

# Wood In Transportation Program, Technology Transfer Efforts

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## Abstract

The backbone of the Wood In Transportation (WIT) Program, formerly the National Timber Bridge Initiative, is technology transfer. Technical information on building vehicular and pedestrian bridges, portable bridges for temporary access, retaining walls, railroad and other transportation structures with timber has to be readily available and easy to understand. One purpose of technology transfer is to ensure that appropriated USDA Forest Service dollars are effectively used to promote and demonstrate efficient use of local timber for wood in transportation applications. This presentation will provide an overview of the Forest Service's technology transfer activities for the WIT program.

Key Words: technology transfer, timber bridges, wood in transportation

## Introduction

Technology transfer activities are coordinated by the Timber Bridge Information Resource Center (TBIRC) in Morgantown, West Virginia. The Center plays a vital role in fostering information sharing with highway officials, community leaders, and others across the Nation. Technology transfer activities provide an avenue for the Forest Service to meet the goals and objectives of the WIT program. This is done

by providing information acquired from demonstration projects and related research to people who will use it. Users include community, business, and government leaders who make decisions affecting local community vitality.

The Program's technology transfer effort is successful because of the collective efforts between the three main branches of the Forest Service and its external partners. Examples of cooperative activities include the quarterly newsletter, "*Crossings*", which over 4,500 individuals or organizations receive; and the development and distribution of publications, such as the "Timber Bridges: Design, Construction, Inspection, and Maintenance" manual. Other examples of technology transfer are special project reports, conferences, seminars, workshops, professional presentations, videos, and promotional material. This material is assimilated from a variety of cooperatively funded projects and activities. Resource Conservation and Development Areas, county officials, universities, state departments of transportation, and industry are the most common partnerships.

This presentation highlights cooperative efforts and partnerships developed by the Forest Service, both externally and internally. Readers will learn how the TBIRC publicizes the WIT program and how

information is managed and distributed via an office automation system, printed material, and electronic media. A brief overview of the WIT program is provided first.

### WIT Program Summary

The WIT program was initially funded by the U.S. Congress in 1989. At that time, it was known as the National Timber Bridge Initiative. Its purpose is to improve rural transportation networks and revitalize rural economies by using wood for transportation structures. Since the beginning of the Program, 359 demonstration vehicular and pedestrian timber bridges, in addition to 66 special projects, have been funded in 48 states. As of June 1996, more than 200 bridges have been built with improved engineered designs and advanced preservative treatment techniques.

In the past, the major emphasis of the Program has been on vehicular highway bridges. However, because of increased interest and demand, the Program has broadened into several additional markets. The direction of the Program now includes portable bridges for temporary access, pedestrian and trail bridges, retaining walls, box culverts, sound barriers, and marine and railway structures. The Program continues to emphasize the stewardship of our forestland through the development of additional markets for low-value, underutilized local timber resources.

The primary goal of the Program is to diversify local economies, which is being carried out by the following objectives:

- Improving rural transportation networks,
- Expanding the range of markets for wood products,
- Creating service industries for wood in transportation structures,
- Commercializing modern timber bridge technology,
- Innovation that leads to cost-saving strategies and improved performance of existing designs,
- Expanding the Program to include other wood in transportation applications, and
- Improving America's forests through stewardship.

These objectives are being achieved through four distinct, yet interrelated components:

1. **Wood In Transportation Demonstration Projects:** These projects utilize timber structures to improve rural road systems, establish markets for wood products, and create service industries for wooden

structures. In addition to demonstration timber bridges and other projects funded by the Program, timber bridges are also being emphasized on National Forest System (NFS) land in an effort separate from the WIT program. Since 1989, more than 250 timber bridges have been constructed on NFS land.

2. **Research:** Research is conducted to optimize the balance between existing and developing technology in the use of wood as a construction material. Much of the work is cooperative in nature. Recent advances in wood treatment, engineered wood composite products, and bridge designs provide for the increased use of wood as a construction material to assist in the cost-effective rebuilding of our Nation's transportation infrastructure.
3. **Technology Transfer and Information Management:** The TBIRC provides information to interested individuals and organizations. It also administers the demonstration grant program.
4. **Rural Revitalization:** All WIT projects have the potential to stimulate rural economies. Many projects are constructed with locally available timber using local resources.

Table 1 shows the budget of the WIT program.

Budget Item	Final FY1994	Final FY1995	Final FY1996
... Dollars in thousands . . .			
Demonstration Projects	\$1,009	\$1,020	\$604
Research	1,093	1,100	770
Technology Transfer	732	671	596
<b>Totals</b>	<b>\$2,834</b>	<b>\$2,791</b>	<b>\$1,970</b>

### Cooperative Efforts and Partnerships

Interested citizens, highway officials, bridge engineers, community planners, and others discover the WIT program through various means. The majority of the budget funds a variety of demonstration projects. Demonstration projects are widely publicized by cooperators, which leads to interest in surrounding communities.

For example, in 1993, the Forest Service helped fund a 40-foot, two-lane vehicular bridge in Meriwether County, Georgia. The Meriwether County Board of Commissioners and the Two Rivers Resource Conservation and Development Council were awarded the grant. This bridge withstood a 500-year flood in July 1994. Since that time, many county government officials in the area have visited the bridge and are now interested in building timber bridges in their communities.

The WIT program also funds special projects that generate interest in using timber for transportation structures. The National Timber Bridge Design Competition is a project partially funded by the WIT program. The student competition, sponsored by the Southwest Mississippi Resource Conservation and Development (RC&D), Inc., promotes the use of wood as a competitive bridge construction material. This annual event involves leaders from the transportation and engineering communities with an emphasis in the academic community.

## **The Development and Distribution of Publications**

After various demonstration and special projects are complete, the TBIRC develops and distributes cost and contacts information and/or technology transfer reports on them. For instance, the TBIRC is working with the Southwest Mississippi RC&D, Inc. to produce a brochure to further advertise the student competition.

In Sussex County, New Jersey, the WIT program partially funded a suspension trail bridge on the Appalachian Trail that was completed in the fall of 1995. Conklin Associates designed the bridge. Tibor Latinsics, Conklin Associates, became aware of the Program through word-of-mouth promotion by individuals from the New Jersey Forestry Services. As a follow-up to this project, Conklin Associates in cooperation with the TBIRC is developing a special project report on suspension trail bridges. There is a lack of information available on this particular design. With more communities showing interest in pedestrian trails, there is a great need to make this information and related trail bridge designs available.

Research efforts of the WIT program are administered at the Forest Products Laboratory located in Madison, Wisconsin. This work is cooperative in nature with partners, such as the Federal Highway Administration, National Forest System, universities, and state departments of transportation. To get research findings

to the public, the TBIRC works closely with the Forest Products Laboratory in distributing their publications that explain the latest technical advances. These publications provide engineers, local community leaders, and others with information on bridge design, fabrication, preservative treatment, construction and erection techniques, and performance.

In addition to the examples listed above, the TBIRC is currently working to fill even more gaps. For instance, the Center is finalizing a case study on portable bridges for timber harvesting. The TBIRC is also working with engineers from two counties to produce case studies on completed demonstration timber bridges. Cost information on projects is recorded in the TBIRC database as projects are completed. This information is used to develop periodic cost reports.

## **Displays, Conferences, and Seminars**

Aside from the various publications distributed by the TBIRC, customers also learn about the WIT program from displays, conferences, and seminars. The TBIRC prepares, presents, coordinates, or helps fund these activities.

WIT information and technology has been made available to potential users at formal conferences. An estimated 14,000 state and county officials, engineers, and involved citizens have participated in these forums since the Program's beginning. To date, 48 formal conferences have been held within the guidelines of the WIT program. More conferences are tentatively scheduled.

## **WIT Coordinators**

Forest Service technical advisors are located strategically throughout the country to help implement the WIT program. These coordinators provide information and work with local partners in developing and implementing demonstration projects. These relationships provide the opportunity for WIT coordinators to share information learned from past demonstration projects and to provide advice to cooperators on the demonstration grant component of the Program. Program coordinators are responsible for:

- Coordinating the demonstration WIT proposal process,
- Coordinating local conferences, workshops, and seminars,
- Providing technical assistance and disseminating information to potential users, and
- Providing information to the TBIRC.

## Crossings Newsletter and INTERNET

Activities throughout the country, from informal conversations to conferences organized by coordinators, help publicize the WIT program. *Crossings*, the quarterly newsletter of the WIT program, and the WIT program's home page on the INTERNET reach thousands of potential customers. *Crossings* is available free of charge and distributed to 4,500 companies, agencies, and individuals. Its purpose is to provide up-to-date information on wood in transportation activities.

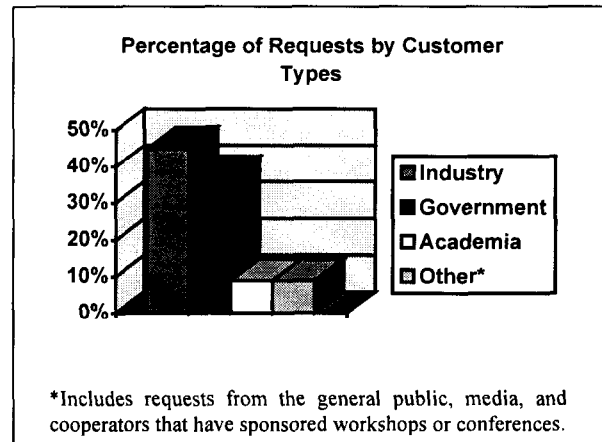
The reason for TBIRC's use of INTERNET is to make more information available electronically. Currently, limited information is available. In the future, the home page will be updated to include as much of the TBIRC's library material as possible.

## Information Distribution

The TBIRC distributed approximately 31,000 pieces of wood in transportation information in Fiscal Year 1995. Most requests are received by telephone, mail, or the INTERNET. To more efficiently distribute this information to customers, the TBIRC is developing an Office Automation and Technology Transfer System (OATTS). Once it is complete, customer service to both external and internal partners will be improved. Some of the highlights of this effort are to update and organize basic project information, improve the tracking capability of projects, and monitor grant extensions and project status. Office Automation will also allow the TBIRC to better organize final project data such as costs and contacts information.

The technology transfer part of the system will include several elements. Some of these are a filing/inventory/catalog system for publications, an information request entry and processing system, and technical information on the INTERNET.

Presently the TBIRC receives an average of four requests per day. This figure does not include requests that coordinators receive. The following graph shows the percentage of requests by customer type for publications and designs received by the TBIRC in Fiscal Year 1995.



## Conclusion

The WIT program is gaining visibility and support because of its technology transfer efforts. Demonstration projects build partnerships and promote the Program. Cost data, special project reports, and other publications educate engineers, community leaders, and others about using timber for wood in transportation applications. Conferences, displays, seminars, *Crossings*, INTERNET, and WIT coordinators introduce hundreds of potential users to the Program.

To make outreach efforts more effective, the TBIRC is implementing an Office Automation and Technology Transfer System. This system will facilitate customer relations with external and internal partners. The WIT program's overall technology transfer effort is producing results that will usher the Program boldly into the 21st century.

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