

## ***FHWA R&T Now*** ~November 2009~

*A news update of research, technology, and development from the U.S. Department of Transportation, Federal Highway Administration (FHWA)*

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### **GENERAL/ADMINISTRATIVE**

#### **-Administrator Mendez Launches the *Every Day Counts* Initiative-**

On November 3, 2009, FHWA Administrator Victor M. Mendez launched the *Every Day Counts (EDC)* initiative, which seeks to reduce highway project delivery times, accelerate the national deployment of innovative technologies, and reduce the Agency's environmental footprint internally (greening FHWA).

The *EDC* initiative recognizes that many underutilized, proven practices, materials, procedures, and equipment exist, which have significant potential for maintaining and renewing highway infrastructure while keeping America moving safely and efficiently and advancing environmental goals. *Every Day Counts* challenges the FHWA leadership to work with stakeholders such as American Association of State Highway and Transportation Officials (AASHTO) and State departments of transportation (DOTs) throughout the transportation community and across the country to accelerate the implementation of promising technologies. Although partnerships between FHWA and AASHTO have achieved significant progress toward improving the Nation's highway system, today the transportation community faces daunting challenges. Many innovative approaches to building highways and enhancing safety are available that can have dramatic impacts on society. These innovations can produce better quality, longer-lasting roadways and bridges and save lives. Recognizing the challenges, FHWA's leadership is addressing the critical need for bold actions and effective investments now more than ever. Working together through partnerships with AASHTO and State DOTs, FHWA can leverage its ingenuity, innovation, imagination, and inventive capacity to make a difference.

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#### **-Formal International Collaboration Platform Established-**

On October 8, 2009, FHWA Office of Research, Development, and Technology Associate Administrator, Michael F. Trentacoste accepted the designation of Associate in the Forum of European Highway Research Laboratories (FEHRL) on behalf of the Agency. FHWA received strong support for application and was sponsored by three national laboratories in France, Czech Republic, and the Netherlands. The active participation will be managed by the Turner-Fairbank Highway Research Center (TFHRC). The FEHRL provides a coordinated structure of the interests of more than 30 national research and technical centers from Europe, together with associated institutes from Israel, South Africa and now, the United States. The FEHRL is engaged in road engineering research topics including safety, materials, environmental issues, telematics, and economic evaluation. The effort to establish a collaboration platform with FEHRL was initiated by FHWA Office of Research, Development, and Technology Director Debra S. Elston, the co-chair of the 2008 international scan on transportation research program administration. One of the scan team's implementation strategies is to build international relationships and institutionalize cooperation in transportation research to achieve global goals and leverage knowledge and resources.

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#### **-Administration's Authorization Considerations-**

Congress passed two continuing resolutions that included language extending the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users at fiscal year 2009 funding levels; the

second extension will expire December 18, 2009. The Administration continues to support an 18-month extension of the authorization, which could be accomplished through a bill introduced by the Senate Environment and Public Works Committee (S.1498). Congressional action is required to extend programs beyond December 18, 2009.

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#### **-Planning for Strategic Highway Research Program 2 Implementation-**

With the naming of Margie Sheriff as FHWA's Strategic Highway Research Program 2 (SHRP2) Implementation Team Director and the pending release of the first SHRP2 research reports, FHWA will be ready to serve as the principal implementation agent for SHRP2, in partnership with AASHTO, National Highway Traffic Safety Administration (NHTSA), and Transportation Research Board (TRB). SHRP2 implementation is a priority within FHWA's fiscal year 2010 Strategic Implementation Plan. For more information contact:

[margie.sheriff@dot.gov](mailto:margie.sheriff@dot.gov) 202-366-1747, 202-493-3377

#### **-Review of the Peer Exchange Program-**

Peer exchanges of State DOT research programs are required under 23 Code of Federal Regulations, Section 420; the requirement was first included when the regulation was revised to include the changes made under Intermodal Surface Transportation Efficiency Act of 1991. Beyond regulatory requirements, guidance is provided in "Guidelines for Conducting Peer Exchanges of State DOT Research Programs."

FHWA is collaborating with the Research Advisory Committee (RAC) Peer Exchange Task Force to revise the guidelines to update them to reflect the experiences of many States since the original peer exchanges were held almost 15 years ago. Among the more significant changes are the redefinition of the regulatory term "periodic" from 3 years to 5 years and the expansion of possible formats from a single State to multiple State peer exchanges and the use of technology (e.g., videoconferencing, Webinars, etc.). The current near final draft is expected to be completed soon.

For more information, contact:

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#### **-FHWA Administrator Recognizes Transportation Pooled Fund Program Task Force-**

This year, in recognition of the efforts to improve the Transportation Pooled Fund (TPF) Program, Mendez presented an Excellence in Teamwork Awards to the TPF Program Task Force. Among the recipients were members from State DOT staff including three RAC members: Ivy W. Harris (Alabama DOT); Glenn E. Roberts (New Hampshire DOT); Leni Oman and Tim Carlisle (Washington DOT); Carol L. Culver (Iowa DOT); and Charmaine Richardson (Texas DOT).

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#### **-TPF Management and Improvement-**

There are a number of activities under the TPF Program that have occurred or are planned for the near future. The TPF Program Procedures Manual, which was initially distributed in December 2008 and has been revised quarterly during 2009, is expected to be issued in its final form by the end of 2009 ([www.pooledfund.org](http://www.pooledfund.org)). The next step is to develop a training course that will delve deeper into the TPF

concept and its processes; it is in the beginning stages and more information will be shared as this effort moves forward.

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#### **-FHWA Phase I Small Business Innovation Research Projects—FY09 Award Activity-**

Congress established the Small Business Innovation Research (SBIR) Program to stimulate technological innovation, utilize small business to meet federal research and development needs, encourage participation by minority and disadvantaged businesses in technological innovation, and increase private sector commercialization of innovations derived from Federal Research & Development. FHWA's SBIR Program Solicitation 2010.1 closed on November 16, 2009, and awards will be made during the first half of 2010. The FHWA program funds a broad range of innovative small business projects ranging from pedestrian and vehicle detection systems to self sustaining intelligent pavement systems.

For more information about the FHWA SBIR Program, contact:

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#### **-Technical Publications Catalog —October 2008–September 2009-**

The FHWA's TFHRC presents its fifth *Technical Publications Catalog*. This is a comprehensive listing of research documents published from October 2008 through September 2009, and includes fact sheets, flyers, product briefs, reports, summaries, and TechBriefs.

<http://www.tfhrc.gov/techpubcat/10018.htm>

### **ADVANCED RESEARCH**

#### **-Exploratory Advanced Research Program Assesses Mega Trends-**

While no one can predict the future it is important to consider the forces—both likely and unlikely—that are shaping the future. For highway research, this can mean understanding diverse forces from global population trends, to climate change, to breakthroughs in material science. For the Exploratory Advanced Research (EAR) Program this means looking as much as 30 to 50 years in the future and close cooperation with National Cooperative Highway Research Program 20-83, Long-Term Strategic Issues Facing the Transportation Industry, and similar efforts.

For more information about the EAR Program, contact:

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#### **-EAR Program Stakeholder Involvement-**

To take advantage of a broad variety of scientific and engineering discoveries, the FHWA EAR Program involves traditional (State DOT researchers, University Transportation Center researchers, and TRB committee and panel members) and nontraditional stakeholders throughout the research process. The EAR Program is seeking stakeholders to assist with evaluation of ongoing research projects. For more information, contact:

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### **-FHWA EAR Program Initiates Research in Emerging Field of Experimental Economics-**

FHWA entered into a cooperative agreement with the University of Central Florida that will help determine fundamental behavioral characteristics of individuals, and could lead to improved highway revenue collection. The approach is focused on characterizing drivers in terms of their value of time, risk attitude, accuracy of risk perception, and discount rate using experimentation to validate economic models of behavior. This award is a result of a Broad Agency Announcement for EAR Proposals issued in December 2008. For more information about the project, contact Karen White at (202) 366-9476, [karen.white@dot.gov](mailto:karen.white@dot.gov).

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### **-FHWA EAR Program Initiates Research on Driver Behavior Leveraging Naturalistic Driving Data-**

FHWA entered into a cooperative agreement with Virginia Tech that will use an artificial intelligence technique to model driver behavior and predict the next action for any given state. Naturalistic data housed at the Virginia Tech Transportation Institute will be used to develop advanced driver behavior algorithms. The research team's technical approach for this study will address three interrelated and critical threads: naturalistic data processing and extraction of critical traffic flow and driving tasks parameters; development and implementation of artificial intelligence-based driver agents that encapsulate individual driver's decisions; and testing and evaluation of the developed agents in a simulation platform. This award is a result of the Broad Agency Announcement for EAR Proposals issued in December 2008. For more information about the project, contact David Yang at (202) 493-3284, [david.yang@dot.gov](mailto:david.yang@dot.gov).

For more information about the EAR Program, contact:

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### **-FHWA EAR Program Initiates Research on Next Generation Vehicle Positioning-**

FHWA entered into a cooperative agreement with Auburn University that, by combining three technology areas, will seek to develop an integrated system for vehicle positioning that exploits the strengths of each technique. First, terrain-based localization (based on precise measurements of vehicle pitch and roll, combined with wheel odometry) is used to find the vehicle's absolute longitudinal position within a premapped highway segment compensating for drift which occurs in dead-reckoning systems in long longitudinal stretches of road. Second, visual odometry keys upon visual landmarks at a detailed level to correlate position to a (visually) premapped road segment to find vehicle position along the roadway. The third technology approach relies on radio frequency ranging based on dedicated short range communications radio technology. Precise vehicle positioning can allow for improved traffic flow and increased safety. This award is a result of the Broad Agency Announcement for EAR Proposals issued in December 2008. For more information about the project, contact David Gibson at (202) 493-3271, [david.gibson@dot.gov](mailto:david.gibson@dot.gov).

For more information about the EAR Program, contact:

[david.kuehn@dot.gov](mailto:david.kuehn@dot.gov) 202-493-3414

### **-Fact Sheet: Crack-Resistant Concrete—Maximizing the Service Life of Transportation Infrastructure-**

Crack-free concrete? Although much progress has been made in reducing concrete's propensity to crack, the goal remains elusive. A novel approach to this problem is the focus of "High-Performance Stress-Relaxing Cementitious Composites for Crack-Free Pavements and Transportation Structures," an EAR Program project launched by the FHWA in 2008 and conducted at Texas A&M University's Texas Transportation Institute.

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<http://www.fhwa.dot.gov/advancedresearch/pubs/09065.cfm>

**-Fact Sheet: Next-Generation Smart Traffic Signals—RHODES with Intellidrive—the Self-Taught Traffic Control System-**

Can a self-calibrating signal control system lead to wider adoption of adaptive traffic control systems? The focus of "Next Generation of Smart Traffic Signals," an EAR Program project, is a system that—with little human intervention—continuously monitors, learns, predicts, and responds to traffic demands and conditions with optimal signal timing for prevailing conditions. Launched by the FHWA in 2007, the study is being conducted by Arizona State University in Phoenix.

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<http://www.fhwa.dot.gov/advancedresearch/pubs/NextGener.cfm>

## INFRASTRUCTURE

**-Techbrief: Improved Corrosion-Resistant Steel for Highway Bridge Construction Knowledge-Based Design-**

The use of weathering steels for construction of new highway bridges has recently increased significantly. The objective of this project was to point out new directions for the development of low-cost steels with much better weathering characteristics than those of currently used weathering steels.

<http://www.tfhrc.gov/structur/pubs/09053/index.htm>

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## SAFETY

**-The Diverging Diamond Interchange Selected by *Popular Science* as One of 100 Best Innovations of the Year-**

The December 2009 edition of *Popular Science* lists the Diverging Diamond Interchange (DDI) as one of the Best Inventions of the year. FHWA's TFHRC had a major role in identifying, evaluating, and assisting Missouri DOT in constructing the design featured in the issue. FHWA's Federal Land Highway Hoover Bridge Bypass Project is listed as another winner of an engineering award. See the December 2009 issue of *Popular Science* at:

[www.popsci.com](http://www.popsci.com)

For information about DDI contact:

[joe.bared@dot.gov](mailto:joe.bared@dot.gov)

**-Crash Prediction Module Updated: Version 5.3.1 Now Available-**

FHWA's Office of Safety Research and Development has just updated the *2009 Beta Release of the Crash Prediction Module* (CPM) to support the upcoming Highway Safety Manual, Part C— Predictive Methods. It is now available for free downloading at [www.ihsdm.org](http://www.ihsdm.org). The CPM is one of six existing modules available from FHWA's 2008 Public Release of the Interactive Highway Safety Design Model (IHSDM). IHSDM is a suite of software analysis tools for evaluating the safety and operational effects of geometric design decisions on two-lane rural highways. For further information, contact:

[clayton.chen@dot.gov](mailto:clayton.chen@dot.gov) 202-493-3054

**-Road Safety Audit (RSA) Program-**

A Road Safety Audit (RSA) Forum was held September 21–23, 2009 in Orlando, Florida. There were 88 attendees at the Southeast RSA Forum and Workshop. Speakers presented on various topics, including: Pedestrian RSAs; How planning organizations include RSAs; Including law enforcement in RSAs; Real examples of RSA findings and recommendations; How other agencies are conducting RSAs and including them in their safety programs.

The Forum focused on common emphasis areas shared between States including current progress, success stories, and ways to advance the implementation of RSAs. Discussion topics included funding, liability concerns associated with RSAs, low cost safety improvements, and conducting RSAs during the planning and design stage. This event was a joint effort between the FHWA, Florida DOT, Florida T2 Center and the Florida Community Traffic Safety Team Coalition.

A new RSA video has been launched and focuses on the benefits of using a multidisciplinary approach to improve safety and may be accessed at: <http://safety.fhwa.dot.gov/rsa/video2009/>. For more information contact:

[rebecca.crowe@dot.gov](mailto:rebecca.crowe@dot.gov)

**FREIGHT MANAGEMENT and OPERATIONS**

**-Announcing the New and Improved FHWA Freight Web Site-**

The FHWA Office of Freight Management and Operations Web site has been updated to meet users' needs and make information easier to find. The site is now organized around key freight topic areas. The left navigation bar has been updated accordingly, making use of topic headings and related sub-links. The content on the topical pages continues to provide information that is accurate, timely, and important to those interested in freight transportation. Visit the new and improved FHWA Freight Web site at <http://www.ops.fhwa.dot.gov/freight>

[carol.keenan@dot.gov](mailto:carol.keenan@dot.gov)

**-Brochure- Freight Professional Development Program-**

This brochure includes a description of what FHWA is doing to build freight capacity and many of the options available are in the brochure "Building Freight Professional Capacity in the 21st Century."

<http://www.ops.fhwa.dot.gov/publications/fhwahop09020/capacity.htm>

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## **RECENT PERIODICALS**

### **-*FOCUS* Newsletter—October 2009-**

This issue includes: Accelerating Innovation Implementation; Courses Offer Guidance on Designing and Constructing Mechanically Stabilized Earth Technology; Data-Driven Decisionmaking Practices: A Case Study; FHWA Solicits Projects for ASR Field Trial; Quantifying the Benefits of Context Sensitive Solutions; Highway Technology Calendar; A Compilation of Design-Build Practices for Transportation Projects.

<http://www.fhwa.dot.gov/publications/focus/09oct/index.cfm>

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### **-*FOCUS* Newsletter—September 2009-**

This issue includes: Your Online Training Connection for Concrete Pavement Construction; SHRP 2: Advancing the Nation's Highway System; FHWA Launches Information Exchange for Bridges; Accelerating Construction with EPS Geofoam; Next Generation Transportation Solutions; FHWA to Host Workshop on Pavement Health Track Analysis Tool; and, Highway Technology Calendar.

<http://www.tfhr.gov/focus/sep09/index.htm>

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### **-*Public Roads*—November/December 2009-**

This issue includes: Designing Complex Interchanges; Rehabbing Maine's I-295 Southbound; The Role of TTAPs in Tribal Transportation; Developing Advanced Methods of Assessing Bridge Performance.

<http://www.tfhr.gov/pubrds/09novdec/index.htm>

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### **-*Safety Compass* Newsletter – Fall 2009-**

This issue includes: Road Safety Audits; Rumble Strips and Rumble Stripes; Median Barriers; Safety Edge; Roundabouts; Left & Right Turn Lanes at Stop Controlled Intersections; Yellow Change Intervals; Medians & Pedestrian Refuge Areas in Urban and Suburban Areas; Walkways.

<http://safety.fhwa.dot.gov/newsletter/safetycompass/2009/fall09/>

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### ***Innovator—Accelerating Innovation for the American Driving Experience—August/September 2009-***

This issue includes: Q&A With Pete Ruane: Telling the Innovation Story; Highways for LIFE Seeks Stakeholder Feedback; NHI Course on Mainstreaming Innovation Now Available; Public-Private

Partnership Works to Advance Highway Quality; Iowa Project to Test Super-Strength Concrete in Bridge Deck Panels; FHWA Offers Connections Manual for Prefab Bridges; Calendar.

<http://www.fhwa.dot.gov/hfl/innovator/issue14.cfm>

***-Transportation and Climate Change Newsletter –September 2009-***

This issue includes: DOTs NHTSA and the U.S. Environmental Protection Agency (EPA) Proposes Landmark Joint Regulations to Establish Light-Duty Vehicle Greenhouse Gas (GHG) Emission Standards and Corporate Average Fuel Economy Standards; Climate Change Bill Introduced in the Senate; EPA Finalizes Nation's First GHG Emissions' Reporting System/Monitoring to Begin in 2010; U.S. Climate Envoy Elaborates on President Obama's Speech at United Nations Climate Summit Regarding Climate Change and December U.N. Conference of Parties; Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions (TRB Special Report 298) Published; NSF Awards NCSE \$1.67M Climate Change Education Grant; U.S. Energy Information Administration Releases Its *Annual Energy Review* .

<http://www.fhwa.dot.gov/hep/climatechange/newsletter/ccnews0909.htm>

**Links:**

**Turner-Fairbank Highway Research Center:** [www.tfhrc.gov](http://www.tfhrc.gov)

**Resource Center:** <http://www.fhwa.dot.gov/resourcecenter/>

**National Highway Institute:** <http://www.nhi.fhwa.dot.gov/home.aspx>

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Suggestions may be submitted to: [FHWA\\_Now@fhwa.dot.gov](mailto:FHWA_Now@fhwa.dot.gov)