Initiatives Moving Forward in Pennsylvania

In the past year and a half, Pennsylvania’s State Transportation Innovation Council (STIC) has moved forward initiatives that are, and will be, making a difference to transportation employees, contractors, and the public. In all, and to date, approximately 50 initiatives are either in the deployment phase or in the works with their respective Technical Advisory Groups (TAGs). This newsletter reports on many of them. The following initiatives continue to move forward:

**Expanded Polystyrene Geofoam.** Material used as an embankment fill to reduce loads on underlying soils or to build highways quickly without staged construction.

**3D Modeling.** Use of 3D modeling software to develop, test, and alter project designs for faster, more accurate, and more efficient planning and construction of roadway projects.

**DarWIN-ME Pavement Design.** Acceleration of PennDOT’s implementation of AASHTO’s pavement design program for consistency in the calibration and validation of national pavement performance models.

**Best Practices for High Percentage RAP Mixes.** Implementation of accepted best practices for the design, evaluation, and quality control of high-reclaimed asphalt pavement mixtures in Pennsylvania.

**Rumble Strip Installations on Thin Pavement Overlays.** Development of a synthesis of best practices to help determine how to address process and procedures for the installation and reinstallation of centerline and edgeline rumble strips on thin pavement overlay projects.

For additional initiatives, turn to ‘Moving Forward’ on page 2.

Message from the STIC Co-Chairs

We are proud to present you with the 2013 State Transportation Innovation Council (STIC) End-of-Year Accomplishments summary. This newsletter details our accomplishments, initiatives moving forward, available resources and milestones achieved in 2013.

We both want to thank all of you for your leadership and participation in the STIC. Each one of you is instrumental in the successful inception, development and progress of PA STIC. We’ve received national attention because of your efforts and hard work.

Over the past two years, we have forged an environment of innovation, imagination and ingenuity through our partnership and collaboration. We’ve proven that we care about our state and the citizens we serve by pursuing innovations and proven techniques that will deliver a modern and high-quality transportation system. In addition, you have looked for additional ways to collaborate to enhance our citizens’ lifestyles, promote safety and protect the environment.

We have a lot of work ahead of us, but the efforts and enthusiasm presented thus far only demonstrate the commitment we have to continue our progress as we look for ways to im-
Putting Innovation Into Practice

The seeds of innovation have been planted in Pennsylvania, and innovative technologies that save money, improve traffic safety, and reduce congestion and traffic headaches are making their way onto our roadways.

Here are three such initiatives promoted by the STIC.

GRS-IBS Bridge Construction

Geosynthetic reinforced soil (GRS) is an old concept that has been modernized with today’s technology. It uses alternating layers of geotextile and compacted stone to create bridge superstructure units, which are combined with beams and a deck to create an integrated bridge system (IBS). GRS-IBS allows bridges to be built more quickly (doesn’t require intricate construction concepts), at a lower cost (from 25 to 60 percent less than conventional construction methods), and in an environmentally friendly manner.

This technology is a great solution to address structurally deficient bridges on low-volume roadways or over low-velocity streams. PennDOT encourages the use of GRS-IBS technology and has included it in Pub 447, New Products for Low-Volume Roads, among the innovative products that local governments may use on their roadways.

GRS-IBS bridges have been built in several communities across the state, including Huston and Sandy townships in Clearfield County and North Hopewell Township in York County. (See box on next page.)

Safety Edge

Safety Edge is the addition of a wedge-shaped attachment to paving equipment so that the edge of the roadway is paved to create a 30-degree angle rather than a hazardous vertical drop-off. Roadway departures account for 53 percent of fatal crashes, and this seemingly small change done while paving can reduce crashes to save lives and prevent serious injuries.

By angling the edge of the pavement, Safety Edge makes it easier for vehicles that drift off the road to return to the roadway smoothly. It also creates a more durable edge that is less prone to deterioration. It involves minimal time and cost to implement during paving projects. The commercially available shoe attaches to existing equipment in mere minutes.

Safety Edge has been incorporated into at least 48 roadway paving projects during the 2013 construction season.

Warm-Mix Asphalt

This new technology allows hot-mix asphalt producers to mix pavement materials 30 to 120 degrees F lower than traditional heating practices. With less energy needed to heat the asphalt, warm-mix asphalt ultimately leads to a 20 percent decrease in fuel consumption. In addition, the more durable asphalt lessens premature damages and aging, thereby providing a longer pavement lifespan.

The benefits of warm-mix asphalt include reduced paving costs, extended paving season in cooler weather, improved asphalt compaction, and improved working conditions due to less exposure to fuel emissions, fumes, and odors. The paved road is also ready for traffic quicker.

PennDOT has incorporated the use of this technology in Pub 408, Construction Specifications, and it’s quickly becoming the asphalt production of choice. More than 30 percent of all asphalt placed by PennDOT in 2012 and 2013 was warm mix. PennDOT has also turned its attention to educating local governments and municipal partners about the benefits of this technology and encouraging its use during the paving of local roads.

Moving Forward (continued from page 1)

Commercial Vehicle Mainline Virtual Weigh Stations.

Installation of mainline, high-speed, weigh-in-motion scales on highways in Pennsylvania to enhance safety and assist the State Police in weight enforcement.

Intelligent Compaction.

System using vibration to collect, process, and analyze measurements so that greater amounts of pavement are compacted with fewer passes than traditional static rollers.

Way-Finding Signs for Water Trails.

Use of way-finding signs on bridges over waterways.


Use of compacted fill material and fabric sheets of geotextile for construction of small bridge support and maintenance.

Highway Safety Manual Integration.


Locally Administered Projects.

Assistance to guide local public agencies (LPAs) through the complexities of a Federal-aid Highway Program project.

By 2015, about 86 percent of all asphalt paving will be warm mix, predicts the National Asphalt Pavement Association.
Sandy Township in Clearfield County employed GRS-IBS technology to rebuild and reopen a closed bridge in record time. By employing this innovative technology and using its own equipment and workforce, the township was able to construct the bridge in 35 days at a cost of $102,000.

Accelerating Innovation

The bridge near our home was reconstructed in record time, thanks to new technology. We appreciate that the detour didn't delay our commute to school and work for long. Thank you!

Milestones in Brief

**High-Friction Surfaces.** Application of high-quality aggregate to existing or potential high-crash areas to help motorists maintain better control in dry or wet driving conditions.

**PA Safety Symposium.** Call for an educational symposium that brings together safety professionals to discuss the most effective ways to improve safety and advance safety policy needs.

**PNDI Access.** Full access to the Pennsylvania Natural Diversity Inventory system for PennDOT personnel and planning partners to facilitate transportation project planning.

**Quality Environmental Documents**

Exploration of new “executive-style” formats for environmental documents to save time and money.

**Pervious Concrete Pavements.** Identification of applications for this “green technology” in Pennsylvania transportation (e.g., park-n-ride lots, low-volume roads).

**Incident Management First-Responder Training.** Focus on a response effort that protects motorists and responders while minimizing the impact on traffic flow.

**Intersection and Interchange Geometrics.** Alternative geometric intersection and interchange designs specifically designed to reduce or alter conflict points, allowing for safer travel for motorists, pedestrians, and bicyclists.

**Intelligent Compaction** — Pilot advertised in July. Strike-off letter on pre-bid design files completed.


**Locally Administered Projects** — Local Project Delivery manual developed. Regional construction inspection open-end agreement executed and ready for use.

**High-Friction Surfaces** — 50 locations selected. PennDOT Lab is working to identify available new products and materials for use of high-friction surface treatments. User Guide and Standard Special Provision in progress.

**Quality Environmental Documents** — Training on purpose and need developed as well as other courses, which will be offered to planning partners in 2014.

**DarWIN-ME Pavement Design** — Implementation plan developed. Local data to be implemented into model in 2014.

**Expanded Polystyrene Geofoam** — Draft guidelines and user specifications developed.

**Highway Safety Manual Integration** — Safety Performance Factors developed for inclusion into Safety Analyst (SA) software.

**Data-Driven Approaches to Crime and Traffic Safety** — Five police departments trained on the integration of location-based crime and traffic crash data to determine most effective methods for deploying law enforcement and other resources.

**PA Safety Symposium** — Session presented at 2013 Transportation Engineering and Safety Conference in December to promote most effective ways to improve safety.

**Intersection and Interchange Geometrics** — Roundabout appendix to PennDOT DM-1X completed. Candidate locations for roundabouts being identified.

**Accelerated Bridge Construction** — Precast bridge standards developed for issue. Three bridges with prefabricated bridge element systems to be constructed in 2014.

**3D Modeling for Construction** — Pilot Automated Machine Guidance (AMG) project led in District 9-0. Strike-off letter on 3D design issued.
Did you know...

The STIC has the following resources available to promote successful transportation initiatives:

- Five **fact sheets** focusing on initiatives (Safety Edge, GRS-IBS, Warm Mix Asphalt, Safety*, ITS*)
- Promotional **brochure**, handouts, and PowerPoint files explaining STIC and promoting its initiatives
- **Tabletop display** to use in promoting STIC (photo at left)
- Tabletop GRS-IBS **bridge model** (photo at bottom right)
- GRS-IBS bridge 8-foot-tall promotional **banner** (photo at top right)
- FHWA **Every Day Counts** materials
  
  * To be completed by the end of 2013

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**STIC Goes Green**

Did you realize the STIC has accepted at least three initiatives that can be considered “green”? Take a look.

**Recycled Asphalt Shingles.** This innovation offers a means to reduce waste in landfills. Although there are several hurdles yet to overcome, it’s not too far out of reach or too far in the future when we can consider asphalt shingles as one type of roadway material.

**Pervious Concrete.** This innovation does raise some concerns about its application on roads, but perhaps it can be used for auxiliary or pseudo-roads and other types of transportation options, such as trails and parking lots.

**Warm-Mix Asphalt.** This material is produced at a lower temperature, thus using less energy and providing environmental benefits.

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**Promoting STIC**

The Public Outreach Technical Advisory Group (TAG) has been hard at work promoting the PA STIC, including the accomplishments of the individual TAGs.

Over the past year and a half, STIC and TAG members have educated audiences at more than a dozen conferences and exhibits across the state about the purpose of STIC and the various initiatives being explored.

The Public Outreach TAG has also developed multiple resources for use at various events. (See box at bottom of page.)

Let’s keep the momentum going! If you know of an opportunity to communicate STIC initiatives and successes, please let us know. Contact PennDOT Information Specialist Jamie Legenos at jalegenos@pa.gov or Carol Kilko, chair of the Public Outreach TAG, at ckilko@psats.org.

Information and publications promoting STIC are available online at modernDOT.pa.gov (select “State Transportation Innovation Council”).

This summer, PennDOT and FHWA held a Local Bridge Showcase in Clearfield County for local officials to learn about GRS-IBS and tour a recently completed bridge project in Sandy Township.

Pennsylvania’s State Transportation Innovation Council (STIC) was featured in the July/August 2013 issue of Public Roads. The article explored how our STIC is working to advance transportation innovations and to save Pennsylvania money through increased efficiencies and enhanced current practices.
The FHWA launched Every Day Counts 2 (EDC2) in our region of the country in October 2012. Since that time, PennDOT has decided to implement many of the EDC innovations that have been shared by FHWA, and the TAGs have received these “special” STIC initiatives to add to their tasks.

For the most part, PennDOT personnel are heavily involved with the EDC2 initiatives, but there is occasion when industry expertise is also sought. So if you haven’t heard or been involved with Every Day Counts yet, just wait.

The Pennsylvania Division of FHWA extends its gratitude to all who participated in a TAG meeting where an EDC2 initiative was discussed or participated in the EDC2 virtual forums and vetting process this past spring.

Pennsylvania ranks near the top among states that have deployed Every Day Counts initiatives.

More information about Every Day Counts can be found at www.fhwa.dot.gov/everydaycounts/.

**Every Day Counts initiatives that have found a home in Pennsylvania include:**

- Accelerated Bridge Construction
- Intelligent Compaction
- High-Friction Surfaces

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These are just three examples of ways that STIC initiatives are cutting across agency lines to encourage interagency collaboration and help to ensure that Pennsylvania’s tax dollars are spent wisely.

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**Beyond Transportation**

The STIC is a forum that gives other state agencies, beyond PennDOT, the opportunity to participate in meetings and glean advantages that could benefit their own agencies.

Through the actions of the STIC, several partners have been introduced or given support to pursue initiatives that may not be entirely surface transportation centric.

Here are some examples:

**Pervious Concrete.** After listening to a presentation to the STIC in June, the Department of Conservation and Natural Resources is interested in piloting this innovation on trailheads.

**Way-Finding Signs.** The Pennsylvania Fish and Boat Commission is interested in using this innovation for water craft (kayaks and canoes).

**Data-Driven Approaches to Crime and Traffic Safety.** This initiative involves local police departments and PennDOT bringing together different data sources for the common good.

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2014 Dates to Remember

STIC QUARTERLY MEETINGS


June 16 — Location to be determined

September 25 — Location to be determined

December 15 — Location to be determined

Shared Decision Making

STIC MEMBERS

Co-Chairs
Barry Schoch
SECRETARY OF TRANSPORTATION
Renee Sigel
DIVISION ADMINISTRATOR, FEDERAL HIGHWAY ADMINISTRATION

Members
John Becker
AMERICAN CONCRETE PAVEMENT ASSOCIATION
Rodney Bender
PENNSYLVANIA PUBLIC UTILITY COMMISSION
Stan Caldwell
CARNEGIE MELLON UNIVERSITY
Tom Clark
AMERICAN PUBLIC WORKS ASSOCIATION
Mark Compton
PENNSYLVANIA TURNPIKE COMMISSION
Cindy Dunn
PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Shawn Good
PENNSYLVANIA CHAMBER OF BUSINESS AND INDUSTRY
Kelly Heffner
PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Brad Heigel
PENNSYLVANIA TURNPIKE COMMISSION
Barry Hoffman
AMERICAN SOCIETY OF HIGHWAY ENGINEERS
Gary Hoffman
PENNSYLVANIA ASPHALT PAVEMENT ASSOCIATION
Bob Latham
ASSOCIATED PENNSYLVANIA CONTRACTORS
Eric Madden
AMERICAN COUNCIL OF ENGINEERING COMPANIES
Mark Magalotti
UNIVERSITY OF PITTSBURGH
Doug McLearen
PENNSYLVANIA HISTORICAL MUSEUM COMMISSION
Martin Pietrucha
PENNSYLVANIA STATE UNIVERSITY
Jim Runk
PENNSYLVANIA MOTOR TRUCK ASSOCIATION
David Sankey
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP SUPERVISORS
Richard Sause
LEHIGH UNIVERSITY
David Spotts
PENNSYLVANIA FISH AND BOAT COMMISSION
Anne Stich
SOUTHERN ALLEGHENIES PLANNING AND DEVELOPMENT COMMISSION
Darlene Stringos-Walker
PENNSYLVANIA ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS
Peter Vlahos
PENNSYLVANIA AGGREGATES AND CONCRETE ASSOCIATION
John Ward
DELAWARE VALLEY REGIONAL PLANNING COMMISSION
Angela Watson
WOMEN IN TRANSPORTATION SEMINAR