FHWA R&T Now ~ November 2010~

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

GENERAL/ADMINISTRATIVE

Planning for the Second Strategic Highway Research Program's Implementation

The Federal Highway Administration (FHWA) has extended the Cooperative Agreement with the Transportation Research Board (TRB) to administer the Strategic Highway Research Program (SHRP 2) for an additional two years, to 2015. This allows for product implementation preparations to get started and for a coordinated approach to implementation planning. All but one of the 82 SHRP 2 projects is under way, and 10 projects are complete. New highway authorization legislation is needed to conduct a SHRP 2 implementation program. In the meantime, TRB has started to convene implementation-planning workshops to facilitate the deployment of early SHRP 2 products. The program is currently in a research and preimplementation phase.

FHWA is collaborating with TRB, the American Association of State Highway and Transportation Officials (AASHTO), and the National Highway Traffic Safety Administration (NHTSA) to educate and position the agencies, State departments of transportation (DOT) and industry for deployment of SHRP 2 research results. This multiorganizational approach to preimplementation activities will ensure that proper preparations are made for the establishment of a formal SHRP 2 Implementation Program, upon reauthorization.

For more information, contact Margie Sheriff, 202-366-1747, margie.sheriff@dot.gov.

FHWA Welcomes New State Planning and Research Part II Contact

Ivy Harris has joined the FHWA Office of Research, Development, and Technology (RD&T) at the Turner-Fairbank Highway Research Center (TFHRC). She will be working with State DOTs and FHWA Division Offices on the State Planning and Research (SPR) program and on international issues in the Office of Corporate Research, Technology, and Innovation Management. Harris will be seeking to strengthen FHWA RD&T's relationship with the FHWA Division Office research coordinators and the State DOT research programs. Before joining FHWA, Harris served in several positions with the Alabama DOT and Georgia DOT. Most recently, Harris was the Assistant Research and Development Bureau Chief, Research Section Head with Alabama DOT. Harris has a bachelor's degree in civil engineering from Georgia Tech.

Questions and issues related to the SPR Part II should be directed to Harris, 202-493-3183, ivy.harris@dot.gov.

ADVANCED RESEARCH

Exploratory Advanced Research Program Conducts Dynamic Rideshare Scanning Tour

The Exploratory Advanced Research (EAR) Program is sponsoring a team of experts to study the "slugging" phenomenon. "Slugging" or "casual carpooling" is a naturally occurring dynamic ridesharing. Slugging has no formal leadership or management but has evolved to fulfill a need for carpools created by the presence of high occupancy vehicle lanes. The dynamic ridesharing system operates by having drivers and riders meet at central, easily accessible locations such as park and ride lots where they

create instantaneous carpools based on desired destinations. The scan starts with a study of the commute on the I-95 corridor in northern Virginia. The group of experts will study slugging in Houston, TX and the San Francisco Bay Area, CA in December. For more information about the scan, contact Allen Greenberg, 202-366-2425, allen.greenberg@dot.gov.

FHWA EAR Program Supports Future Concept of a Crashless System

FHWA entered into a contract with the University of California, Berkeley that will explore the feasibility of an Integrated Active Transportation System (IATS.) IATS is envisioned as a system wherein all vehicles in all modes of transport are seamlessly interrelated, sharing information, and actively adapting to both the current local situations, and to the larger system state, and the overall system objectives. In the IATS, collisions would be infrequent, if not impossible, in the same way that people can move effortlessly in many directions through large crowds without collisions and with optimal throughput. This award is a result of the national Broad Agency Announcement for EAR Proposals issued in 2009. For more information about the project, contact Kunik Lee, 202-493-3491, kunik.lee@dot.gov. For more information about the EAR Program, contact David Kuehn, 202-493-3414, david.kuehn@dot.gov.

INFRASTRUCTURE

TRB Workshop 102 on Aggregate Source Depletion and Future Supply

TFHRC worked with the TRB Mineral Aggregates Committee, State DOTs, Industry, and the U.S. Geological Survey (USGS) to develop this workshop to be held January 23, 2011 at the TRB Annual Meeting, Washington, DC. Presentations from USGS will include Aggregate Resource Availability and Sustainable Aggregate Resource Management, along with presentations on aggregate issues by the Alaska DOT, the Oregon DOT, and Industry permitting and encroachment issues and European experience as well. Natural and recycled aggregates will be addressed. In addition FHWA engineer Richard Meininger will give an overview of the activities of the FHWA- International Center for Aggregates Research (ICAR) Technical Working Group, which has been reviewing aggregate research and working on a new Aggregates Research Roadmap, as well as identifying other aggregate research needs. Participants in the technical working group include university, State DOT, and industry technical experts active in the ICAR and the National Stone, Sand, and Gravel Association. For more information contact Richard Meininger, at the FHWA TFHRC, 202-493-3191, richard.meininger@dot.gov, or the workshop chair K. Wayne Lee, University of Rhode Island, 401-874-2695, leew@engr.uri.edu.

Workshop Held on Fly Ash Research and Specifications for Use in Highway Concrete Pavements and Transportation Structures

On September 29 and 30, 2010, a workshop on fly ash research and specifications for use in highway concrete pavements and transportation structures was held at FHWA TFHRC in McLean, VA. Objectives of the workshop, titled “Steps Needed in the Research and Development of New Specifications for the Proper Inclusion of Fly Ash into Concrete Mixes for Highway Pavements and other Transportation Structures” included: bringing together people from academia, DOTs and industry to brainstorm the latest ideas in the area of fly ash; targeting dramatically increasing usage of fly ash in concrete without compromising performance; and identifying research opportunities gaps in knowledge. Presentations by participants reflected the perspectives of the research community, the electric power industry, fly ash marketing organizations, State DOTs and the concrete industry on the usage of fly ash in concrete, with special emphasis on the technical constraints associated to its increased usage. Several developers of innovative cementitious materials based on fly ash also outlined their work in developing cements with a lower carbon footprint. A brief description of each of the presentations has been prepared and will be distributed to the AASHTO Subcommittee on Materials and others interested in the topics discussed. Many of the presentation materials are also available if there is an interest in studying a particular topic or

contacting experts and researchers. The FHWA EAR Program participated in the workshop. Researchers involved in fly ash research in the recent EAR project and fly ash researchers at TFHRC also participated. For more information, contact Ahmad Ardani, 202-493-3422, ahmad.ardani@dot.gov, or Richard Meininger, 202-493-3191, richard.meininger@dot.gov.

Highways for LIFE Technology Partnerships Program Update on Asphalt Binder Cracking Device

The analyses of Asphalt Binder Cracking Device (ABCD) interlaboratory study (ILS) were based on the data from 23 laboratories that used the original binder samples. With very limited experience with the ABCD equipment and test procedure, almost all participating laboratories were able to complete the ABCD ILS successfully without major difficulty. Ten laboratories also volunteered to participate in Bending Beam Rheometer (BBR) critical temperature ILS. The results of ABCD and BBR ILS indicated that the precision estimates of ABCD cracking temperature and those of the BBR critical temperature were comparable. The final report is posted at http://www.fhwa.dot.gov/hfl/partnerships/asphalt/ez/ez.pdf.

For more information on the Highways for LIFE Technology Partnerships Program, contact julie.zirlin@dot.gov

Highways for LIFE Phase I Report: Pre-Cast Concrete Bridge Bent System for Seismic Regions

This report describes a precast concrete bridge bent system that is suitable for high seismic zones. Lateral load tests on both the top (column-to-cap) and bottom (column-to-footing) connections of the system have demonstrated that the connections have strengths and ductilities similar to those of comparable cast-in-place connections. Additional tests on the bottom connection of the system are ongoing, and construction of a demonstration bridge project will begin later this year. The phase I final report is posted at http://www.fhwa.dot.gov/hfl/partnerships/bergerabam/phase_1.cfm

For more information on the Highways for LIFE Technology Partnerships Program, contact julie.zirlin@dot.gov

Highways for LIFE: Bridge Composites Awarded a Technology Partnerships Grant

State DOT's have expressed a need for corrosion-resistant, light-weight bridge decking for rapid installation on moveable bridges. Over the past several years, the New York State DOT developed a bridge deck that would be well-suited for such an application. It is made primarily of fiber reinforced polymer composite materials that use confined cementitious grout to produce a structurally efficient section. Lab tests have shown that the hybrid deck can meet AASHTO loading requirements, be detailed for easy and rapid installation, and endure the repeated loadings required for a long service life. As a first step, this project will demonstrate that the section can be produced economically through alternative methods of composite production such as pultrusion, vacuum assisted resin transfer molding, or offshore subcomponent manufacture. Detailed manufacturing specifications and shop drawings will be produced and made available to others to encourage broad acceptance in the engineering community. More information is available at http://www.fhwa.dot.gov/hfl/partnerships/composite_bridge/

For more information on the Highways for LIFE Technology Partnerships Program, contact julie.zirlin@dot.gov

SAFETY

A Guide to Developing Quality Crash Modification Factors

The purpose of this guide is to provide direction to agencies interested in developing crash modification factors. Specifically, this guide discusses the process for selecting an appropriate evaluation methodology and the many issues and data considerations related to various methodologies.

http://safety.fhwa.dot.gov/tools/crf/resources/fhwasa10032/

OPERATIONS

EAR Project Confirms Major Traffic Flow Improvement Potential of Cooperative Adaptive Cruise Control

A research project has confirmed that the shorter headways allowed by Cooperative Adaptive Cruise Control (CACC) systems will be acceptable to drivers and will allow major improvements in traffic flow and performance in the future. The study is being conducted by the California PATH, University of California, Berkeley, and is sponsored by FHWA's EAR program and California Department of Transportation. Adaptive cruise control systems are now commercially available on some vehicles that use advanced sensors (such as radar) to automatically adjust the speed of a vehicle to avoid possible conflicts with vehicles ahead. CACC systems would extend the concept by using vehicle-vehicle communication to share information between the two vehicles in real-time, low latency communications, and to allow vehicles to follow with shorter gaps without compromising the safety margin, as the following vehicle systems would automatically respond to any events such as sudden decelerations. The shorter headways were shown to allow significantly greater traffic flow, and so could provide substantially better traffic performance on freeways. The project conducted field experiments using human subjects from the general driving population to determine whether drivers might accept the closer following distances allowed, and how closely they would comfortably follow if the CACC allowed it. Sixteen subjects were allowed to experience the improved capabilities in tests conducted on a California freeway. The subjects generally rated the CACC capabilities highly, and most subjects chose the closest following distance possible (0.6 seconds) when using the CACC system as opposed to the closest following distance (1.1 seconds) used when CACC was not available. These results confirmed that CACC systems that could substantially improve traffic performance would be acceptable to drivers.

For more information about the project, contact Bob Ferlis, 202-493-3268, robert.ferlis@dot.gov

RECENT PERIODICALS

FOCUS Newsletter—September 2010

This issue includes: FHWA Bridge Conference Spotlights Opportunities and Successes in Accelerated Bridge Construction; National Highway Institute Introduces Interactive New Web Site; A Context Sensitive Approach to Designing Walkable Urban Thoroughfares; First National Green Streets and Highways Conference: The Leading Edge of Sustainability; Online Courses Offer Instruction in Highway Plan Reading; Highway Technology Calendar; An Introduction to 3D Design: Better Quality Equals a Better Product.

http://www.fhwa.dot.gov/publications/focus/10sep/index.cfm

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***FOCUS* Newsletter—October 2010**

This issue includes: Advancing Bridge Safety and Serviceability: Scanning the Globe for Success; Second International Conference on Transportation Construction Management: New Directions and New Solutions; Into the Deep: New Training Takes Underwater Bridge Repairs to the Next Level; Download the Pavement Health Track Analysis Tool; Get Ready for the Fifth Asphalt Shingle Recycling Forum; Highway Technology Calendar; and, Up Close With Ultra-High Performance Concrete.

http://www.fhwa.dot.gov/publications/focus/10oct/index.cfm

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***Public Roads*--September/October 2010**

This issue includes: Taking on Distracted Driving; To Lessen Work Zone Impacts: Try TMPs; LTPP Keeps Rolling; Earthquake!; and, Doing More With Less.

http://www.fhwa.dot.gov/publications/publicroads/10septoct/index.cfm

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***Public Roads*—November/December 2010**

This issue includes: The Double Crossover Diamond; Integrated Corridor Management; Workforce Development in Action; and, The CMF Clearinghouse: A Handy Safety Tool.

http://www.fhwa.dot.gov/publications/publicroads/10novdec/index.cfm

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***Innovator–Accelerating Innovation for the American Driving Experience*—August/September 2010**

This issue includes: Showcases Demonstrate Value of Highway Innovations; New Highways for LIFE Projects Announced; Safety Edge Scores Gains in Iowa; Whitetopping Halves North Dakota Project Time; Highway Construction Goes Green With Recycling; Precast Pavement Panels to Slash Construction Time on Utah; Project; and, Calendar.

http://www.fhwa.dot.gov/hfl/innovator/issue20.cfm

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Links:
Turner-Fairbank Highway Research Center: 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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