

CROSSINGS



NEWSLETTER OF THE NATIONAL TIMBER BRIDGE INITIATIVE

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CCA: The Wood Treatment with Diverse Uses

There are three main wood preservatives in common use today: Creosote, pentachlorophenol, and CCA (chromated copper arsenate). When properly applied, all are effective at protecting wood. For some projects, the choice of treated wood type is a matter of personal preference, since all three provide long-lasting defense against termites and fungal decay. However, each preservative has distinctive characteristics which make it better suited for particular applications.

CCA is a waterborne, rather than oilborne, preservative which leaves wood with a clean surface and thus, appropriate for use where contact with clothing and skin is likely. CCA-treated wood is the overwhelming pick for decks, fences, picnic tables, retaining walls, planter boxes, playground equipment, wood foundations, and other residential structures.

But CCA-treated wood is hardly limited to backyards. It is also used for utility poles, foundation piling, bulkheads, pedestrian and vehicular bridges, sign posts, guard rail systems, boardwalks, roller coasters, sound barriers, and other commercial and industrial projects.

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Fiscal Year 1995 Timber Bridge Construction Grants Awarded

The Timber Bridge Initiative Proposal Evaluation Panel met during the week of January 17, 1995, at Morgantown, West Virginia to review and recommend for funding the Fiscal Year 1995 timber bridge construction grant applications. Panel members were:

Steve Bratkovich, Timber Bridge Initiative Coordinator, Northeastern Area Representative

Larry Roybal, Timber Bridge Initiative Coordinator, Region 3

Liz Crane, Timber Bridge Initiative Coordinator, Region 5

Robert Westbrook, Timber Bridge Initiative Coordinator, Region 8

Kenneth Kilborn, Timber Bridge Initiative Coordinator, Region 10

Michael Ritter, Forest Products Laboratory, Engineered Wood Products & Structures

John Sebelius, Cooperative Forestry, Washington Office

Ken Kilpatrick, Engineering, Washington Office

Dave Summy, Engineering, Region 9

Lou Triandafilow, Federal Highway Administration

Sheila Duwadi, Federal Highway Administration

John Pasquantino, Legislative Affairs, Northeastern Area Representative

Edward Cesa, Timber Bridge Initiative, Acting Program Director and Facilitator

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The performance of CCA-treated wood is well established. The product has been in use since 1933, and more than 6,000,000,000 bd. ft. of lumber is treated annually, plus plywood and poles.

As with other preservatives, CCA treating is done in a large, pressure-rated cylinder. Dried lumber is pushed into the vessel, vacuum drawn to remove air from spaces in the wood, and the cylinder flooded with liquid preservative solution. Pressure pumps force the solution into the wood.

Two variables are especially important in describing CCA-treated wood: penetration and retention.

Penetration is the depth to which the preservative is pushed into the wood. Some species of wood accept treatment better than others, and sapwood is more easily treated than heartwood. If a preservative penetrates only the outer shell of the wood, inner portions will be susceptible to termites and rot should the surface crack or be scuffed.

Retention is the amount of preservative retained in the wood, measured in pounds per cubic foot (pcf).

Different exposure conditions present different hazards to wood; where the hazard is greater (e.g., salt water immersion vs. above ground use), more chemical protection is needed.

The American Wood Preservers' Association has established the following retention standards:

AWPA Standard & Building Code Requirements¹

Application	Required Retention (pcf)	Drying After Treatment ²
LUMBER, TIMBERS AND PLYWOOD		
Above Ground	0.25	Optional
Ground/Fresh Water Contact	0.40	Optional
Salt Water Splash	0.60	Optional
Wood Foundation	0.60	Required
Salt Water Immersion	2.50	Optional
PILING AND COLUMNS		
Structural Poles	0.60	Optional
Foundation/Fresh Water	0.80	Optional
Salt Water Immersion	2.50	Optional

¹ CCA preservative must meet AWPA P-5 and Federal Standard TT-W-550. The treating process and the above results meet or exceed Federal Specification TT-W-571 and AWPA Commodity Standards as applicable.

² Dried after treatment, or DAT, means the pressure-treated wood has been dried to a moisture content of 19 percent or less, either by air or by kiln (KDAT).

Since CCA-treated wood contains a pesticide, it is natural to ask, "is it safe for people, plants, and animals?" The answer, confirmed by many laboratory studies and six decades of use, is a clear "Yes." EPA studied preservative-treated wood for eight years and suggested only modest precautions, most of which apply equally well to the handling and cutting of ordinary, untreated wood.

The recommendations appear in the Consumer Information Sheet available from treated wood suppliers.

— **Huck DeVenio**
Hickson Corporation
Smyrna, Georgia

EDITOR'S NOTE: For more information on the standards for processing and evaluating pressure-treated wood, contact: American Wood Preservers' Association; P. O. Box 286; Woodstock, MD 21163-0286; (410) 465-3169.

Pennsylvania Department of Transportation Demonstration Timber Bridge Program

In November 1988, the Legislature established the "Hardwood Initiative", one of several state economic development programs. The purpose of this initiative was to expand the scope and value of our state's timber industry, since Pennsylvania has one of the greatest maturing hardwood forests in North America.

In February 1989, the Department of Transportation initiated the Pennsylvania Demonstration Timber Bridge Program. This was not only to respond to the economic initiative, but also to provide a lower cost, lower maintenance bridge alternative to Pennsylvania's 2,639 municipalities. Another reason for starting the program was to participate as a partner in the National Timber Bridge Initiative sponsored by the USDA Forest Service.

A total of 17 candidate projects were selected for inclusion in the program. At least one timber bridge project was selected in each of the Department's 11 Engineering Districts. Projects were selected in each district to allow local governments across the state to participate in the program. The Department wanted the projects to be partnership efforts of federal, state, and local governments working together.

The candidate projects were selected for the Demonstration Program based on the following criteria:

- Less than 750 ADT (Average Daily Traffic)
- Less than 25 ADTT (Average Daily Truck Traffic)
- 20-60 feet bridge span length
- Capital Budget authorization available
- Included in the Department's Twelve Year Program
- Local support from municipal officials

There are three bridge types used in this program. They are:

- Stressed Timber
- Hardwood/Steel Composite Stressed Timber
- Glued-Laminated Hardwood Timber

The Stressed Timber design is used for bridges with lengths of 20 feet to 24 feet. The Hardwood/Steel Composite Timber design is used for structures with lengths of 25 feet to 45 feet. Glued-Laminated Hardwood Timber designs are used for the remaining bridges. The Pennsylvania State University has developed design stress specifications for three species of Pennsylvania hardwoods for use on longer spans. The University also developed bridge standards for gluing, treating, and fastening each type of hardwood.

In January 1995, the Department formally implemented its new *Series BLC-560, Standards for Hardwood Glulam Timber Bridges, Publication #6*. This publication can be obtained through the Department's Publication Sales Office at (717) 787-6746. Additionally, the Department contracted with West Virginia University to complete a "Quality Assurance and Inspection Manual for Timber Bridges" that is available upon request from the Office of Research and Special Studies at PennDOT, phone (717) 787-5593.

Funding for the Demonstration Timber Bridge Program was initially as follows:

- 80% State funds
- 10% USDA funds
- 10% Local funds

There are no plans to expand the Demonstration Timber Program beyond the 17 projects. All future timber bridge projects will be completed through the Department's Bridge Program, providing these projects meet capital budget and Twelve Year Program requirements. These projects would be eligible for funding using a combination of federal/state/local funds provided federal eligibility requirements are met, and that state capitol budgeting requirements are met. The 80% state funding is the maximum permitted through the Bridge Capital Budget.

Ultimately, the marketplace will determine whether these new timber bridge designs will be cost competitive with prestressed concrete or steel bridges.

For additional information or for any questions regarding Pennsylvania's experience with this Program, contact William Pogash at (717) 787-1964.

Bridge Construction Grants Awarded ... continued from page 1

Eighty-eight proposals were evaluated and 36 proposals were selected for funding for Fiscal Year 1995. The total dollar amount awarded was \$914,429. This amount was cooperatively matched with 1.7 million of state and local dollars. Proposals were reviewed and rated for their technical merit, including key items such as structural integrity, rural development benefits, and cost competitiveness. Following is a list of the approved bridges and special projects.

FUNDED BRIDGES and SPECIAL PROJECTS

State	County	State	County
AK	Anchorage	MI	Roscommon (2)
AK	Anchorage **	MO	St. Louis *
AK	Mat-Su	MS	Humphreys
AL	Crenshaw	MS	Lincoln **
AZ	Maricopa *	NJ	Sussex *
CA	Humbolt *	NY	Schuyler **
CO	Gunnison *	NY	Tioga
CO	Mesa *	NY	Washington
CT	Fairfield *	OK	Blaine
GA	Jasper	OK	Noble
GA	Pike	PA	Huntingdon
IA	Appanoose	PA	Westmoreland *
IA	Warren	RI	Kent
IA	Warren **	VA	Wythe **
KY	Magoffin *	WV	Monongalia **
ME	Hancock **	WV	Monroe
MI	Houghton (2)	WV	Preston

* Pedestrian Bridges

** Special Projects

(2) Two Bridges Funded in that County

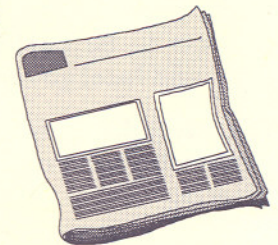
New Publications

The publication "Materials for and Design of Hardwood Glulam Bridges," by Dr. Harvey Manbeck and Mr. Keith Shaffer, Agricultural and Biological Engineering Department, The Pennsylvania State University has been completed. The publication was developed from a presentation at the "National Hardwood Timber Bridge Conference, 1992" held at the Pennsylvania State University.

The publication presents design requirements, calculations, and details for 30- to 40-foot simply supported hardwood glulam girder bridges with transverse glulam decks. The new hardwood glulam bridge standards prepared for the the PA Department of Transportation are discussed; also, design procedures are explained and are followed by design examples.

This publication should be of particular interest to bridge engineers and other highway officials interested in using northern red oak, red maple, or yellow-poplar for glulam timber bridges.

Copies can be obtained by contacting TBIRC, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505; phone 304-285-1591.



Article contributions, questions or comments may be sent to the Program Director, Timber Bridge Information Resource Center 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.

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