

## ***FHWA R&T Now*** ~ March 2010~

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

---

### **GENERAL/ADMINISTRATIVE**

#### **Monique R. Evans, FHWA's New Director, Office of Safety Research and Development**

Monique R. Evans has been selected as the new Director, Office of Safety Research and Development. Evans has more than 20 years of transportation related experience in the area of research and development. Since 2000, she has served as Administrator, Office of Research and Development, Ohio Department of Transportation (ODOT). In this position, Evans is responsible for the administration, delivery, and accountability of ODOT's transportation research, development, and technology transfer program. Previously, she served in ODOT as a Standards Engineer, where she developed engineering policies, design criteria, and recommended statewide policy and procedure changes for roadway and roadside safety design. Evans holds a Bachelor of Science Degree in Civil Engineering from the University of Cincinnati. She is a Registered Professional Engineer in Ohio and a Certified Public Manager. She currently chairs several Transportation Research Board committees, including the Conduct of Research Strategic Planning Subcommittee. Evans also co chairs an American Association of State Highway Transportation Officials (AASHTO) committee that leads the development of recommendations for research funding and programs to be included in the National Transportation Bill.

#### **FHWA's Energy Efficiency Profile in the USDOT SBIR Program FY09 Annual Report**

The USDOT Small Business Innovation Research (SBIR) Program FY09 SBIR Annual Report to the Small Business Administration includes two of FHWA's Phase I projects, submitted by Eric Weaver from FHWA's Office of Infrastructure R&D. The projects are highlighted in the transmittal letter and at the front of the report as examples of FHWA's compliance with Energy Independence and Security Act of 2007.

For a copy of the report, contact:

[john.munro@dot.gov](mailto:john.munro@dot.gov)

202-493-3368

### **ADVANCED RESEARCH**

#### **The EAR Program Sponsors Hand-off Workshops**

On March 18–19 and April 15–16 at the Turner-Fairbank Highway Research Center (TFHRC) in McLean, VA, FHWA's Exploratory Advanced Research (EAR) Program is sponsoring "hand-off" workshops for projects that are at or near completion. During the workshops, the participants will determine the next steps to be taken for the technologies examined within the projects. They will also determine a more general course of action that can be applied to those, and other EAR Program research projects, as they near completion for the first time. The topics for the March 18–19 workshop include integrated highway system concepts and technology for assessing performance. The topics for the April 15–16 workshop include human behavior and travel choices for safety and regional modeling and nanoscale research for structures and pavements.

For additional information, contact David Kuehn, 202-493-3414, [david.kuehn@dot.gov](mailto:david.kuehn@dot.gov); or Terry Halkyard, 202-493-3467, [terry.halkyard@dot.gov](mailto:terry.halkyard@dot.gov).

## **The EAR Program Initiates Research on Nanoscale Approaches for Inhibiting Corrosion**

As a result of a Broad Agency Announcement for exploratory advanced research proposals issued in 2009, FHWA issued a second award on approaches for inhibiting corrosion. While the first award went to the City College of New York to develop approaches for steel structures, this project conducted at Florida State University seeks to develop technologies for new in-situ materials and methods to either repair or retrofit structures located both above and underwater to inhibit corrosion. The research team is taking advantage of the advancement in nanomaterials, in particular, carbon nanotubes and their related versatile physical and mechanical properties to develop an onsite spray based method to develop a structural capacity enhancement and a barrier layer for corrosion resistance. The technical innovations if successful will lead to profound impacts in advanced multifunctional strengthening/repair technology. For more information about the project, contact Paul Virmani, (202) 493-3052, [paul.virmani@dot.gov](mailto:paul.virmani@dot.gov).

For more information about the EAR Program, contact:

[david.kuehn@dot.gov](mailto:david.kuehn@dot.gov)

202-493-3414

## **The EAR Program Awards Research on Nanoscale Sensors for Structural Health**

As a result of a Broad Agency Announcement for EAR proposals issued in 2009, FHWA issued a cooperative agreement for the University of Minnesota, Duluth to develop new intelligent self-sensing concrete pavement that can monitor its own structural health by continuously detecting internal stress level changes of the pavement. In the proposed pavement structure, the concrete is mixed with carbon nanotubes (CNTs), whose piezoresistive property will enable the concrete to detect the changes in the mechanical stress. Phase I of the proposed work will develop and test a prototype of self-sensing CNT concrete in a laboratory environment. Phase II of the proposed work, which will be conducted with the partnership of the Minnesota Department of Transportation (Mn/DOT), will fabricate and test the self-sensing CNT concrete in a real but controlled road environment at the Minnesota Road Research Facility of Mn/DOT. For more information about the project, contact Wendy McAbee, [wendy.mcabee@dot.gov](mailto:wendy.mcabee@dot.gov), 202-493-6064.

For more information about the EAR Program, contact:

[david.kuehn@dot.gov](mailto:david.kuehn@dot.gov)

202-493-3414

## **INFRASTRUCTURE**

### **Infrastructure R&T Strategic Plan & Roadmap**

The Offices of Infrastructure, Infrastructure R&D, and Technical Services are cooperatively developing a consolidated and integrated 5-year Infrastructure Research and Technology (R&T) Strategic Plan (ISP) and Roadmap. The ISP and Roadmap will be founded on the FHWA Strategic Plan. It is anticipated that the Roadmap will be reviewed annually and periodically updated to reflect realities of authorizing & appropriations legislation as well as accomplishments and other changed conditions. The Roadmap will be the basis for determining the annual spending plan for use of FHWA Infrastructure funding. It will encompass the responsibilities of the Offices of Infrastructure, Infrastructure R&D and Technical Services from research through technology implementation, such that the transitions and hand-offs between R&T phases (exploratory/advance research, applied research, development, evaluation, demonstration, deployment) are accounted for in planning and are seamless. It is intended that the ISP and Roadmap will recognize the interrelationships and interdependencies among the different infrastructure disciplines (pavement, bridge, geotech, hydraulics, construction) and provide a framework for cross-discipline coordination. Moreover, it is anticipated that the strategic planning process will yield greater transparency and allow for enhanced and better coordinated input relative to FHWA's infrastructure research, development and technology initiatives.

In the initial stages of the strategic planning process, the focus will be on strengthening working relationships. The team members and participants will rely on knowledge of stakeholder needs as expressed in a variety of forums and industry roadmaps in development of the draft FHWA Infrastructure R&T Strategic Plan and Roadmap. As part of the implementation plan the participants will develop formalized, comprehensive, and consistent processes for engaging stakeholders in the infrastructure R&T program. It is envisioned that through this process, the offices will build on the strong foundation in place to improve the well-coordinated, well-managed, and highly effective Infrastructure Research & Technology Program. A draft will be available for discussions with stakeholders when completed.

For more information:

[bob.richard@dot.gov](mailto:bob.richard@dot.gov)

202-493-3163

### **FHWA Technical Manual to Receive Engineering Excellence Silver Award**

On March 27, the *FHWA Technical Manual for the Design and Construction of Road Tunnels* will receive the Engineering Excellence Silver Award by the American Council of Engineering Companies of New York. The manual, published by FHWA's National Highway Institute (NHI), was adopted and will be published by AASHTO officials.

### **SAFETY**

#### **Report Supports Planning for Unconventional Transportation Modes, Such as the Segway™, On Shared-Use Paths and Roadways**

The Office of Safety R&D has released a report titled "Operating Characteristics of the Segway™ HT" (FHWA-HRT-10-025). The objective of this research was to examine the primary operating characteristics of the Segway™ HT (Segway), to support the development of a rational approach to incorporating Segway traffic into the regulation, planning, design, and control of shared-use paths and roadways. Research was conducted at the FHWA's TFHRC on a closed sidewalk course. Acceleration and stopping distances (for both planned and unplanned stops) as well as approach speeds and clearance distances when navigating around obstacles, were recorded. The Segway is one of a number of unconventional transportation modes that may share these facilities in the future. The methodologies described in this report may prove useful in determining the operating characteristics of these other modes as well. The report will be available on the Web shortly, at: <http://www.tfhrc.gov/humanfac/hf.htm>.

For more information contact:

[amanda.emo@dot.gov](mailto:amanda.emo@dot.gov)

(202) 493-3395

### **Cooperative CICAS Reports Posted**

Two reports on Intersection Collision Avoidance Systems (CICAS) research projects have been posted on the IntelliDrive Web site. The CICAS program is a multi-year, cooperative research program including Federal, State, academic, and industry partners. The goal of the overall research program is to use ITS technologies to address the problem of intersection crashes.

The report titled "Cooperative Intersection Collision Avoidance Systems—Suburban Left Turn Assistant: Interim Report on the Human Factors Data Mining Efforts: Report 1 of 2" ([http://www.intelldriveweusa.org/documents/PATH\\_CICAS\\_HF\\_Data\\_Mining\\_Report.doc](http://www.intelldriveweusa.org/documents/PATH_CICAS_HF_Data_Mining_Report.doc)) presents interim results of data mining of previously collected data from the CICAS Signalized Left Turn Assist program segment to answer three questions: 1) Whether the decision support should be provided to drivers through an infrastructure or an in-vehicle display, 2) Whether or not the driver assistance provided could take the

form of a last-second warning, and 3) Whether or not predicted post-encroachment time should still be pursued as the primary means for determining whether or not it is safe for the driver to turn in front of the oncoming vehicles. California DOT and the FHWA jointly funded the project.

The report titled “CICAS HF3: Sign Comprehension, Rotation, Location, and Random Gap Analysis” summarizes the results of testing of several candidate CICAS Stop Sign Assist (SSA) concepts in order to identify a single sign that may provide the greatest utility in terms of driver performance and usability. CICAS-SSA is an infrastructure-based driver support system that is to improve gap acceptance at rural stop-controlled intersections. The Mn/DOT and the FHWA jointly funded this project.

<http://www.intellidriveusa.org/documents/UMN%20Cicas%20Tech%20Repor%2009%202008.pdf>

For more information, contact:

[gregory.davis@dot.gov](mailto:gregory.davis@dot.gov)

202-493-3367

### **Highway Design Handbook for Older Drivers and Pedestrians**

This 2001 handbook was written for highway designers, engineers, and highway safety specialists. The handbook provides guidance on how to accommodate the declining functional capabilities of the older road users with effective road design practices and engineering enhancements. (FHWA Pub. No. RD-01-103)

<http://www.tfsrc.gov/humanfac/01103/coverfront.htm>

*The handbook is currently being revised and will be available at the above Web site when it is updated in 2011.*

## **OPERATIONS**

### **Agent-Based Modeling is the Topic of Upcoming Workshop**

On May 4, at the TFHRC, FHWA’s EAR Program is convening a 1-day workshop on Agent-Based Modeling and Simulation (ABMS). Though the field of ABMS is growing and used in other areas of study, the applications to transportation have not been fully explored. Hence, the objectives of this workshop are to begin a discussion on the topic of ABMS and explore its applicability in transportation research, identify areas of focus, and collaborate with knowledgeable ABMS experts. A panel of five speakers from fields outside of transportation will present their research related to ABMS. Following the presentations, these speakers and the transportation community will discuss applications of ABMS in addressing transportation challenges and meeting transportation goals, knowledge gaps, and barriers to implementation. It is expected that the workshop will result in a proceedings report and research opportunities. Approximately 50 transportation professionals from the USDOT, other Federal agencies, and various academic and research institutions are expected to attend this workshop. For technical information on ABMS and May’s workshop, contact David Yang, 202-493-3284, [david.yang@dot.gov](mailto:david.yang@dot.gov).

For more information about the EAR Program, contact:

[samyra.simmons@dot.gov](mailto:samyra.simmons@dot.gov)

202-493-3469

## **RECENT PERIODICALS**

### **FOCUS Newsletter—January/February 2010**

This issue includes: Efficient, Expeditious, and Effective: Best Practices in Project Delivery Management; Innovations and Real Solutions in 2010; A First-Hand Introduction to Accelerated Bridge Construction;

Telling the R&T Story; Traffic Maintenance Online Training Courses Debut; and, Highway Technology Calendar.

<http://www.fhwa.dot.gov/publications/focus/10jan/index.cfm>