FHWA Update for AASHTO RAC – January 2019

FHWA Staff Updates

- Nicole Nason has been nominated to be the next administrator of FHWA. Ms. Nason is currently assistant secretary of the Bureau of Administration within the U.S. Department of State. From 2003 to 2006, she worked as assistant secretary for government affairs at the USDOT, then served as Administrator of NHTSA from 2006 to 2008. Prior to her transportation tenure, she spent a year as the assistant commissioner for government affairs at the U.S. Customs and Border Protection and served as counsel for the U.S. House Committee on the Judiciary.
- Brandye Hendrickson continues as FHWA Deputy Administrator and will lead FHWA until a new Administrator is confirmed.
- Thomas (Tom) Everett has been selected to serve as the new Federal Highway Administration’s Assistant Administrator (Executive Director) effective October 22nd. Previously Tom served as the Associate Administrator for Infrastructure.

Connected & Automated Vehicles

The USDOT released new guidance for automated vehicles. ‘Preparing for the Future of Transportation: Automated Vehicles 3.0’ (AV 3.0) builds upon—but does not replace—voluntary guidance provided in ‘Automated Driving Systems 2.0: A Vision for Safety.’ Specifically, the new AV 3.0 guidance provides updates to the Department’s initiatives relating to automated vehicles, by:

- Stating that the Department will interpret and, consistent with all applicable notice and comment requirements, adapt the definitions of “driver” or “operator” as appropriate to recognize that such terms do not refer exclusively to a human, but may include an automated system.
- Identifying and supporting the development of automation-related voluntary standards developed through organizations and associations, which can be an effective non-regulatory means to advance the integration of automation technologies.
- Affirming USDOT is working to preserve the transportation safety applications to function in the 5.9 GHz spectrum.

The draft Guidance will be published in the Federal Register for public review and comment. More information on the Department’s work on automated vehicle systems can be found at www.transportation.gov/av.

The FHWA also announced plans to update the 2009 Manual on Uniform Traffic Control Devices (MUTCD), taking into consideration new connected and automated vehicle technologies.

Cooperative Automation Research Mobility Applications (CARMA3)

FHWA announced a new software platform available advance and refine the communications technology used with automated vehicles to reduce congestion and improve safety. Cooperative Automation Research Mobility Applications (CARMA) is a tool for industry and public agencies involved in cooperative automation research and testing. Cooperative automation allows automated vehicles to communicate with other vehicles and the infrastructure to coordinate movements.

CARMA’s goal is to improve the accuracy of how messages are received and interpreted by traffic modeling plug-ins for select highway maneuvers – vehicle platooning (enabling close following between vehicles to improve throughput); speed harmonization (using wireless speed control to reduce bottlenecks); cooperative lane change and merge functions (to reduce traffic disruptions at interchanges) and coordination of signalized intersection approach and departure (allowing vehicles to enter and exit signalized intersections safely and efficiently to reduce delay).

CARMA enhances the efficiency and safety of these highway movements by refining the capability of automated vehicles to accurately detect, recognize and anticipate the movements of other transportation users and respond in turn. CARMA applications are the result of years of research and will be available as open-source, free of charge, through GitHub.

SP&R-B Guidance Revised

The guidance provides updated information on funding, eligible activities, and requirements of the SPR-B program. To support implementation of the guidance FHWA hosted two webinars to discuss the content and answer questions. For more information contact: Jack Jernigan at 202-493-3363 jack.jernigan@dot.gov.

Legislation Update

FHWA is currently operating under the continuing authority of the Fast Act. The FAST Act provides authorization for FHWA programs through the end of fiscal year 2020. As a result, FWHA is beginning a process to identify proposals for the next highway authorization bill.
GRS-IBS Design and Construction Guidelines

FHWA has published updated guidance for design and construction of geosynthetic reinforced soil abutments and integrated bridge systems (GRS-IBS). The publication “Design and Construction Guidelines for Geosynthetic Reinforced Soil Abutments and Integrated Bridge Systems (FHWA-HRT-17-080)” supersedes the previously published GRS-IBS Interim Implementation Guide. The updated manual reflects changes to material specifications, and provides site selection guidance and default design values; it also provides additional information on details of construction and includes an appendix on design requirements for hydraulic conditions.

Coming Soon: Long Term Bridge Performance (LTBP) InfoBridge Web Portal

A new web portal for the LTBP Program is slated for release at the 2019 TRB Annual Meeting. Modelled after the InfoPave™ web portal, InfoBridge will provide improved access to LTBP data and information.


While 3D design practices are common in State transportation departments, automation technology requires added detail in 3D design models to output data in a portable and durable format and also requires additional organization and description of the data. FHWA has published a report providing the accuracies needed for both survey control and topographic survey. It describes how construction specifications can incorporate practices to manage the use of automation technology in a manner to adapt to project characteristics and evolving technologies. It also describes how consistency in 3D data and survey methods provides for automated inspection tasks, especially acceptance and measurement processes. The report may be found at: https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/18036/index.cfm

Feasibility of Mapping and Marking Underground Utilities by State Transportation Departments

The FHWA has published a Report and summary Tech Brief documenting the findings of research undertaken to document issues associated with State transportation agencies asserting their responsibility to manage utility installations within the highway right-of-way. These publications may be found at: https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/16031/index.cfm and https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/18070/index.cfm.

Impact of Initial Density on Strength-Deformation Characteristics of Open-Graded Aggregates

The FHWA has published a TechBrief summarizing investigation of the strength-deformation characteristics of open-graded aggregates under common field conditions. The publication may be found at: https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/18048/index.cfm

Properties and Behavior of UHPC-Class Materials

Ultra-high-performance concrete (UHPC) is an advanced construction material that can positively influence the future of the highway infrastructure. Since 2001, the Federal Highway Administration has been at the forefront of developing UHPC-based solutions for pressing challenges. The growing usage of UHPC across the U.S. highway infrastructure has focused attention on the need for common assessment of the basic performance measures often associated with UHPCs. FHWA has published a report that provides significantly enhanced breadth of knowledge relative to FHWA's early work on this topic, as published in FHWA-HRT-06-103. By assessing properties for multiple UHPCs, FHWA is providing needed answers while also delivering a framework for future UHPC property assessments. The report may be found at: https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/18036/index.cfm.

Fluorescence-Based Technology for Assessing Fly Ash Adsorption of Air Entaining Agents

FHWA recently published the technical brief, “Fly Ash Air Entaining Agents (AEA) Adsorption Capacity Estimation as Measured by Fluorescence or Foam Index” (FHWA-HRT-17-118), which discusses a study examining the feasibility of using a fluorescence-based technology in place of the traditionally-used foam index for measuring adsorption capacity of fly ash. This technical brief is available at: https://www.fhwa.dot.gov/publications/research/infrastructure/structures/bridge/17118/17118.pdf. For more information, contact Ahmad A. Ardani, 202-493-3422, ahmad.ardani@dot.gov.

FHWA Launches Development of Infrastructure-Based Motorcycle Crash Countermeasures

FHWA is completing a Phase I data analysis of the Motorcycle Crash Causation Study data to identify candidate Infrastructure Based Safety Countermeasures. In April 2018, five countermeasures were selected for Phase II development, implementation and evaluation through 2021. The countermeasures include:

- High Friction Surface Treatment
- Limited Sight Distance Warning Signs
- Pavement Change Warning Sign
- Curve Speed Warning
- Prohibitive Signs

This research relies on collaboration with NHTSA, TXDOT, NHDOT, NTSB, IIHS, the California Highway Patrol, and the New York State Police.
Transitioning EAR Program Project Results

The Exploratory Advanced Research (EAR) Program conducts Technology Readiness Level (TRL) assessments of funded projects to help assess when projects are ready to advance further. Last month a TRL assessment will took place on a project research application of alternative cementitious materials for pavements and structures. More information on the project is located at https://www.fhwa.dot.gov/publications/research/ear/18031/index.cfm

Recent EAR assessments include:

- TRL assessments on structural sensor systems, a project lead by Michigan State University and one by Drexel University. The EAR Program is working with asset owners to identify opportunities for further pilot demonstrations. More information on these projects is located at https://www.fhwa.dot.gov/publications/research/ear/17043/index.cfm

- A TRL assessment on the use of hardware-in-the-loop for connected vehicle research. The EAR Program is developing a user guide for researchers that want to replicate hardware-in-the-loop research and is planning a demonstration workshop this year. More information about these projects is located at https://www.fhwa.dot.gov/publications/research/ear/17044/index.cfm

The EAR Program is also conducting an initial stage investigation on dynamically powering plug in hybrid electric vehicle charging on roadways. and participated in an October roundtable on powering plug in hybrid electric vehicles at Purdue University. The roundtable sponsored by the Utah State University Sustainable Electrified Transportation Research Center (SELECT) and The Ray, a living laboratory along Interstate 85 in Georgia, to identify research opportunities and possible federal role in advancing powered roadways.


The 2019 Winter Edition of Public Roads features a guest editorial by FHWA’s new Executive Director, Thomas D. Everett and the following articles:

- Exchanging Solutions Across the Globe (Jihan Noizet and Matthew Dorfman)
- Recruiting Tomorrow’s Workforce (Joyce Gottlieb and Will McClure)
- Toward Self-Diagnosing Bridges (Fred Faridazar)
- Renewable Roadsides (Tina Hodges and Amy Plovnik)
- Getting Connected in Wyoming (Edward Fok, Vince Garcia, Kate Hartman)

Hard copies are available at the Turner-Fairbank Highway Research Center #927 booth at TRB and it is available on line at https://www.fhwa.dot.gov/publications/publicroads/19winter/index.cfm