

# FHWA R&T Now

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

**November/December 2014**

## **GENERAL/ADMINISTRATIVE**

### **SHRP2 Solutions Announced for Round 5**

The Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO) have announced the following solutions to go forward for implementation in Round 5 of the Second Strategic Highway Research Program (SHRP2) Implementation Assistance Program (IAP).

- [3D Utility Location Data Repository \(R01A\)](#)
- [Performance Specifications for Rapid Renewal \(R07\)](#)
- [Railroad-DOT Mitigation Strategies \(R16\)](#)
- [Planning Process Bundle \(C02/08/09/12/15\)](#)

Each product selected for implementation assistance has the potential to deliver more efficient, cost-effective programs to meet today's complex transportation challenges. Participants include State departments of transportation, metropolitan planning organizations, tribal agencies, and FHWA Federal Lands Divisions. Through Round 4, the joint FHWA/AASHTO IAP has put 24 SHRP2 Solutions into the hands of transportation agencies on approximately 200 projects.

Product-specific Webinars for Round 5 are scheduled for early December. The application period for Round 5 will begin on January 16, 2015, with selections announced in April 2015. The application process for Round 6 is expected to launch in June 2015.

For more information, contact Carin Michel, 410-962-2530, [carin.michel@dot.gov](mailto:carin.michel@dot.gov), or visit [www.fhwa.dot.gov/goshrp2](http://www.fhwa.dot.gov/goshrp2).

### **Research Pooled Fund Training Webinar Offered a Second Time**

On November 13, 2014, staff from FHWA, AASHTO, and State departments of transportation participated in a training Webinar for the Research Pooled Fund. The training focused on the primary steps of originating, funding, conducting, leading, administering, and closing a pooled fund project.

Due to overwhelming demand, the same Webinar will be offered again on December 15, 2014. December's presentation will be recorded and subsequently posted on the Pooled Fund Web site. For details about FHWA's Transportation Pooled Fund Program, visit [www.fhwa.dot.gov/research/partnership/pooledfund](http://www.fhwa.dot.gov/research/partnership/pooledfund).

For information on how to participate in December's Webinar, contact David Pamplin, 202-493-3166, [david.pamplin@dot.gov](mailto:david.pamplin@dot.gov).



## INFRASTRUCTURE

### **FHWA Delivers Bridge Design Specification Revisions for Lightweight Concrete**

AASHTO's Load and Resistance Factor Design Bridge Design Specifications provide the basis for the design of highway bridges in the United States. The extensive provisions relating to concrete structures are recognized to poorly predict the performance of lightweight concrete structures.

With strong stakeholder support, FHWA's Structural Concrete Research Program embarked on a research program in 2007 to address these shortcomings. After hundreds of tests, the compilation of multiple data sets, and the assessment of various performance parameters, a full ballot item has been developed for consideration by the AASHTO Subcommittee on Bridges and Structures Technical Committee #10 (SCOBS T-10).

On September 6, 2014, this ballot item was formally discussed in an open session at the T-10 meeting and T-10 member States and industry partners subsequently vetted the ballot. Ben Graybeal, Ph.D., P.E., who heads FHWA's Structural Concrete Research Program, led an extended discussion of the ballot item during T-10's October meeting. After fielding numerous questions, FHWA's Research and Development team was given T-10 concurrence contingent on addressing a set of twelve action items in finalizing this twenty-six part ballot item.

On October 30, 2014, the revised ballot item was submitted to the chair of T-10 for formal consideration by the full AASHTO Subcommittee on Bridges and Structures. This ballot item is expected to be voted on in April 2015. If passed, these specification revisions will allow for increased clarity and consistency in the design of concrete structures while also facilitating economical and appropriate use of an underutilized class of concrete.

For more information, contact Ben Graybeal, 202-493-3122, [benjamin.graybeal@dot.gov](mailto:benjamin.graybeal@dot.gov).

### **AAPA and ASRA Members Visit Turner-Fairbank**

On November 3, 2014, members of the Australian Asphalt Pavement Association (AAPA) and the Australian State Road Authority (ASRA) visited Turner-Fairbank Highway Research Center (TFHRC) and met with staff to exchange information and discuss developments. The twenty-one visitors included pavement engineers and asphalt concrete company executives. The visitors were given a tour of the pavement testing facility, asphalt labs, and chemistry lab, where they were shown new and emerging equipment.

Several of the tour participants have previously visited TFHRC in connection with the two Accelerated Loading Frames in use in Australia. Three members of the tour group are from the Australian Roads Research Board (ARRB). The Queensland State Road Authority and ARRB participants intend to establish an accelerated load facility on Queensland. Their visit offered them an overview of how equipment for pavement research is used at TFHRC.

For more information, contact Jack Youtcheff, 202-493-3090, [jack.youtcheff@dot.gov](mailto:jack.youtcheff@dot.gov).

### **NCHRP 24-41 Project Team and VDOT Staff Tour Geotechnical Facilities**

On October 28, 2014, the research team of the National Cooperative Highway Research Program (NCHRP) 24-41 project, Defining the Boundary of Geosynthetic Reinforced Soil (GRS) Composite Behavior, visited TFHRC.

The visit featured a tour of FHWA's GRS Pier, the outdoor strong floor, the full-scale prototype GRS-Integrated Bridge System (IBS) abutments, the long-term GRS bridge piers, the outdoor test pits, and the indoor geotechnical laboratory. Discussions included the significance of research projects conducted at TFHRC and the use of



advanced instrumentation that will help the NCHRP team achieve their core objectives. Staff from the Virginia Department of Transportation (VDOT) also attended the tour, which was timely, as they are preparing for an IBS project in Staunton, VA in early 2015. The bridge will be constructed by the Staunton District State Force Crew and instrumented as part of the NCHRP project. In support of the Every Day Counts initiative, FHWA will provide technical assistance for the bridge.

For more information, contact Mike Adams, 202-493-3025, [mike.adams@dot.gov](mailto:mike.adams@dot.gov).

#### **FHWA Meets with National Concrete Bridge Council**

On November 12, 2014, FHWA held its annual meeting with the National Concrete Bridge Council at TFHRC. The National Concrete Bridge Council is an umbrella group composed of industry organizations with a direct interest in the concrete bridge sector. The annual meeting provides a forum for both FHWA and NCBC members to discuss matters of mutual interest.

For more information, contact Ben Graybeal, 202-493-3122, [benjamin.graybeal@dot.gov](mailto:benjamin.graybeal@dot.gov).

#### **TechBrief: Long-Term Bridge Performance—High Priority Bridge Performance Issues**

The objective of this technical brief is to describe the bridge performance issues that will be studied under FHWA's Long-Term Bridge Performance (LTBP) Program, including how they were identified and prioritized with the assistance of bridge owners and other key stakeholders in the bridge community. It is intended for bridge owners and the bridge community at large (bridge engineers, bridge inspectors, and bridge asset managers) interested in the activities of the LTBP Program.

This document is available at [www.fhwa.dot.gov/publications/research/infrastucture/structures/ltbp/14043/index.cfm](http://www.fhwa.dot.gov/publications/research/infrastucture/structures/ltbp/14043/index.cfm). For more information, contact Susan Lane, 202-493-3151, [susan.lane@dot.gov](mailto:susan.lane@dot.gov).

## **SAFETY**

### **Researchers Deliver Final Project Presentations for Two TCD Pooled Fund Studies**

On October 6, 2014, FHWA's Office of Safety Research and Development (R&D) Human Factors Team hosted the final project presentation for the Traffic Control Devices (TCD) Pooled Fund study, "Evaluation of Elongated Pavement Markings." The study aimed to evaluate the conspicuity, legibility, and effectiveness of symbolized pavement markings that are horizontally elongated versions of the post-mounted signs they complement.

The goals included:

- Determining post-mounted sign types that would most benefit from complementary pavement markings.
- Developing proposed design considerations for elongated pavement markings.



- Evaluating the conspicuity and legibility of selected elongated markings.
- Evaluating the effectiveness of symbolized elongated pavement markings when complementing post-mounted signs.

To download the report, visit [www.pooledfund.org/Document/Download/5366](http://www.pooledfund.org/Document/Download/5366).

On October 10, 2014, researchers conducted the final project presentation for the TCD Pooled



Fund study, “Human Factors Evaluation of Warning Sign Legends for Emergency Incidents.” The objective of this project was to identify message options for Traffic Incident Management (TIM) legends such as the information on advance warning and guide signs. Researchers used a multi-staged approach to identify legend options for TIM traffic control devices.

They considered the following factors:

- Level of specificity.
- Use of symbols and/or words.
- Road user demographics (e.g., language, age).
- First responder characteristics (e.g., emergency medical services, police, firefighters).



- Natural events such as flooding, landslides, or snow-related emergencies characteristic of different geographic regions.
- Incident severity and frequency—rare events such as chemical spills versus common events such as traffic collisions.

To download the report, visit [www.pooledfund.org/Document/Download/5367](http://www.pooledfund.org/Document/Download/5367).

Both presentations were attended by representatives of State and local governments, the private sector, and FHWA’s Office of Operations, Office of Safety, and Office of Safety R&D. The projects were funded through FHWA’s [TCD Pooled Fund Consortium](#).

For more information, contact Jim Shurbutt, 202-493-3420, [jim.shurbutt@dot.gov](mailto:jim.shurbutt@dot.gov).

#### **Report: Collecting and Analyzing Stakeholder Feedback for Signing at Complex Interchanges**

Drivers at unfamiliar interchanges must read the available signage, observe pavement markings, and determine a path through the interchange before they reach the gore point. As an additional source of stress, driver errors at interchanges are often more difficult to correct since drivers transfer to a grade-separated freeway, highway, or roadway which provides limited access points for their return to the original roadway. Clear navigation signage is needed to guide drivers and reduce errors.

Recent FHWA research examined challenges that drivers face while navigating complex interchanges, which was important for understanding these problems from the drivers’ perspective. This report discusses a project that extended this line of research through interviews with State engineers and other stakeholders regarding practical challenges related to complex interchanges. The goal of the project was to identify design constraints related to signing, markings, and geometry for complex interchanges and to identify useful topics for future research that will yield findings that can address those design issues.

This document is available at [www.fhwa.dot.gov/publications/research/safety/14069/index.cfm](http://www.fhwa.dot.gov/publications/research/safety/14069/index.cfm). For more information, contact Jim Shurbutt, 202-493-3420. [jim.shurbutt@dot.gov](mailto:jim.shurbutt@dot.gov).

#### **OPERATIONS**

#### **Report: Analysis of Network and Non-Network Factors on Traveler Choice Toward Improving Modeling Accuracy for Better Transportation Decisionmaking**

Travelers’ choices are central to the performance of a transportation system, but little is known about what influences such choices or the impact they have on system



performance. When selecting a transportation management strategy, a transportation management center operator must understand and anticipate how travelers will respond and the potential benefits of alternative overall strategies.

This report addresses the current state of the practice, identifies gaps in knowledge regarding traveler choices, and provides six case studies on how to improve current models. It provides a comprehensive conceptual framework that incorporates traveler behavior and the impact on network performance for demand-side and supply-side measures. The document will be a resource for both traveler choice researchers and organizations considering transportation management strategies that influence traveler choice.

The report is available at [www.fhwa.dot.gov/publications/research/operations/13097/index.cfm](http://www.fhwa.dot.gov/publications/research/operations/13097/index.cfm). For more information, contact Taylor Lochrane, 202-493-3293, [taylor.lochrane@dot.gov](mailto:taylor.lochrane@dot.gov).

#### RECENT PERIODICALS

##### ***Public Roads—November/December 2014***

This issue includes: A New Approach to Improving Travel Times; One Size Doesn't Fit All; An Evolving Partnership; Bracing for Hard Times Ahead; and Surviving an Interstate Bridge Collapse.

It is available online via [www.fhwa.dot.gov/publications/publicroads/14novdec/index.cfm](http://www.fhwa.dot.gov/publications/publicroads/14novdec/index.cfm).

For more information, contact TaMara McCrae, [tamara.mccrae@dot.gov](mailto:tamara.mccrae@dot.gov).

##### ***Innovator: Accelerating Innovation for the American Driving Experience—September/October 2014***

This issue includes: EDC-3: The Next Wave of Transportation Innovations Is Here; GRS-IBS

Showcase Shows How It's Done; Helping Local Agencies Procure Consultants' Services; Solar Highways Move Closer to Reality; North Carolina Superstreets Enhance Travel Time, Safety; States Innovate!; and Calendar.

The issue is available online via [http://www.fhwa.dot.gov/hfl/innovator/e-version/issue\\_44/](http://www.fhwa.dot.gov/hfl/innovator/e-version/issue_44/).

For more information, contact Kathleen Bergeron, [kathleen.bergeron@dot.gov](mailto:kathleen.bergeron@dot.gov).

#### Links:

**Turner-Fairbank Highway Research Center:**  
<http://www.fhwa.dot.gov/research/>

**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)

