

NHI Real Solutions 2009

*Improving the performance of the
transportation industry through training*

Partners
in Training

Preparing for
Coastal Storms

Instructors
of Excellence

Role of Public
Involvement

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NATIONAL HIGHWAY INSTITUTE

The National Highway Institute (NHI) is pleased to offer the second edition of *NHI Real Solutions*—a collection of articles that showcase real-world applications of NHI training and highlight the latest programs and partnerships related to transportation workforce development.

Table of Contents

- I NTTD Shapes NHI’s Offerings
Insights from State training directors help guide program delivery
- II Rebuilding from Katrina
New bridge manuals and NHI courses are helping coastal States recover
- IV Instructors of Excellence and Team Administrative Awards
Honoring quality in delivery of NHI training
- V Maintaining a Quality Workforce
Outsourcing to consultants and contractors is making training ever more important
- VI Saving Lives and Saving Money
Transportation professionals find low-cost improvements can make a difference
- VII New Take on Road Safety Audits
Upgrading a proven winner for saving lives
- VIII How Public Involvement Can Improve Highway Projects
Mn/DOT uses innovative approaches on reconstruction of Highway 36
- X Local and Tribal Technical Assistance Centers
A trusted resource for local and tribal governments
- XI Resource Center to the Rescue
This “organization without borders” offers vital technical assistance and training
- XII Incorporating New Technologies Into Transportation Management
NHI courses cover the latest ITS tools and their applications
- XIII Customer Input Bolsters Freight Offerings
New and updated courses and a certificate of accomplishment are available
- XIV Distance Learning at NHI
The catalog of online training continues to grow
- XV Transportation Curriculum Coordination Council
Partnering with NHI to provide quality training
- XVI Introducing the NHI Store
Your one-stop shop for NHI training materials



NTTD Shapes NHI's Offerings

Insights from State training directors help guide program delivery

Since 1997, the National Transportation Training Directors (NTTD) network has helped connect the transportation training community across the United States.

Composed of one training director from each State, the group assesses the competencies of the transportation workforce and improves the quality, reduces the cost, and speeds delivery of technical and organizational training. Members share current technology and materials, exchange information on products and services, and strive to elevate the level of professionalism through networking.

Cosponsored by the Federal Highway Administration and the American Association of State Highway and Transportation Officials, NTTD is an important partner of the National Highway Institute (NHI). In fact, NTTD plays an integral role in helping NHI align its focus with the needs of the transportation community.

"The NHI partnership with NTTD provides valuable insight into determining the workforce training needs of State departments of transportation [DOTs]," says NHI Training Director Rick Barnaby.

NTTD's annual conference offers a recurring opportunity for connecting and charting new opportunities. For example, discussions during the 2007 conference inspired NHI to launch a seminar series in 2008 called "Real Solutions." Through Web conferencing, these monthly 1-hour seminars will cover a range of issues such as safety, asset management, planning and environment, real estate, communications, and public administration.

NHI Marketing Manager Ann Gretter sought input from NTTD members that will shape NHI's future programs.

Participants can register for the seminar sessions through the NHI Web site, as they do for other NHI Web-conference training. The seminars are free, and attendance is not restricted.

The Real Solutions Seminar Series is designed to increase the availability of NHI training opportunities across the country while addressing the problem of limited travel budgets.

Barnaby adds that the partnership between NHI and NTTD facilitates identifying and deploying alternative methods for training delivery, such as videoconferencing. For example, NTTD partner Julie Rodriguez of the Transportation Learning Network, a program of the Upper Great Plains Transportation Institute at North Dakota State University, recently oversaw delivery of an NHI workshop via videoconferencing. The session, Work Zone Traffic Control for Maintenance Operations on Rural Highways, was offered through the Transportation Learning Network, a videoconferencing network that links DOTs in Western States with universities that have transportation and engineering departments. The instructor-led course was beamed by video to 14 sites and reached 167 transportation practitioners.

All DOTs will face workforce challenges in the years to come, says Ray Belk, president of NTTD and director of training at the Texas DOT, underscoring the importance of collaboration between NTTD and NHI. "NHI is a valued partner to have in your training program toolbox," he says, because it "brings a wealth of available training programs, flexibility in scheduling, a competitive price schedule, and the latest skill-set competencies in the transportation field."

FOR MORE INFORMATION ABOUT NHI'S PARTNERSHIP WITH NTTD, CONTACT NHI MARKETING MANAGER ANN GRETTTER AT 703-235-1260 OR AGRETTTER@DOT.GOV.



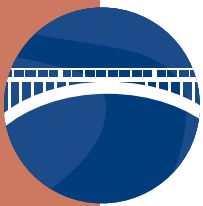
"You will be hard pressed to find another training institute that provides the depth of technical topics offered through NHI."

Ray Belk, President of NTTD

Rebuilding from Katrina



Following Hurricanes Ivan (2004) and Katrina (2005), which caused extensive damage to bridges and other highway infrastructure in Alabama, Florida, Louisiana, and Mississippi, the Federal Highway Administration (FHWA) developed an action plan to mitigate further hurricane hazards to bridge infrastructure.



The plan involved research, development, and delivery of guidance and instructional materials, including two manuals that represent a breakthrough in how to handle the impacts of coastal storms on bridges.

To address the expected increase in the frequency and severity of tropical storms, FHWA and the American Association of State Highway and Transportation Officials (AASHTO) are developing the manuals to help bridge engineers make informed decisions as they rebuild in Louisiana and other coastal States. *Guide Specifications for Bridges Vulnerable to Coastal Storms* and *Handbook of Retrofit Options for Bridges Vulnerable to Coastal Storms* are expected to be released in late 2008 and early 2009, respectively.

"The guide specifications provide a newly developed, physics-based model to estimate the impacts of coastal storms on bridges," says Firas Ibrahim, Ph.D., senior bridge codes engineer in the FHWA Office of Bridge Technology.

The model resulted from research by the State of Florida and the University of Florida, and included a review of national and international models for estimating the effects of coastal storms on bridges. A task force of Federal, State, private, and academic experts oversaw development of the specifications in cooperation with AASHTO.

"We developed the manuals to increase public safety, protect our national assets and economy, and assist States in designing and retrofitting bridges vulnerable to hurricanes," says Ibrahim. "Vulnerable bridges on critical routes need to remain in place for evacuations and remain open for post-hurricane response and recovery efforts."

The manuals provide guidance on how to mitigate damage to future bridges by raising their profiles and, if not possible, by designing them for the coastal storm forces. For existing bridges, the retrofit manual offers retrofit options to resist wave forces and storm surges. The guide specifications are based on the load and resistance factor design methodology. Once the manuals are released, the National Highway Institute (NHI) will develop a course to deliver hands-on training to transportation engineers in coastal States.



New bridge manuals and NHI courses are helping coastal states recover



These two photos show some of the damage to the bridge that connects New Orleans with Slidell, LA, caused by a storm surge from Lake Pontchartrain, a large inland lake, during Hurricane Katrina.

Credit: LA DOTD

NHI training already is a significant component of the recovery effort. "Post-Katrina analysis of the damage in Louisiana revealed that a lot of the drainage design was old-fashioned—a hodgepodge of what had been done over the years," says Glynn Cavin, director of the Louisiana Transportation Resource Center of the Louisiana Department of Transportation and Development's (LA DOTD) Training and Education Center.

In 2007, responding to this challenge, LA DOTD offered 23 sessions of NHI courses, such as Urban Drainage Design (FHWA-NHI-135027), Stormwater Pump Station Design (FHWA-NHI-135028), and Culvert Design (FHWA-NHI-135056), among others. Although these courses are not designed for addressing hurricane damage, LA DOTD appreciated their value and is looking forward to an upcoming NHI course, Highways in the Coastal Environment (FHWA-NHI-135082), which is hurricane-

related. "Because of these courses, our designers now have the latest infrastructure tools," says Cavin.

To determine LA DOTD's real-world training needs, the department is doing a strategic assessment of its current and future workforce demographics. In addition, as an NHI regional training center, LA DOTD is attracting transportation professionals from surrounding States, such as Mississippi and Arkansas. "We have the latest audiovisual technologies in every classroom and a robust capability to do distance learning when a course lends itself to that," says Cavin.

Participant feedback reveals that the courses are well received. "Based on their responses, the participants are taking away relevant and timely information they can apply to their jobs," Cavin says. "We are using every method at our disposal post-Katrina to get our highway and bridge infrastructure back up to speed."

FOR MORE INFORMATION ABOUT THE MANUALS, VISIT WWW.POOLEDFUND.ORG AND SEARCH FOR TPF-5(130). TO READ FULL DESCRIPTIONS OF NHI COURSES, VISIT WWW.NHI.FHWA.DOT.GOV.

In these two photos, the instructor and participants in NHI's Culvert Design course are observing the effects of water flow in a simulator.

Credit: LA DOTD



Instructors Of Excellence And Team Administrative Awards

Honoring quality in delivery of NHI training

"Top notch," "funny, enthusiastic, down to earth," "best in the business," "excellent in every conceivable way"... These are just a few of the accolades showered upon the top-ranked instructors of NHI training courses by grateful participants.

To show appreciation for outstanding leadership in transportation training, the National Highway Institute (NHI) recently named three of its instructors as recipients of the first annual Instructors of Excellence awards. NHI also recognized three contracting firms and their instructors with Team

Administrative Awards for 2007.

The awards applaud the efforts of NHI instructors and underscore the importance of consistently delivering high-quality instruction. "NHI is committed to maintaining the highest standard of technical ability and delivery competence for our contracting firms and instructors," says NHI Training Programs Team Leader Rick Barnaby. "These awards enable us

to honor the year's top performers."

NHI congratulates the following instructors and administrative teams:

Instructors of Excellence

- Susan Mosher, PerformTech., Inc.
- Robert Merryman, O.R. Colan, Inc.
- Ted Pluta, O.R. Colan, Inc.



Susan Mosher from PerformTech teaches the NHI Instructor Development course and is one recipient of the 2007 Instructors of Excellence award. She has taught at NHI for the past 8 years.

Credit: Erika Mosher

Team Administrative Awards with Instructors

- Applied Pavement Technologies, Inc., for Principles and Practices for Enhanced Maintenance Management Systems (FHWA-NHI-131107), instructors Katie Zimmerman and Dean Testa
- Ryan Berg and Associates, Inc., subcontractor The Collin Group, Ltd., Geosynthetics Engineering Workshop (FHWA-NHI-132013), instructor Jim Collin
- Owen Ayres & Associates, Inc., for River Engineering for Highway Encroachments (FHWA-NHI-135010), instructors Peter Lagasse, and Larry Arneson, FHWA

A team of NHI staff selected the winners. Criteria for earning the Instructors of Excellence award consist of the following:

- Nomination from an NHI training program manager
- Achievement of NHI certification
- Attendance and successful completion of the NHI Instructor Development course (FHWA-NHI-420018 or FHWA-NHI-420018A) within the last 5 years
- Consistent achievement of an average ranking of 4.5 or above (on a 5-point scale) on instructor satisfaction surveys completed by course participants

Recipients of the Team Administrative Award were judged according to the following criteria:

- Timely and accurate submission of session administrative packages (which include participant registration forms, class roster, sign-in sheet, and participants' course/instructor evaluations) within 10 working days of the session end date
- 100 percent of administrative packages submitted to NHI for fiscal year 2007
- Timely response to scheduling requests
- All instructors in the group achieved and maintained a minimum 4.0 average for participants' overall rating of instructors for fiscal year 2007
- All instructors in the group attended the NHI Instructor Development course within the last 5 years
- All instructors in the group requested or completed NHI observation for certification

FOR MORE INFORMATION, CONTACT CAROLYN EBERHARD AT 703-235-0010 OR CAROLYN.EBERHARD@FHWA.DOT.GOV.

"We thank each of these NHI instructors and firms for their help in delivering critically needed training to the transportation community."

Carolyn Eberhard,
NHI Instructor Liaison



Maintaining a Quality Workforce

Outsourcing to consultants and contractors is making training ever more important

Transportation agencies increasingly are being called upon to build and maintain more highways with fewer staff. Downsizing of agency staff, retirements, and growing competition with the private sector for engineering talent are making it difficult for some highway agencies to sustain an appropriate workforce level.

According to the Federal Highway Administration (FHWA), full-time employment in State departments of transportation (DOTs) has dropped significantly. In one DOT, for example, the full-time-equivalent engineering staff decreased from 5,200 to 3,200 between 1974 and 1994, while expenditures more than doubled. These staffing challenges have led agencies to outsource more of their operations in order to deliver and maintain the Nation's transportation infrastructure.

As State and local highway agencies shift to contracting much of the planning, design, and construction work, the transportation community needs to ensure that contractors and consultants are trained in the latest technologies and practices—the broader skill sets needed today to meet agency goals. Maintaining a highly qualified staff is an issue not only for highway agencies, but also for consulting firms and contractors.

Many private companies host National Highway Institute (NHI) courses to help maintain the specific qualifications required by highly competitive transportation contracts. Approximately 12 percent of the participants in NHI sessions that have attendee data from 2007 were participants from the private sector.

Traffic control in this work zone on a New York interstate involved marking the transition from two-lane traffic to one lane, using orange drums and a temporary concrete barrier.

Credit: Jerome Atwood

In March 2007, for example, the Buffalo, NY, office of LiRo Engineers, Inc., an engineering/architectural construction management firm, hosted an NHI course on Design and Operation of Work Zone Traffic Control (FHWA-NHI-380003). "We looked at several alternatives," says Leonard DePrima, a LiRo vice president. "The NHI course was affordable, and the date was flexible, giving us enough time to generate interest within our own firm and with some of our local partners." In all, 24 individuals from the private sector attended.

"What the course provided," DePrima says, "was a concise overview of safety policies and procedures for the setup of work zones." In addition to gaining knowledge of the importance of protecting workers and motorists, participants learned about the effective placement of cones, barrels, and variable message signs and specific items such as the need to maintain sign reflectivity.

"What's on paper for a transportation project may need adjustment in the field," DePrima says. "If modifications are necessary to meet field conditions, our people need to make those adjustments consistent with the safety requirements in the MUTCD [*Manual on Uniform Traffic Control Devices*]."

Another Buffalo engineering consulting firm, Hatch Mott MacDonald, hosted a February 2008 session of the work zone course. Jerome Atwood, the company resident engineer who coordinated the offering, says, "Design specifications, such as the length of safety buffers, change constantly. Our people need to be up to date on the MUTCD and the latest safety procedures and know where to find the answers to particular situations that might not be detailed in a contract, such as mobile closure design specifications or the proper way to do closure of a right-hand lane."

Atwood recommends that inspection personnel, designers, and field personnel take the course at least every 5 years "to avoid becoming complacent." He concludes, "The course gives them the confidence to analyze a contract's work zone setup and compare it with the drawings to see that it's done properly."

TO READ THE FULL COURSE DESCRIPTION, VISIT THE NHI WEB SITE AT WWW.NHI.FHWA.DOT.GOV.



Saving Lives and Saving Money

Transportation professionals find low-cost improvements can make a difference

Using information learned during an LCSl workshop, transportation officials in Cass County, IL, built shoulders inside sharp curves to cut crash rates.



More than 43,000 people are killed each year in vehicle crashes on U.S. roads. With stretched budgets, departments of transportation need to find cost-effective solutions that provide safer roads and highways. To help, the National Highway Institute (NHI) offers the Low-Cost Safety Improvements Workshop (FHWA-NHI-380076).

Typically, low-cost safety improvements (LCSIs) are projects that cost \$10,000 or less to implement. Typical LCSIs include removing vegetation, such as trees that block drivers' views; building up shoulders to eliminate dropoffs; and adding signage to warn motorists about unusual roadway features such as sharp curves.

Participants in NHI's workshop discover many ways to improve roadway safety inexpensively. They learn to recognize deficiencies in operation and design of roadway features, such as signage, markings, lighting, and traffic signals. They also review crash patterns and select the best countermeasures for various problems.

The workshop uses the Federal Highway Administration's (FHWA) three-pronged approach to road safety:

- Keep the vehicle on the road.
- Provide a roadside environment that enables an errant driver to recover control and get back into the lane.
- Design roadside objects so they will not cause a severe injury or fatality when struck by a vehicle.

Nearly 60 percent of fatalities occur on local roads. To help get LCSl information into the hands of local transportation professionals without the expense of traveling for face-to-face, instructor-led training, NHI is developing a Web-based workshop that should be available in October 2008. Once

complete, the workshop will enable NHI to "send the message out to a much greater group of transportation professionals who can influence the safety of the Nation's highways and roadways," says John McFadden, a safety/geometric design engineer at FHWA.

Numerous States and localities report benefits from the workshop. In Georgia, the Douglas County Traffic Operations Division created a safety action plan to help address rapid suburbanization and growing crash rates outside Atlanta. Many roads in the county are former wagon trails that were paved over the years without any improvements to alignments. Consequently, the county had many run-off-the-road crashes.

According to Keary Lord, Douglas County's assistant director/traffic operations division manager, the county learned to better identify high-crash locations and has since improved safety with LCSIs such as enhanced signing and pavement markings, improved shoulders, roadside vegetation and tree removal, rumble strips, and guardrails. The division also installed illuminated street name signs and LED signal displays for better visibility.

In Gainesville, GA, transportation officials reacted quickly to a workshop in Atlanta, implementing various LCSIs within 2 weeks: installing oversized stop signs, speed limit signs, and warning signs. Officials there are conducting a "before and after" study of the improvements to gauge their effectiveness, says Dee Taylor, a traffic engineer with the city of Gainesville.

Following an LCSl workshop in early 2007, transportation officials in Cass County, IL, installed roadside chevron signs on curves county-wide and district-wide in some areas, according to State Safety Engineer Priscilla Tobias. The county built shoulders on the inside of sharp curves in several places to reduce crashes. Some counties, Tobias says, also have begun performing road safety audits—inexpensive, multidisciplinary assessments to preempt crashes.

FOR MORE INFORMATION ON LCSl, VISIT WWW.TFHRC.GOV/SAFETY/EVALUATIONS/INDEX.HTM. FOR FULL DESCRIPTIONS OF NHI COURSES, VISIT WWW.NHI.FHWA.DOT.GOV.

New Take on Road Safety Audits

(Before) During an RSA, law enforcement officers revealed a safety issue on this suburban Virginia highway. Several rear-end crashes had occurred when vehicles slowed to make a right turn.

(After) Safety enhancements included installing a dedicated right-turn lane.

Credits: Craig Allred, FHWA

Upgrading a proven winner for saving lives

Whether it's called a road safety audit or a road safety assessment, an RSA is a valuable tool that has a proven track record for making roads and intersections safer. For example, an RSA dramatically reduced crashes on a suburban roadway in Phoenix, AZ, where hundreds formerly occurred every year.

An RSA is a formal examination carried out by an independent, multidisciplinary team to evaluate the safety performance of an existing roadway and suggest low-cost, short- and long-term measures to reduce crashes. All types of roads can benefit from RSAs. During a road resurfacing in Iowa farm country, for example, an RSA recommended a low-cost solution to a hazardous situation. A "Curve Ahead" sign that was shadowed by a tree was moved, and chevron signs were installed, enhancing safety on that roadway. RSAs also can be used during the project planning stage to identify potential safety issues and develop solutions.

Transportation agencies use RSAs to help identify countermeasures for their top five high-crash locations as required by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In Tennessee, the department of transportation districts perform RSAs to set priorities in their hazard elimination projects. Virginia is using RSAs in the implementation steps for its strategic highway safety plan.

To encourage use of RSAs, the National Highway Institute (NHI) recently upgraded its popular, hands-on course on Road Safety Audits/Assessments (FHWA-NHI-380069). The course

now is more accessible to all transportation professionals, whether planners, designers, or finance and maintenance people; whether they are from State, local, or tribal transportation agencies; and whether they are law enforcement personnel, city council members, or city managers. For example, in Kingsport, TN, a county commissioner attending the course left the room and called the sheriff and said to send someone down immediately.

Over the past 3 years, FHWA's Highways for LIFE program has funded 110 RSA workshops, enabling NHI to refine the course to reflect the latest improvements in the RSA program. The host organization now can select one of four modules that best fits its situation: (1) rural, (2) urban, (3) suburban, or (4) tribal/frontier, including national park roads and even unpaved roads with less than 20 vehicles per day. The four versions of the course offer the same concepts but modified for specific population densities, types of roads, and majority users.

The modules can be further customized to specific needs. "For example, if you're having a safety issue with pedestrian crossings," says Thomas Elliott, NHI training program manager, "the course instructor can put more emphasis on those and less on bicyclists or motorcyclists." Tailoring the course to specific needs helps participants transfer the information from the learning environment to the workplace—and ultimately the Nation's roadways.

"The road safety audit process is a significant tool for making our Nation's streets and highways safer," says Eugene Calvert, P.E., P.T.O.E., Collier County Transportation Division, FL. "And this course really gives the traffic safety engineer a solid understanding of the RSA process and how to effectively conduct an audit."

FOR MORE INFORMATION ABOUT RSAs, VISIT [HTTP://SAFETY.FHWA.DOT.GOV/](http://SAFETY.FHWA.DOT.GOV/) RSA. FOR MORE INFORMATION ON THE NHI COURSE, VISIT WWW.NHI.FHWA.DOT.GOV. THE UPGRADED COURSE SHOULD BE AVAILABLE FOR SCHEDULING BY OCTOBER 2008.



How Public Involvement Can Improve Highway Projects

Mn/DOT uses innovative approaches on reconstruction of Highway 36



To close or not to close—a highway, that is. This was the question officials at the Minnesota Department of Transportation (Mn/DOT) asked the public in early 2006.

The time had come to upgrade Highway 36 east of St. Paul. The options were partial versus full road closure during construction. The steps Mn/DOT officials took to involve the public earned accolades both at home and from the Federal Highway Administration (FHWA). Here's how the department did it.

Planning studies revealed that partial road closure would result in 16 months of lane closures during construction. Full closure, on the other hand, would shut down the 2-mile section of road for just 5 months, with traffic detouring around the construction site. Full closure therefore offered a 70 percent reduction in traffic impacts.

Rather than leave the decision to the engineers, Mn/DOT put the question to the people. In February 2006, the department's public affairs and market research staff conducted phone surveys with residents, commuters, and local businesses.

Materials lie along the north side of Highway 36 awaiting construction of a pedestrian bridge crossing Highway 36 near North High School. The pedestrian bridge, which opened in September 2007, was the impetus for the highway reconstruction project.

Credit: R. Kent Barnard, Mn/DOT



The callers described the two scenarios—full closure for 5 months or partial closure for 16 months—and gathered respondents' preferences. Mn/DOT staff spoke to 1,074 people, with the results split nearly 50/50. Weighing the benefits, Mn/DOT opted for full closure, which would allow faster construction, be less expensive and safer for workers and motorists, and yield a higher quality roadway.

Recognizing that the project would detour traffic away from downtown North St. Paul, the department took steps to reduce the impact of construction on residents and businesses. Specifically, Mn/DOT hosted open houses and workshops in North St. Paul, the community most affected by the construction, and Maplewood, a city located at the edge of the project.

"Our goal was to work with citizens and businesses to make this project as painless as possible and provide some benefits for them," says Kent Barnard, a communications specialist with the Mn/DOT Metro District Office of Public Affairs.

Meetings with business groups provided forums for brainstorming marketing ideas with local merchants to help them attract customers to their businesses during construction. One workshop, called "Open for Business—Surviving and Thriving During Construction," drew more than 150 people.

The workshop and subsequent meetings generated ideas for community events, such as North St. Paul's first "Old Fashioned Christmas" in December and Detour Days in late April to mark the highway's closure. The special events attracted residents and visitors to downtown businesses for food, prizes, arts and crafts, a 5-kilometer run, and live music and dancing. Mn/DOT staff also held special events to mark project milestones, such as the grand opening of a pedestrian bridge crossing the highway.

"Through our participation in local meetings and events, and by providing regular updates at those events, residents and business owners alike could put a face to Mn/DOT," Barnard says.

In addition, the department distributed news releases covering not only construction updates but also community events—an uncommon combination of purposes for DOT news releases. Mn/DOT also offered construction updates on its Web site and through e-mail blasts.

"Just because a DOT or government agency happens to have expertise in design, doesn't mean it knows what's appropriate for the people that will use the highway facility," says Kathleen



North St. Paul's iconic snowman oversees construction on Highway 36. Standing 44 feet high and made from metal and stucco, the snowman is a city symbol, a permanent replacement for the large snowmen built each winter by the Jaycees to celebrate the city's annual Snow Frolics event. Special care was taken during construction, including preliminary borings to determine the soil composition and driving pilings to support the huge snowman.

Credit: R. Kent Barnard, Mn/DOT

Bergeron, marketing communications coordinator for FHWA's Highways for LIFE (HfL) program. "Mn/DOT did the market research beforehand and went the extra mile to work with residents and businesses to devise and promote community events around the construction project."

That extra effort, Barnard says, has been key to the project's success. "Although there was opposition to the highway closure," Barnard says, "by being available and accessible, providing regular information, and responding to concerns, we were able to soften the effects of construction through North St. Paul and actually gain support for the work."

Mn/DOT's successful public relations efforts on this project were highlighted during a workshop held in November 2007,

which was cosponsored by the Transportation Engineering and Road Research Alliance, HfL, and the FHWA Minnesota Division Office. This workshop featured panel sessions on the project innovations, such as intelligent compaction, accelerated construction, road closure, and the communications, outreach, and market research efforts. More than 75 people attended the event, which also included a site tour and demonstrations.

FOR MORE INFORMATION, VISIT WWW.FHWA.DOT.GOV/HFL OR WWW.TERRAROADALLIANCE.ORG/EVENTS/INNOVATION_SERIES/2007/TH36.HTML, OR CONTACT KATHLEEN BERGERON AT 202-366-5508 OR KATHLEEN.BERGERON@FHWA.DOT.GOV.

*To learn more about effective strategies for public involvement, host or enroll in the National Highway Institute (NHI) course **Public Involvement in the Transportation Decisionmaking Process (FHWA-NHI-142036)**. For a course description and the complete NHI catalog, visit www.nhi.fhwa.dot.gov.*

Clark Titus and Ralph K. Banks, P.E., adjunct instructors with the Texas Engineering Extension Service (TEEX), are participating in a bridge inspection sponsored by the Texas LTAP.

Credit: TEEX

Local and Tribal Technical Assistance Centers

A trusted resource for local and tribal governments

When it comes to the Nation's roadways, local and tribal governments are on the front lines, responsible for maintaining more than 3 million miles of roadways and more than 300,000 bridges.

More than 25 years ago, the Federal Highway Administration (FHWA) answered a pressing need for training and technical assistance at the local level by creating the Local Technical Assistance Program (LTAP) and the Tribal Technical Assistance Program (TTAP). Together, these programs help local agencies build, maintain, and operate America's transportation system by delivering targeted training and technical assistance to local and tribal governments.

The LTAP/TTAP network consists of 58 individual centers: one LTAP center in each State and Puerto Rico, and seven regional TTAP centers that serve tribal governments. Their 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.

"With a focus on supporting local transportation professionals, LTAP and TTAP centers improve the quality and safety of local and tribal roadways through training, technology transfer, and information exchange," says LTAP/TTAP Program Manager Denise Saunders in the FHWA Office of Professional and Corporate Development (OPCD). "We provide a one-stop shop for local and tribal government needs."

The LTAP/TTAP centers serve more than 38,000 local agencies. Their customers include local road agencies, public works agencies, public officials, tribal governments, county and municipal engineers, and State departments of transportation.

In 2006, LTAP and TTAP centers offered nearly 5,000 affordable training sessions, reaching 136,000 participants. "With limited staff and resources, the LTAP and TTAP centers deliver a lot of training—a big bang for the buck," says Cameron Ishaq, a member of the LTAP/TTAP team supporting OPCD.

"The technology transfer program is all about sharing knowledge and best practices," says Donna Shea, director of the Connecticut LTAP center. "An important aspect of our program is the face-to-face, hands-on training that enables participants to learn from our instructors and have the opportunity to share issues and solutions with their peers. For many local agencies, we are the primary source of professional development for their transportation staff."

Critical to the success of the LTAP/TTAP centers is the ability to tailor their training to meet the specific needs of the local transportation workforce. "Over the past 10 years, nearly half of all LTAP/TTAP trainings focused on safety," Shea says, "covering both worker and highway safety." For the TTAP centers, infrastructure management is a major focus area. The TTAP centers also provide information about transportation programs of interest to the tribes, including provisions in highway legislation that affect how tribal governments manage their transportation programs.

Over the next decade, the need for training, technology transfer, and implementation of best practices throughout the transportation community will be considerable. "A strong relationship with FHWA, the National Highway Institute [NHI], and other national transportation partners will provide us with the opportunity to better meet these needs," Shea says. For example, LTAP/TTAP centers often host NHI courses and repurpose NHI training materials for their constituents. Adds FHWA's Saunders: "Projections are that nearly half the current transportation workforce will be eligible to retire by 2010. It is crucial that we provide technical assistance and training programs that are timely and relevant so that we can build a strong transportation workforce for the future."



FOR MORE INFORMATION AND A LIST OF LTAP/TTAP CENTERS, VISIT WWW.LTAPT2.ORG OR CONTACT DENISE SAUNDERS AT 703-235-0532 OR DENISE.SAUNDERS@DOT.GOV.

Resource Center To the Rescue

This “organization without borders” offers vital technical assistance and training

When a ceiling tile failure in Boston’s Central Artery/Tunnel killed a motorist in July 2006, structural engineers from the Federal Highway Administration’s (FHWA) Resource Center headed to the scene to assist with design reviews and inspections.

When Florida transportation officials sought advice in assessing the State’s intersections, a team from the Resource Center headed south to complete road safety audits at selected locations. In April 2007, at FHWA’s National Field Engineers Conference in Albuquerque, NM, technical experts from the Resource Center taught a variety of courses, bringing a large audience of FHWA engineers up to speed on the latest highway innovations and practices.

Whether finding solutions to transportation problems, delivering training, or helping State highway officials comply with Federal regulations, the Resource Center is FHWA’s one-stop shop for technical assistance to the division offices and States.

“We have the ability to be quick and nimble,” says Carin Michel, team leader for the Resource Center’s Marketing and Communications team. “We coordinate with FHWA headquarters and the division offices to get people on the scene quickly.” How quickly? “In emergency situations, we can have people on the spot within 24 hours,” she says.

Reflecting the Resource Center’s goal of being an “organization without borders,” it has locations in Atlanta, GA; Baltimore, MD; Lakewood, CO; Olympia Fields, IL; and San Francisco, CA. In addition to the geographical reach, the Resource Center offers a high level of expertise, with teams skilled in 15 subject areas. (See sidebar.)

The Resource Center receives most of its work through an annual call-for-service process, during which divisions, headquarters, and Federal lands customers submit requests for service from the Resource Center teams. Additional requests come in throughout the year. When a request comes in, a subject matter expert from the Resource Center will determine the source of the problem and identify appropriate assistance. The solution might be technical assistance or perhaps a training session. “Whether the need is routine or urgent, we’re equipped to get the job done,” Michel says.



Joyce Curtis (right), director of the FHWA Resource Center, assists in a product demonstration of expanded polystyrene (EPS) geofoam on the Woodrow Wilson Bridge project in northern Virginia. EPS geofoam is a rigid foam plastic engineered with a unit density as low as 1 pound per square foot, making it a lightweight fill that is 100 times lighter than most soils and useful on some transportation projects.

Credit: FHWA Resource Center

Training offered through the Resource Center is largely customer driven. “What courses we offer changes depending on industry trends or world events, such as a new technology that’s proven beneficial or a crisis situation like a bridge collapse,” Michel says. “We also do proactive training, covering new policies or laws.”

The Resource Center offers technical assistance and training through a variety of methods—in person, over the Web, through videoconferences, and over the phone. The training complements courses offered through the National Highway Institute (NHI), and many staff members are instructors for NHI courses. “The Resource Center and NHI have long partnered to provide training that improves the performance of the transportation community,” says Ann Gretter, marketing manager for NHI.

Together, the Resource Center and NHI deliver the latest industry know-how to help practitioners in the field build, maintain, and operate the Nation’s roadways, safely and efficiently.

FOR MORE INFORMATION ABOUT THE SERVICES OFFERED THROUGH THE FHWA RESOURCE CENTER, VISIT WWW.FHWA.DOT.GOV/RESOURCECENTER/INDEX.CFM.

Resource Center Teams

*Administrative
Air Quality
Civil Rights
Construction &
Project Management
Environment
Finance Services
Geotechnical & Hydraulics
Information & Management
Innovative Finance
Marketing & Communications
Operations
Pavement & Materials
Planning
Safety & Design
Structures*

Incorporating New Technologies Into Transportation Management

NHI courses cover the latest ITS tools and their applications



What do highway advisory radio, weather sensors, traffic signals, and “smart” cards have in common? Each is a tool in a traffic manager’s arsenal to fight congestion, improve safety, and enhance productivity.

Since the early 1990s, researchers at the Federal, State, and local levels have worked with the private sector and academia to develop and deploy these and other intelligent transportation system (ITS) technologies. Integrated together, ITS technologies can make lives easier—for traffic managers and the traveling public.

ITS technologies can be grouped into six types:

- **Information gathering.** Cameras, traffic sensors, and weather sensors collect information more thoroughly and frequently than road managers could in the past.
- **Information sharing.** Transportation agencies routinely use dynamic message signs, highway advisory radio, 511 telephone services, and Web sites to share information.
- **Traffic control.** Lane control signals, ramp meters, and variable speed limit signs help control traffic in real time.
- **Vehicle-based technologies.** From crash avoidance technologies to global positioning systems, a variety of vehicle-based technologies inform drivers about road conditions and help them avoid bottlenecks and hazards.
- **Vehicle to roadside to home base communication.** Sometimes referred to as “tracing and tracking,” this technology enables fleet operators to maintain contact with drivers and cargo via satellite and terrestrial systems.
- **Payment.** Electronic toll tags and smart cards for transit and parking streamline payment and expedite traffic flow.

Combined, these technologies facilitate new ways of managing the transportation system. The resulting improvement in operations promises to improve safety and mobility. The following courses are a sampling of the ITS-related training available from the National Highway Institute (NHI):



Personnel from FHWA and the Virginia Department of Transportation calibrate a video image processor, a type of over-roadway sensor, one of the many forms of ITS technologies that can be integrated into a transportation system to smooth traffic flow.

- **CORSIM Traffic Simulation Model Training (FHWA-NHI-137022).** This training examines CORSIM, the corridor simulation package of the Traffic Software Integrated System, which mimics traffic control conditions on street and freeway networks. CORSIM can help road managers evaluate ITS technologies, such as real-time traffic adaptive control.
- **Introduction to Systems Engineering for Advanced Transportation (FHWA-NHI-137024).** This course covers systems engineering, including modeling, prototyping, tradeoff analysis and testing, and risk mitigation.
- **Principles and Tools for Road Weather Management (FHWA-NHI-137030).** This training helps maintenance and operations personnel develop strategies for addressing road weather problems. The course includes an overview of basic meteorology and describes tools such as Road Weather Information Systems.
- **Integrated Transportation Management for Small- and Medium-Sized Communities (FHWA-NHI-137043).** This course helps those involved in planning, design, and operation of ITS technologies. Participants learn to use Advanced Transportation Management Systems and Advanced Traveler Information Systems.
- **Improving Highway Safety With Intelligent Transportation Systems (ITS) (FHWA-NHI-137044).** This course aims to heighten awareness of how ITS technologies can improve highway safety.

Several other NHI courses address proven ITS technologies and applications. For example, the course on Freeway Management and Operations (FHWA-NHI-133075) has a module on high-occupancy tolling and electronic toll collection.

By improving management of freeways, arterials, incidents and special events, work zones, and road weather, ITS applications marry the latest technological innovations with the mission of highway agencies to better serve the traveling public.

FOR FULL DESCRIPTIONS OF NHI COURSES, VISIT WWW.NHI.FHWA.DOT.GOV.



State and local transportation agencies are increasingly aware they will have to make room for more trucks as freight demand increases in the coming years.

Credit: Cambridge Systematics, Inc.

Customer Input Bolsters Freight Offerings

New and updated courses and a certificate of accomplishment are available



Responding to customer feedback, the National Highway Institute (NHI) is strengthening its commitment to freight-related training. Additional courses are taking shape and will total five in 2008. Web-based training, expanded topics, and a certificate of accomplishment also are on tap.

Focus groups and surveys, plus evaluations following training sessions, provide freight constituents the opportunity to help shape NHI courses, says Tony Furst, director of the Federal Highway Administration (FHWA) Office of Freight Management and Operations. For example, the biennial Freight Partnership meetings, in Columbus, OH, in 2005 and Natchez, MS, in 2007, enabled FHWA and NHI to reach out to constituents about their freight planning needs. The meetings drew professionals from State departments of transportation, metropolitan planning organizations, FHWA division offices, and the private sector, providing valuable feedback for training development.

Many constituents asked for more information on forecasting freight, financing freight transportation improvements, and calculating the public benefits of private projects that include moving freight. Freight professional development also ranked highly on the list, especially engaging the private sector. Constituents further recommended raising awareness of available courses and other resources.

"We talked with survey respondents about what some of the training should be and what topics should be covered," says Furst. "We asked them which delivery mechanisms would be most appropriate. They talked about workshops and seminars. They want the personal contact."

Building on this feedback, FHWA's freight office and NHI set to work crafting the following new course offerings.

- **Uses of Multimodal Freight Forecasting in Transportation Planning (FHWA-NHI-139002).** This course covers forecasting freight traffic at the State and metropolitan levels.
- **Advanced Freight Planning (FHWA-NHI-139003).** This course focuses on multimodal planning and program management and identifying, prioritizing, developing, and implementing freight-supportive projects.
- **Principles of Effective Commercial Motor Vehicle (CMV) Size and Weight Enforcement (FHWA-NHI-139004).** This course provides information on enforcing Federal size and weight regulations, writing and evaluating State enforcement plans and certifications, and addressing funding issues.
- **Freight Planning and Environmental Considerations (FHWA-NHI-139005).** This course focuses on integrating freight and environmental considerations throughout the planning, programming, and project development processes.
- **Integrating Freight in the Transportation Planning Process (FHWA-NHI-139006).** This course is the Web-based version of the instructor-led course of the same name (FHWA-NHI-139001). Both provide an understanding of the stakeholders, trends, and issues associated with freight transportation.

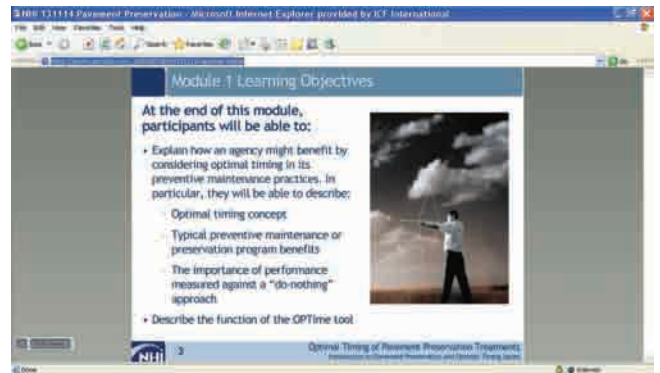
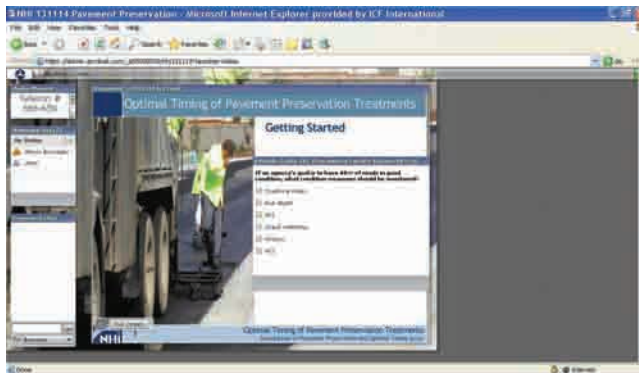
NHI offers a Certificate of Accomplishment in Freight Management and Operations for completing courses 139002, 139003, and 139005. Other program improvements stemming from customer input include downloadable course materials from the online NHI Store and a growing inventory of Web-based training and video training options.

In addition, the Office of Freight Management and Operations offers the following workshops: Engaging the Private Sector in Freight Planning Workshop, Freight Security Awareness Web-Based Primer, and Freight Security Awareness Workshop.

FOR MORE INFORMATION ON FREIGHT PROFESSIONAL DEVELOPMENT, VISIT [HTTP://OPS.FHWA.DOT.GOV/FREIGHT/FPD](http://ops.fhwa.dot.gov/freight/fpd). FOR FULL DESCRIPTIONS OF NHI COURSES, VISIT [WWW.NHI.FHWA.DOT.GOV](http://www.nhi.fhwa.dot.gov).

Distance Learning at NHI

The catalog of online training continues to grow



Screenshots from the pavement preservation course.

Over the past 2 years, the National Highway Institute (NHI) has grown its catalog of online courses, responding to customer requests for distance learning opportunities and short seminars on key subjects. Through online training, participants receive the same high-quality instruction but save money and time in avoided travel to and from sessions.

In fiscal year (FY) 2007, NHI launched 12 new Web offerings and 3 updated ones. These courses are available to participants through Web-based training (WBT) or Web-conference training (WCT) formats. WBT sessions consist of self-paced course modules that participants complete over the Internet, whenever and wherever they choose. Alternatively, WCT is scheduled online training with

instructor support. Participants join a virtual classroom through the Web at a predetermined time to view course materials and visuals, while listening to an audio portion over an ordinary phone line.

"I think this is a great vehicle for training," noted one participant after completing a WBT session. "It saved me from driving 2 hours to and from the headquarters office."

Also in FY 2007, NHI's reach to customers grew 23 percent over the previous year, with the number of participants trained increasing from approximately 15,500 in FY 2006 to more than 19,000. NHI officials attribute much of this growth to the increasing popularity of WBT and WCT sessions.

One of the in-demand WCT courses is Pavement Preservation: Optimal Timing of Pavement Preservation Treatments (FHWA-NHI-131114). All highway agencies perform pavement preservation or preventive maintenance (PM) activities, and one of the important issues facing these programs is identifying the best time to apply a PM treatment. This 4-hour seminar covers the use of OPTime, which is a downloadable software tool developed to help agencies determine the optimal time for performing PM activities.

"Reviews of the course have been positive—and the sessions full," says Rick Barnaby, the NHI training team manager. "We've reached more than 100 participants with this free training."

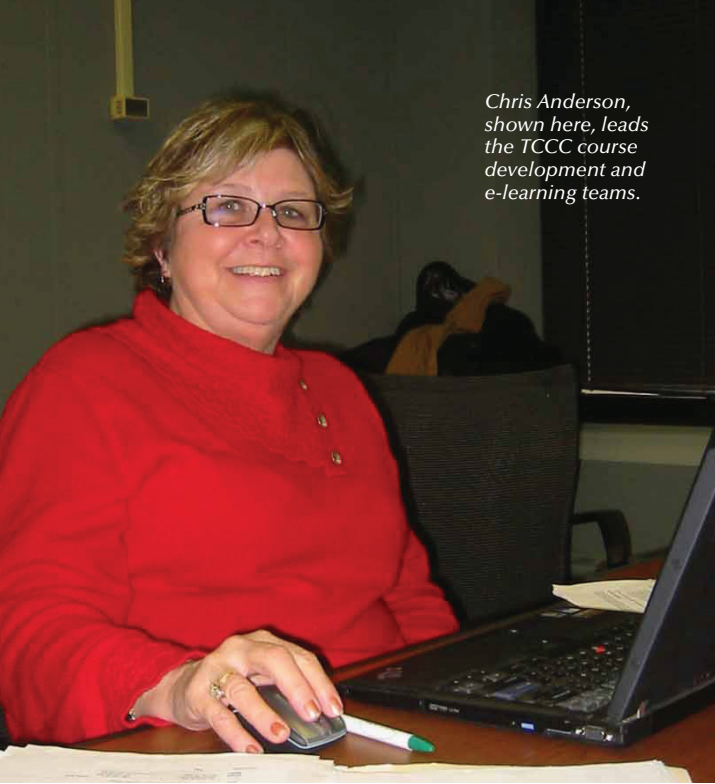
Topics in the seminar include defining goals, identifying the characteristics of effective pavement preservation programs, collecting data on treatment performance, and identifying costs and benefits. The course instructor is a lead author of National Cooperative Highway Research Program (NCHRP) Report 523, *Optimal Timing of Pavement Preventive Maintenance Treatment Applications*, and participation includes online access to the report itself.

The target audience for the course includes upper- and mid-level highway agency professionals who are responsible for decisions regarding pavement preservation and management. Specifically, the audience includes individuals responsible for choosing rehabilitation, reconstruction, and preservation treatments for highways and those who survey roads and determine which projects to fund and schedule.

Based on the lessons learned from and success of this and other online sessions, NHI plans to offer more training through WCT and other distance learning methods. In the words of another course participant, in the modern training environment "online courses will be and should be a tool to reach each other for learning opportunities."

FOR COMPLETE DESCRIPTIONS OF NHI COURSES, VISIT WWW.NHI.FHWA.DOT.GOV.

"I think this is a great vehicle for training," noted one participant after completing a WBT session. "It saved me from driving 2 hours to and from the headquarters office."



Chris Anderson, shown here, leads the TCCC course development and e-learning teams.

Transportation Curriculum Coordination Council

Partnering with NHI to provide quality training

“We’re all in the business of building and preserving highways,” says Pete Rahn, director of the Missouri Department of Transportation and current CEO of the Transportation Curriculum Coordination Council (TCCC).

“But how do we build and preserve the best transportation workforce for today and tomorrow? We train. We certify. We set national standards. And we make it easy for managers to access the courses that produce highly qualified, highly motivated employees.”

The TCCC is a partnership of the Federal Highway Administration, the National Highway Institute (NHI), State departments of transportation (DOTs), and the highway transportation industry. The council’s purpose is to build and maintain training resources for the transportation workforce, primarily at the technician level at State, municipal, and county DOTs. Since the council’s creation in 2000, it has grown to include hundreds of subject matter experts from across the country and throughout the highway industry.

According to Ann Gretter, NHI’s liaison to the council, the TCCC and NHI have partnered to develop many courses, and members are working to roll out 5 Web-based and 8 instructor-led courses in 2008. “NHI relies on input from subject matter experts to develop quality training,” Gretter says. “The council works with NHI by providing subject matter expertise and funding for course development.”

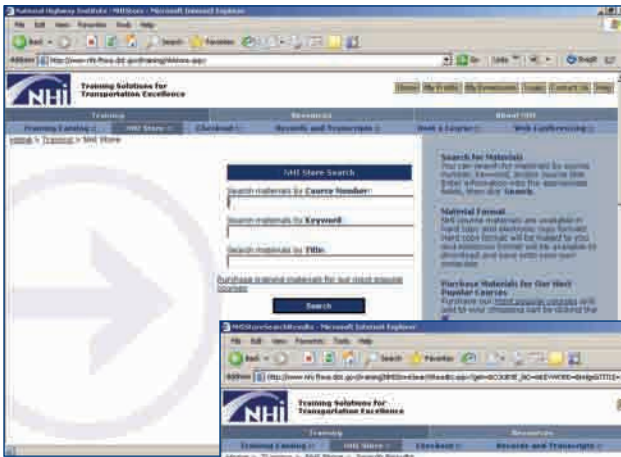
For example, one of the TCCC’s technical panels is collaborating with NHI to develop a 4-week maintenance academy for use by the highway industry. The maintenance academy will offer six courses, covering maintenance administration, roadways and shoulders, roadside maintenance and drainage, weather-related issues, traffic services, and environmental issues.

In the coming year, the TCCC expects to shift focus increasingly toward distance learning. “The intent is to give agencies and contractors good, quick training for employees to help them save travel time,” says Chris Anderson, technical training coordinator for Iowa DOT, who serves as chair of the TCCC’s course development team. “It’s a money-saving way to get the skills to the people who need them.”

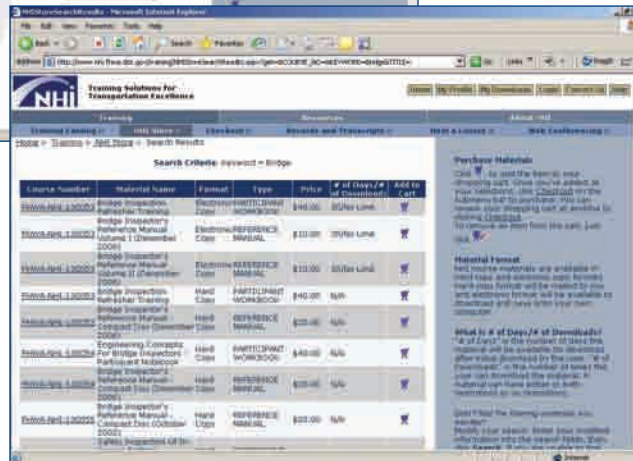
FOR MORE INFORMATION, VISIT WWW.NHI.FHWA.DOT.GOV/TCCC OR CONTACT CHRISTOPHER NEWMAN AT 202-366-2023. TO HOST OR ENROLL IN TCCC TRAINING, VISIT WWW.NHI.FHWA.DOT.GOV.

TCCC Courses

- Hot-Mix Asphalt Construction (FHWA-NHI-131032)
- Hot-Mix Asphalt Production Facilities (FHWA-NHI-131044)
- Hot-Mix Asphalt Materials, Characteristics, and Control (FHWA-NHI-131045A)
- Pavement Preservation: Design and Construction of Quality Preventive Maintenance Treatments (FHWA-NHI-131103A)
- Pavement Preservation: Integrating Pavement Preservation Practices and Pavement Management (FHWA-NHI-131104)
- Principles and Practices for Enhanced Maintenance Management Systems (FHWA-NHI-131107)
- Pavement Preservation Treatment Construction—WBT(FHWA-NHI-131110)
- Pavement Preservation: Optimal Timing of Pavement Preservation Treatments—WCT(FHWA-NHI-131114)
- Basic Materials for Highway and Structure Construction—WBT(FHWA-NHI-131117)
- Principles of Writing Highway Construction Specifications (2-Day) (FHWA-NHI-134001)
- Bridge Maintenance Training (FHWA-NHI-134029)
- Managing Highway Contract Claims: Analysis and Avoidance (FHWA-NHI-134037A)
- Materials Control and Acceptance—Quality Assurance (4.5-Day) (FHWA-NHI-134042)
- Use of Critical Path Method (CPM) for Estimating, Scheduling, and Timely Completion (FHWA-NHI-134049)
- Construction Inspection, Workmanship, and Quality (FHWA-NHI-134055)
- Ethics Awareness for the Transportation Industry—WBT(FHWA-NHI-134069)
- Daily Diary—WBT(FHWA-NHI-134071)



The NHI Store's main search page.



Your one-stop shop for NHI training materials

Searching for the keyword "bridge" reveals a list of relevant resources.

Targeted and hard-hitting course materials provide the backbone for every course offered through the National Highway Institute (NHI).

Developed through a partnership of the NHI training team, instructional systems designers, and subject matter experts from the Federal Highway Administration (FHWA), industry, and academia, these materials guide training delivery and provide valuable takeaway references for participants. Responding to customer requests and the growing demand for access to these materials, NHI now offers training materials for sale through its online shop, the NHI Store, providing greater flexibility for customers and increased access to NHI's top-quality training resources.

Launched in 2006, the NHI Store has attracted a broad profile of customers, including transportation professionals from the private and public sectors, industry associations, nonprofits, and engineering and academic programs. For example, Steve Hall, executive director of the Pile Driving Contractors Association (PDCA) in Orange Park, FL, purchases materials through the NHI Store to provide his members—many of whom are contractors to FHWA—with additional resources they might need on the job. "Being able to educate our members is important," Hall says, "and to be able to go to NHI and say we need a specific training material prevents us from having to develop an entirely new curriculum and course outline."

Hall also uses FHWA materials purchased through the NHI Store as a basis for some of the training PDCA offers its members. Using these materials helps his association and its members "be in line with FHWA" policies and procedures.

Another customer, Mina Mikaeel, a geotechnical/hydraulics engineer from Egypt who now works in the United States, reports that training materials purchased through the NHI Store have been crucial to his understanding of U.S. policies.

One of Mikaeel's primary responsibilities in his company's hydraulics department is to study scour. Upon arriving in the United States, he had no real experience in this area and was unfamiliar with U.S. regulations regarding scour. After a lengthy search for references, Mikaeel discovered that NHI was the only organization that provided specific, practical examples. "I found that NHI publications combine the theoretical background in detail, along with the practical experience that engineers need in their projects," Mikaeel says.

Further, because no NHI sessions on this topic were scheduled in his State, Mikaeel appreciated the ability to purchase the course materials through the NHI Store as an alternative to attending training.

The NHI Store has publications from almost every course offered, including reference manuals, participant workbooks, field guides, and course handouts. To date, the most popular materials sold through the NHI Store include the *Design and Construction of Driven Pile Foundations* resource manual, *Volumes I and II*; the *Micropile Design and Construction Reference Manual* and *Participant Workbook*; and the *Bridge Inspector's Reference Manual* CD. These materials make up 42 percent of the store's total sales.

Using the NHI Store is easy. Users can search by course number or title, or by keyword. The course materials are available in hardcopy and electronic formats. Hardcopies will be mailed to you, while electronic formats can be downloaded and saved onto your computer.

Whether planning a workshop, supporting train-the-trainer exercises, or stocking an office or library with highway-related reference materials, transportation professionals can find what they need through the NHI Store.

TO START YOUR SEARCH, VISIT WWW.NHI.FHWA.DOT.GOV/TRAINING/NHISTORE.ASPX. NHI OFFERS SPECIAL THANKS TO THE TRANSPORTATION CURRICULUM COORDINATION COUNCIL FOR PLANTING THE SEED THAT GREW INTO THE NHI STORE.

About NHI

The National Highway Institute (NHI) is the training arm of the Federal Highway Administration (FHWA). NHI's team of talented Federal and contract employees are housed within FHWA's Office of Professional and Corporate Development (OPCD). NHI helps improve the performance of the transportation industry through training. To achieve this mission, NHI and its partners provide leadership and resources to guide the development and delivery of transportation-related training in many formats, including classroom-based and distance learning. NHI is authorized to award continuing education units (CEUs) through the International Association of Continuing Education and Training (IACET).

For more information, please visit the NHI Web site at www.nhi.fhwa.dot.gov or contact the NHI training team at nhitraining@dot.gov.

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