



CROSSINGS



NEWSLETTER OF THE NATIONAL TIMBER BRIDGE INITIATIVE

Editor Tinathan Royce

Issue 7

February 1992

How Does the Timber Bridge Initiative Fit into the Nation's Revitalization of the Bridge Infrastructure and Rural Economic Development?

Today, most rural communities are dependent on roads for access. This transportation system provides for direct and immediate access to basic commodities, jobs and services whether produced or consumed in rural areas. Transportation serves as the linkage for the Nation's rural communities to urban and suburban centers. "For several years the FHWA has reported to Congress that the rural collectors of our nation's transportation system are in the poorest condition."¹ Many miles of roads and bridges were built in the 1800's and early 1900's when traffic volumes were less and loads were lighter. As a result, "much of the local system is now obsolete and still serving today's increased traffic volumes, heavier loads, and larger vehicles."² The bridge conditions are a concern. The need for flexibility in design and standards for bridges that reflect good quality and properly sized vehicles to support our rural communities transportation and safety needs are critical. As of December 31, 1988, the National Bridge Inventory (NBI) contained information on 578,094 highway bridges, of which 81 percent were classified as rural. The average age of all bridges was found to be 35.5 years, with rural bridges averaging 36.6 years, and urban bridges averaging 30.9 years. The county governments are responsible for 63

continued on page 2

Timber Bridge Initiative Funded for '92

Due to approved funding for the Timber Bridge Initiative for fiscal year 1992, the Timber Bridge Information Resource Center has been accepting proposals for the construction of modern timber bridges throughout the nation. Each area has been assigned a Timber Bridge Regional Coordinator*. These coordinators work closely with the state and local governments and the TBIRC Program Manager in disseminating information relating to the Timber Bridge Initiative including the proposal process. The list of Coordinators, their address, phone number, and the states they represent are as follows:

Northern Region (R1): Vern Meyer; USDA-Forest Service; P.O. Box 7669; Federal Building; Missoula, MT 59807; Telephone: Comm: (406)329-3388; FTS: 585-3388; STATES: Montana, northern Idaho, North Dakota, and northwestern South Dakota.

Rocky Mountain Region (R2): Robert Dettman; USDA-Forest Service; P.O. Box 25127; 11177 West 8th Avenue; Lakewood, CO 80225; Telephone: Comm: (303)236-7073; FTS: 776-7073; STATES: South Dakota, Wyoming, Nebraska, Colorado, and Kansas.

continued on page 3

EDITOR'S NOTE

In this issue of "Crossings," there is a prestamped postcard requesting your response. If you want to continue to receive Crossings," please return the card by April 30, 1992. Failure to do so will eliminate your name from the mailing list to receive future copies.

Errata sheets for the Timber Bridges: Design, Construction, Inspection and Maintenance manual are enclosed in the envelope with this issue of "Crossings." Please use these informational sheets to update your manual. If you have not received a manual and would like to do so, contact Gretchen Hanna, USDA-Forest Service, 180 Canfield Street, Morgantown, West Virginia 26505; Phone: (304) 285-1536. The manual will be sent to you via United Parcel Service, free of charge.



Your University at Work

Mississippi State University - The Mississippi Forest Products Laboratory (MFPL) is conducting cooperative research with the USFS Forest Products Laboratory, Madison, Wisconsin, to develop wood preservative and dimensional stabilization treatments for timber bridges. The MFPL also has an active program in the development and evaluation of new preservative and adhesive systems that may have future applications for timber bridges. A timber bridge conference held at Mississippi State University in August 1990, was attended by 161 engineers, highway department officials, etc. An engineered wooden bridge was constructed as part of the conference. Two additional timber bridge conferences have been held in different parts of Mississippi, and three additional demonstration timber bridges were funded for 1991. One of these bridges is complete and the others are in various stages of construction. A survey of rural highway bridges in north central Mississippi indicated that, while concrete decks are present on many of them, supports under most of the bridges were creosote-treated wood piles. While piles under several bridges remained sound after 30-40 years, piles under other bridges were in various stages of deterioration. This study indicated the need for developing inspection and maintenance procedures as an integral part of any timber bridge program. In this regard, remedial treatments must be developed and evaluated for use in the maintenance of bridges. Such treatments are being studied as a part of the MFPL research program.

— **Dr. Terry L. Amburgey**
Mississippi State University
Mississippi Forest Products
Laboratory
Mississippi State, Mississippi

How Does the Timber Bridge Initiative Fit ... *continued from page 1*

percent of the nation's deficient or obsolete rural bridges with the State government's responsibility at 30 percent. Nationwide, 468,095 rural highway bridges and 51 percent are located off the Federal-Aid Highway System. In off-system rural bridges, 58 percent are structurally deficient or functionally obsolete. Of the bridges in rural areas in agriculturally significant counties, 47 percent are concrete, 38 percent are steel, and 15 percent are timber.³ Reliable, efficient transportation is a basic necessity for the

economic growth and survival of rural America. It is highly dependent on maintaining and improving local transportation systems and networks to our national system. The conditions of our bridges in rural areas continue to decline. Under our Nation's current transportation practices, one industry, whether concrete, steel, or timber, cannot meet the changes taking place in rural areas. It must be a concerted effort of our bridge industry to meet the challenge ahead of us. In support of our rural infrastructure and the need to upgrade our bridges, the Timber Bridge Initiative was funded in 1989 under the sponsorship of Senator Robert C. Byrd, WV. The purpose of the program was to diversify local economies with the improvement of our nation's transportation system, markets for wood products, and development of service industries for wood bridge construction. Demonstration bridges have been funded to expand on locally available timber resources species which are underutilized. The selection criteria was based on structural integrity, use of local labor and wood species, and innovative designs in conformance with the American Association of State Highway Transportation Officials. Environmental Protection Agency (EPA) approved treatments are used. With the modernization of treatment facilities nationwide, the quality of treatment has greatly improved, providing longer protection for the wood products. The development of several specifications for treating various species, retention of treatment, and cleaning processes are keys to environmentally sound products.⁴ Methodology and technique for the treatment of non-traditional wood species and traditional wood species have been tested and applied on demonstration bridges. Many of these bridges are being monitored through the Forest Products Laboratory and various universities. The monitoring results are not yet compiled, but should be available in the near future. Studies and evaluations of demonstration timber bridge technology are continuing. Prefabricated units, design systems, non-destructive techniques, and maintenance applications are currently being evaluated to update the technology of modern timber bridges. The information and knowledge derived will assist rural communities in upgrading their transportation systems. The major difficulty for rural areas is financing their infrastructure needs. Today, there are few effective Federal and State programs to assist or finance the bridge transportation needs. "There is simply no reservoir of taxable wealth."⁵ Rural communities infrastructure needs must be appropriately planned, sized, and allowed to be built so that local officials can use local materials, labor, and equipment, with allowances for

Continued on page 3

VIEWPOINT: Using Common Sense with Treated Wood

The wood treating industry has undergone changes in the past two decades. Alternative methods of construction have posed competition, economic recessions have threatened, and controversies have arisen regarding access to adequate supplies of timber to treat. The most significant event, however, during the past 20 years, has been the growth of the environmental movement and the sweeping (and often uncritical) application of its commendable tenets throughout commerce and industry. As I travel throughout the western United States, consulting with architects and engineers, the question I most often encounter regarding treated wood is, "But is it environmentally safe?" This is a rational and worthy question, but all too often the information-seeker has already reached the conclusion that it is not. Additionally, some of the architects and engineers I speak with regarding treated wood have unwittingly developed the preconceived notion that any wood impregnated with chemicals becomes a hazardous substance. Our chemical-conscious society often fails to make the distinction between the chemical itself, which is admittedly developed with the aim of eliminating fungi, insects, marine borers, and other undesirable inhabitants, and the wood that is infused with the chemical. Pressure treated "fixes" the chemical into the very fibers of the wood and becomes a safety issue only when the wood is machined or burned. Simple, safe, and common-sense handling precautions should then be taken, in accordance with well established U.S. Environmental Protection Agency (EPA) guidelines. The wood-treating chemicals themselves, however, have a long and relatively innocuous history. Creosote, for example, is really nothing more than the liquid portion of coal, and its coal tar derivatives are found in unregulated abundance throughout the marketplace — in the buttons on your shirt and in the dandruff shampoos you buy at the drugstore. Koppers Company experiments have found creosote to have a moderately low toxicity; about half again as toxic as common table salt. The city of Seattle has received much of its drinking water for many decades through two wood-staved aqueducts treated with creosote.

continued on page 4

How Does the Timber Bridge Initiative Fit ... *continued from page 2*

the development of a sustained economic transportation system. It is rather inappropriate for the bridge industry (i.e., concrete, steel and timber) to fall short in serving our rural infrastructure needs. All industry plays a vital role. The service needs in rural America are in need of our joint efforts. The Timber Bridge Initiative has addressed many rural economic needs, and would gladly assist the bridge industry in developing a positive approach to assist our rural areas. The needs in rural areas can be satisfied only by the bridge industries' joint efforts with others in Federal, State, and local community participation. "No one bridge type will serve every community, as every community is made up of diverse skills, cultures and needs" in which the bridge needs in most cases are site specific.

¹ *Transportation Facts, United State Department of Agriculture, January 1989.*

² *Mr. Richard Gatten, President of the Idaho Association of County Engineers.*

³ *Transportation Report, Office of Transportation, United States Department of Agriculture, Washington, DC 20090-6575.*

⁴ *Final Report - System Optimization for Stress-Laminated Timber Decking Systems for High Volume Roads.*

⁵ *Richard Tracy, Highway Superintendent, Westhampton, Massachusetts.*¹

— **Stephen C. Quintana**
Program Manager - TBIRC

Timber Bridge Initiative ...

continued from page 1

Southwestern Region (R3): Karen Lowden; USDA-Forest Service; 517 Gold Avenue, S.W.; Albuquerque, NM 87102; Telephone: Comm: (505)842-3835; FTS: 476-3835; STATES: Arizona and New Mexico.

Intermountain Region (R4): Clare Mitchell; USDA-Forest Service; 324 25th Street; Ogden, UT 84401; Telephone: Comm: (801)625-5260; FTS: 586-5260; STATES: Southern Idaho, Nevada, and Utah.

Pacific Southwest Region (R5): Dean Huber; USDA-Forest Service; 630 Sansome Street; San Francisco, CA 94111; Telephone: Comm: (415)705-2871; FTS: 465-2871; STATES: California, Hawaii, Guam and Trust Territories of the Pacific Islands.

continued on page 4

VIEWPOINT: Using Common Sense ...

continued from page 3

Waterborne preservative, or arsenicals, cannot help but bring to mind images of murderous octogenarians clad in equally old lace. But I am told that arsenic is ubiquitous in the environment. It is found in seawater and in the seafood that we consume, particularly shrimp and cod. All soils have some concentration of indigenous arsenic; the state of Alaska has the highest levels. All chemicals used in wood-preservative treatment have been exhaustively tested by the EPA, which has issued a set of useful and appropriate guidelines for the use of treated wood. These guidelines are available from the EPA or the Western Wood Preservers Institute upon request. Any prudent discussion of treated wood should include some consideration of its alternatives, and the environmental price we pay for using them. There is no energy source that is free of environmental hazard, whether it is air-polluting fossil fuels or wild-life-endangering hydroelectric power. Timber, on the other hand, is a primary and renewable resource. Extending its life through pressure treatment is a responsible act of conservation. For those who advocate the use of nontreated, so-called "naturally resistant," species of cedar and redwood, I would encourage reading Bjorn Hausen's *Woods Injurious to Human Health: A Manual*. You might be surprised to discover the confirmed health problems associated with exposures to Western red cedar and redwood sawdust and shavings. In closing, many scientific sources of information on the environment compatibility of treated wood are available through the Western Wood Preservers Institute and other sources. I see my advocacy role for the use of pressure-treated wood products as carrying an equal responsibility of education. The best advice I can offer a prospective customer is the application of liberal amounts of an expensive yet often-overlooked commodity: common sense.

— John Culp, District Engineer
Western Wood Preservers Institute
Vancouver, Washington

Timber Bridge Initiative ...

continued from page 3

Pacific Northwest Region (R6): William vonSegen; USDA-Forest Service; P.O. Box 3623; 319 S.W. Pine Street; Portland, OR 97208; Telephone: Comm: (503)326-2729; FTS: 423-2729; STATES: Washington and Oregon.

Southern Region (R8): Robert Westbrook; USDA-Forest Service; 2500 Shreveport Highway; Pineville, LA 71360; Telephone: Comm: (318)473-7286; FTS: 497-7286; STATES: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, Virginia Islands, and Virginia.

Northeastern Area, S&PF (R9): Theresa Heyer; USDA-Forest Service; 1992 Folwell Avenue; St. Paul, MN 55108; Telephone: Comm: (612)649-5239; FTS: 777-5239; STATES: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Wyoming.

Northeastern Area, S&PF (R9): Kenneth Kilborn; USDA-Forest Service; P.O. Box 640; Durham, NH 03824; Telephone: Comm: (603)868-5936; FTS: 834-5767; STATES: Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont.

Northeastern Area, S&PF (R9): Ed Cesa; USDA-Forest Service; 180 Canfield Street; Morgantown, WV 26505; Telephone: Comm: (304)285-1530; FTS: 959-1530; STATES: Delaware, Maryland, New Jersey, Ohio, Pennsylvania, West Virginia.

Alaska Region (R10): Eugene Wheeler; USDA-Forest Service; 201 E. 9th Avenue, Suite 206; Anchorage, AK 99501; Telephone: Comm: (907)271-2577; FTS: 868-2575; STATES: Alaska.

*NOTE: The Forest Service does not have a Region 7.

— Editor

Contributions, questions or comments may be sent to Tinathan A. Royce; USDA Forest Service; 180 Canfield Street; Morgantown, WV 26505; Phone: 304-285-1596; FTS: 959-1596 or FAX: 304-285-1505; DG: S24L08A.

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