

# Technology Transfer

JOHN O. HIBBS

Regional Federal Highway Administrator  
FHWA, Homewood, Illinois

Technology transfer now commonly referenced as "T<sup>2</sup>" is an exciting subject to me as an engineer. As a federal or FHWA engineer, I have a special appreciation for the subject. Let me explain. Looking back through the history of the highway program, the federal contributions to better highways have been significant. This is especially true in the area of technology transfer. The federal engineer has a distinct advantage or opportunity to gain a national view of many operations and, thus, can observe new and innovative techniques or advancements. Federal engineers then are in a position to be the carrier of the "good word" from one organization to another and help technology transfer to occur. Bridging the gap between research products, new procedures, or equipment and practical application is one of our most important services. Engineers are by nature rather cautious and reluctant to dig through mounds of paper to learn of new techniques.

The FHWA has a formal organization to give assistance in technology transfer. Actually we have several parts of the organization with a role to play. I will briefly describe these organizations and then use examples of what I consider good technology advancements to illustrate how the organizations function. Before I say more about FHWA, I must hasten to acknowledge that we accomplish little to nothing without assistance from our highway partner, the state highway organization, as well as local government, universities, the industry and others who share our goal of providing for highway improvements.

The organizations with special technology transfer responsibilities are outlined below:

Implementation

Experimental Projects

National Highway Institute (NHI)

Demonstration Projects

Rural Transportation Assistance Program (RTAP)

The Office of Implementation is an arm of the FHWA Research and Development organization. The NHI is likewise housed with research. Demonstration Projects Division is a part of our engineering and operations organization. The RTAP program is administered in part by our Office of Planning and in part by NHI.

Before I go further to give some examples of how each unit has helped

with the transfer of technology, perhaps you are wondering why the T<sup>2</sup> assignment has been so splintered throughout the FHWA organization. Others have questioned this fact. From an administrative viewpoint, such as budgeting and coordination, some problems have occurred. From another view, the involvement of several offices is very positive. Effective technology transfer is a selling challenge and the more sales personnel you have scattered throughout your total organization, the better your chances are to make the proper contacts.

To aid with the problems of coordination and direction, an executive committee was named several years ago to help keep all units pointed in the same direction. Each of the Washington office units plus one field representative (a regional administrator) serves on the committee. It is my pleasure to currently be serving a two-year tour as the field representative on the executive committee.

### NATIONAL HIGHWAY INSTITUTE

The Federal-Aid Act of 1970 (23 USC 321) authorized the establishment and operation of NHI. The institute's function is to identify training needs and help develop training to meet those needs. In FY 83, 78 courses were given in 444 presentations to a total of 13,996 students. Sixty-four percent were state and 23% were locals.

Numerous courses have been provided to Indiana. One that is currently scheduled is a "Bridge Maintenance Training Course for Supervisors (#3433)." The date is July 9-11, 1985 in West Lafayette.

### RAILROAD GRADE CROSSING HANDBOOK

This is a how-to manual for local officials to obtain federal participation and project approval. It was developed through the Indiana T<sup>2</sup> center here at Purdue under leadership of Dr. Scholer and in cooperation with Indiana Department of Highways and FHWA. Three seminars were held throughout the state. RTAP funds helped finance the T<sup>2</sup> center activities here at Purdue. The number of centers that are now funded across the country totals 23 with three to five more being added this year. Purdue was one of the first to be funded because of HERPICC. The Highway Extension and Research Project for Indiana Counties and Cities was well established and operational long before federal dollars were available or Federal Highway Administrator Ray Barnhart implemented the T<sup>2</sup> center program. Thus, Purdue and Dr. Scholer's operation was a natural for federal funding and an addition to the broader network of technology transfer.

### PORTLAND CEMENT CONCRETE PAVEMENT PATCHING

A two-day workshop was held in Homewood, Illinois, to deal with a simple and basic problem—how to construct a good concrete patch?

States, university and federal officials from Washington and two regions assembled to share knowledge on the subject. Donald Scott and Fred Mohid of the Indiana Department of Highways presented papers on the Indiana experiences and specifications. This activity was funded by Demonstration and Implementation Funds. These funds helped pay for travel and preparation of the Tech Share Report.

#### DEMONSTRATION PROJECT #61, PAVEMENT MANAGEMENT REHABILITATION PROGRAMMING

Indiana Department of Highways hosted this demonstration project. The two-day presentation described details of how California, Arizona and New York have organized their rehabilitation project programming. As a result of this exchange of information and other considerations, Indiana has contracted with a consultant and is nearing development of a totally new approach to pavement management.

The Demonstration Projects Program promotes the adoption of new technology through actual example demonstrations. The three types of promotional techniques used include hands-on demonstration of equipment, workshop training seminars, or in-the-field demonstration of new technology.

#### DEMONSTRATION PROJECT #65—MAINTENANCE OF HIGHWAY SAFETY HARDWARE

This presentation has recently been given three times to personnel throughout Indiana to implement new techniques in keeping guardrail and other hardware in good serviceable condition. I was especially pleased to learn that it was given a fourth time at the State's Research and Training Center in Lafayette for video taping so that the technology sharing can be broadened to a wider audience. Video equipment is one of our most modern means to transfer technology at a minimum of cost.

#### LOCAL ROADS MANUAL ON TRAFFIC CONTROL

This is another excellent example of technology sharing provided through the Purdue T<sup>2</sup> center.

#### T<sup>2</sup> CENTER ADDITIONAL CONTRIBUTIONS

The "Pothole" is another excellent technology sharing mechanism, especially to advertise future training activities such as courses on:

Minor Maintenance Manual for County Bridges,  
Pavement Cuts for Utility, and  
Pavement Maintenance Seminar.

Now that we have several T<sup>2</sup> centers such as Purdue functioning efficiently, an effort is underway to share information from one T<sup>2</sup> center to another.

## EXPERIMENTAL PROJECTS

This is one area that little has been said about up to now but it is an important part of technology exchange. Actually it is a medium between research and actual practice. Our implementation division uses the experimental project route to test research on a limited basis before full implementation is initiated. Many of the papers presented at the concrete pavement patching workshop were a summary of experimental projects.

## PAVEMENT RECYCLING

Indiana has completed some recycling projects on an experimental basis. Other states like Wisconsin are in the implementation stage. The 32-mile section of I-90/94 was visited by over 500 persons last year including engineers from Indiana. Demo funds supported the open house. Demo and implementation funds helped finance the preparation of a 30-minute video tape telling the project story. Over 100 copies of the tape have been made. Experience gained on this project is being shared across the country.

A quick look at our recent history reveals some other significant contributions to providing more efficient and safer highway projects. These include:

- Breakaway Sign Supports
- Improved Guardrail and Bridge Rail
- Concrete Barriers
- Impact Attenuators
- Epoxy Coated Reinforcing Steel

The list could go on and on but, in summary, I hope you appreciate why I think technology sharing is such a rewarding activity.

## SUMMARY

We have many parts of our organization working with states, local government, universities, and the industry to bridge the gap between new techniques and actual practice. They include the NHI, implementation, demonstration projects, experimentation and RTAP support for T<sup>2</sup> centers. It would be wrong for me to omit our field coordinators, Roger Stokes at the region and Larry Tucker at the division. They serve an important part in keeping the "good word" flowing.

Deep down, each of us would like to think that he will leave the world a better place to live as a result of our having been here. In the world of highway engineering, I can think of no more effective way of achieving this goal than by having an active role in technology transfer.