State Transportation Innovation Council (STIC)

Innovation in Motion

A newsletter with highlights from the STIC

INNOVATE
DEPLOY
EDUCATE

This edition of the STIC Innovation in Motion e-newsletter highlights innovations Pennsylvania is pursuing to extend pavement life. According to the Federal Highway Administration (FHWA), many of the pavements in the nation's highway system have reached or are approaching the end of their design life. However, these roadways still carry daily traffic that often far exceed their initial design criteria.

A few of the innovations helping to extend pavement life that are highlighted in this newsletter are Hot Pour Mastics (HPM) and Targeted Overlay Pavement Solutions (TOPS). Hot Pour Mastics is a STIC innovation being pursued by the Maintenance Technical Advisory Group (TAG) and has shown to be an effective application to fill large cracks and small potholes.

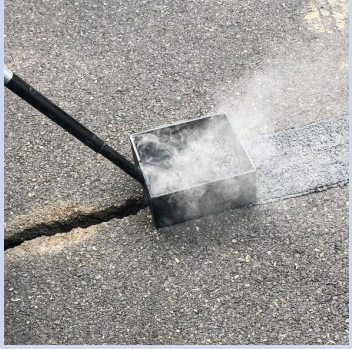
TOPS is part of the recently released FHWA Every Day Counts Round 6 (EDC-6) innovations. TOPS focuses on asphalt and concrete pavement overlays which can provide long-life performance under a wide range of traffic, environmental, and existing pavement conditions.

In addition to TOPS, PennDOT has selected to pursue Digital As-Builts, e-Ticketing and Ultra-High Performance Concrete for Bridge Preservation and Repair as part of EDC-6. Stay tuned for future STIC Innovation in Motion e-newsletters to find out more about those innovations.

Hot Pour Mastics Gains Traction Across Pennsylvania

PennDOT is well on its way to adopting the innovative technique to extend pavement life across its nearly 40,000-mile road network.

According to PennDOT Roadway Programs Manager Ty E. Reed who is overseeing implementation of HPM,



“People are impressed with the performance and application of the product, plus it’s easy to apply.” Last year, PennDOT crews applied 460,000 pounds of HPM across Armstrong, Berks, Clearfield, Clinton, Delaware, Montgomery, Luzerne, Tioga, and Union Counties.

HPM allows crews to fill pavement cracks two inches or greater and deeper compared to traditional crack sealing methods which only allows cracks up to one inch to be sealed. The innovation is a pourable, self-adhesive asphalt binder that is applied hot.

Reed said, “HPM is a crack sealant on steroids that goes above and beyond filling cracks.” Besides cracks larger than one-inch, HPM can be used for other pavement imperfections such as filling pavement seams and shoulder joint failures, making pavement repairs around raised manholes and leveling bridge approaches.

Joining PennDOT in the development of the innovation was the Pennsylvania Turnpike Commission, the Federal Highway Administration, the Pennsylvania State Association of Township Supervisors, Villanova University and consultant McCormick Taylor.

For more information, visit the HPM page on the STIC website.

PennDOT Pursues Enhanced Pavement Treatments In Line with Federal Innovations Effort

In its ongoing pursuit of longer-lasting concrete and asphalt surfaces, PennDOT is working to advance up to four new pavement technologies as part of FHWA’s EDC-6 TOPS innovation.

PennDOT aims to pilot and review the use of Highly Modified Asphalt, Crack Attenuating Asphalt Mixture, Enhanced–Friction Overlay, and Bonded Concrete on Asphalt. These techniques would be added to the pavement innovations PennDOT has already adopted including: High-Performance Thin Overlay, Stone Matrix Asphalt, Asphalt Rubber Gap-Graded, Ultra-Thin Bonded Wearing Course and Unbonded Concrete on Concrete.

“For concrete surfaces, we are focused on bonded concrete on asphalt,” said Lydia Peddicord, P.E., Chief, Pavement Design and Analysis Unit in PennDOT’s Bureau of Project Delivery and one of the project champions for the TOPS innovation. She added that several districts are interested in participating in pilot applications and her goal is to update PennDOT’s specifications, so the improvements can go into widespread use.

Peddicord is part of an implementation team that includes Neal Fannin, Pavement Materials Engineer in PennDOT’s Construction and Materials Division, and Kevin Smith, Assistant Construction Engineer in District 3 based in Lycoming County.

According to FHWA, half of all dollars invested nationally in infrastructure go for pavements and half of that is needed for overlays to extend pavement life. The innovations are aimed at combining different materials to generate longer service life or lower cost, so revenue-challenged DOTs can reach more of their extensive road networks.

Fannin said Highly Modified Asphalt appears to be a good candidate for use on interstates. “New Jersey DOT has pretty good specifications on that, and we could pull off of that,” he said. “They use it extensively on their interstates.” He added that more investigation is needed on the enhanced friction overlay technique.

“The general objective is to have needed tools in the maintenance toolbox,” Fannin said. “Every one of these can be viewed as a tool that we can use in the proper context and situation. If we have more and better tools, we can address pavement problems more effectively.”

Fannin noted that the innovations under review are only part of PennDOT’s ongoing effort to deliver better services. “There are quite a few things we are looking at to improve our specifications,” he said. “It’s a continual thing we do. We look nationally to see what is going on out there and when something makes sense, we try to use it.”

In general, FHWA, PennDOT and DOTs across the country are looking at ways to extend the expected pavement life of concrete to 50 years compared to the current 30 years and extend asphalt pavement wearing courses to beyond the existing 10- to 12-year before maintenance is needed, Fannin said.

Peddicord noted that PennDOT has both asphalt and concrete quality improvement

committees that work with industry partners. “We are always looking for cost effective solutions to pavement issues,” she said.

For more information on the TOPS innovation, visit the EDC-6 page on FHWA’s website.

For more information, please contact the STIC Team at penndotstic@ pa.gov.