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RESOURCE CENTER

Centered on Service

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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 Resource Center teams to the FHWA Division Offices, Headquarters Offices, and State partners.

First Northern Air Quality Summit a Huge Success

Nearly 130 meet in Baltimore to discuss key topics, best practices and the latest information on issues vital to transportation

Air quality professionals from Northern and Mid-Atlantic States met for the first Northern Transportation and Air Quality Summit (NTAQS) in Baltimore, MD, August 13-15. The NTAQS brought together stakeholders from the fields of transportation and air quality to discuss the current and upcoming regulatory environment, new technologies, and current practices.

The 3-day conference began on a Wednesday afternoon with a basic orientation on the Mobile Vehicle Emission Simulator (MOVES), the Environmental Protection Agency's (EPA) latest air-quality modeling software. The demonstration, by EPA's Gary Dolce and FHWA's Jeff Houk, covered MOVES design concepts, making the transition from EPA's current model MOBILE6.2 to MOVES, an introduction to the database software MySQL, and an actual demonstration of MOVES.

The second day focused on four themes: climate change, regulatory issues, Mobile Source Air Toxics (MSATs) and air pollution public health considerations. Dr. George Eads, a senior consultant from CRA International, gave a briefing on the results of a study by the Transportation Research Board's Committee on Climate Change and U.S. Transportation. The study concluded that global warming is indeed occurring and the impacts will affect all regions of the country and all transportation modes. Climate change, he said, will require significant changes in planning, design, operation and maintenance of the transportation infrastructure.

Renee Fizer from the Maryland Department of the Environment discussed major concerns in her State regarding greenhouse gases, including rising coastal waters, loss of aquatic life and the potential for extreme weather. Mike Clifford from the Metropolitan Washington Council of Governments wrapped up the climate change discussion with a presentation on the impacts of climate change on metropolitan planning.

See **NTAQS** *on page 2*

NTAQS *from page 1*

Laura Berry of the EPA began the regulatory issues segment by providing an update on transportation conformity issues, which included the new national ambient air quality standards, upcoming transportation conformity rulemaking and future guidance documents. Gary Dolce of the EPA returned to give a presentation on MOVES, particularly addressing the schedule for preparation and implementation. The regulatory issues segment concluded with a report, by the EPA's Matt Laurita, on the Federal roundtable known as Effective Interagency Consultation, which covered good practices for how transportation and air quality agencies can consult with each other.

The MSATs segment started off with a regulatory backgrounder on MSATs by the EPA's Melanie Zeman, who said more than 1,000 compounds have been identified in exhaust and evaporative emissions from on-road and non-road mobile sources, and that some of these compounds have cancer and non-cancer health effects in animals and humans. Victoria Martinez of the FHWA's Office of Natural and Human Environment and Michael Claggett of FHWA's Resource Center continued with a discussion on MSATs interim Federal guidance and project-level applications. Chad Bailey of the EPA concluded the MSATs segment with a presentation on assessing the impact of transportation facilities on ambient air toxics. Bailey talked specifically about measurements of air toxics near transportation facilities, modeling tools and consideration in model application.

The second day's final segment focused on health considerations of air pollution. Ronald White from the Department of Epidemiology at Johns Hopkins Bloomberg School of Public Health started off with a presentation on the role of epidemiology in air quality public policy decisionmaking. Next, Debra Kaden of the Health Effects Institute provided a critical review of the literature regarding the exposure and health effects of MSATs. Ying Zhou from the Harvard School of Public Health concluded the public health segment with a talk on spatial extent of mobile source air pollution. She discussed hot spots and how spatial extent is defined in different study types, including monitoring, modeling and geographic information systems-based epidemiological studies.

The final day covered modeling and diesel-freight issues. David Winter from the FHWA's Office of Highway Policy Information (OHPI) started with a presentation on his office's efforts to reassess the Highway Performance Monitoring System (HPMS), which was developed in 1978 to provide essential information about the Nation's highways, including conditions, performance, use and operating character. OHPI is reassessing the HPMS so FHWA knows what future analyses and data will be needed by 2010.

The next segment on diesel and freight featured a presentation by Anthony Erb of the EPA's SmartWay Transportation Partnership, which brings together government, business and consumers to protect the environment reduce fuel consumption and improve air quality. Erb discussed the many ways the partnership is improving air quality, such as improving truck idling technology and policies, developing more fuel efficient truck tires and making truck trailers more aerodynamic.

Dave DuVal of the Fairfax County, VA, Department of Vehicle Services talked about the county's diesel retrofit project, which seeks to cut fleet emissions through such methods as diesel oxidation catalyst, diesel particulate filters, alternative fuels, closed crankcase vents and filters, and fuel treatments. The final presentation, by Alison Riley of Philadelphia's Department of Public Health Air Management Services, covered the city's public-private partnership to reduce emissions from diesel engines.

Nearly 130 people attended the conference, which was held at the Renaissance Baltimore Harborplace Hotel in the heart of the city's inner harbor area. Conference evaluations were completed by the attendees and comments were highly favorable. Specifically, attendees mentioned how well the conference was organized, their approval of the venue and the speaker list, the value of the conference itself, and the hope that it be held again. That wish will likely come true as the second Southern Transportation Air Quality Summit (STAQS) is planned for summer 2009, and the second NTAQS is scheduled to follow in summer 2010. Watch for information and announcements in Centered on Service and other government agency and trade publications and FHWA Web sites.

FHWA and EPA sponsored NTAQS. Co-sponsors included the Mid-Atlantic Regional Air Management Association, the Mid-Atlantic Diesel Collaborative and the Baltimore Metropolitan Council.

Additional information on NTAQS can be found at ***www.marama.org/ntaqs/***

TECHNICAL ASSISTANCE

2nd Regional Hydraulics Web Conference Focuses on POAs

On July 29, the 2nd regional hydraulics web conference was held to help ensure State departments of transportation (DOT) from the midwest were making progress with the required development and implementation of plans of action (POAs) for scour-critical bridges. The POAs are mandated by several Federal Highway Administration (FHWA) policy memos issued by the FHWA Office of Bridge Technology.

The web conference was conducted in a round-robin format with at least one representative from each State DOT in the Midwest region presenting a report on their State's progress with POAs. Each State's presentation was followed by an opportunity for questions and responses.

There were representatives from 12 State DOTs, 10 FHWA Division Offices, 1 member of the FHWA Federal Lands Highway Division, and 3 members of the FHWA National Hydraulics Team on hand, through approximately 22 web connections.

Critical Feature Inspection -
critical features that need special emphasis during inspections can include need for underwater inspection when scour conditions cannot be determined by other means. Bridges with underwater members that cannot be visually evaluated during periods of low flow or examined by feel for condition, integrity and safe load capacity due to excessive water depth or turbidity shall be inspected by divers at least every 5 years. Divers inspect for both scour and structural integrity. Photo courtesy: Washington State DOT

Dan Ghere, FHWA Resource Center's Senior Hydraulics Engineer, facilitated the meeting, which provided updates from Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Missouri, Kansas, Nebraska, North Dakota, South Dakota, and Iowa. The DOT representatives from each State provided details regarding their individual plans for repairing and monitoring scour-critical bridges. Most POAs that are in place are implemented by the DOT region's staff using the FHWA POA template as a guide.

- A common finding was that more research had to be done for locally-owned bridges, because many had unknown foundations.
- The State DOTs are working with local owners to address these bridges, and the National Highway Institute's POA web-based training is commonly referenced for help in the development of the POAs.
- The web conference was useful in allowing States to overview POAs in place by neighboring States and the information sharing is helpful in advancing further inspections to improve scour-critical bridges.
- States affected by the Midwest floods have had more trouble establishing POAs due to inaccessible roads inhibiting their research. However, post-flood inspections will sometimes be more meaningful since damage had been done to some bridges. The DOTs have found that video and photo logs over time are invaluable in assessing bridge sites after flood events. More inspections were being conducted now that the floods have subsided.

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New Bridge Inspector Pocket Guide available!

In July, the FHWA Resource Center and the National Highway Institute published ***"STREAM INSTABILITY, BRIDGE SCOUR, AND COUNTERMEASURES; A Field Guide for Bridge Inspectors."***

This handy pocket reference provides tips on what to look for with regard to:

- **Stream Instability,** *such as lateral instability, degradation, and aggradation*;
- **Scour at Bridges**, *such as contraction scour, pier scour, abutment scour; and,*
- **NBI, Coding, and Plans of Action, and Countermeasures**; *such as river training countermeasures, armoring countermeasures, monitoring, as well as flood watch and bridge closures.*

To obtain a copy, contact:

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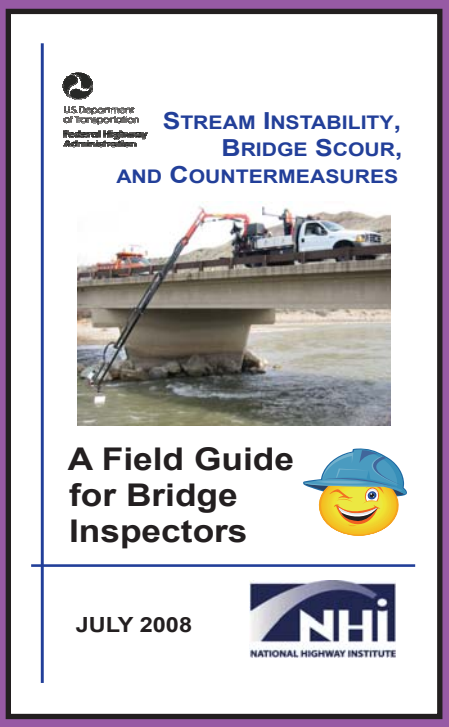

Low-Cost Signal Timing Workshop Gets Green Light Review

The FHWAs Resource Center's Operations Technical Service Team (TST), in collaboration with the FHWA Tennessee Division Office, developed and delivered a pilot workshop on low-cost signal timing this summer.

The workshop focused on the fundamentals of signal timing and traffic control from an objective oriented perspective.

The signal timing process and the development of signal timing plans were examined in detail providing the participants with an understanding of the benefits of developing and evaluating the effectiveness of signal timing using an objective oriented approach.

Low-cost methods for developing and optimizing signal timing were also introduced and reviewed using exercises and examples from local intersections within Tennessee.

This Low-Cost Signal Timing Workshop was well received by 27 attendees.

For more information on this workshop, or to schedule one in your State, please contact:

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Southeast States Host Roundtable Discussion on Value Engineering

Not even Tropical Storm Fay could stop the southeastern States from sharing successes, strategies, and challenges in Value Engineering. Value Engineering took center stage as the Federal Highway Administration (FHWA) convened the second Value Engineering (VE) roundtable, held August 21–22, in Orlando, FL. The roundtable brought together practitioners from nine States to share and discuss successful practices. The event also brought national VE experts from the American Association of State Highway and Transportation Officials (AASHTO) to share national priorities, objectives, and strategies. This event included a presentation on Road Safety Audits by the FHWA Resource Center's Safety and Design Technical Service Team and discussions on how to coordinate and integrate critical aspects of the two programs.

The VE roundtable was designed to give participants the opportunity to discuss their experiences, network, and share ideas and tools in order to better their own programs and improve the VE program in other parts of the country. In 2007, the Midwest States sponsored a roundtable on VE. That networking opportunity became the model within the VE community, and established the "roundtable" as a valuable resource for States to implement to exchange knowledge and convey best practices.

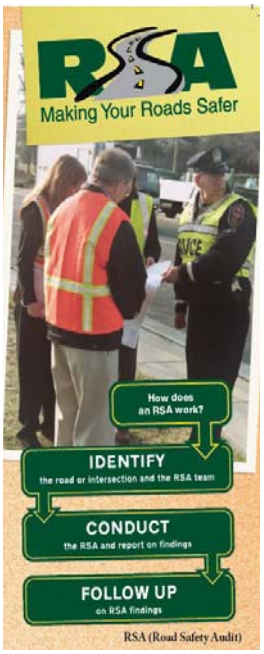
In transportation, *Value Engineering* can be defined as an organized approach by transportation disciplines to analyze and select the best value alternatives in the design of a project at the lowest life-cycle cost while maintaining project quality, performance, safety and maintainability. Mary Murray, FHWA Kentucky Division, explains, "When I think of practical design I also think of VE--but from the standpoint of the use of practical design when you have limited funds and you want to build a good project -- what you NEED versus what you WANT (top of the line). Practical design is normally used on most projects (small or large dollar value) whereas VE has a minimum that it's applied to . . . ."

The VE roundtable was designed to give participants the occasion to consider definitions; discuss experiences; and deliberate national priorities, policies, and objectives. Participants gathered new ideas and innovations to carry back to their States. Kurt Lieblong, Florida Department of Transportation, facilitated the roundtable. In the welcoming address, Lieblong noted that this event offers an avenue for States in the Southeast to come together to present success stories and lessons learned, with the goal to improve programs and encourage progress in VE in other parts of the country. Highlights of the 1½-day roundtable discussion were framed around several themes:

- VE program structure and operations
- VE program challenges
- VE awareness and benefits across the State

During a discussion of some of the challenges of implementing VE many participants noted the inaccurate portrayal of VE as a cost-cutting mechanism, rather than its intended goal of producing a higher-quality product.

In the presentation by the FHWA Resource Center, Safety Engineer Mark Doctor emphasized, "Road Safety Audits (RSAs) and Value Engineering analyses are each very important procedures within an effective project development process. Both procedures have proven extremely effective for improving a roadway design, with the RSA being focused specifically on safety issues and the VE analysis seeking opportunities for economic value efficiencies." In addition to defining RSA, Doctor addressed common myths about RSA and VE and provided examples of how RSA can be used to improve key safety aspects of a facility.



Doctor continued, "Each procedure identifies elements of the design that should be investigated for potential modification in the interest of either safety (via the RSA report) or cost effectiveness (via the VE report). The overall efficiency of the design process and the effectiveness of each procedure will depend upon how well the RSA and VE procedures are integrated and/or coordinated." Doctor advised the participants that " . . . conducting several iterations of RSAs and VEs at various stages of project development has the potential to create cumulative project improvements to safety and efficiency. However, if the two procedures operate independently there is potential that the recommendations from each process may be in conflict."

See **VE** *on page 17*

TECHNOLOGY DEPLOYMENT

PDS UPDATE:

Getting Ready for Winter with MDSS Technology

The FHWA Resource Center, Headquarters Road Weather Management Program, AASHTO and the Utah LTAP Center recently sponsored three, 1-day sessions on the Maintenance Decision Support System (MDSS) technology. These Product Demonstration Showcases (PDS) were held in Omaha, NE; Valley Forge, PA; and Boise, ID, and were open to all agencies having winter maintenance as part of their duties and responsibilities. There were more than 266 registered attendees that participated in the three PDSs representing State DOTs, municipalities, towns, and counties. At each showcase, attendees were presented with a wealth of information on the technology and the benefits of public/private partnerships in operations. The presentations showed how MDSS can improve safety and mobility during snow and ice control operations, while improving productivity and cost effectiveness.

The MDSS PDS included presentations and discussions on:

- Training
- Communications
- Management support
- Set up requirements
- Cost and expectations
- Agency maintenance variability/practices

MDSS is a computer-based, customized tool that provides winter maintenance personnel with route-specific weather forecast information and treatment recommendations. Through partnerships with national laboratories and a stakeholder community of public, private sector, and academic participants, MDSS has evolved from a concept to an applied, market-ready technology.

See **PDS UPDATE** *on page 7*

Pennsylvania MDSS PDS AGENDA

Session	Topic	Speakers
Opening Session	Welcome Challenging Remarks Opening Remarks MDSS Vision	Jason Norville, *PennDOT* Scott Young, *PennDOT* Renee Sigel, *FHWA* Ray Murphy, *FHWA*
Introduction to MDSS	AASHTO TIG Video Federal Prototype Pooled-Fund States	Dave Huft, *SDDOT* Kevin Petty, *NCAR* Ben Hershey, *Meridian Inc.*
MDSS Demonstration 1	Illinois DOT	P. Dean Kernan, *IDOT* and Jim Block, Jon Chrzanowski *DTN/Meteorlogix*
MDSS Demonstration 2	Colorado DOT	Philip Anderle, *CDOT* & Steve Gaddy, *Meridian Inc.*
Mobile Data Collection	MDC Requirements Mobile Data Collection Mobile Data Collection	Steve Gaddy, *Meridian Inc.* Michael Howarth, *Intelligent Devices Inc.* Kevin Groeneweg, *IWAPI, Inc.*
MDSS Demonstration 3	City of Denver	Kevin Petty, *NCAR*
MDSS Issues	Panel Discussion	Ron Hall, *KDOT* - Phillip Anderle, *CODOT* - Jason Norville, *PennDOT* - Curt Pape, *MnDOT* - P. Dean Kernan, *IDOT*

PDS UPDATE *from page 6*

This year the organizers of the PDS partnered with AASHTO to provide a session on maintenance at the 14th Annual Snow and Ice Expo held in King of Prussia, PA, on August 28. Although this session was a condensed version of the previous day's PDS, it provided the audience with information to evaluate the application and decide if MDSS is a tool they would want their agency to invest in.

UPCOMING PDS -- SIGN UP NOW!

On **November 19,** a PDS on **Fiber Reinforced Polymer** (FRP) wrapping will be held in Ohio. The FRP composite wrapping method is a relatively quick and economical way to repair secondary aluminum members of overhead sign trusses. Repairs can be performed while the truss is still in service, with only the lanes below the repair area blocked off from traffic. A typical repair takes 3 workers 3 hours to complete, at an estimated cost of $3,000 per joint.

The next PDS scheduled is at the **Roundabout Traffic Improvement** Project in La Jolla, CA, on **December 10**. This PDS will focus on a case study involving a traffic improvement project on La Jolla Boulevard. The intersection sees a high volume of traffic -- average daily traffic of more than 20,000 -- and there has been concern about how to slow traffic down, while at the same time, enhance the walk-ability of the boulevard. The PDS will include information about the involvement of the community and businesses and how they provided input in the initial phases of the roundabout project. Other topics will include outreach and community education, pedestrian crossing safety, funding, constraints on right-of-way-issues, construction management and roundabout design improvements which arose from lessons learned during the project.

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Election Day:
Tuesday, November 4, 2008

Life-Cycle Cost Analysis Implementation Workshop in Maine

The FHWA visted the Maine Department of Transportation to present a 2-day life-cycle cost analysis implementation workshop on August 26-27. This training, held in Fairfield, ME, was attended by more than 20 State employees, including the State DOT's Chief Engineer John Dority.

The workshop included presentations on the life-cycle cost analysis process, an overview of national practices, a conceptual overview of road user costs, and also introduced new analytical methods to treat uncertainty inherent to the analysis.

Following the formal presentations the FHWA team provided an in-depth review of RealCost, the FHWA's recommended software to conduct LCCAs, that included a detailed review of case study examples and hands-on training with the software.

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TRAINING

FHWA Offers Seismic Design & Retrofit Workshop

The Sixth National Seismic Conference on Bridges & Highways (6NSC) -- co-sponsored by Federal Highway Administration (FHWA), MCEER, University at Buffalo and the Transportation Research Board -- was held in Charleston, SC, July 28-30. The South Carolina Department of Transportation (SCDOT) hosted the event. *(See related article on 6NSC on this page.)*

To kick-off the week, the FHWA Resource Center delivered its "Best Practices for Seismic Design and Retrofit of Bridges Workshop" to more than 85 attendees who arrived early for this pre-conference workshop, which was offered on Sunday, July 27. The aim of the workshop was to provide participants with information covering a host of vital seismic issues including:

1. **Seismic Lessons Learned**
2. **Seismic Hazard and Response Spectrum Fundamentals/Seismic Demand**
3. **Bridge Response and Analysis Fundamentals**
4. **Seismic Force-based Design Fundamentals**
5. **Seismic Displacement-based Design Fundamentals**
6. **Seismic Detailing Fundamentals**
7. **Seismic Geotechnical Considerations**

Session 1

Workshop Facilitator Reggie Holt, Sr. Structural Engineer with the FHWA Resource Center, delivered the workshop's opening remarks and introductions. Then, Phi Yen, Research Structural Engineer with the FHWA's Turner-Fairbank Highway Research Center, set the stage with a presentation on Seismic Lessons Learned. (Dr. Yen also served as the 6NSC Conference Chair this year.)

Session 2

Derrell Manceaux, Sr. Structural Engineer with the FHWA Resource Center, provided a presentation on Seismic Hazard and Response Spectrum Fundamentals/Seismic Demand, which touched on 1000 year Hazard Maps - Upper Level EQ; 100 year Hazard Maps - Lower Level EQ; Response Spectra Definition (Amplification and Damping Effects & Effects of Site Soil Conditions); and Three Point Design Spectra.

Session 3

Dr. Lee Marsh, Structural Engineer from Berger Abam, discussed Seismic Analysis and Response Fundamentals. Topics included: Earthquake Loading (Inertial Forces); Modeling Guidelines (Types of Models); Choosing Analysis Techniques; Regular vs. Non-Regular Bridges; Elastic Force and Displacement Demand; Elastic Design vs. Actual Forces & Displacements; Ductility & Inelastic Behavior Fundamentals; Orthogonal Force Combination (Long. & Transv.); and Multi-Modal Coupling (CQC, RMS).

Session 4

Dr. Ian G. Buckle, Director of Civil Engineering at the University of Nevada, Reno led the discussion on Force Based Design Fundamentals Seismic Capacity. Details were provided on: Elastic Forces vs. Modified Design Forces; Controlling Forces for Design; Strength Capacity of Bridge Members; Member Expected Strength; Member Over-strength (Manders); Plastic Hinging Forces; and Phi Factor Change (P-Delta).

See **Seismic Kick-Off** *on page 9*

6th National Seismic Conference on Bridges & Highways (6NSC)

The FHWA workshop attendees joined more than 300 registrants at the **Sixth National Seismic Conference on Bridges & Highways** (6NSC) at a variety of sessions held over the next 3 days. The theme of the 6NSC was *Seismic Technologies for Extreme Loads.*

On Monday, King Gee, FHWA Associate Administrator of Infrastructure (and Honorary Chairman of the Conference) addressed U.S. Highway Infrastructure in the 21st Century, and highlighted that seismic issues include both natural (for example earthquakes) and manmade extreme events. Phi Yen, Research Structural Engineer with the FHWA's Turner-Fairbank Highway Research Center, also provided ***A Summary of FHWA Sponsored Research***; highlighting how in recent years climate change has had a significant impact on flooding, hurricanes, and more in relation to the Nation's transportation infrastructure.

Concurrent technical sessions followed on a variety of topics including: Seismic Accelerated Bridge Construction; New-Geo- seismic Practice and Guidelines; Emerging Seismic Design and Retrofit Technologies (which included FHWA presentations on both the Development of the FHWA Pushover

See 6NSC *on page 9*

Seismic Kick-Off *from page 8*

Session 5

Dr. Roy Imbsen, Sr. Structural Engineer from MCEER spoke on Displacement Capacity Design Fundamentals. The presentation centered on: Displacement Capacity Design Approach (background); Ductile Response (full & limited ductility); Implicit Deflection Capacity; Pushover Analysis Capacity; Moment Curvature; and Inelastic Deformations.

Session 6

Dr. Reggie DesRoches, Georgia Institute of Technology University, Professor of Engineering, addressed Seismic Detailing Fundamentals. He provided essential information on Support Length Details & Requirements; Capacity Protection Philosophy and Details ; Detailing for Ductility (laps, confinement); Earthquake Resisting Systems (ERS); and Typical Retrofit Details.

Session 7

Dr. Anoosh Shamsabadi, Sr. Bridge Engineer, of the California Department of Transportation provided specifics on **Geotechnical Considerations**, such as Liquefaction; Liquefaction Mitigation; Surface Fault Rupture; and Near Fault Effects.

For more information on seismic retrofit or if you are interested in seismic training, please contact:

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6NSC *from page 8*

Analysis Computer Program, as well as New Seismic 1000 Year Return Period – Impact to Bridge Design Methodologies); Liquefaction and Mitigation; and the day ended with Evolving Bridge Seismic Specifications and Its Impact in Design – A State's Perspective.

2008 Earthquake Remembered

Tuesday's general gession featured a dramatic presentation entitled ***Highway Infrastructure Damage Resulting from Sichuan, China Earthquake of May 12, 2008.*** The great Wenchuan earthquake struck the Sichuan province of China, where more than 70,000 people died in a 8.0 magnitude earthquake. During the introduction, participants were asked to observe a moment of silence to remember the people who lost their lives in both this earthquake and the Loma Prieta earthquake in San Francisco when bridges collapsed due to seismic activity.

Tuesday's general session was followed by concurrent technical sessions on Emerging Seismic Design and Retrofit Technologies (which included FHWA presentations on both the New Tools Available to Practicing Engineers for the Seismic Design of Bridges as well as Seismic Retrofit of Highway Bridges in the United States); Soil-structure Interaction and Foundations; Design and Analysis of Major Bridges in Areas of High or Moderate Seismicity; Seismic Instrumentation and Monitoring Systems; Earthquake Strategies for Protection Against Other Hazards; and finished up with Seismic Risk Assessment of Highway Networks.

Wednesday's concluding general sessions were on Displacement Based Seismic Design of Bridges as well as the Reconstruction of Ica, Pisco, Chincha and Canete, Peru, Based on Hazard maps. The final concurrent technical sessions were on International Technologies and Practices as well as the Effects of Near-field Earthquakes on Bridges.

Twenty exhibitors were also on hand throughout the event to showcase the latest technologies and services available to assist today's bridge engineer.

The conference concluded with a technical boat tour of the Charleston harbor and the Ravenel Bridge, guided by Daniel Burton Smith of the South Carolina Department of Transportation. The eight lane bridge has a main span of 1,546 feet (471 m), the longest among cable-stayed bridges in the Western Hemisphere.

SUCCESS! 2008 National Hydraulic Engineering Conference

The 2008 National Hydraulic Engineering Conference (NHEC) was held in beautiful, tranquil, downtown Portland, ME, from August 26-29, to the acclaim of more than 210 registered participants and the dismay of at least that many lobsters. The theme of the conference, "Partnering for Progress in a Changing Environment" was reflected in the range of agencies and disciplines represented, as well as, the diversity of topic sessions and presentations. Registered attendees from 46 States and 3 Canadian provinces (British Columbia, Ontario, and New Brunswick) participated in the 11 technical presentation sessions and the field trip to the U.S. Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL).

The conference commenced with introductory remarks by Maine Department of Transportation (DOT) Commissioner David A. Cole and Federal Highway Administration (FHWA) Maine Division Administrator Jonathan McDade, followed by keynote speaker Myint Lwin, Director, FHWA Office of Bridge Technology. All three speakers recognized the vital role of the hydraulic engineering discipline in the planning, design, and preservation of surface transportation infrastructure. In addition, the critical need to partner and collaborate to overcome existing and future challenges (specifically, climate change, increasing demand on the Nation's infrastructure, diminishing capital resources, and preservation of the natural environment) was underscored by all. These themes were interwoven throughout the conference sessions, which were:

- Innovative Solutions
- Changing Climate's Impact on Transportation
- Asset Management: Doing More with Less
- Water Quality – Partnering for an Improved Environment
- Partnering in Research
- Resolving Issues of the Coastal and Tidal Environment through Partnerships and Collaboration
- Progress in Fish Passage
- Bridge Scour – Progress through Partnerships
- Automating Hydrology
- Advancements in Hydrology
- Progress through Partnerships: Consultants, Universities, Agencies

One of the most heavily attended and discussed sessions was "Progress in Fish Passage." Presentations and discussion focused on various agency methodologies for designing fish passage culverts, as well as the FHWA's ongoing effort to develop a design approach.

A highlight of the conference was a tour of CRREL in nearby Hanover, NH (www.crrel.usace.army.mil). The CRREL staff is involved in research areas including climate change, ice jam formation and mitigation, and design of cold weather concrete and pavement subgrade. The CRREL staff frequently partner with federal and state agencies to conduct research and develop technology and are willing to discuss opportunities as needs arise.

In addition to the technical sessions and the lab tour, the conference afforded numerous networking opportunities with many of the best and brightest minds in the fields of surface transportation hydrology and hydraulics. The conference hotel also served as a venue for two committee meetings: the American Association of State Highway and Transportation Officials (AASHTO) Technical Committee on Hydrology and Hydraulics and the Transportation Research Board AFB60 Committee on Hydrology, Hydraulics and Water Quality.

The 2008 NHEC steering committee, a collaboration between the FHWA, AASHTO, CRREL, and Maine DOT personnel, expressed thanks to all of the conference participants, presenters, moderators, tour guides and exhibitors for their contributions to the success of this event. Members of the conference steering committee were especially grateful to Jacqueline Guimond of the Maine DOT for her conference planning expertise and many efforts to ensure the success of the conference.

The next biennial conference will be held in 2010. A state DOT host and agency partners are actively being sought. You can stay apprised of the next conference at the FHWA website: http://www.fhwa.dot.gov/engineering/hydraulics/index.cfm. Please consider attending the next conference and even making a presentation.

For questions concerning upcoming 2010 conference or the recently held 2008 conference, including requests for conference presentations, contact:

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CA Debuts Web-based Training: Designing for Older Drivers and Pedestrians

"Helping seniors helps everyone," states Michael L. Brown, in the opening video introducing the course, "California Designing for Older Drivers and Pedestrians." As Deputy Secretary of Public Safety for the Business, Transportation, and Housing Agency, and Chairman for the Older California Traffic Safety Task Force, Brown issues a challenge to the training participants, "Absorb what you see here, and calculate how you can put it into action."

A pilot session of this web-based training was conducted this summer in August, and the course was launched on September 30, 2008. Ken Kochevar, Safety Engineer for the FHWA California Division, has the lead for this blended web-based training, combining a facilitated web conference and discussion, along with a self-paced instructional course. Peter Eun, Safety Engineer for the Safety and Design Technical Service Team, provided technical assistance and expertise in developing the content and modules, in addition to offering support as an instructor/facilitator during the initial pilot sessions. The FHWA also worked in partnership with other California State agencies in the development and rollout of the course and training.

Senior Drivers. Photo Courtesy: www.dot.wisconsin.gov

The focus of the web-based training is to help agencies better design for senior drivers and pedestrians. The course affirms that safety for seniors can be assisted by engineering advances, emphasizing methods such as highway design challenges, and sign and signal modifications. Brown points out that the nation's senior population is increasing quickly and "anything we can do is a plus." From Brown's perspective, helping seniors helps everyone because these changes in highway design assist the entire motoring public.

As a member of the Older California Traffic Safety Task Force, Kochevar initiated the concept for this distance learning training, requesting assistance from the Resource Center in February 2008. Kochevar, Eun, and others converted the instructor-led course, Older Drivers and Pedestrians, into the web-based training. This new distance learning format can reach a broader audience, and conversion from an existing course allowed for "…a fairly quick turnaround," says Eun. The California training also will be a starting point for developing a national web-based training course.

"Ken was great on keeping the team on track. Especially since we decided to have five different people record the self-paced modules. The course has a total of 11 modules. The first and last are web conferences, which Ken facilitates. Modules 2 and 10 are pre- and post- tests. Modules 3-9 are recorded modules that participants view on their own time between the live sessions," explains Eun. Kochevar will use the distance learning technology to reach more people with the information they need, and doing it without traveling all over California. Three more sessions are being planned for the 2009 calendar year.

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California's
Designing for Older Drivers and Pedestrians

Web-based Training MODULES:

1. **Introduction**- *Live Web* **Conference**
2. **Pre-Test** - *Self-paced*
3. **Age-Related Diminished Capabilities** - *Self-paced*
4. **Intersections (At-Grade) -** *Self-paced*
   a. **Intersection Design**
   b. **Traffic Control Devices**
5. **Interchanges (Grade–Separated)** - *Self-paced*
6. **Roadway Curvature and Passing Zones** - *Self-paced*
7. **Construction/Work Zones** - *Self-paced*
8. **Highway-Rail Grade Crossings (Passive)** - *Self-paced*
9. **Engineering Practices in Use by other States** - *Self-paced*
10. **Post test** - *Self-paced*
11. **Final -** *Live Web Conference*

PARTNERSHIPS

***Let's Do It Again in 10 years*:**

The GEESD IV Conference

The 4th decennial Geotechnical Earthquake Engineering and Soil Dynamics (GEESD IV) Conference was held this summer at the Sacramento Convention Center in California. The GEESD was organized by the EESD Committee of the American Society of Civil Engineers' Geo-Institute. This 4th gathering followed previous conferences held in Pasadena, CA (1978), Park City, UT (1988), and Seattle, WA (1998) -- all highly successful events.

The GEESD IV brought together the broad community of geo-professionals working on earthquake engineering and soil dynamics problems for this comprehensive decennial examination of technical disciplines. The conference agenda coverage was very diverse, and included case histories, practice-oriented papers, recent research findings, innovative technologies, and the emerging arts across many disciplines.

Professional engineers, researchers, specialty contractors, regulators, educators, and students all interacted across a broad range of technical sessions, tutorials, short courses, discussions, and equipment demonstrations.

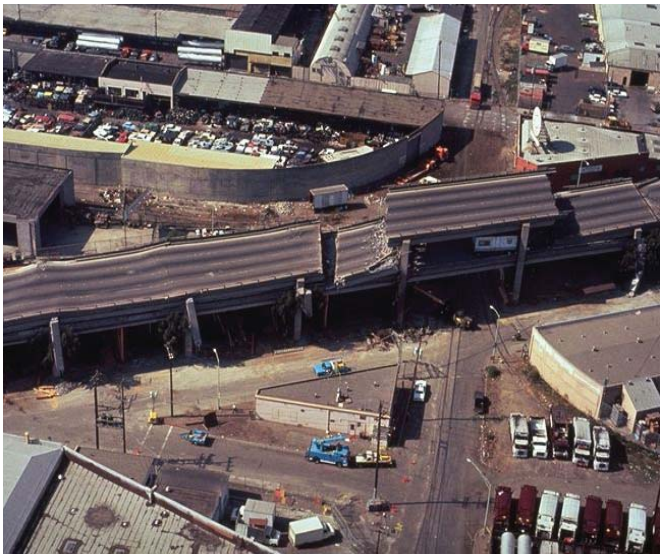
The 4-day conference included 2-5 technical short workshops, 3 plenary sessions, 27 concurrent technical sessions, 5 tutorials, a poster session, an exhibition, a NEES equipment demonstration, and technical field trips.

The short workshops included sessions on Soil Liquefaction During Earthquakes, Site Response of F-type Soils, Seismic Analysis of Embankment Dams, and an International Workshop on New Trends of Seismic Design Based on Seismic Performance and Lifecycle Cost.

An added bonus to the conference was that participants had the opportunity to earn Professional Development Hours by attending conference technical sessions.

The conference played host to 17 exhibitors and 12 cooperating organizations. There was a plethora of speakers—9 keynote speakers and 9 theme speakers—providing insightful information to 595 attendees about a wide range of subjects including: The Role of Numerical Modeling in Geotechnical Earthquake Engineering, Liquefaction and its Consequences, Earthquake Engineering for Complex Geotechnical and Lifeline Systems, Application of

Seismic Measurements in Geotechnical Engineering, and Fault Rupture and other Geologic Hazards.



Freeway damage following the Loma Prieta Earthquake in California, 1989.

In addition to the conference, the U.S.-Japan Workshops on Ground Improvement were held over a 2-day period just ahead of the GEESD IV event. The workshops covered issues related to ground improvement and liquefaction hazard mitigation.

Sponsored by the Japanese Geotechnical Society and the Geo-Institute of the American Society of Civil Engineers, the U.S.-Japan Workshops enhanced communication and collaboration between the geo-professional communities in Japan and the United States. The first joint workshop on geo-mechanics was held in Boston in 2003 and two more were held in 2005.

The first day included informational sessions on various topics, some examples being: ground improvement methods for increasing lateral pile group resistance, centrifuge modeling of liquefiable sand stabilized with colloidal silica grout, a review of

See **GEESD** *on page 13*

GEESD *from page 12*

Seismic activity shakes the ground and the infrastructure and the Oakland-San Francisco bridge sustains serious damage in 1989.

design of gravel and prefabricated drains for mitigation of liquefaction, applications of compaction grouting method to the existing structures, and an update on the FHWA's Seismic Program regarding seismic hazards and ground improvement. The second day consisted of field trips to several Caltrans sites along the Pacific coast north of San Francisco on US Highway 1.

The 4th decennial Geotechnical Earthquake Engineering and Soil Dynamics Conference was highly successful in bringing together the leaders and innovators of engineering to help share ideas and knowledge about protecting our Nation's road infrastructure from natural disasters.

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MN DOT & FHWA Partner to Promote National R&T Center

The Minnesota Department of Transportation (MDOT) is currently working with the FHWA's Minnesota Division Office and the FHWA Resource Center's Communications and Marketing Technical Services Team on a plan to promote MnROAD – a national research and technology center.

The state-of-the-art research facility, located in Monticello, MN (40 miles northwest of the Twin Cities) is a cold-region testing laboratory that has been used by researchers across the country and around the world. Constructed in 1994, the facility provides many benefits to researchers. For example, it allows both the evaluation of pavement performance under real world conditions and the ability for customized experiments to be developed. It also provides 15 years of historical data for researchers to look at, and has a highly trained staff. In addition, the American Association of State Highway and Transportation Officials has been using MnROAD's data to calibrate and validate their design guide.

In partnership, the MNDOT and the FHWA have organized a series of focus group sessions to gather ideas and data on both how the facility can be used more frequently and how the results of its research could be better utilized. The goal of the project is to make sure that data gathered by MnROAD is used as often as possible by researchers and that new projects keep coming to the facility. Currently, focus groups of current and potential customers are being queried to determine the best ways to communicate with future customers and the research community.

For more information about the MnROAD facility, contact Maureen Jensen, at maureen.jensen@dot.state.mn.us. For more information on the communication project contact:

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SPECIAL FEATURE

Bike-Pedestrian-Only Roundabouts

They're making their mark on path systems and college campuses as ways to improve safety and mobility

Over the past two decades the roundabout has become an increasingly popular feature on America's roadways primarily because of its ability to improve safety and traffic flow, particularly in low and medium traffic capacity situations. But another type of roundabout is also making its presence known in the United States. Roundabouts dedicated solely to bicycles and pedestrians – and sometimes bicycles only – are being constructed with increasing frequency on shared-use paths, those dedicated primarily to bicyclists, walkers, joggers, and skaters.

Bicycle and pedestrian roundabouts on shared-use paths are being constructed primarily for the same reasons as motor-vehicle roundabouts: they have the potential to improve safety and traffic flow. As with motor-vehicle roundabouts, fewer conflicts occur for users of the roundabout on shared-use paths.

National crash data demonstrate the importance of minimizing conflicts among motorists, bicyclists and pedestrians. Over the past decade, the number of bicyclists killed nationwide in traffic crashes has ranged from 600 to 800 per year. In 2006, 773 bicyclists were killed and an additional 44,000 injured in traffic crashes. Another 4,784 pedestrians were killed in traffic crashes in 2006, according to the Fatality Analysis Reporting System.

A National Policy is Born

The current surface transportation law, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, now either requires or recommends that bicycle and pedestrian needs be integrated into the overall transportation planning process. As a result, roundabouts dedicated to bicycles and pedestrians have become an increasingly popular and viable component of the shared-use path or trail.

However, one of the challenges State and local governments face in constructed bicycle and pedestrian roundabouts is the lack of national guidelines. There are no Federal Highway Administration (FHWA) or American Association of State Highway and Transportation Officials (AASHTO) publications that provide specific details on how to design a bicycle-pedestrian-only roundabout. As result, roundabout planners and designers at the local level are essentially on their own. But the lack of national guidelines hasn't prevented a host of local jurisdictions nationwide from succeeding.

Students move counterclockwise through the roundabout at West Quad Way and Shields Avenue on the UC Davis campus. Photo courtesy : UC Davis

Nowhere is this more apparent than in Davis, CA, a university town of about 64,000 people situated between Sacramento and the northeastern suburbs of the San Francisco Bay Area. Davis is considered one of the most bicycle-friendly cities in the country. Both the city and University of California, Davis (UC Davis) have built an extensive bikeway network that has helped Davis become known as the Bicycle Capital of the U.S. Davis was the first U.S. city to install formal striped bike lanes on its streets in the mid-1960s. The city and university are considered pioneers in the application of roundabouts on shared-use paths.

Davis has bike lanes on about 95 percent of its arterials and collectors. It also has 27 different grade separations for bicycles and pedestrians. Over the past 10 years, the city has spent more than $14 million on bicycle projects, including the construction of bicycle-only roundabouts. The university has an extensive bike-pedestrian trail network that features more than 12 bicycle-pedestrian roundabouts at key locations throughout the campus. Several of these roundabouts were built as far back as the 1970s, while the remaining ones were built at various times throughout the 1980s and 1990s.

UC Davis banned all motor vehicles from its campus roadway system back in the late 1960s. As a result, the university has converted some of its intersections, such as this one at Storer Mall and California Avenue, into bicycle and pedestrian roundabouts using concrete bumpers and installing splitters, signs and other devices to keep traffic moving smoothly in the right direction. Photo courtesy: UC Davis

See **Roundabouts** *on page 15*

Roundabouts *from page 14*

More University Roundabouts

The success of UC Davis has prompted other colleges and universities to construct roundabouts to improve safety and mobility. Stanford University in Palo Alto, CA, with a student population of about 13,500, recently installed two new roundabouts on its campus to improve safety, traffic flow and aesthetics. Both were constructed in summer 2007, one at White Plaza, the other at a notorious bicycle-pedestrian crossroads informally known as the "Intersection of Death," where pedestrians and bicyclists frequently experienced conflicts, particularly during the change of classes.

Stanford University constructed this roundabout in summer 2007 at the notorious bicycle-pedestrian crossroads known as the "Intersection of Death," shown here. Photo courtesy: Stanford University

Some reasons for the increased interest in bicycle and pedestrian roundabouts include the desire of transportation officials to separate bicyclists from pedestrians on shared-use path and trail systems and because conventional intersection designs don't work well on college and university campuses.

The University of California, Santa Barbara (UCSB), with a student population of about 20,000, has adopted this approach of separating bicyclists and pedestrians whenever possible to improve safety and mobility. About 14,000 students, staff and faculty commute by bicycle each day to campus. The university responded by constructing an extensive path and trail system that's integrated into the city and county's path network.

While the university's bike-pedestrian path system contains both shared and separated paths, the emphasis in recent years has shifted to suburban solutions that completely separate bicycle and pedestrian paths for safety reasons, said Tye Simpson, director of Campus Planning and Design. The university's path system includes six campus roundabouts and four grade separations that help minimize conflicts between pedestrians and bicyclists. These facilities include refuge islands so pedestrians only have to wait long enough to cross one lane of bustling bicycle traffic on their way to their next class.

Roundabouts on Shared-Use Paths

Officials at the South Suburban Park and Recreation District outside Denver, CO, have recently begun to separate bicyclists and pedestrians with the help of roundabouts.

The South Platte River Greenway, a 35-mile trail system south of downtown Denver, is a typical example. One of the trails, the Mary Carter Greenway, consists of a 10-feet-wide concrete pathway that accommodates up to 700,000 walkers, joggers, roller skaters and bicyclists annually. But soon after its completion in the 1980s, the trail quickly filled with a multitude of users ranging from families with toddlers in strollers to high-speed cyclists on training rides.

A fatal head-on collision involving two bicyclists along the greenway in 2004 prompted trail management, law enforcement and safety experts to convene a forum to address ways to reduce conflicts and improve overall safety. Some immediate solutions included painting a centerline along the entire length of the path, posting a "15 mph" speed limit and stepping up enforcement.

A longer-term remedy involved construction of a fine crushed-stone pedestrian-only path parallel to the paved trail. But trail officials still needed to slow bicyclists down and sort out traffic at key junctions where pedestrians and bicyclist shared the pathway. The district decided to build two roundabouts at two of its most congested intersections: one near the Carson Nature Center and the other at the junction of the Lee Gulch and South Platte River trails.

Both roundabouts have nearly identical designs, including a 10-foot-wide concrete path surrounding a 42-foot-diameter landscaped center island. The center island is bordered by a 4-inch mountable curb, which, in combination with the landscaping, discourages users from cutting through the inner circle. Trail system rangers say they are pleased with the dual trail and roundabouts and believe the roundabouts have led to fewer crashes.

See **Roundabouts** *on page 16*

Roundabouts *from page 15*

Roundabouts at Critical Intersections

The Municipality of Anchorage, AK, is constructing two roundabouts as part of a major upgrade and expansion of its Chester Creek Trail system. One of the roundabouts will be installed at a critical intersection about halfway between a University of Alaska residential complex and the Alaska Native Medical Center near the shores of University Lake. The other roundabout will be constructed farther north at a connector to the Northern Lights Trail north of the University of Alaska and Alaska Pacific University. The Alaska Department of Transportation is constructing the roundabouts for the Municipality of Anchorage using funds from SAFETEA-LU.

The Cape Cod Rail Trail in Massachusetts, which was originally constructed in the 1970s along an abandoned railroad right of way, has undergone extensive upgrades since the early 1990s, including a tunnel and installation of two bridges over Hwy 6. Among some of the more recent upgrades was construction of an extension from Harwich to Chatham along another former railroad right of way.

The Massachusetts Department of Conservation and Recreation, which owns and maintains the trail system, installed a bicycle-pedestrian roundabout in 1998 at the intersection of the Rail Trail and the new Harwich-Chatham extension to help slow bicyclists and keep traffic flowing in the right direction. The relatively large grassy roundabout inner circle, measuring about 100 feet in diameter, is equipped with such amenities as bicycle parking, benches, picnic tables and trash cans.

Designing the Bicycle and Pedestrian Roundabout

If bicycle-pedestrian-only roundabouts are proposed, what guidelines should be applied in the facility's design, construction and operation? An unsuccessful search for authoritative source materials on this specific topic provides an opportunity for bicycle and pedestrian transportation specialists to blaze a new trail.

In the absence of definitive guidelines, planners and designers of bicycle-and-pedestrian only roundabouts are left to decide for themselves how to proceed with the critical details such as geometric layout, signing and marking conventions. Some cite AASHTO's Guide to the Development of Bicycle Facilities as a useful reference. The Guide's Chapter 2 design guidelines for shared-use paths (pages 33-46) offer general suggestions that transportation planners say can be applied to bicycle and pedestrian roundabouts. For example, a minimum width of 6 feet is recommended for a one-directional shared-use path, useful information for ensuring entry and circulating lane widths are not scaled down too severely.

But the criteria dealing with horizontal alignment, curvature and superelevation is mostly relevant to continuous segments of paths and trails, not necessarily intersections. So, while some helpful information may be gleaned from the guide and other similar publications, there remain a number of questions regarding detailed design issues.

The South Suburban Park and Recreation District near Denver, Co, recently built a roundabout at the Carson Nature Center because nature hikers were frequently coming into conflict with high-speed cyclists on training rides. The roundabout was constructed to sort out bicycle and pedestrian traffic at this busy intersection.
Photo credit: South Suburban Park and Recreation District

In light of this reality, most of the transportation professionals interviewed for this article suggested applying standard engineering principles for traditional motor-vehicle roundabouts, and then adjusting the designs based on the smaller size and lower speeds of bicycles. Perhaps the most helpful starting point for designing a roundabout for bicycles and pedestrians only is to recall the key principles of any modern roundabout intersection design:

- Speed through the roundabout is reduced
- Entry geometry provides adequate deflection to aid in speed reduction and to provide intuitive orientation (to favor the counterclockwise circulation)
- Entering users must yield the right of way to users already circulating in the roundabout.

See **Roundabouts** *on page 20*

VE *from page 5*

Lieblong, as Past Chair of the AASHTO VE Technical Committee, provided a presentation on the committee's goals and objective, activities, performance measures, and guidance. In particular, Lieblong highlighted the 2009 AASHTO Value Engineering Conference, which is to be held in San Diego, CA, August 31-September 3, 2009, and announced a call for papers. The group identified key areas, such as Road Safety Audits and Life-Cycle Cost Analysis, as potential white papers for the AASHTO conference. The group also decided to promote continuing roundtables across the country, advocating using this discussion forum as a significant tool for States to collaborate and further inform those in the transportation industry of the importance of value engineering.

VE is nothing new to the State of Florida. "As far as our success level, we've been doing VE for many years, and even if it was not required by law, we would still be doing it. It's an active program in Florida because there are enough people that see the benefit of it. The more support, the more success," said Lieblong. Other successful VE strategies include Florida's decision to perform VE studies early in the project development and environmental phase of projects so that there is more time to properly utilize the recommendations produced by the study, as well as time to adjust the budget. "If the VE study is completed too late in the project development, and things aren't getting changed because budgets and plans are already secured, people get discouraged," said Lieblong. Promoting recognition is another approach. Florida has implemented its own recognition program that not only recognizes teams for excellent work, but also recognizes districts for having an excellent VE program and employees for participating in the VE program.

The roundtable underscored the significance of building the VE program throughout the country, and applying VE more thoroughly and consistently. The FHWA's VE program is growing and has a promising outlook. Many of the VE coordinators from the Southeast States are well on their way to improving their individual programs while looking forward to continued Federal support.

Education is the key to success of VE. "If new employees get a positive experience with VE early in their careers, they will most likely support the VE program later in their careers," said Lieblong. "Success is combination of two things: champions at State DOTs and sharing winning experiences on a case-by-case basis," concluded Pete Garcia, FHWA Wisconsin Division.

Visit the Value Engineering website at http://www.fhwa.dot.gov/VE/.

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Election Day:
- Tuesday -
November 4, 2008

Don't forget to exercise your right to vote

FHWA Resource Center Welcomes New Team Members

STRUCTURES

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Ben Beerman is the latest addition to the Structures Technical Service Team. Beerman joins the team as a Structural Engineer, after serving with the West Virginia Division of Highways, where he held a dual position as a Consultant Coordinator and Squad Leader. He brings more than 14 years of experience in bridge design, repair, and rehabilitation of both highway and rail structures located throughout the mid-Atlantic region. He began his career at the Louisiana Department of Transportation while attending graduate school at Louisiana State University (LSU). Subsequently, he joined Modjeski and Masters in New Orleans then later transferred to help establish their Charleston, WV, office. Throughout, Beerman has been involved in numerous bridge design and rehabilitation projects. Some of the more complex include a networked tied-arch bridge (the largest in the world), cable-stay structures, and steel trusses (fixed and moveable – for both highway and rail). His areas of expertise include: AASHTO Standard and LRFD Highway Specifications; AREMA rail design guidelines; accelerated construction; alternative contractual procurement concepts; bridge evaluation, strengthening, and rehab; cable stay systems; coordination and review of contract plans and specifications; constructability assessments; deep and shallow foundation design; high performance materials (FRP, HPC, HPS); major/complex structures & small bridge replacements - highway and rail; pre-cast structural components; pre- and post-tensioning systems; RSS and MSE walls. He holds P.E. licenses in West Virginia, Ohio, and Louisiana. Beerman earned his bachelors of science degree in civil engineering from LSU, where he also completed his minor studies in environmental engineering.

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Claude Napier has also joined the FHWA Structures TST, after serving as structural engineer, in the FHWA Virginia Division, for 20 years. He is experienced in bridge safety inspections, design, system preservation (preventive maintenance), rehabilitation, replacement and construction of simple, complex, and major and unusual structures. Napier began working in the engineering field in 1970, and joined FHWA in 1978. Napier's areas of expertise include: accelerated bridge construction; bridge design, construction, rehabilitation, and maintenance; division office structural program management; high performance materials; major projects; prefabricated bridge elements and systems; and structural program reviews. Over the course of his career, Napier has been involved in the design and construction of the Coleman Bridge and I-95 Bridge over James River -- national examples of accelerated construction and prefabricated structures. He has participated on concrete and steel industry and consultant task groups to determine the best alternatives for design and construction of major bridges. He also provided review and design oversight on many major bridges in Virginia, including the Springfield Interchange and Woodrow Wilson Bridge Projects, and Virginia's currently largest mega project underway, the Capital Beltway (I-495) HOT Lanes. As a bridge designer and design squad leader, he planned, developed, evaluated, and managed structural engineering programs for the Virginia DOT, Eastern Federal Lands, and FHWA Headquarters Bridge Division. He has also worked to promote new and innovative bridge technologies and served on concrete and bridge research advisory committees. He also led a team of research scientists to conduct an investigation and prepare a recommendation report for the Bridge over Canal San Luis, Route 187, Rio Grande, Puerto Rico. He is a member of the Prestressed Concrete Institute (PCI) Committee on Bridges. He earned both his bachelors of science degree and his master's degree in civil engineering from the Virginia Polytechnic Institute & State University. He is also a registered P.E. in Virginia.

CALENDAR OF EVENTS

This *Calendar of Events* is presented to highlight upcoming conferences, workshops, and other special dates of interest to the transportation community.

-- 2008 - 2008 - 2008 - 2008 - 2008 --

Nov 6 - 8, 2008 - Pittsburgh, PA
ASCE's 13th Annual Civil Engineering Conference
More info: www.asce.org/conferences/eventsmore.cfm?cevtid=conferences

Nov 11 - 14 - Mobile, AL
Gulf Coast Hurricane Preparedness, Response, Recovery, and Rebuilding.
More info: http://trb.org/conferences/2008/Hurricane/Program.pdf

Nov 13 - 14 - Memphis, TN
FHWA 2008 Asset Management Conference
More info: www/fhwa/dot/gov/infrastructure/asstmgmt/ramc.cfm. E-mail: francine.shaw-whitson@fhwa.dot.gov

Nov 13 - 14 - San Antonio, TX
2008 Road Dust Management Practices and Future Needs Conference
More info: www.meetingsnorthwest.com/DustConference.htm. Contact: Roger Surdahl, (720) 963-3768
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Nov 21 - 22 - Jacksonville, FL
World Congress on Disabilities
More info: www.wcdexpo.com

Dec 1 - 3 - Charlotte, NC
2008 Highway Geophysics-NDE Conference
Hosted by the NCDOT
More info: www.ncdot.org/doh/preconstruct/highway/geotech/geophysicsconference/

Dec 3 - 5 - London, UK
The Fourth International Conference on Forensic Engineering
More info: www.forensicengineering2008.com/

Dec 10 - 11 - Washington, D.C.
Advancing Regional Traffic Operations and Management
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Dec 10 - 12 - Bethesda, MD
Perspectives on Employment of People with Disabilities
More info: www.dol.gov/opep

Dec 10 - 12 - Hong Kong
2nd International Symposium on Shallow Flows
More info: http://www.ce.ust.hk/issf/

-- 2009 - 2009 - 2009 - 2009 - 2009 --

Jan 11 - 15, 2009 - Washington, D.C.
Transportation Research Board (TRB) 88th Annual Meeting
More info: www.trb.org/calendar

Jan 15 – 17 - Tampa, FL
Composites 7 Polycon 2009
Sponsored by the ACMA, to be held at the Tampa Convention Center
More info: www.acma-net.org

Mar 24 - 25 - Columbus, OH
Midwest Traffic Monitoring Workshop
More info: http://guest.cvent.com/EVENTS/Info/Summary.aspx?e=d6b24d08-d6a7-4e66-af7f-3fa5969ec47d

Apr 22 - 24 - St. Louis, MO
National Conference on Preservation, Repair and Rehabilitation of Concrete Pavements
More info: www.fhwa.dot.gov/pavement/concrete/2009CPTPconf.cfm
Contact: Cari Jefferson or Shiraz Tayabji, Fugro Consultants, at (410) 997-9020 or
E-mail: joseph.huerta@dot.gov

Jul 13 - 15 - Sydney, Australia
9th International Symposium on FRP Reinforcement for Concrete Structures
More info: www.iceaustralia.com/frprcs9

For event details and contact information visit our website at:
www.fhwa.dot.gov/resourcecenter

Roundabouts *from page 16*

The first principle – speed reduction – is likely to have the most profound influence on the overall size of a bicycle-pedestrian roundabout due to the direct relationship between speed and curvature. As with motor-vehicle roundabouts, it is desirable to achieve a speed reduction of 30-50 percent through the roundabout compared to approach speeds.

For a shared-use facility with a design speed of 20 mph (per the AASHTO guide), this yields a circulating speed range of about 10 to 14 mph. Even at speeds this low, bicycles remain stable, and the entry and circulating curve geometry are kept to a reasonable and minimal scale. This allows a bicycle-only roundabout to occupy a much smaller footprint as compared to its motor vehicle sibling. And, as with motor vehicle roundabouts, it is this significant reduction in speed that speaks to the better safety performance – for all users.

Additional design detail considerations may include the use of sloped or mountable curbing for the raised features of a roundabout, such as the splitter islands and the central island, avoiding the potential tripping hazard of a raised 6-inch curb. Also, choosing the location and heights of vegetation and signing should be done carefully, since low-hanging features can not only interrupt sightlines, but may pose a bodily danger to the bicyclists and pedestrians when placed near the traveled edge of the path.

Whether on a college campus or shared-use path, the roundabout is indeed an option that transportation planners can consider as a way to minimize bike and pedestrian conflicts and improve overall safety and mobility.

For more information about bike-pedestrian only roundabouts, contact

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