETTER OF THE NATIONAL TIMBER BRIDGE INITIATIVE



Editor - Tinathan Cogger

Issue 15

February 1994

## Timber Bridge Design Awards Announced

**T**he special task group on timber bridges has announced the winners of the nation's second 1992 National Engineering Timber Bridge Design Award Competition.

The judges for the 1992 competition were Mike Ritter, USDA Forest Products Laboratory, M. G. Patel, Pennsylvania Department of Transportation, Ed Tice, Appanoose County, Iowa, and Tom Williamson, American Wood Systems.

The Timber Bridge Awards Program was sponsored by the American Forest and Paper Association's (AFPA) Special Task Group on Timber bridges. Financial support of this program was provided by the USDA Forest Service, American Forest and Paper Association, Southern Forest Products Association, American Institute of Timber Construction, American Wood Systems, Western Wood Preservers Institute, Trus Joist MacMillan, and Western Wood Structures.

Awards were presented to eleven outstanding bridges.

Listed, beginning on page 2 are the categories and the respective winners.

*Continued on page 2*

## Update on Timber Bridges Fiscal Year 1992 through November 1993

**U**nder the Timber Bridge Initiative, States are developing Timber Bridge Programs, and adopting initiatives that suit their individual needs. The following is an update on various State's activities from Fiscal Year 1992 through November 1993.

**Alaska:** The University of Alaska, at Fairbanks, is testing methods to enhance the double diffusion process for white spruce. In connection with this research the state is promoting the use of white spruce in timber bridges.

Two tested processes have shown promise for improving treatment. In one procedure the timbers are wrapped after immersion. This slows the drying process, and allows the diffusion process to continue, which allows better penetration of chemicals. The second process tested uses ultrasonic waves to increase chemical penetration. When the success of these processes is varified, the results will be published.

**Colorado and Louisiana:** Engineering Data Management, of Colorado, in conjunction with the Louisiana Department of Transportation and Development, determined the length and soundness of piles by using stress wave propagation. The areas where piles wear most, from scour and/or rot, are readily identified in this process. A publication is available.

**Illinois:** For several years, the Illinios Department of Transportation's program on rural bridges has provided funds to assist counties in the replacement of local state bridges. These funds may be used to match federal grant funds such as the USDA Timber Bridge Initiative or the FHWA Timber Bridge Initiative.

*Continued on page 3*





## Timber Bridge Design Awards Announced...continued from page 1

### Pedestrian Light Vehicular Bridge

#### *First Place:*

Taidnapam Park Bridge, Morton, Washington. This bridge design features a series of five glulam stringer sections, supported by four steel towers. Two sections are cantilevered over supports. One end of the bridge drops six feet to meet an existing abutment. The bridge rails are sawn lumber, and the deck is 4 inch thick structural concrete.

#### *Award of Merit:*

Bird Sanctuary Bridge (Izumi-No-Mori Midori-No-Kakehashi), Yamoto, Japan. The bridge features two oriental style glulam towers that support a glulam stringer and deck system for the 90-foot center span and approach spans. Also included is a long glulam boardwalk, water wheel and two viewing platforms.

### Long Span Vehicular Bridges

#### *First Place:*

Eagle River Bridge, Eagle River, Michigan. This 152 foot long structure is supported by twin glulam arches having a clear span of approximately 75 feet. The center of the three hinged arch configuration rises some 45 feet above the river. Seven pier bents support transverse floor beams, which in turn support the longitudinal stringers and transverse deck systems.

#### *Award of Merit:*

Grand Lake Bridge, Grand Lake, Colorado. This arch bridge has a clear span of over 110 feet. It is a pinned glulam arch structure with two traffic lanes and a cantilevered walkway. The arches are pressure treated Southern Pine. The beams are Douglas Fir, incised and fabricated before pressure treatment. Steel rods, suspended from the glulam arches, support the glulam beams and deck panels.

Wye Narrows Bridge, Queen Annes County, Maryland. This 702 foot bridge design called for an all timber superstructure, timber pilings, and a dowel laminated panelized deck system.

### Short Span Vehicular Bridges

#### *First Place:*

Deibler Road Bridge, over Spruce Creek, Ferguson Township, Pennsylvania. This bridge is 37'-10" long and 29'-6" wide. The glued laminated stringers support transverse glulam deck panels.

#### *Award of Merit:*

Sunnyside Road Bridge over West River, Italy, New York. The bridge is a two lane, three span bridge with a length of 83 feet and a width of 25 feet.

East Avenue Bridge over Limestone Creek, Manlius, New York. This 72-foot long glulam bridge features a superstructure using glulam timber beams and a transverse glulam deck, new abutments and wingwalls, a modern wearing surface, and timber curb and guardrail system.

### Rehabilitation of Existing Bridges

#### *First Place:*

Axe Handle Road Covered Bridge, Union County, Ohio. The main arches of this bridge are nail laminated from machine stress rated lumber. Longitudinal glulam deck panels were suspended from galvanized rods. New floor beams were also glulams. Tongue and grooved lumber flooring was laid transversely for the final wearing surface to complete the job.

#### *Award of Merit:*

Ashbrook Road Covered Bridge, Canal Winchester, Ohio. The rehabilitation of this bridge required skilled, old-fashioned craftsmanship. This skills included splicing new timbers to old framing, epoxy grouting to seal cracks, and replacing damaged blocking, truss members, bracing and floor beams. New siding is Southern pine, and a new shake roof was added.



## Timber Bridge Design Awards Announced...*continued from page 2*

Crooked River Arm Bridge, Culver, Oregon. This 464 foot suspension span required approximately 136,000 board feet of industrial appearance glulam deck panels. The material was pressure treated with 0.4 pcf of Pentachlorophenol preservative treatment in a Type A carrier.

For more information, write: American Forest and Paper Association, 1250 Connecticut Avenue NW, Washington, DC 20036. Phone: 202-463-2700.

**EDITOR'S NOTE:** The sponsors have produced a full color, eight page brochure entitled "Timber Bridges 1992 Award Winners." This brochure highlights each of the award winning bridges. To receive your copy contact: The Timber Bridge Information Resource Center, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505. Phone: 304-285-1591.

*The above article is condensed from the brochure "Timber Bridges 1992 Award Winners" Summer 1993.*

## Update on Timber Bridges...

*continued from page 1*

**Iowa:** This state is proceeding with the development of standard design plans for demonstration timber bridges built with cottonwood. The fabrication plans are near completion. Iowa is developing a timber infrastructure network to support manufacture and fabrication of timber bridges.

**Kansas:** In eastern Kansas, the Lake Region RC&D Council is installing two drop box spillway structures to reduce erosion. Emphasis is placed on using readily available timber from local merchants to build energy dissipating drop structures. They will use both CCA and creosote treated materials.

**Maine:** Maine recently passed a bill to fund a \$700,000 timber bridge program. Research projects are designated to receive \$300,000. The remaining \$400,000 will be used for demonstration timber bridges.

**Massachusetts:** A \$1,500,000 bond was passed to support a Timber Bridge Program in Massachusetts. It will fund demonstration timber bridges in State Forest and State Park systems. This resulted from the efforts of the state legislature community development groups, industry and the State Forester's Office.

The Massachusetts Division of Forests and Parks is involved in a marketing study to increase the acceptability of timber for short span bridges and related rural road applications.

**Michigan:** The Huron Pines RC&D Council, Inc. is evaluating the potential for manufacturing and marketing modern timber bridges to aid Michigan's efforts to rebuild its transportation infrastructure.

**Mississippi:** Now in the process of developing their 10 year legislation for a bridge rehabilitation or replacement initiative. The Mississippi state legislature proposed \$300,000,000 for their bridge replacement program. Consideration shall be given to utilizing timber products on some projects, provided that projects using timber will be comparable in cost to those using other materials, while meeting current bridge design standards.

**New Hampshire:** The North Country RC&D Area, Inc. is developing design standards for binwall retaining structures, and evaluating the future market for sales of these products.

**New York:** The Greater Adirondack RC&D Council is developing plans and specifications for a timber binwall that will stabilize soils subject to erosion or movement. When completed the plans will be standardized for the state department of transportation.

Allegheny County has its own timber bridge program for fabricating and installing timber bridges.

**Ohio:** With the assistance of John Smolen, TBIRC is developing a case study to describe Ashtabula County's timber bridge program. Work there is accomplished by county crews, and the study will include resourceful ways that the county



## Update on Timber Bridges...

*continued from page 3*

has attempted to achieve optimum use of its materials and equipment. The county crews perform most of this program work during slack winter periods. Timber bridges are one area where Ashtabula County has been successful.

**Oregon:** Oregon's Department of Transportation with the Wood Products Center has an engineer skilled in timber design. They provide direct technical assistance and information on modern timber bridge designs, specifications, etc. to counties throughout the state.

**Pennsylvania:** The Pennsylvania Wood Industry Association is evaluating red maple as structural timber for bridges in the hardwood states, particularly in Pennsylvania. The study focuses on structural yield and costs for producing structural grade timber for bridges, taking into account development of the expertise needed.

**Vermont:** The Vermont Agency of Transportation working with the VT Department of Forestry and RC&Ds has designed a timber binwall that will allow most timber species native to Vermont to be used in binwall construction. A conference was held in March 1992 on design and use of timber binwalls, and a Timber Bridge Special Project Grant has been approved for Vermont to build a demonstration timber retaining wall at Arlington, VT. This project, and

information gained from it, should result in designs that will allow binwalls to be constructed nationwide from locally native timber species.

**Virginia:** Virginia is in the process of installing 7 demonstration bridges. Two more demonstration bridges scheduled for next year, bring the total to 9.

The Center for Forest Products Marketing, at Virginia Polytechnical Institute and State University, is studying the tendency to adopt new timber bridge technology, its effect on the timber bridge market, and its effect on rural economic development. The study is intended to evaluate barriers to adoption, develop strategies to overcome these barriers and to identify the most promising market segments.

**West Virginia:** The Constructed Facilities Center of West Virginia University is developing a manual for designing and load rating Modern Stressed Timber Bridges, supporting modern timber bridge technology developed through the Timber Bridge Initiative. The manual will include a step-by-step design and load rating process that can be in field use with minimum training for inspectors.

**Wisconsin:** The Wisconsin Resource Conservation and Development Council is conducting a study to identify the potential market demand for timber bridges.

If other state programs are available, please feel free to notify the Timber Bridge Information Resource Center and we will include them in one of our future issues of *Crossings*.

*Article contributions, questions or comments may be sent to Stephen C. Quintana, Program Director, P.E. or Ms. Tinathan A. Coger, Information Assistant; USDA Forest Service; 180 Canfield Street; Morgantown, WV 26505; Phone: 304-285-1591 or 304-285-1596; or FAX: 304-285-1505; DG: S24L08A.*

***Crossings* is a service of the USDA Forest Service, Northeastern Area, State and Private Forestry, and is distributed quarterly to individuals and organizations without fee. Products, designs, and treatments mentioned by contributors from outside the USDA are not necessarily endorsed by the USDA, nor do statements made herein reflect the policy of the USDA. In all cases, consult with appropriate professional and State or local regulatory agencies for conformance to applicable laws and regulations.**

The policy of the United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, age, religion, sex, or disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotope, etc.) should contact the USDA Office of Communication at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, US Department of Agriculture, Washington, D.C., 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.