

# Centered on Service

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## INSIDE

### 03 TECHNICAL ASSISTANCE

- Construction Cost Evaluation Process Review in NC
- Systems Engineering Goes T3
- New Innovative Finance Webinars

### 06 TECHNOLOGY DEPLOYMENT

- PDS Update: ACS Lite
- FRP Composite Demo in NY
- SMS & WMS User Guides Out
- Tribal Consultation Tool Under Development
- SonoBlaster & WZ Warnings

### 10 TRAINING

- Employing FRP Technology

### 11 PARTNERSHIP

- HPC Expertise Sought by International Audiences

### 12 CENTERED ON RESULTS

- New RC Staff

*Centered on Service* is dedicated to sharing success stories, information, and updates on FHWA Resource Center projects, as well as ongoing news about services provided by the Technical Service Teams to the FHWA Division Offices, Headquarters Offices, and State partners.

## DVD Highlights Benefits of New Winter Maintenance Software Application

Since early 2004, the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) have collaborated on development of a market-ready technology called the Maintenance Decision Support System. MDSS, as the technology is abbreviated, is a powerful software application that brings together a full range of information on weather, road conditions, and maintenance actions required to make sound maintenance decisions during inclement weather. Now FHWA and AASHTO have joined forces to produce a 15-minute DVD that explores the economic, safety, environmental, and practical ways MDSS can help transportation agencies get the most out of their winter operations programs.



The DVD, titled "Guiding Your Customers Safely Through the Storm," begins with a brief introduction explaining what MDSS does and how it can increase safety and enhance mobility. From there, the DVD provides insight to six important concepts, which include:

- I. Safety Enhancements
- II. Near-Real-Time Information
- III. Maximizing Your Maintenance Budget
- IV. Preserving the Environment
- V. Benefiting the Motorist
- VI. MDSS Simplicity

Winter maintenance is a complex and challenging endeavor for highway agencies even under the best conditions, bringing together skilled operators and their equipment in a battle against the fury of Mother Nature. Managers have to make split-second decisions on what warnings to give, what maintenance forces to deploy, what deicing materials to apply, and what schedules to work. Those decisions can now be made more easily and reliably through MDSS.

MDSS is based on a simple premise. If maintenance managers know current road conditions; the weather forecast; the behavior of snow, ice, and chemicals on road surfaces; and available equipment, material, and manpower; they can determine the best maintenance treatments and the best time to apply them.

In one of the DVD's testimonials, Phillip Anderle, a maintenance supervisor with the Colorado Department of Transportation, explains: "Now we have a scientifically-based system that brings Road Weather

See MDSS on page 2

## MDSS from page 1

Information System data together with deicing product specs and performance information and includes other weather and road resources if we need them. That helps us make the right application, at the right rate, at the right time, to get the best outcome.”

### I. Safety Enhancements

Safety is always the highest priority for transportation agencies. So, what if you had a tool to help make winter travel safer whether you're a senior manager, front-line supervisor, equipment operator, traffic operations technician, or public information officer? Using current road information and coming weather, MDSS predicts the future condition of the road surface if standard maintenance treatments, innovative treatments, or no treatments at all are applied. Managers can select the treatment options that most effectively and efficiently maintain safer roads for travelers. As a result, motorists are less likely to be involved in crashes and traffic jams. Fewer crashes mean fewer deaths, injuries, and property damage, as well as, less incident-related congestion. That's a win-win for transportation agencies and their customers.

### II. Near-Real-Time Information

The next scenario asks viewers to imagine a system that provides near-real-time information on road conditions during a winter storm. MDSS can feed up-to-date information to 511 or Web-based travel information systems. When drivers receive accurate traffic and weather information, they can make better decisions about when, where, and how to travel during bad weather. Whether you're a motorist, snowplow operator, or senior manager, MDSS provides a continuous stream of current and accurate data.

### III. Maximizing Your Maintenance Budget

The third scenario, directed to maintenance managers, asks viewers to imagine a system that helps manage resources and extend winter maintenance budgets. As transportation agencies face ever-tightening budgets, managers have to maximize the use of limited resources. MDSS helps make the most efficient use of your workforce, equipment, and materials.

MDSS considers the number of operators and trucks at your disposal and suggests how to deploy them most effectively. MDSS also suggests chemical applications appropriate to the specific road conditions and the storm, allowing managers to make decisions that lower costs while maintaining good roads. On a wider scale, MDSS can support economic growth by maintaining reliability and safety for motorists and freight.

### IV. Preserving the Environment

The fourth scenario focuses on the environmental benefits of MDSS. The audience is asked to imagine saving lives and saving money while preserving the environment. MDSS helps maintenance agencies use just the right amount of chemicals and grit for the storm at hand. MDSS can help fine-tune the amount of sand, salt, and other deicing agents used to

maintain safe roads. By suggesting effective but not excessive application rates, MDSS helps managers select treatments that reduce the amount of chemicals and sediments entering streams, rivers, and wetlands. MDSS can also help reduce air contamination and damage to roadside vegetation.

### V. Benefiting the Motorist

The next scenario asks viewers to imagine a system that helps agencies achieve consistent, high-quality maintenance across broad regions in the changing face of a storm. Motorists traveling from one region or State to another expect consistent conditions throughout their trip. They don't expect to suddenly encounter icy or snow-packed roads just because they've crossed an invisible county or State line. MDSS promotes the consistent use of effective practices, whether maintenance workers are new to the job or seasoned employees. MDSS suggests maintenance treatments that will help achieve the level of service specified in conformance with State policies, operating procedures, and prior experience. Vendors can tailor MDSS to meet the requirements of individual agencies, roads, and their traveling public.

### VI. MDSS Simplicity

The final scenario asks the audience to imagine a system that does so much in such a simple, easy-to-use manner. Imagine opening your laptop, starting up your MDSS application, and having immediate access to the weather, road conditions and treatment information you need to manage a breaking weather event. There's no need to pound the keyboard, waiting for multiple programs and systems to open. There's no need to wear out the floor mat swiveling from one computer to another to access the information you need. There's no need to wonder if you've missed important information that could help you make the best decisions as conditions worsen and pressures mount. MDSS provides customized support in all these areas – automatically.

The DVD concludes by challenging viewers to take command of the tools that can help maintain safety and mobility during the most challenging weather conditions. MDSS makes information readily available so States can lead their agency, staff, and customers safely through the storm. It helps them take command of their workforce, machinery, materials, budget, and resources for winter operations.

To obtain a copy of the DVD and get more information about MDSS go to [www.fhwa.dot.gov/weather](http://www.fhwa.dot.gov/weather).

For more information on MDSS contact:

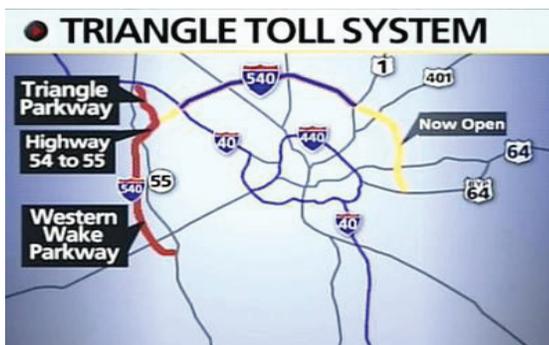
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## TECHNICAL ASSISTANCE

# Construction & Project Management TST contributes to Cost Estimation Process Review in Raleigh, NC

The Construction and Project Management Technical Service Team (TST), in partnership with the FHWA Major Projects Team, participated in a cost estimation and validation process review of the North Carolina Turnpike Authority's (NCTA) proposed tollway -- the Western Wake Parkway and Triangle Parkway -- on September 25-28, 2007. The objective of the review was to verify the accuracy and reasonableness of the current total cost estimate to complete the Western Wake Parkway and Triangle Parkway project and to develop a reliability-based cost estimate that reflects the project's current stage of design. Results of the review will be used by the FHWA during its review of the Initial Financial Plan (IFP) to support a Transportation Infrastructure Finance Innovation Act application.

The Western Wake Parkway and Triangle Parkway are located in western Wake County, adjacent to NC 55. The end result will be a new 6-lane, controlled access parkway. The pre-review cost estimate was close to \$1 billion. The review team devoted 3.5 days to interviewing NCTA and State department of transportation staff, as well as reviewing the various estimates that comprise the phases of the project. This includes items such as project scope, quantities, and sequencing of work; non-construction costs, such as preliminary engineering, construction engineering and inspection; mobilization; contingencies; and inflation. During the review, the team identified risks and opportunities and conducted a Monte-Carlo risk assessment of the cost estimate. The Monte-Carlo method provides a probabilistic (statistically based) analysis of cost estimates considering uncertainty, likelihood, and impacts.



Western Wake Parkway Map

On the final day, the team gave a closeout presentation of the review findings. Based on the variation of cost estimate inputs, the review team determined there was a 90 percent probability that the estimate would range between \$966 million and \$1.043 billion. The review team made several recommendations to the State during the closeout presentation, some of which included finalizing the project revenue strategy and developing a plan to manage risks and opportunities. The NCTA will prepare the IFP for the FHWA's approval, consistent with the review findings.

### Future Cost Estimate Reviews

The FHWA Major Projects Team or the Resource Center's Construction and Project Management TST staff are available to provide assistance in this area. For information on how to set up a Cost Estimate Review in your State, please contact:

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# T3 Webinars Integrate Systems Engineering & Agency Business Practices

The FHWA Resource Center held its first T3 (Talking Technology and Transportation) webinar on Systems Engineering (SE) on August 2, 2007. This webinar was the first in a series of T3s that will focus on Systems Engineering at the practitioner level.

The purpose of this T3 webinar was to address one of the more challenging aspects of SE -- understanding and articulating where and how it applies in an organization's day-to-day business processes and practices. To illustrate these concepts, separate case studies were presented by two State agencies -- the Virginia DOT and the Mississippi DOT -- on the approach these agencies have used to incorporate SE into their project delivery process. The webinar also explored how needed institutional changes occurred and what products had to be developed in support of the SE application.

## Background

When planning, developing, and implementing an ITS project, knowing what specific systems engineering activities must occur, and where and when, can be confusing. Many organizations have well developed processes used on traditional road and infrastructure projects. A similar process can be used to bring in systems engineering activities for ITS projects. By not including these systems engineering steps the project development can produce costly and delayed projects that do not meet their intended purpose. Instead, successful funding, planning, development, and deployment of ITS projects depends upon a well structured and documented process that includes operators, planners, designers, construction personnel, and other key stakeholders at the appropriate times.

To achieve such a process requires a change in agency business practices as well as a mindset shift in transportation project managers. Systems engineering provides ITS project managers with a proven process that emphasizes and formalizes quality control and quality assurance throughout. As demonstrated by the two participating agencies, use of SE on ITS projects ensures that the delivered system is based on user needs and requirements, and more likely to be completed within the budget and time constraints established by the project manager.

## Intended Audience

- State and local transportation engineers
- Traffic operations engineers and managers
- Transit operations managers
- Transportation planners
- Emergency management agency managers
- FHWA Division Office ITS and Planning personnel
- FTA Regional Office ITS and Planning personnel

T3 Webinars are sponsored through the U.S.DOT's ITS Professional Capacity Building (ITS PCB) Program.

Visit the ITS PCB website at: [www.pcb.its.dot.gov/](http://www.pcb.its.dot.gov/) for more information about T3 and other ITS PCB sponsored learning opportunities.

## Feedback

Some participants of the first webinar had this to say ...

*"I liked that they had both an urban and rural approach to integrating SE into the DOT processes."*

*"I believe that the [SE] process is the best approach we can take to bring planners and operations managers to interact effectively. This Webinar helped put that process into perspective and helped me identify where I need to focus attention."*

*"[I got a ] better understanding of and appreciation for other State DOTs beginning to use the process, and [appreciated] that references were made to the California SE Guidebook and the FHWA Guidebook. California appears to have started earlier and experienced the steep uphill start, and it is great to see that others are using and adapting the process to their unique conditions."*

For more information about the T3 Webinar Series see the box on the next page or contact:

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## Systems Engineering Series

The T3 Program will be hosting a series of Systems Engineering (SE) webinars designed to provide practical advice for integrating SE into ITS projects. All webinars will begin with an overview of the SE practice (approximately 20 minutes) based on material found in the *Systems Engineering for Intelligent Transportation Systems (ITS) Handbook* (January 2007).<sup>\*</sup> That segment will be followed by transportation agency presentations that demonstrate the practice in action. As with all T3 webinars, the entire SE series will be recorded and posted, along with webinar presentations, in the T3 Archives.

### Planned Session Topics

#### Managing and Documenting ITS System Changes through Configuration Management

Configuration management (CM) can be defined as "a management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design and operational information throughout its life." (From ANSI/EIA 649-1998). Establishing the system baseline, or configuration, and managing change to that baseline, are key processes for ensuring that system integrity is maintained throughout the life of the system. Read more about Configuration Management in Section 5.4 of the *Systems Engineering for ITS Handbook*.

#### How to Write a Concept of Operations Plan and Use It on a Project

The Concept of Operations (ConOps) frames the overall system and sets the technical course for a project. Its purpose is to clearly convey a high-level view of the system to be developed so that each project stakeholder can understand. A good ConOps answers who, what, where, when, why, and how questions about the project from the viewpoint of each stakeholder. This T3 will discuss the key elements and format of a ConOps, and describe how to use it in developing project requirements and validating the ITS project. Read more about the ConOps in Section 4.3 of the *Systems Engineering for ITS Handbook*.

#### Writing Requirements to Define What Your ITS System Will (and Will Not) Do

One of the most important attributes of a successful project is a clear statement of requirements that meet the stakeholders' needs. This webinar will focus on the different types of requirements that must be defined for a project. This includes functional requirements ("what" the system must do), performance requirements ("how well" the system must perform), and a variety of other requirements that define "under what conditions" the system must operate. Read more about System Requirements in Section 4.4 of the *Systems Engineering for ITS Handbook*.

#### Writing a Risk Management Plan to Anticipate, Monitor, and Control Risk on ITS Projects

Risk management is the identification and control of risks during all phases of the project life cycle. This webinar will provide guidance on how to write the risk management plan to identify potential problems before they occur. It will also address risk monitoring techniques and early actions to take if the risk occurs. Read more about Risk Management in Section 5.3 of the *Systems Engineering for ITS Handbook*.

#### Tailoring the SE Process Based on ITS Project Size, Complexity, and Agency Resources

Many ITS projects are small or relatively low risk and low complexity. The systems engineering process can be tailored to fit all project types. This T3 will provide examples on how various SE tasks were scaled up or down to fit their project's quality control and assurance needs. Section 6.2.3 of the *Systems Engineering for ITS Handbook* provides a more comprehensive discussion of how to tailor the systems engineering approach.

#### SE Tools for Everyday Practice: The Systems Engineering Guidebook

Trying to navigate the many available systems engineering tools and understand how to apply them to an ITS project can be confusing. Help is available. The FHWA California Division and the California Department of Transportation (Caltrans) jointly developed the *Systems Engineering Guidebook for ITS*. This session will provide a quick tutorial on information and tools in the Guidebook that State and local agencies can quickly apply or adapt for their use. Read more about systems engineering resources in Section 7 of the *Systems Engineering for ITS Handbook*.

<sup>\*</sup> To download the *Systems Engineering for Intelligent Transportation Systems Handbook* visit the following website: <http://www.ops.fhwa.dot.gov/publications/seitsguide/index.htm>

## Innovative Finance Webinars Available to Divisions & States

The Resource Center Innovative Finance Technical Service Team (TST) provides a complete range of services to financial officials at State, local, and Federal Highway Administration division offices across the Nation, covering 50 States and six territories - the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands. The mission of the Innovative Finance TST is to provide sound innovative financing and Federal-aid fund management alternatives.

The team has been actively engaged throughout the United States providing a full range of specialized advice and services that help guide the application of innovative transportation finance tools from concept to closure.

The Innovative Finance TST provides technical assistance and training through a variety of webinars. These "online seminars" are offered in the following subject areas:

1. GARVEE and Private Activity Bonds
2. TIFIA
3. Freight Financing
4. State Infrastructure Bank and Section 129 Loans
5. Border Infrastructure Finance
6. Bond 101
7. Public-Private Partnership



To schedule webinar training, contact the team's Program Assistant:

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## TECHNOLOGY DEPLOYMENT

### PDS Update: ACS Lite

ACS Lite (Adaptive Control Software) offers small and medium size communities a low-cost traffic control system that operates in real-time, adjusting signal timing to accommodate changing traffic patterns and ease traffic congestion.



A development meeting was held in Houston to discuss future plans for a Product Demonstration Showcase (PDS) there focusing on ACS Lite. Professionals from Houston Transtar, Siemens, the FHWA Resource Center, Metropolitan Transit Authority, Eastern Operations Center, Western Operations Center, and the Texas Engineering Extension Service joined to participate in this meeting.

During the course of the discussion, Siemens reported that Tyler, Texas, officials were installing a system in their city. The system was "turned on" the first week of October. Tyler representatives showed interest in participating in the PDS planned for Houston to relate their experiences installing the system. The ACS Lite PDS has tentatively been set for April or May 2008 in Houston. Look for more information and details here in the next issue, or visit the PDS website for updates as they become available at: [www.pdshowcase.org](http://www.pdshowcase.org).

The purpose of the PDS campaign is to advance the implementation of roadway and bridge technology in the municipal arena. These events provide decisionmakers an unbiased -- start-to-finish -- project experience with field-applied technologies and processes.

For more information on the ACS Lite PDS, or on other planned showcases, contact:

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## Fiber-Reinforced Polymer (FRP) Composites Demo in NY

Over the past 15 years, many States have aggressively initiated programs to inventory, inspect and maintain overhead sign structures. These programs have been successful in averting potential catastrophic collapses onto active travel lanes. However, due to the overwhelming number of these structures that have aged and deteriorated, the States have been looking for cost-effective ways to keep them safely in service for as long as possible until systematic replacements can be carried out.

Recognizing this need, a few years ago, the AASHTO Technology Implementation Group identified Fiber-Reinforced Polymer (FRP) composite wrapping as a high priority technology for implementation. Because of its interest and active review of the research that led to its determination, the New York State Department of Transportation (NYSDOT) was named as a Lead State to assist others with learning about the benefits of this technology.

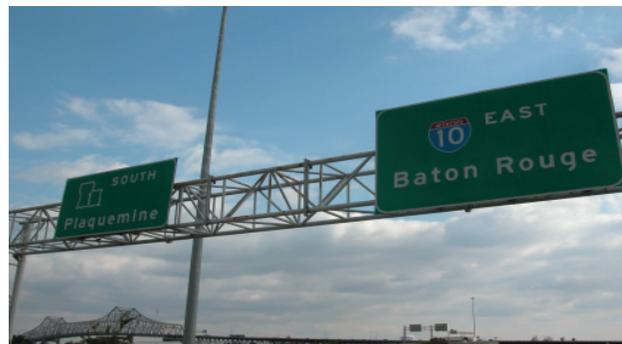


*A demonstration of how to make FRP repairs to an overhead sign in New York.*

The assistance began with surveying the States as to the extent of their aluminum overhead sign inventory; the magnitude of the problems they were having with these structures; whether they were interested in learning more about FRP repair procedures; and whether they were interested in hosting a demonstration of the repair procedures. A limited number of States hosted the demo a few years ago, while others who were interested were unable to schedule it at the time.

The AASHTO has transferred the implementation of this technology to the FHWA, and it has remained a priority and market-ready technology with our Agency. To that end, the FHWA Resource Center Structures Technical Service Team

(TST) worked with the Office of Bridge Technology (HIBT) and the NYSDOT technology champion to resurvey the States as to their interest in hosting a demonstration. Several States responded in a positive manner, and three demos have been conducted so far this year, with other possibilities to be scheduled in the near future.



*Typical overhead sign truss where FRP Composites could be used.*

This year, more than 40 people have been educated about FRP composites and the wrapping of secondary aluminum members of overhead sign trusses. The 1- to 2-day sessions start with an overview or introduction to the FRP composite technology by Lou Triandafilou (Senior Structural Engineer and the TST's high performance structural materials specialist) and then a presentation by the NYSDOT champion, Harry White, on specific wrapping techniques using two different systems. The following day, demonstrations are conducted by the NYSDOT champion, who is assisted by the host State DOT. In two cases, the demos were conducted at a maintenance facility, using a section of aluminum sign truss that had been previously removed from a roadway. In the third case, the demos were conducted with traffic control and lift equipment provided by the host State, at an in-service truss. Professional development hour (PDH) certificates were provided to all attendees by the Resource Center.

The NYSDOT has retrofitted more than 30 aluminum sign structures using the FRP composite wrapping technique. The DOT is convinced of the life-cycle cost benefits of using the technology, as many of these retrofits have now been in place for more than 5 years. Based on the encouragement provided to them during the demos, the three host States will be looking for appropriate structures on which to implement this high-payoff technology.

For more information on this technology, or to schedule a demonstration, please contact

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# Hot Off the Presses!

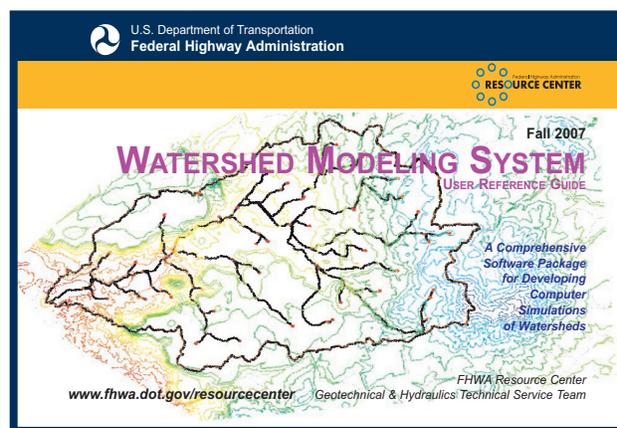
## SMS and WMS Desk References Now Available

The FHWA Resource Center's Geotechnical & Hydraulics Technical Service Team has just completed two software desk references -- the Surface-water Modeling System (SMS) User Guide, and the Watershed Modeling System (WMS) User Guide -- to provide step-by-step tips to users of these technologies in the field. National distribution of these publications should be completed by late-November.

### SMS User Guide

The purpose of this user reference guide is to provide the beginner or infrequent two-dimensional (2-D) surface-water modeler with helpful tips on utilizing the SMS and the Finite Element Surface-Water Model System (FESWMS). General topics covered in this guide include:

- Understanding the SMS graphical user interface (GUI) and its various components, programs, and applications
- Downloading, installing, and registering the SMS software, including how to obtain a password and software updates
- Importing background images and topographic data for use in constructing models
- Building and running a 2-D surface-water model by following a step-by-step procedure
- Managing files and saving project data
- Running the FST2DH finite element surface-water model
- Troubleshooting problems encountered while modeling
- Obtaining technical assistance



### WMS User Guide

The purpose of this reference guide is to provide the beginner or infrequent watershed modeler with helpful tips for utilizing the WMS. General topics covered in this guide include the following:

- Understanding the WMS graphical user interface (GUI) and its various components, programs, and applications
- Downloading, installing, and registering the WMS software, including how to obtain a password and software updates
- Importing background images and topographic data for use in constructing models
- Computing flow directions and delineating watersheds
- Creating and importing coverages for use in constructing a model
- Building and running a watershed model by following a step-by-step procedure
- Managing files and saving project data
- Obtaining technical assistance

Since the guides are geared toward beginners, they are not intended to be all-inclusive, and many of the more advanced modeling features of the software programs have been omitted or covered only briefly.

For more information on the SMS desk reference please contact:

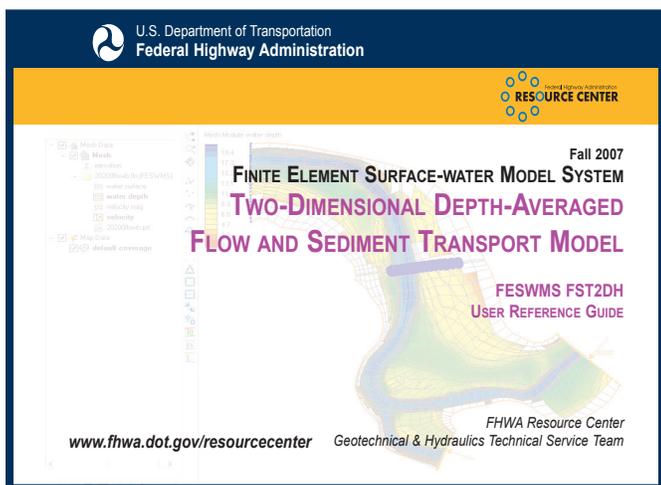
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For technical questions related to your hydrologic and hydraulic modeling projects or available training on SMS and WMS software, contact:

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## SonoBlaster® Alerts Workers and Drivers of Work Zone Intrusion

The SonoBlaster® Dual Alert Work Zone Intrusion Alarm is an impact activated safety device that warns roadway workers and errant vehicle drivers simultaneously to help prevent crashes and injuries in roadway work zones. The SonoBlaster® mounts on typical work zone barricades, cones, drums, delineators, A-frames, and other barriers. Upon impact by a vehicle, the SonoBlaster's built-in CO2 powered horn blasts at 125dB to signal workers that their protective zone has been violated, allowing critical reaction time for a worker to move out of harm's way. On average, 1,068 fatalities occur a year from motor vehicle crashes in work zones. Between 15 and 20 percent of those killed in work zones are highway workers. More than 40,000 people are injured each year as a result of motor vehicle crashes in work zones.



*SonoBlaster® is an impact-activated safety device that warns roadway workers and errant vehicle drivers simultaneously to help prevent crashes and injuries in our nation's roadway work zones.*

The Federal Highway Administration (FHWA) is sponsoring a technology demonstration program of the SonoBlaster® to enhance work zone safety, and to evaluate the effectiveness of this device through hands-on experience. The FHWA will provide the SonoBlaster® intrusion alarm units to State departments of transportation for use in work zones. This demonstration is financed by the FHWA Office of Asset Management and operated in partnership with the FHWA Resource Center Construction and Project Management Technical Service Team.

### How SonoBlaster® Works:

- Shock activated unit deploys upon direct vehicle impact
- Alerts both workers and errant drivers
- Pinpoints the source of oncoming danger
- Sounds alarm at 125dB for 15 seconds
- Unit deploys when tilted at 70-90 degrees
- Powered by CO2 cartridges; requires no electrical power
- Alarm units mount to traffic cones or barricades
- Light-weight, long-life unit
- Each unit operates independently

## Evaluation Plan

The evaluation period of the SonoBlaster® may last for up to 3 years depending upon the deployment of the units by the State agencies. The FHWA has purchased and will arrange for distribution of the SonoBlaster® units at no cost to the receiving State agencies. Printed instructions and a demonstration CD-ROM are provided with each unit, and the work zone intrusion unit becomes the property of the receiving agency upon delivery. The receiving agencies will deploy the units to actual work zone(s) of their choosing. A designated agency representative will complete an evaluation of the device and submit the report to the FHWA. The FHWA will compile a summary report with recommendations for the use of the intrusion alarms with a focus on safety enhancements for highway workers in actual field operations, and distribute the results to all State DOTs and other potential users.

### State Departments of Transportation Encouraged to Register for SonoBlaster® Demonstration

The FHWA has procured 100 sets (of 25 units each) of SonoBlaster® work zone intrusion alarms. These are nonelectronic, self-contained independent units that can be attached to individual work zone delineation devices. The SonoBlaster® units will be available for demonstration beginning in the fall of 2007 through 2009.

Share this information with your State department of transportation contacts. Some suggested recipients are the leaders in Construction, Maintenance, Incident Management, Traffic and Safety, Bridge Inspection, and Utility Coordinators or Local Agency Program Coordinators.

For more information concerning the technology demonstration program for the SonoBlaster®, or to register a State as a potential demonstration participant contact:

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## RC Environmental Specialist Begins Work on Tribal Consultation Tool

Using an innovative and possibly unprecedented approach to developing and executing an agreement document with multiple Tribes in multiple States, the North Dakota Department of Transportation (NDDOT) and the FHWA North Dakota Division tailored the consultation process to meet NDDOT needs while addressing tribal concerns about cultural resources that may be affected by NDDOT projects. The 12 Tribes involved were: the Mandan, Hidatsa, and Arikara Nations; Turtle Mountain Band of Chippewa Indians; Spirit Lake Dakotah Nation; Standing Rock Sioux Tribe, Sisseton/Wahpeton Oyate Tribe; Fort Peck Assiniboine & Sioux Tribes; Northern Cheyenne Tribe; Crow Tribe; and Lower Sioux Indian Community. The States involved were North Dakota, South Dakota, Montana, and Minnesota.

Stephanie Stoermer, Environmental Program Specialist in the FHWA Resource Center, recently conducted interviews with cultural resource staff from the NDDOT and members of the Tribal Consultation Committee that will be used to develop a new tribal consultation case study.

The study will highlight the best practices used in the development and implementation of a multi-Tribe Section 106 programmatic agreement for transportation projects in North Dakota. It is expected that the case study will help foster innovative best management practices in the area of tribal consultation.

Effective tribal consultation advances the FHWA's strategic goals related to both environmental stewardship and streamlining. On a recent trip to North Dakota, Stoermer gathered 6 hours of video footage, took 130 photos, and taped 12 hours of interviews over a 2-day period.

No completion date has yet been announced. Interviews with NDDOT participants and Tribal Consultation Committee members are ongoing. Check back here for further details as they become available.

For more information on this project, contact:

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## TRAINING

### Advancing the Implementation of Prefabricated Bridge Element Technology: Fiber-Reinforced Polymer Composites (FRP)

The RC Structures Technical Service Team recently convened a seminar on Fiber Reinforced Polymer (FRP) composites for the New Mexico Department of Transportation (DOT). The event was well-received by attendees from the State DOT, the FHWA New Mexico Division Office, and local consulting firms, academia, and material suppliers.

Topics discussed at the seminar included:

- an introduction to FRP materials and reinforcing bar issues;
- FRP mechanics and general design issues;
- FRP instrumentation and experimentation;
- FRP bridge decks and superstructures;
- FRP bridge deck qualification and acceptance criteria
- innovative FRP applications in New York State; and
- case studies of FRP projects in West Virginia.

The host State also described an interesting project where an under-capacity deck slab was strengthened using FRP materials.

Co-presenters included a senior program officer from the Multi-disciplinary Center for Earthquake Engineering Research at SUNY-Buffalo (formerly with the New York State DOT), and a long-time FRP researcher and practitioner from West Virginia University.

Other Division Offices and/or State DOTs interested in hosting the seminar, with an emphasis on prefabricated bridge elements and systems/accelerated bridge construction, may contact:

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# FHWA Implementation Mandate and Changes in Seismic Spec Push LRFD to the Front Burner



The FHWA Resource Center Structures Technical Service Team has been busy developing both a **Load and Resistance Factor Design (LRFD) Pier Design Workshop** and an **LRFD Seismic Design Seminar** and presenting them throughout the nation.

Interest in LRFD training has spiked with the October 1, 2007, mandate to implement the American Association of State Highway and Transportation Officials' (AASHTO) *LRFD Bridge Design Specification* for all new Federal-aid bridge projects. The AASHTO recently approved two major changes to the seismic design of highway bridges. The first is updated seismic provisions in the AASHTO *LRFD Bridge Design Specifications*, and the second is adoption of a new "Guide Specification for LRFD Seismic Bridge Design."

## LRFD Pier Design Workshop

The first-ever LRFD Pier Design Workshop was recently held in Maine with nearly 30 participants.

This workshop focused on the design of bridge pier substructures using the latest AASHTO LRFD Bridge Design Specification. The workshop covered detailed designs of two common bridge pier types -- hammer head and multi-column. Participants were provided completed design examples of each of these two pier types along with other presentation material. The more recent and significant changes reflected in the current -- fourth edition -- *AASHTO LRFD Bridge Design Specification* are highlighted in the design examples.

## LRFD Seismic Design Seminar

The updated seismic provisions in the 2007 edition of the LRFD Specifications relate to: (1) changing the return period of the design earthquake from 500 years to 1000 years; and (2) keeping the specifications up to date and in line with recent developments in the seismic design of bridges. FHWA has established "just in time" training to make designers aware of the significant changes and has delivered this training to two State DOTs. Five additional training sessions are scheduled.

For information on the **LRFD Pier Design Workshop**, contact:

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For information on the **LRFD Seismic Design Seminar**, contact:

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## PARTNERSHIP

# High Performance Concrete Expertise Sought by International Audiences

Based on their expertise in the area of High Performance Concrete (HPC), the Structures Technical Service Team was invited to present at two recent international workshops and conferences.

The first was the **3rd Annual U.S.- Taiwan Workshop** in Taipei, Taiwan, coordinated by the Turner-Fairbank Highway Research Center. Information was presented on HPC applications in the United States, including self-consolidating concrete (SCC), lightweight concrete (LWHP), and ultra-high performance concrete (UHPC). More than 100 people attended the event at the National Technical University in Taipei.



*Touring structures in Taiwan*

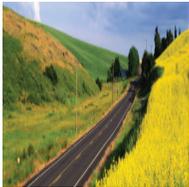
Similar information was also presented to more than 80 people at the **1st International Conference on Recent Advances in Concrete Technology**, in Crystal City, VA.

Division Offices and/or State DOTs interested in hosting a seminar on HPC, with emphasis on SCC, LWHP, and UHPC applications in prefabricated bridge elements and systems/accelerated bridge construction, may contact:

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## CENTERED ON RESULTS

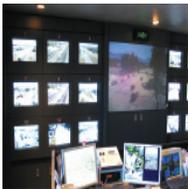
# FHWA Resource Center Welcomes New Team Members



### ENVIRONMENT TST

**Rodney Vaughn, P.E.**  
Environmental Program Specialist  
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The newest Environment Technical Service Team member is Rodney Vaughn. Vaughn joins the Resource Center directly from the Wyoming Division Office. He is a specialist in emergency preparedness/security, bicycle/pedestrian coordination, Federal Land Transfers, environment, and right-of-way. He also brings to the team experience in the NEPA Process Management, Homeland Security, Recreational Trails, Scenic Byways, Enhancements, and Safe Routes to School. In addition, Vaughn directed both the Cody to Yellowstone EIS, and the Moran Junction to Dubois, EIS projects in Wyoming. In 2005, he received the Secretary's Award for Volunteerism for leading teams on relief projects in the Hurricane Katrina area in Mississippi and the tsunami area in Sri Lanka. Vaughn earned a bachelor's degree in Civil Engineering from the University of Michigan. He is also a Registered Professional Engineer in Colorado and Wyoming.



### OPERATIONS TST

**James (Eric) Ferron, P.E.**  
Freeway Operations Specialist  
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Eric Ferron has joined the FHWA Resource Center's Operations Technical Service Team as a Freeway Operations Specialist. In this position, he will focus on providing technical assistance and training, and promoting technologies to improve mobility and safety with workzone operations and freeway management. Ferron was previously employed by the Colorado Department of Transportation, where he served as the Assistant Traffic Operations Engineer in the Pueblo area. His technical specialties include: workzone traffic control, freeway and arterial operations, traffic and safety investigations, impact analyses, hazard elimination projects, ITS, and highway construction. He also gained experience in engineering and construction management while serving in the U.S. Army -- including active duty in support of Operation Enduring Freedom -- helping to rebuild roads in Afghanistan and Army facilities, for which he was awarded a Bronze Star. He earned a bachelor's degree in Civil Engineering Technology from Colorado State University and is a Registered Professional Engineer in Colorado.

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