



LTAP/TTAP: 25 Years of Service

Local and Tribal Technical Assistance Programs rise to the challenge of meeting transportation needs at the local level.

(Above) At a Construction Career Day event in Rhode Island, high school students had the opportunity to man the controls of this backhoe. Growing the pipeline of students interested in transportation careers is one goal of the LTAP and TTAP centers. Photo: University of Rhode Island Transportation Center.

*by Denise Saunders
and Donna Sbea*

Building and maintaining the Nation's roadways is no small feat. Across the country, 38,000 local and tribal agencies are responsible for maintaining 4.8 million kilometers (3.0 million miles) of roads and more than 300,000 bridges—75 percent of the Nation's streets and highways. These cities and towns, rural and urban counties, and tribal governments juggle a multitude of increasingly complex challenges, including enhancing roadway and work zone safety, managing congestion without building more roads, providing safe and convenient paths for pedestrians and bicyclists, complying with new Federal and State regulations, and training the grassroots transportation workforce—all with limited funds.

In 1982, the Federal Highway Administration (FHWA) answered

the call for training and technical assistance at the local level by creating the Local Technical Assistance Program (LTAP). Nine years later, FHWA launched the Tribal Technical Assistance Program (TTAP) to meet the needs of tribal transportation agencies. Together, these programs help local and tribal governments build, maintain, and operate U.S. roadways by delivering targeted training, technical assistance, materials, and resources.

Today, the LTAP/TTAP network consists of 58 centers—one LTAP center in each State and Puerto Rico, and seven regional TTAP centers that serve tribal governments. The LTAP/TTAP mission: To foster a safe, efficient, and environmentally sound surface transportation system by improving the skills and increasing the knowledge of the local and tribal transportation workforce. That means providing hands-on methods for moving innovative transportation technologies and practices into the hands of the men and women charged with maintaining the Nation's local roads and bridges.

The LTAP and TTAP centers serve a diverse and geographically dispersed audience of professionals that includes public works directors and staff; city, town, and county engineers; transportation planners; and street and road maintenance superintendents and staff. The programs also reach officials at State departments of transportation (DOTs), municipal planning organizations, regional planning agencies, and private consultants.

The centers meet the training needs of this varied audience through workshops, technology demonstrations, computer training, distance learning, conference seminars, and courses in the field and classroom. The ability to be flexible and tailor training and technical assistance to an individual State or local agency is paramount to the programs' success.

"It would be hard to find a program in the Federal Government that touches as many people and fosters

such success as LTAP and TTAP," says Joseph Toole, associate administrator of FHWA's Office of Professional and Corporate Development. "Part of this is clearly due to the partnerships these centers have created, but even more so it is a measure of the commitment and passion of the people that make them work."

As LTAP celebrates 25 years of service, both programs continue to innovate and evolve to meet tomorrow's transportation challenges, including a retiring workforce, declining transportation budgets, and aging infrastructure. Mirroring national transportation policies, LTAP and TTAP are focusing on four key areas: safety, infrastructure management, workforce development, and organizational excellence. A newly revamped Web site, an online clearinghouse for materials and training, a collection of educational programs designed to meet local needs, and a national voice—through a national LTAP association—combine to make the LTAP/TTAP network stronger than ever.

Workforce Development

One of the most pressing challenges facing the transportation industry is that nearly half the workforce is eligible to retire by 2010. With 950,000 people directly employed in the transportation industry at the State, local, tribal, and contractor

levels, the next decade will bring increased need for training, education, and technology transfer.

The industry as a whole faces the challenge of an aging and retiring workforce, leaving fewer people with institutional knowledge and field-tested experience. Offering training and career development opportunities can help motivate and retain the next generation of transportation workers.

"Our LTAP center helps transportation practitioners in the field stay current on best practices—which is absolutely vital in this time of aging infrastructure and shrinking budgets," says Laura Melendy, director of the University of California, Berkeley's Technology Transfer Program, the California LTAP. For example, when Vickie Smith-Becker, an analyst at the Calaveras County Department of Public Works, needed information to prepare a grant application, she contacted the California LTAP. "I needed information about adding passing lanes on rural, two-lane roads in order to apply for a grant and to help explain to the public why this was important," she says. "The [LTAP] librarian not only sent me some electronic files on the subject but copied print resources that weren't available online and mailed them to me. We're a rural county, and we're far away. [The LTAP center] saved us the time and



These transportation workers are engaged in a tabletop exercise on work zone safety, hosted by the North Carolina LTAP.

North Carolina LTAP

LTAP/TTAP: By the Numbers

Over the past 10 years alone, the LTAP and TTAP centers have achieved the following results:

- They conducted more than 60,000 training events.
- More than 1.5 million local transportation professionals attended LTAP and TTAP training.
- Participants logged more than 9 million hours of training.
- Nearly half of all LTAP and TTAP training included content related to highway and worker safety.
- Centers distributed more than 2 million technical publications and resources in response to requests from local and tribal agencies.

- Local transportation agencies saved an estimated \$8 for every \$1 LTAP spent on information and training.

“The return on the investment of Federal, State, and local funds into LTAP and TTAP has been incalculable,” says Anthony Giancola, executive director of the National Association of County Engineers. “These programs have provided critical training for county and local highway professionals and, in particular, are improving the safety and preservation of our local roads. The end result has been the implementation of state-of-the-art best practices in highway operations and maintenance, and ultimately improved service to our citizens.”

expense of me driving down and hunting for the information myself.”

At the local and tribal levels, a number of barriers can limit the availability and feasibility of delivering and attending training. Whether driven by budget constraints or lack of awareness of available training and the value it could bring to their organizations, local agency officials sometimes are hesitant to invest in workforce development.

LTAP/TTAP centers overcome these challenges by forming partnerships with agencies and organizations that can influence decisionmakers. These partners include the National Association of County Engineers (NACE), American Public Works Association (APWA), Transportation Curriculum Coordination Council (TCCC), State agencies, and regional planning agencies. In addition, many LTAP centers have integrated their services with those at colleges and universities, offering programs such as summer transportation institutes and engineering and construction career days.

Even when funding and training opportunities are available, personnel are sometimes hesitant to commit to training if they have reservations about how comfortable the learning environment will be or how relevant the training will be to their day-to-day jobs. To overcome these barriers, the centers work hard to provide environments that

are welcoming and conducive to learning by tailoring class presentations to the needs of participants as much as possible, says David Page, workforce development coordinator at the Florida LTAP. “When an agency asks us for training, our instructors often call the agency ahead of time to discuss their goals and any specific skills training they would like included or emphasized in the class,” Page says. “For example, our heavy equipment instructor determined before buying his plane tickets that an upcoming class of students did not need his hands-on course. He found out that everyone had 20–30 years’ experience. He recommended a refresher course on safety and equipment inspections and a different instructor who was local to the agency. We reduced the cost to the agency by over half and still met its training needs.”

Adds Tiffany Wise, codirector of the Florida LTAP, “The most positive feedback is obtained when the instructor tailors the class to the individuals and spends one-on-one time with them, making sure they master the skills they are being taught. This is especially true in the hands-on courses, such as heavy equipment operation and safety.” Wise describes one instance in which a local agency was grateful to the LTAP center for the skills imparted during a course on chainsaw safety. During the hands-on training, the instructor explained that before clearing a tree

on the ground, it is critical to look up to ascertain whether any broken branches or limbs might fall from above. The agency reported that shortly after the training, its workers were called out at night to clear a downed tree. Remembering what they learned in training, the workers spotted a broken treetop above the one they were about to clear and took steps to control the fall of the overhead treetop, avoiding potential injury or death during the clearing operation.

The reach of the training is considerable: LTAP and TTAP centers provide 5,300 training events to more than 145,000 participants every year. The LTAP/TTAP centers also deliver key transportation information—technical information, research updates, and legislative and regulatory news—to local agencies through technical assistance requests, newsletters, and other publications.

Road Scholar and Road Master Programs

One particularly successful means for promoting ongoing skills development at the local and tribal levels is the Road (or Roads) Scholar and Road Master programs, which recognize staff for reaching various competency levels through training and development of transportation expertise. The details of the programs vary from State to State, but the underlying approach is to provide curricula that enable local and tribal transportation workers to study road fundamentals, safety, drainage, snow and ice removal, and other topics with the goal of becoming expert road managers. The courses help participants develop professionalism and advance their careers.

In New Hampshire, anyone who takes an LTAP course is automatically entered into the Road Scholar program. “Right away, course attendees know they are part of the program,” says Kathy DesRoches, former director of educational programs at the New Hampshire LTAP center. “Every time they participate in a workshop, they receive a transcript that shows how many hours of training they have taken.”

New Hampshire’s program has four levels, and each workshop generally runs 5 hours. Level 1 involves completion of any five courses (25 hours of training). Level 2 requires

completion of 10 courses (50 hours), including mandatory workshops on staff supervision, tort liability, and environmental issues. "We purposely keep course requirements flexible so people take training of interest to them, but we require certain core courses to ensure a well-rounded education," DesRoches says. To achieve Level 3 (Senior Road Scholar), participants must complete 15 courses (75 hours). Participants who complete Level 4 (100 hours) earn the designation Master Road Scholar.

Twice a year, the New Hampshire LTAP center hosts a graduation ceremony to honor new Master Road Scholars. The ceremony features a keynote speaker, and graduates are encouraged to bring a supervisor or spouse. The center also recognizes the graduates in its quarterly newsletter and publishes and distributes an annual directory of Road Scholars.

In terms of training content, LTAP centers offer something for everyone. DesRoches says maintenance personnel represent the largest number of training attendees at her center, but course offerings draw people from a variety of professions. For example, some training counts toward continuing education units, which help engineers fulfill their professional licensing requirements.

Nearly half the LTAP centers offer Road Scholar/Road Master programs. Though the cost of training varies by State, centers strive to keep the rates affordable. In New Hampshire, DesRoches says, "You can become a Master Road Scholar for less than \$1,500."

Building Organizational Excellence

To reach diverse audiences efficiently, LTAP and TTAP centers rely on their ability to leverage their combined resources. The LTAP/TTAP Clearinghouse, available online at www.ltapt2.org, is a central source of information for the centers and is a one-stop shop for training, resources, and materials for local and tribal transportation agencies.

George Huntington, with the Wyoming LTAP center, is using a retroreflectometer to test the retroreflectivity of this pedestrian crossing sign.

"We provide support services to help centers accomplish as much as they can," says Alison Premo Black, director of the LTAP/TTAP Clearinghouse. "We make sure LTAP and TTAP staffs are aware of the latest materials available. We have a database of trainers to help center staff locate instructors for various topics. We also have

a resource database listing all the courses offered through LTAP and TTAP centers across the country."

Literally thousands of resources are available through the clearinghouse, ranging from reports and training materials to videos, tips from the field, best practices, and Web-based information. "We continuously look for new resources



Wyoming LTAP



Technology Transfer Expos, such as the one shown here, are one of the many ways LTAP/TTAP centers highlight the latest in transportation technology and equipment.

to keep on top of the latest materials,” Black says. Checklists and factsheets are among the most requested items. Currently, the top products by far deal with new retro-reflectivity requirements released by FHWA in the latest update to the *Manual on Uniform Traffic Control Devices* (MUTCD). “We’ve sent out more than 18,000 of those,” Black says. The clearinghouse also offers customizable LTAP/TTAP marketing materials to help centers promote their individual programs.

The clearinghouse has gone through many changes in the nearly 20 years since it was established. In recent years, the Web site has become the primary mechanism by which the clearinghouse works with the centers. “We completely revamped the Web site recently,” Black says. “One new feature is that we introduced a password-protected area to give centers a ‘virtual’ home.” Here the centers can update their public profiles, enter information into the resource database, download contact information for other centers, and collect information on their courses.

The Web site helps improve the centers’ operating efficiency on a number of fronts. For example, centers previously submitted annual reporting data to FHWA via paper documents, but the password-protected

area on the new site enables them to enter the data online, saving time.

The clearinghouse also facilitates using the latest technologies to extend LTAP/TTAP reach and impact. Videos are among the newest additions, and the clearinghouse is considering podcasts for future online applications. Another new feature is a virtual meeting space that centers can use any time to host online meetings. The virtual meeting space takes the traditional conference call to a higher level, enabling participants to talk, send instant messages, and view shared documents.

“Improving efficiency and doing more with less, that’s the heart and soul of the clearinghouse and LTAP/TTAP,” says Black.

NLTAPA: A National Voice

While individual LTAP and TTAP centers focus their efforts at the local level, the National Local Technical Assistance Program Association (NLTAPA) represents the centers at the national level. NLTAPA fosters awareness of LTAP/TTAP efforts to help FHWA and States understand local transportation issues and build capacity for meeting customer needs at the local and tribal government levels. The association also is an avenue of communication bridging the centers across the country.

“Most centers are small, with fewer than three or four full-time-equivalent employees, and are very independent, but we do need to represent ourselves and speak clearly in a common voice to FHWA and industry at the national level,” says Kevin Burke, director of the Illinois LTAP center and NLTAPA president. “NLTAPA gives us a foot in the door to talk with national organizations and help influence how resources are spent at the local level.”

NLTAPA’s roots lie in the informal peer-to-peer interactions and sharing of lessons learned that germinated with the LTAP program in the early 1980s. The association officially formed and elected officers in 1991 and operates as a “100 percent volunteer organization,” says Marie Walsh, director of the Louisiana LTAP center and former NLTAPA president.

Local and tribal centers provide the resources and opportunities for their employees to participate as NLTAPA members. Volunteers from the LTAP and TTAP centers participate as officers, committee chairs, or members of various workgroups who carry out much of NLTAPA’s work. The workgroups focus on program strategies, partnerships, internal and external communications, training development, and professional development.

An annual conference affords the opportunity for sharing information about national priorities with the centers. For example, in 2008, NLTAPA scheduled a half-day train-the-trainer session focused on FHWA’s sign retroreflectivity requirements. NLTAPA coordinated the session with the association’s annual meeting, enabling center staff to interact directly with FHWA experts and provide feedback.

The association also plays a leading role in envisioning the strategic direction for LTAP and TTAP efforts. It solicits stakeholder input on topics to cover in webinars and information to include in the new trainer database available through the clearinghouse Web site. A recent needs assessment conducted in partnership with NACE will help NLTAPA find and fill gaps in the knowledge, skills, and technical capacity at the centers. Performing this activity at the national level avoids the need for the centers to do so individually.

NLTAPA's efforts in developing and maintaining industry partnerships have helped ensure the centers' ongoing success. In 1998, after years of informal collaboration with many State DOTs, local public works chapters, and county associations, NLTAPA established formal agreements with APWA, NACE, and the American Association of State Highway and Transportation Officials (AASHTO). The goal of these relationships is to reduce duplication of services, share training costs and expertise, and provide optimum training and information to their shared customers.

"AASHTO strongly supports the work of the centers in providing valuable training and transferring knowledge to our DOT members as well as county and city government employees," says AASHTO Executive Director John Horsley. "With State DOTs seeing budget constraints and limited resources, the LTAP and TTAP centers not only need to be continued but enhanced and expanded."

NLTAPA officers and members sit on national highway committees to provide local input and perspectives. For example, NLTAPA has representatives on the FHWA LTAP/TTAP strategic planning committee and on the steering committee for the LTAP/TTAP Clearinghouse. Walsh participates on the AASHTO subcommittee on safety management, which focuses on integrating safety efforts at the Federal, State, local, and tribal levels. In this way, NLTAPA provides input on both operational and strategic issues at the Federal level.

Professional development, the subject of one of the association's workgroups, is a key focus area. One recent initiative, conducted with support from FHWA and the clearinghouse, was development of an orientation program for new LTAP and TTAP directors. The orientation helps bring new directors up to speed quickly and expands staff development opportunities. "For a small organization, we stay focused on what centers need and want," Walsh says.

Opportunities abound for participating in NLTAPA initiatives, whether through involvement in a committee or workgroup, attendance at regional meetings or presentations, or simply



These transportation professionals are participating in a site visit at a suburban intersection and crosswalk. Field exercises are an important part of the RSA trainings for local agencies.

signing up for the organization's listserv to stay abreast of what is going on, Walsh says. "I have been involved for 4 years. Thanks to the opportunities to interact with peers, I have learned more than I possibly could have anywhere else," she says.

Focus on Safety

Safety is a primary concern of every part of the surface transportation system, with focus from local, tribal, State, and Federal government partners as well as the private and commercial sector. LTAP and TTAP centers take responsibility for delivering hands-on training and technical assistance on safety at the local level.

Nearly half of all LTAP and TTAP training is related to highway and worker safety. The LTAP/TTAP focus on safety also is supported through collaboration with the FHWA Office of Safety, National Highway Traffic Safety Administration, and Governors Highway Safety Association.

Two of the flagship safety-focused tools available through LTAP and TTAP centers are road safety audits (RSAs) and road safety audit reviews (RSARs). FHWA defines an RSA as a formal safety performance examination of an existing or future road or intersection by an independent audit team. Some highway agencies define RSAs as assessments of

During training conducted jointly by the Northern Plains Tribal Technical Assistance Program and the Northwest Tribal Technical Assistance Program near Polson, MT, participants consult the MUTCD while in the field conducting an RSAR.



Northern Plains Tribal Technical Assistance Program



Worker safety is a focus of many LTAP/TTAP trainings and resources. The town of Granby, CT, is committed to protecting its workers' safety, requiring use of appropriate worker visibility apparel, as shown here.

planned facilities, while RSARs cover reviews of existing roadways. Other terms for these reviews include road safety assessments, road safety evaluations, and safety impact teams. RSAs and RSARs rely on independent assessment and review teams that perform site visits at targeted intersections or segments of roadways and then prepare written reports for the roadway owners, detailing the assessed problems and recommended solutions to improve safety.

"RSARs determine whether the safety needs of road users are being met," says Dennis Trusty, director of the Northern Plains TTAP center in Bismarck, ND. "They can help determine whether the use of a roadway has changed over time, or whether standards or traffic levels have changed since a road was designed and built."

RSARs use crash data as background information but rely on more than history and existing data, Trusty says. "Good RSARs identify what can be improved, not just what has already created problems."

According to Great Falls District Traffic Engineer James Combs of the Montana Department of Transportation (MDT), an RSAR resulted in plans for a more thorough review of warning signs at various locations. "The review is currently in progress by MDT," he says. "Curve warning signage will be updated to meet current State guidelines and the 2003 MUTCD. Unwarranted warning signs will be removed and new curve warning signs installed where needed. Part of the review looked at the school bus route on secondary highway 464 with the local school

bus drivers to determine which existing School Bus Stop Ahead signs should be relocated or removed and to determine if new signs are warranted at other stops."

The Northern Plains TTAP leads the audits for tribes in five States, and the tribes help recruit the people and organizations who should be involved in the audits. Audit teams might consist of LTAP/TTAP staff, State DOT personnel, and representatives of other organizations, including FHWA, the Bureau of Indian Affairs (BIA), the transportation industry, law enforcement, and emergency medical services.

"Having more eyes reviewing a new design or an existing transportation system provides the many perspectives that must deal with the end result," Trusty says. "Law enforcement's views might be much different from those of maintenance and engineering personnel or those involved in construction." For example, in the case of an RSAR on the Blackfeet Reservation, law enforcement officials from the Montana Highway Patrol highlighted the challenge of responding to run-off-the-road crashes during severe weather, such as high winds and whiteout driving conditions. "Having the law enforcement perspective helped the RSAR team focus on a very important issue," Trusty says.

RSAs and RSARs are tools that can be used in every State, whether through an LTAP or TTAP center, FHWA, or State DOT. For each location, staff from LTAP or TTAP centers serve as leaders, organize the audits for each location, or help find personnel to lead or staff the teams.

The Northern Plains TTAP already has conducted RSAs with three State DOTs. The results of those audits are helping prioritize maintenance projects and are finding their way into tribal transportation improvement plans and road reconstruction projects directed by the tribes and BIA. A recent RSAR in Montana for the Blackfeet Nation will result in improvements on roads managed by MDT and BIA. Specific improvements include installation of better signs and striping; enhancement of guardrails; installation of bridge ends with newer, safer designs; and removal of trees and rocks in clear zones.

Safety Circuit Rider Program

Another safety initiative carried out through the LTAP and TTAP centers is the Safety Circuit Rider (SCR) program, which presents workshops for local and tribal governments and other organizations. The cornerstone of the program is the SCRs, safety specialists who travel throughout a State, region, or reservation making presentations on topics such as work zone safety, MUTCD requirements, retroreflectivity, roadside and excavation safety, and pavement markings. Many transportation workers cannot attend training events because of the travel time and cost involved. However, through onsite workshops and site visits, SCRs take safety training to local and tribal agencies, making participation convenient and cost effective.

The idea for the SCR program grew out of a 2003 meeting of representatives from FHWA, NACE,

and NLTAPA. While reviewing the latest statistics on roadway fatalities, the assembled safety experts determined that the highest percentage of fatal crashes occurred on local roads. The proposed solution was to establish a program to identify high-crash locations and recommend corrective measures.

In 2004, FHWA funded SCR programs in Florida, Kentucky, and West Virginia, and another involving the Northern Plains TTAP. In 2006, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorized States to use funds from the Highway Safety Improvement Program for engineering improvements and as a resource to address problems identified through SCR programs. Today, 20 States have active SCR programs.

“The number of riders depends on how each LTAP or TTAP center decides it can best meet local interests and needs,” says Bruce Drewes, training and research manager with the Idaho Technology Transfer Center. Some States, such as Iowa, Kentucky, and Wyoming, have one person who serves as the SCR. Others have multiple part-time staff. Florida, for example, has three part-time SCRs to call on depending on the location and schedule. Each SCR works closely with Florida Department of Transportation staff to identify high-crash locations and help the local agency determine appropriate measures to improve safety.

Identifying possible hazards is a major focus, Drewes says. “The most common problems are obstructions along the roadway, issues with signing or pavement markings, and sight distances,” he says. “Most of these problems can be solved fairly inexpensively.” Therefore, many of the corrective measures SCRs recommend are low-cost maintenance improvements, such as clearing vegetation around signs and intersections, correcting roadside drainage, fixing

These participants from departments of transportation and local agencies are gathered in a conference room to discuss ways to make work zones work better.

Mutual Aid Programs

The Utah and New Hampshire LTAP centers are among several that are spearheading innovative partnering relationships with municipalities, counties, and other States to facilitate faster responses to emergencies. New Hampshire’s Public Works Mutual Aid Program, the first voluntary statewide program of its kind in the United States, invites government entities to become part of a mutual aid network of municipalities that assist one another during emergencies through partnering agreements and a protocol for requesting and receiving aid.

Benefits include reduced vulnerability for participating communities, prompt and effective responses to incidents, and rapid rehabilitation of infrastructure. In addition, the program facilitates exchange and sharing of supplies, equipment, and personnel. The network

proved integral in helping numerous communities repair and restore damaged infrastructure following major floods in 2005, 2006, and 2007, according to Kathy DesRoches, formerly with the New Hampshire LTAP center.

A partnership between the Utah LTAP center and county emergency managers was instrumental in developing a public works resource inventory. The list will be critical in identifying available resources and their locations, and calculating response times for critical equipment. Due to exhaustive work on the State’s new emergency operations plan, Utah is now 1 of 11 States accredited through the voluntary Emergency Management Accreditation Program.

Mutual aid programs represent another means of broadening the support network available to local and tribal governments.

shoulder dropoffs, and removing rockfalls and trees along roadsides.

SCRs also can organize and participate in RSAR teams. “Most of us drive the same route between home and work every day,” says Drewes. “We become so familiar with the route and how to drive it safely that we overlook deficiencies that someone new to the road might notice. An SCR and an RSAR team can provide that ‘new’ perspective.”

The SCR can assist in finding funding or otherwise addressing a safety issue, but, Drewes says, “it is up to the local jurisdiction to deter-

mine what improvements to make. In essence, the SCR program needs to be a strong partnership between the LTAP/TTAP center, State DOT, and local jurisdiction. It’s that partnership and cooperation that will push down the numbers of fatalities on the national roadway system.”

Infrastructure Management

Another major priority for local and tribal agencies is maximizing the performance of transportation infrastructure while minimizing impacts on financial and human resources. These agencies occupy the front





LTAP/TTAP centers offer training on winter operations, covering topics such as snow plow safety, to ensure that drivers know how to operate plowing equipment safely, as shown here in Michigan.

line in overseeing the vast majority of the Nation's transportation infrastructure. LTAP and TTAP centers provide a critical service to those responsible for the longevity of roads and bridges. The centers have trusting relationships with local and tribal agencies throughout the country.

"Local agencies trust the information that centers provide because we don't have the vested interest that a vendor has," says Terry McNinch, director of the Michigan LTAP center. "The centers are in a perfect position to take the lead on local agency implementation of asset management nationwide."

to facilitate a more organized, logical approach to decisionmaking. Thus, asset management provides a framework for handling both short- and long-range planning."

The Michigan LTAP center condenses the FHWA definition of asset management to "an ongoing process of maintaining, upgrading, and operating physical assets cost effectively, based on a continuous physical inventory and condition assessment." McNinch underscores the importance of the latter part of this definition. "Everyone deals with other types of physical infrastructure—buildings, houses, and

According to FHWA's "Asset Management" Web site, today's transportation system is deteriorating more rapidly than ever. In FHWA's *Asset Management Primer*, the agency defines asset management as "a systematic process of maintaining, upgrading, and operating physical assets cost effectively. It combines engineering principles with sound business practices and economic theory, and it provides tools

cars—and nonstructural things like our physical health using the principles of asset management," he says. "You take care of the asset before it totally falls apart. If your roof leaks, you get it repaired quickly; you don't wait until the walls and floors have been ruined."

According to McNinch, over the past century, physical, social, and administrative factors have led roadway managers down a path from system expansion to system reconstruction, resulting in the majority of current resources being devoted to heavy rehabilitation and reconstruction. This approach, he says, sacrifices preventive maintenance—the activity that keeps good roads good—for more costly reconstruction of the roads deemed in the worst condition.

"This has become the way of doing business," McNinch says. "You never see a ribbon cutting on a crack-seal job, but reconstruction initiated by an elected official makes the news. Dwindling budgets, along with increasing costs of pavement materials, have put road managers in a position where their backs are up against the wall. The revenue stream cannot support this 'worst first' way of doing business."

Changing business as usual involves changing the knowledge and culture of road management agencies, which takes time. Everyone involved—engineers, managers, road crews, elected officials, finance managers, and the public—needs to be



Pavement preservation is a critical priority for infrastructure management, and LTAP centers can help by providing training and technical information on new materials and technologies. Before beginning this paving project on I-89 near Randolph, VT, the contractor enlisted the Connecticut Advanced Pavement Laboratory to perform thermal imaging to study the effectiveness of a new material transfer unit. Testing revealed that the equipment produced a more uniform pavement.



Dave Orr (center, red and green striped shirt), of the New York LTAP center, is leading a course on the principles of drainage. Here, he is giving a demonstration on compaction as participants look on.

educated to some degree on pavement deterioration, the benefits of a “mix of fixes,” and the pitfalls of the “worst first” approach, McNinch says.

In Michigan, the LTAP center works in partnership with the Michigan Transportation Asset Management Council, conducting a variety of training events on asset management. The council provides substantial funding for 20 half-day sessions of Introduction to Transportation Asset Management for Elected Officials, 4 full-day sessions of the Michigan Transportation Asset Management Workshop, and 10 full-day sessions on using the Pavement Surface Evaluation and Rating condition rating system. The center also is integral in organizing the Michigan Transportation Asset Management Conferences.

In 2007, under a contract with the council, McNinch revamped the *Asset Management Guide for Local Agencies in Michigan*, which serves as the foundation for the Michigan LTAP workshops. The guide is available for download at www.michigan.gov/documents/mdot/AMC_MDOT_Guide_Local_Agencies_180204_7.pdf.

The Michigan LTAP center also has a hand in developing software tools for asset management. For example, the center helped develop and conducts training for “RoadSoft GIS [geographic information system],” an infrastructure management system now being used by more than 260

counties and cities in Michigan, as well as other State agencies.

Agencies applying the principles of asset management are seeing big payoffs, McNinch says. In 2004, the Emmet County Road Commission invited the Michigan LTAP center to give a presentation on asset management to county road commissioners and township board members. In the months following the presentation, the center worked with the Emmet County highway engineer to upload the county’s road condition data into RoadSoft GIS for analysis. The county engineer then developed 5-year road maintenance plans for all 16 townships in the county. After numerous meetings, the engineer succeeded in having tax millage proposals placed on the ballot in every township. All the proposals passed. By its fourth year, that special millage had generated \$8 million intended specifically for local road maintenance.

A Successful Recipe

Through innovative partnerships with State DOTs, municipal planning organizations, universities, associations, and others, each LTAP center matches with local funds every Federal dollar it receives. BIA in partnership with FHWA’s Office of Federal Lands Highway provides matching funds to TTAP centers. The LTAP and TTAP centers collaborate with other organizations to share resources and exper-

tise, increase efficiency, and reduce duplication of services, making the LTAP/TTAP model as sustainable as it is successful.

“You have to plant the seed if you expect anything to grow,” McNinch says. “Something as simple as an article in a newsletter or distributing a manual qualifies as a seed. But an LTAP/TTAP center’s real mission is to cultivate those seeds, through training and technical assistance, to help them grow into something worthwhile, something that makes a difference—like changing the way roads are managed in this country.”

Denise Saunders has served as the LTAP/TTAP program manager since July 2007. She has more than 20 years of experience with FHWA, working at headquarters and division offices. She brings experience in quality management principles, performance measurement, and program evaluation. Prior to this position, Saunders worked on FHWA’s National Review Program as a member of the reviews on administration of local projects and procurement and selection of consultant services. Before moving to the Washington, DC, area in 2004, she was the quality coordinator in the FHWA Connecticut Division Office.

Donna Shea is director of the Connecticut LTAP center at the University of Connecticut, where she has worked for 9 years. Previously, she was with the Tuck Executive Education program at Dartmouth College. Shea’s expertise is adult learning. She also serves as president-elect of NLTAPA.

For more information, visit www.ltapt2.org or www.ltapt.org, or contact Denise Saunders at 703-235-0532, denise.saunders@dot.gov, or Donna Shea at 860-486-0377, shea@engruconn.edu. To locate a center, visit www.ltapt2.org/centers.