



SHRP2 SOLUTIONS

STRATEGIC HIGHWAY RESEARCH PROGRAM

R06C Product

Using Infrared and Ground Penetrating Radar for uniformity measurements on New Asphalt Layers

Implementation Assistance Update

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U.S. Department of Transportation
Federal Highway Administration



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SHRP2 Summary



- Nearly \$232 million have been allocated for **research** under SAFETEA-LU and its extensions.
- Funding for SHRP2 product **implementation** totals approximately \$169 million. This funding came from:
 - MAP-21
 - 4% of SPR funds being used for SHRP2 implementation
 - FHWA is providing additional funding
- To utilize funding effectively, FHWA and AASHTO have developed a SHRP2 implementation plan.

Implementation Assistance

Round 4



Renewal:

- R06A: Nondestructive Testing Technologies to Identify Bridge Deck Deterioration
- **R06C: Using IR and GPR for Uniformity Measurements on New HMA Layers**
- R06E: Real-time smoothness Measurements on PCC
- R06G: Mapping Defects in or Behind Tunnel Linings
- R09: Managing Risk in Rapid Renewal
- R10: Innovative Strategies for Managing Complex Projects
- R19A: Designing & Preserving Bridges to Achieve a 100-Year Service Life
- R21: Composite Pavement Systems



Capacity:

- C03/C11: Economic Analysis Tools
- C10: Integrated Travel Demand Modeling



Reliability:

- L02/05/08: Reliability Data and Analysis

R06C - Round 4 Results

GPR - Two (2) Proof of Concept Agencies announced:

NE DOT

ME DOT

IR - Ten (10) Lead Adopter Incentives announced:

AL DOT

MO DOT

ME DOT

Fed Lands

AK DOT

NC DOT

VA DOT

IL DOT

NJ DOT

WV DOT

TECHNICAL ASSISTANCE:

- AASHTO contracted to provide support (Kick-off Mtg Scheduled – Oct 28th)
- IR:
 - ✓ Fielding of Equipment for Demo Projects
 - ✓ Conduct Multi-State Showcase
 - ✓ Provide 9 ea. 4-hr Workshops
 - ✓ Doc. Of Result/Case Studies
 - ✓ Marketing & Communication
- GPR:
 - ✓ Oversee Validation (Plan, Field Equipment, Provide Tech. Assistance, Oversight)
 - ✓ Education (Document & Present Findings)

The Challenge

- Develop solutions to measure and quantify non-uniformity of asphalt mixture construction



Localized non-uniform areas fail prematurely. Random testing seldom catches problem



Increased use of night paving makes inspection more difficult

SHRP2 Solutions

Thermal Profile during Placement: **Pave-IR**



Cold spots generally become low density

Density uniformity after Compaction: **Rolling Density Meter**



Measures density at 6 in. intervals non-destructively

Pave-IR Summary



- **What is it**

- Automated system for

- Measuring temperature uniformity of new asphalt mat immediately after placement

- Documentation of paver stops

- Draft Test procedure and Specifications proposed in SHRP 2 Report

- **Implementation in DOT's**

- Texas, Minnesota, Washington and Ohio

- **Commercial System**

- Yes through MOBA corporation

Rolling Density Meter

- Real-time measurement of surface dielectric of asphalt mixture using GPR
- Operator establishes correlation of dielectric with mat density from field cores
- Once established automated output of final mat density (air voids)
- 6 in. reporting interval yields substantially increased testing coverage
- With multiple passes can test nearly 100% of constructed area
- Tests final product that agency is buying



Benefits of R06C Products



- Pave-IR and GPR technologies potentially foster more uniformly constructed and longer-lasting asphalt mixture construction.
- Real-time temperature quality control allows for prompt adjustments by the paving crew, thereby minimizing segregation problems.
- The GPR Rolling Density Meter potentially reduces reliance on single-point density gauges and provides almost 100% pavement testing coverage.

The Look Ahead – Round 5



RENEWAL

- 3D Utility Location Data Repository (R01A)
- Performance Specifications for Rapid Renewal (R07)
- Railroad-DOT Mitigation Strategies (R16)

CAPACITY



- Capacity Process Bundle (C02/08/09/12/15)

Round 5 Application Timeline

- Announcement Webinars
Planned for Dec 2014
- Round 5 Application Period
Jan 16 - Feb 13, 2015
- Round 5 Announcement
March 27, 2015
- More information and
apply online at
www.fhwa.dot.gov/goshrp2



THANK YOU



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