

Innovation in Motion

A newsletter with highlights from the STIC

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This edition of the STIC *Innovation in Motion* e-Newsletter highlights the Federal Highway Administration (FHWA) Every Day Counts Round 7 (EDC-7) innovation, Environmental Product Declarations, or EPDs.

EPDs document the environmental impacts of construction materials, such as concrete and asphalt, during their life cycle. This tool helps transform the project delivery process to encourage the demand and supply of products that promote more sustainable use of resources and create less stress on the environment.

This e-Newsletter also looks ahead to the final *Innovation in Motion* webinar for this year, and highlights the effectiveness of roundabouts in Pennsylvania as part of National Roundabouts Week, which is held every September, in celebration of the innovation's life-saving impacts.

PennDOT Implementing Environmental Product Declarations to Reduce Greenhouse Gases

Construction materials, such as asphalt, concrete, aggregate, cement and steel, have environmental impacts during their life cycle. In an effort to help measure and reduce environment impacts, such as greenhouse gases and global warming potential (GWP), PennDOT has adopted the use of [Environmental Product](#)

[Declarations \(EPDs\)](#), a Federal Highway Administration (FHWA) Every Day Counts Round 7 (EDC-7) innovation.

An EPD is a standardized report that resembles the nutrition statement on a food product, presented in a scientifically sound way to communicate the potential environmental impacts. EPDs are based on the International Organization for Standardization approved methodology that uses life cycle assessment as the method for quantification.

The life cycle of construction materials is viewed in four stages: production, construction, use and end-of-life. The production stage focuses on the GWP from the extraction of raw material supply and the transportation and manufacturing of the product. The construction and use stages of the EPD life cycle concentrate on the environmental impacts from the transportation and installation of the product to the maintenance, repair and refurbishment of the product as it is in use. The end-of-life stage focuses on the deconstruction or demolition and disposal of the product. At every stage of a construction material's life cycle, there are impacts on the environment to consider. EPDs are a tool to help state transportation departments support procurement decisions that aim to understand and achieve lower embodied carbon reductions.



In February 2024, PennDOT established a team of professionals to review guidance and best practices and develop an EPD implementation process. The EPD team consists of various PennDOT employees, FHWA representatives and consultants. The EPD team is also working with other state transportation departments to learn how they are implementing the EDC-7 innovation.

While EPDs can cover several construction materials, PennDOT's current initial focus is on asphalt mixtures. Starting with the January 2025 Job Mix Formula (JMF), PennDOT will require PDF copies of EPDs for all asphalt mixtures submitted for use. A JMF is a detailed recipe that specifies the proportions of elements that make up the product.

PennDOT is currently focusing on the production stage of asphalt materials. The production stage provides information on the GWP from the extraction of raw materials, like aggregates and asphalt cement, and the transportation to the asphalt plant and production of the mix until it is placed in the truck for delivery. This is referred to as a “Cradle to Gate” EPD and accounts for the material through production only. EPDs are typically required to be updated every five years, or sooner, if there is a change to any of the constituent materials.

One goal that PennDOT hopes to meet with the EPD requirement is to create a benchmark for materials to be used in future contract procurement. PennDOT has also partnered with the [Pennsylvania Asphalt Pavement Association](#) to develop guidance for manufacturers for creating and submitting EPDs to state transportation departments.

This new innovation provides an opportunity for PennDOT to make informed decisions regarding materials for projects, improve sustainability goals, help reduce negative environmental impacts from building and maintaining transportation infrastructure, identify possible energy and cost savings for manufacturers and also demonstrate a commitment to protecting Pennsylvania’s environment.

For questions regarding EPDs, please contact EPDS@pa.gov.

Looking Ahead



Want to learn more about innovative initiatives happening across PennDOT?

Join us for our final 2024 *Innovation in Motion* webinar for 2024 and hear the latest updates about PennDOT's continuing **Digital Transformation** journey.

Dec. 10, 2024

10 a.m. to 11 a.m.

Click [here](#) to add this webinar to your calendar.

If you missed our September webinar about Innovating Winter Maintenance, visit [here](#). All other previous *Innovation in Motion* webinars are available for viewing at www.penndot.pa.gov/innovation. Select the blue "Innovation in Motion Webinar Series" tile on the right-hand side of the page.

Did You Know?

Roundabouts Reducing Injuries and Crashes in Pennsylvania

PennDOT recently announced that at locations where traditional intersections were replaced with roundabouts, crashes involving injuries were reduced by 51 percent and the total number of crashes were reduced by 7 percent. During the 20-year review period, there have been two fatalities at roundabouts on state routes. Roundabouts are a part of the FHWA Every Day Counts Round 2 (EDC-2) Intersection and Interchange Geometrics innovation and have been recognized by the Pennsylvania State Transportation Innovation Council as an innovation that has become standard practice within the transportation community. Learn more [here](#).



For more information on these and other STIC innovations visit www.penndot.pa.gov/stic or email penndotstic@pa.gov.