SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

New Composite Pavement Systems (R21)

Guidance to designing and constructing long-life composite pavement systems that provide durable, sustainable aggregate surfaces at a potentially lower cost than conventional pavement

Challenge

Many agencies today are faced with the challenge of being sustainable (that is, using recycled materials) and economical in rehabilitating pavements, while also providing for a long service life. A few agencies today also face the challenge of having a limited source of quality aggregates, thus having the added cost of importing materials. Pavements that combine new asphalt over concrete, and/or 2 lift concrete generally have a long service life with excellent surface characteristics, structural capacity, and the ability to be rapidly renewed. However, the majority of roads containing these composite pavements resulted from maintenance and rehabilitation activities. Few roads are intentionally designed to utilize composite pavements because reliable guidance for designing and using these materials has been lacking. U.S. Transportation agencies require guidance, specifications, objective and reliable performance data, and life-cycle cost analyses to support use of these pavement systems.

Solution

SHRP2's Composite Pavements Solution provides detailed performance data on existing composite pavement systems, and offers step-by-step guidance on two types of composite pavements (Hot-Mix Asphalt (HMA) over Portland Cement Concrete (PCC) and PCC over PCC [constructed wet on wet]) using procedures consistent with the Mechanistic-Empirical Pavement Design Guide (MEPDG).

Benefits

With the new guidance, models, techniques, and specifications, State and local departments of transportation and other organizations can have confidence that the new composite pavement systems they install and maintain will be long lasting and have predictably low life cycle costs. Agencies will no longer need to develop construction specifications and quality management guidelines on their own, but instead, can consider using these guidelines. The training tools and case studies include relevant design and construction issues, and are essential to widespread adoption and use of composite pavements.

The Implementation Assistance Program

Implementation assistance is available to help State departments of transportation (DOTs), metropolitan planning organizations (MPOs), and other interested organizations deploy SHRP2 Solutions. A range of opportunities is available to raise awareness of SHRP2 Solutions and to encourage early adoption of these products. Application periods are offered approximately twice per year. Each product selected for implementation assistance has the potential to deliver more efficient, cost-effective programs to meet the complex challenges facing transportation today.

Save Lives

Excellent skid resistance results from the high-quality top layer. Pavement is designed to be resistant to cracking, fatigue, and wear.

Save Money

The bottom layer can be designed with lower cost materials such as with a higher recycled content, lower cement content, locally available marginal quality aggregates, and increased use of supplemental cementitious materials.

Save Time

The replacement or retexturing of the top layer is both economical and quick. Reduced maintenance needs result in fewer traffic disruptions.

RENEWAL

One of four SHRP2 focus areas, Renewal products help transportation organizations rapidly build and restore highway infrastructure that lasts longer while minimizing user disruption and delay.

Continued on next page.

Visit: www.fhwa.dot.gov/GoSHRP2
Learn more about products, case studies, and implementation assistance.

How can you learn more?

Visit: www.fhwa.dot.gov/GoSHRP2

- Additional product information
- Information about how this product is being used in the field
- Contact information for peers who are familiar with this product
- Links to research reports

Contacts

Steve Cooper (FHWA)
stephen.j.cooper@dot.gov

Kate Kurgan (AASHTO)
kkurgan@aashto.org

About SHRP2 Implementation

The second Strategic Highway Research Program (SHRP2) is a partnership of the Federal Highway Administration (FHWA), the American Association of State Highway and Transportation Officials (AASHTO), and the Transportation Research Board (TRB). TRB completed the research, and now FHWA and AASHTO are jointly implementing the resulting SHRP2 Solutions that will help the transportation community enhance productivity, boost efficiency, increase safety, and improve the reliability of the Nation's highway system.

U.S. Department of Transportation | Federal Highway Administration
American Association of State Highway and Transportation Officials • Transportation Research Board

Date Generated: 10/19/2025