State Transportation Innovation Council (STIC)

Innovation in Motion

A newsletter with highlights from the STIC

INNOVATE
DEPLOY
EDUCATE

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This edition of the *STIC Innovation in Motion* e-newsletter highlights the progress of STIC innovations currently under development as well as the success of deployed innovations. The STIC's Technical Advisory Groups and Innovation Development Teams continue to use the power of collaboration to identify, develop and deploy innovations that provide a safer and more efficient transportation system for all Pennsylvanians.

Innovations in Detailed Development

Certified Concrete Finishers Course

Nothing beats a new, smooth finish on a just-completed sidewalk, and the Pennsylvania State Transportation Innovation Council (STIC) is working on an innovation that will enhance the quality of concrete finishing across Pennsylvania...read more.

Hot Pour Mastics

Hot Pour Mastics (HPM) can be used year-round as a one-time application for large cracks and small potholes in concrete and asphalt when surface temperatures are 40 degrees Fahrenheit and rising. HPM has the flexibility and adhesion of rubberized sealants and the load-bearing capabilities of engineered aggregates to completely fill a crack or pothole. In cooler weather applications, the use of hot air lances, heated chutes and torches may be necessary, which will require additional labor, preparation work, and equipment.

Like crack sealing operations, the best times of year to use HPM are spring and fall, as cracks are open, and the mastic material takes less time to cool down and reopen the road to traffic. HPM repair areas must be readied to receive HPM by thoroughly cleaning the area of all loose material, vegetation, dust and debris, and drying the area.

Since its introduction to the STIC in November 2018, HPM has been piloted in PennDOT Districts 2, 3, 4, 5, 6, 8 and 10, including a construction project on Interstate 81 in Cumberland County. As of February 2020, PennDOT's New Products and Innovations Section (NPI) has "conditionally approved" four Hot Pour Mastics manufactures. PennDOT plans to monitor performance for two years before removing the "conditional approval" status. This "conditional approval" does not limit the use of the products but allows NPI to continue its evaluation based on field applications. The four approved Hot Pour Mastics manufacturers have also been added to a new standalone category in the Miscellaneous section of PennDOT's Bulletin 15. Additionally, PennDOT plans to update Publication 23, Chapter 7 with a section on Hot Pour Mastics.

"Hot Pour Mastics is a fast and cost-effective alternative for repair of wide cracks greater than one inch, which would usually require base repairs," said Donald Free, assistant maintenance manager in PennDOT District 3. "The use of HPM seals up the cracks and protects the subgrade from further deterioration."

Innovations Advanced for Deployment

Stormwater Training and Field Guidebook

Stormwater Control Measures (SCMs) are incorporated into transportation projects to manage pollutants and keep water clean and safe. SCMs, such as retention ponds, sand filters, pervious pavement and constructed wetlands, need to be regularly and adequately maintained over the long term. Each requires different types and levels of maintenance after initial construction. The STIC's Maintenance Technical Advisory Group has been developing the Stormwater Management Training and Field Guidebook to help maintenance crews at PennDOT, other state agencies, and local governments care for these vital features.

As the first innovation to move through the new STIC Innovation Development Process, the Innovation Development Team has been utilizing resources from FHWA and other state DOTs, as well as STIC Incentive Funds to develop the training and field guidebook. Six of the eight planned modules have been drafted and reviewed by the team members. The team is also working with PennDOT Highway Administration's training staff and a consultant to organize the most innovative training delivery method. The team has identified attendees from various stakeholders to attend a pilot training in fall 2020. Following the pilot training, attendees will be asked to provide initial feedback on the training content and delivery method. Once all training is developed, an abbreviated version will be created and reformatted into a guidebook for field personnel's reference.

Deployed Innovations

Design-Build Traffic Control

Successful highway and bridge projects depend on a high level of collaboration between PennDOT and its partners. Championed by the Pennsylvania State Transportation Innovation Council, the innovative Design-Build Traffic Control Plan (DBTCP) aims to improve project delivery by exploring ways to provide greater contractor flexibility in constructing a project...read more.

Geosynthetic Reinforced Soil-Integrated Bridge Systems

Faced with upkeep of thousands of bridges on their local roads, municipal officials can turn to PennDOT for a cost-effective solution: the Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS). The system is also a viable alternative for low-volume, PennDOT-owned structures...read more.

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