

AASHTO's Perspective on Preservation

SHRP2 R26 Workshop – Preservation of High-Traffic-Volume Roadways

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American Association of State Highway and Transportation Officials

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Toward Zero Deaths™
National Strategy on Highway Safety

A CENTURY OF ACHIEVEMENT FOR A BETTER TOMORROW





AASHTO Centennial Year

<http://centennial.transportation.org/>



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AMERICAN ASSOCIATION OF
STATE HIGHWAY AND
TRANSPORTATION OFFICIALS
AASHTO
THE VOICE OF TRANSPORTATION

Themes That Have Shaped AASHTO's Accomplishments

- Getting the Farmer Out of the Mud
- Inter-Regional Connectivity
- Addressing Rising Fatality Numbers
- Coast to Coast without a Stop
- Human & Natural Environment
- Urbanization/Suburbanization → Multimodal

- *Context* -



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Two Decade Shift on Preservation

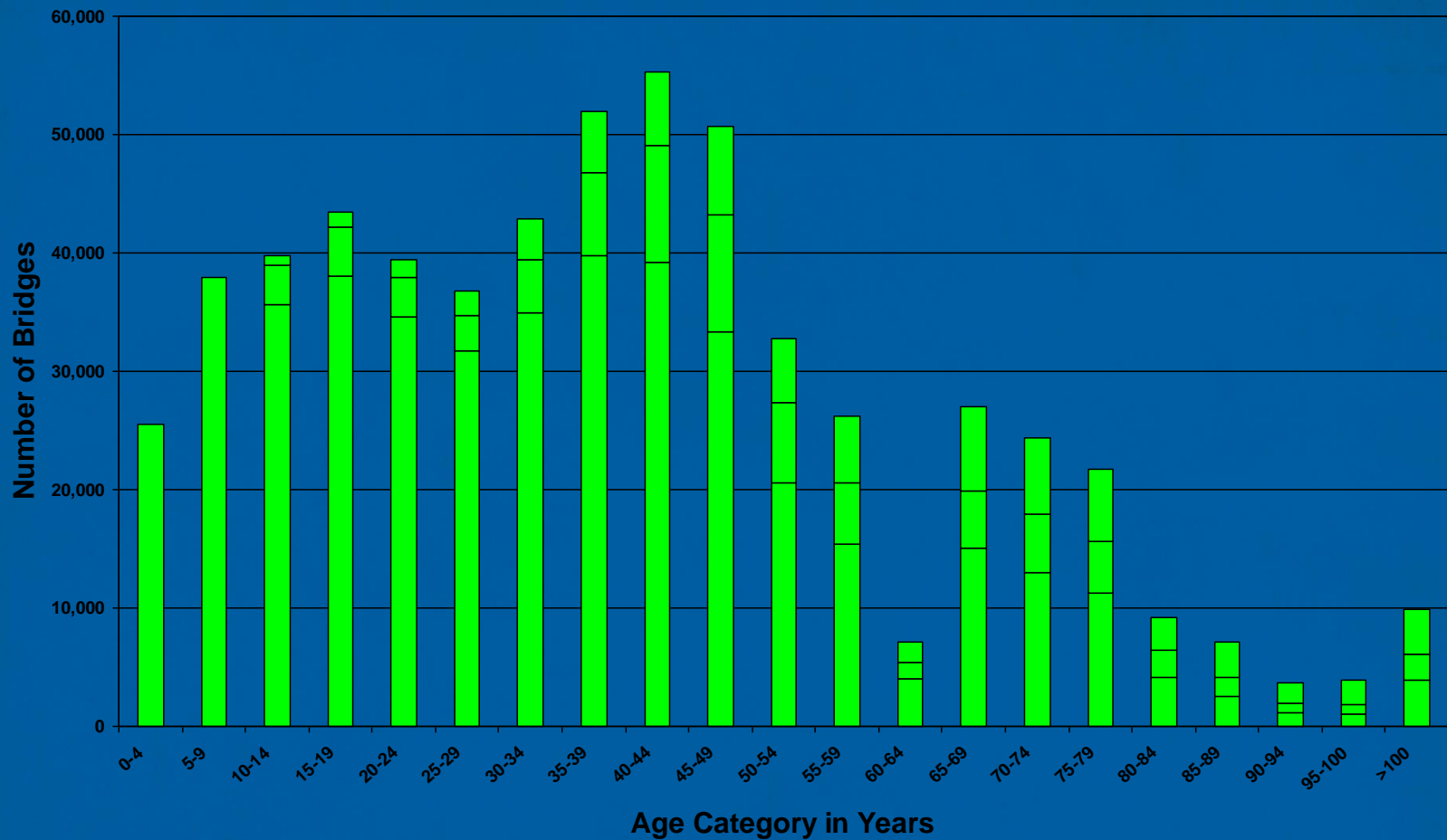
- Asset Management Task Force – 1997
- Transportation System Preservation TSP (TSP2) – 2005
- Asset Management Guide – 2003, 2011
- Asset Management Subcommittee – 2004
- TSP2 added Bridge & Equipment – 2008
- SC/Performance Management – 2008



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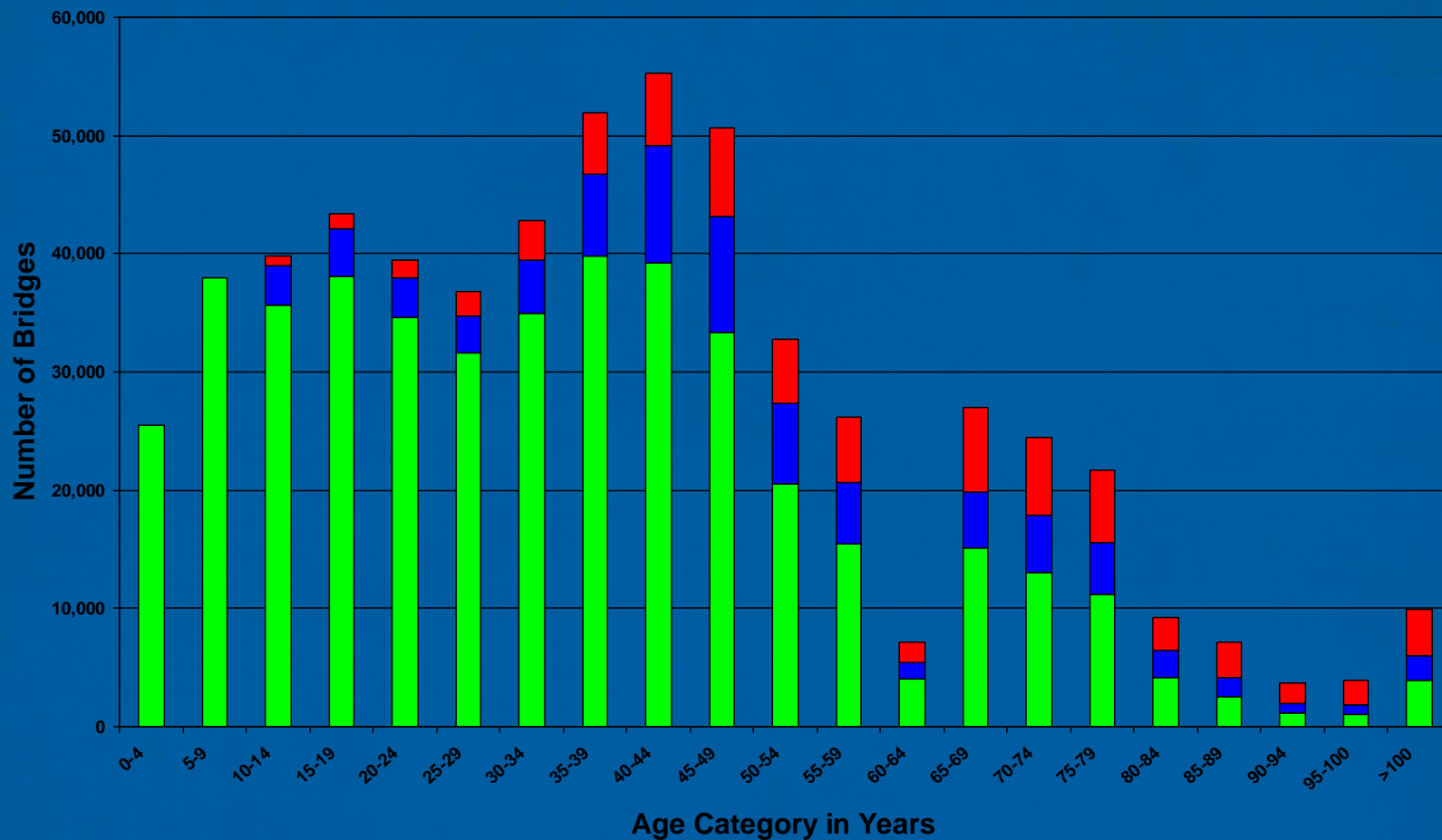
Highway Bridges by Age



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Highway Bridges by Age and Condition



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Research Illustrative of Focus

- **Resource Allocation Logic Framework to Meet Highway Asset Preservation, NCHRP Report 736 – 2012**
- **Strategic Issues Facing Transportation, Volume 2: Climate Change, Extreme Weather Events, and the Highway System: Practitioner's Guide and Research Report, NCHRP Report 750 – 2014**
- **SHRP2 Preservation Focus**
Safety – Renewal – Capacity - Reliability



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SHRP2 Origin & Philosophy



Needs identified by State DOT and industry leaders—
driven by *customer-oriented goals*:

- Make highways safer: revolutionary change
- Fix highways: address epidemic of aging infrastructure
- Reduce congestion: increase physical and operational capacity

Success requires non-traditional approach:

- Multiple disciplines
- Collaboration with non-DOT stakeholders
- Portfolio: from new knowledge to practical tools to allow existing innovations to be more widely used

Focus Areas



Safety: Fielding the largest-ever Naturalistic Driving Study into driver behavior in order to reduce crashes and save lives



Renewal: Making rapid, innovative construction possible for “ordinary” projects



Reliability: Providing management and technical tools to reduce congestion through operations



Capacity: Systematizing collaborative decision making to achieve better, faster project decisions

Renewal: Strategic Rationale



- **Facilities are aging; users depend on them:**
 - Renew infrastructure quickly
 - Have minimal impact on users
 - **Produce long-lasting facilities**
- **We know how to do this—on special projects.**
- **What keeps us from doing it consistently across the system?**
 - Lack of standard methods, specs
 - Lack of reliable performance/usage information
 - Human/institutional challenges
- **SHRP2 seeks to overcome these obstacles.**

Priority Renewal Projects



Bridges

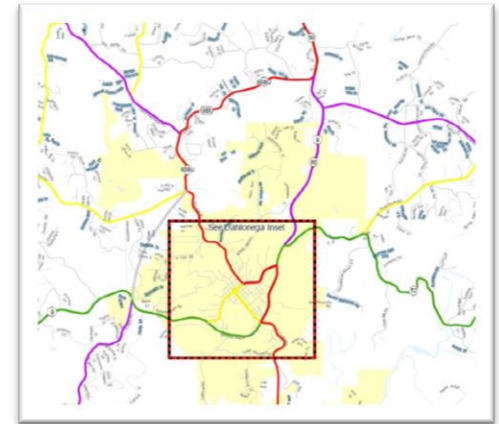
- Innovative Bridge Designs for Rapid Renewal (R04)
- Service Life Design for Bridges (R19A)

Pavements

- GeoTechTools (R02)
- Precast Concrete Pavement (R05)
- New Composite Pavement Systems (R21)
- Pavement Renewal Solutions (R23)
- Preservation on High-Volume Roadways (R26)

Pavement Preservation on High-Volume Roadways – R26

- 13 states and DC engaged
 - Over 30 pavement projects
 - ADT range 5000 to 108,500
 - All climate zones
- Quarterly conference calls
- Have created a 13 state users group that routinely meets
- Workshop in **Alabama** at NCAT
- **Rhode Island** showcase
- Marketing materials and pocket guide under development



Georgia - SR 60
Mill and Thin
HMA Overlay
Test Site
Location

R26 in a Nutshell

A Vital Resource for Informed Decision-making

Transportation departments in 33 states and the District of Columbia are testing, implementing, and sharing their options for extending the life of heavily traveled roads using the **Guidelines for the Preservation of High-Traffic Volume Roadways**. Collectively, 13 different preservation treatments are being tested on more than 30 roads with average daily traffic (ADT) ranging from 5,000 to more than 56,000 vehicles. The guidelines:

- Provide a portfolio of vital information on more than 20 treatments that have proven cost-effective.
- Take into account diverse environmental and traffic conditions.
- Consolidate useful information in one place to save time on research and cost comparisons.
- Help engineers move quickly and confidently to select the right treatments at the right time.
- Make it easier to invest in preservation strategies on high-volume roads based on information that is tried and tested.
- Be useful to states with considerable experience in pavement preservation that are eager for new approaches to use on their higher-traffic roads as well as those that are new to pavement preservation.

"The long-term financial impact of investing in pavement preservation is very exciting. The guidelines provide useful information that motivated the state to move toward newer approaches to extend the life of our roads."

—Greg Garner, Kentucky Transportation Cabinet

Examples of High-Traffic Volume Roadways

State	Project	Traffic	Climate Zone	Contact
Washington DOT	3 chip seals and 5 hot-applied seal	2,000 ADT on a 1/2 mile urban arterial, 2 new rural principal arterials, 2 new rural minor arterials, and 2 new minor arterials	West/Severe	Jeff Ulmer: ulmerj@wastate.gov
Missouri DOT	1 unbound PCC overlay, 1 water-borne emulsion asphalt wearing surface	5,000 ADT on a 1/2 mile urban arterial, 2 new rural principal arterials, 2 new rural minor arterials, and 2 new minor arterials	West/Severe	William Starnes: starnesw@missouri.gov
Michigan DOT	1 unbound PCC overlay, 1 water-borne emulsion asphalt wearing surface	5,000 ADT on a 1/2 mile urban arterial, 2 new rural principal arterials, 2 new rural minor arterials, and 2 new minor arterials	West/Severe	William Starnes: starnesw@missouri.gov
Alabama DOT	2 chip seals, 2 microsurfacing	5,375 heavy-duty average annual daily traffic with 15 percent trucks and 16,000 ADT with 15 percent trucks and 16,000 ADT with 15 percent trucks and 16,000 ADT with 15 percent trucks	South/Severe	Bill Hargis: ahargis@alab.gov
Georgia Department of Transportation	1 water-borne emulsion asphalt wearing surface, 1 hot-applied seal, 1 hot-applied seal, 1 hot-applied seal	2,000 ADT on a 1/2 mile urban arterial, 2 new rural principal arterials, 2 new rural minor arterials, and 2 new minor arterials	West/Severe	Georgina Greer: greer@dot.ga.gov

"The guidelines provide a comprehensive design guide to support decision making about pavement preservation treatments. While Texas already has its own pavement preservation decision process, there is always room for improvement, and the guidelines provide those options."

—Magdy Mikhail, Texas Department of Transportation

What the Guidelines contain:

Factors Affecting Project and Treatment Selections for Pavement Preservation

- Traffic Level
- Pavement Condition
- Climate/Environment
- Work Zone Duration Restrictions
- Expected Treatment Performance
- Costs

Treatment Selection Process

- Treatments for HMA-Surfaced Pavements
- Treatments for PCC-Surfaced Pavements
- Preservation Treatment Selection
- Preliminary Identification of Feasible Preservation Treatments
- Final Identification of Feasible Preservation Treatments
- Treatment Cost-Effectiveness Analysis
- Selection of the Preferred Preservation Treatment

Preservation Treatment Summaries

What your colleagues are saying about Preservation Approaches and the Guidelines:

"This tool is about opportunity; this tool is giving the states a portfolio of options and choices. I think it will help us redefine how we do our decision making in terms of infrastructure management."

—Andrew Williams, Ohio Department of Transportation

"The Guidelines will help us move into using these techniques on high-volume roads with a little more reassurance that there's research and support behind that decision making."

—Chris Bauserman, Delaware County, Ohio

"If you can keep your treatment costs down for a longer period of time and push out those major rehabs, then you've saved real dollars."

—Judith Corley-Lay, North Carolina Department of Transportation

Pavement Preservation Solutions in Action

Pennsylvania: With an aging and underfunded road network, the Pennsylvania Department of Transportation (PennDOT) applied flexible micro-surfacing products on four test sections in Lancaster and completed a pilot other locations. PennDOT officials say that the Lancaster site is already showing differences in pavement resilience.

Kentucky: Facing sharply rising asphalt prices, the Kentucky Transportation Cabinet (KYTC) is using the guidelines to broaden use of pavement preservation and to help them keep good roads in good condition longer and "catch more on a four-lane rural arterial with average daily traffic of 12,800 vehicles. KYTC officials say the guidelines provide useful information that motivated the state to move toward newer approaches to extending the life of roads."

Rhode Island: The Rhode Island Department of Transportation (RIDOT) already has considerable experience using preservation on its high-volume roads; however it is using the guidelines to broaden the range of successful treatments is uses. RIDOT is testing a stress-absorbing membrane interlayer (SAM) chip seal on a five-lane rural collector with average daily traffic of 16,200 vehicles including 2.8 percent truck traffic. The goal is to broaden the preservation options beyond the "usual suspects."

SHRP2 Solutions

preserving high-traffic roadways

Your guide to the best options for extending pavement life

The Challenge — Knowing when, what, and how to apply smart pavement techniques

Stretching the time between major rehabilitation projects and improve safety. For years, transportation agencies have successfully extended the life of lower-volume roadways by applying pavement preservation techniques. Achieving systematic approach that takes into account a variety of road conditions and proper timing of treatments to reduce high-traffic roads.

The Solution — Strategies and techniques to make the right decision

Many conventional preservation techniques—and some new ones—can be used to extend the life of high-traffic roadways without major reconstruction and traffic disruption. A Strategic Highway Research Program (SHRP2) offers the technical background and decision-making framework needed to bring preservation strategies widely into play for high-traffic roads.

Preservation Approaches for High-Traffic Volume Roadways, and its companion, **Guidelines for the Preservation of High-Traffic Volume Roadways** (also referred to as R26) are the first systematic and comprehensive new comprehensive guide developed through the second technical background research program (SHRP2) offers the findings from a comprehensive survey of 40 state highway agencies, seven Canadian provinces, and three cities, as well as a review of existing successful preservation techniques.

The **Guidelines** include a selection process and matrices that enable quick identification of treatment options by various categories, such as rural or urban roads, climate zones, work zone duration restrictions, traffic volumes, and relative costs.

PAVEMENT

Extending the life of the nation's busiest roads

The **Guidelines for the Preservation of High-Traffic Volume Roadways** help transportation agencies save lives, money, and time.

Saving Lives

Extending the life of pavement reduces the frequency of major reconstruction projects.

Saving Money

Applying the right pavement preservation techniques to a broad range of high-traffic roads helps agencies stretch transportation dollars by reducing the frequency of major rehabilitation projects.

Saving Time

The proven preservation strategies reduce lane closures and congestion that come with lengthy rehabilitation and reconstruction projects, saving time for the traveling public.

SHRP2 SOLUTIONS

For more information, visit <http://www.shrp2.gov> or call 1-800-368-5848.

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Trends & Developments Affecting Preservation

- Funding Shortfalls → Preservation First
- Practical Design →
Design and Operations & Preservation
- MAP-21 Performance Measures
- System & Life Cycle Management
- Public-Private Ventures
- Electric, Connected & Autonomous Vehicles



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Toward Zero Deaths™

National Strategy on Highway Safety

- Multi-Association Initiative
- National Strategy Document - Ready
- Key Areas:

- Safer Drivers & Passengers
- Safer Vulnerable Users
- Safer Vehicles

- Infrastructure
- Enhanced EMS
- Improved Safety Management

→ Safety Culture



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SHRP2 Implementation Assistance Program



SHRP2 Implementation Assistance Program



Proof of Concept Pilot

- Funds for piloting products to evaluate readiness for implementation
- Contractor support to collect data and evaluate the application

Lead Adopter Incentive

- Funds for early adopters to offset implementation cost and mitigate risks
- Recipients required to provide specific deliverables designed to further refine the product, and possibly “champion” the product to other states and localities

User Incentive

- Funds for implementation support activities after early adopter use
- Used to conduct internal assessments, build capacity, implement system process changes, organize peer exchanges, or offset other implementation costs

SHRP2 Implementation Assistance Process Timeline



First Four Rounds (2013-2014)

- First round of awards announced in May 2013 (7 products, 71 different opportunities)
- Second round of awards announced in October 2013 (4 products, 27 opportunities)
- Third round of awards were announced on March 28, 2014 (5 products, 48 opportunities)
- Fourth round of awards were announced August 8, 2014 (19 products, 85 opportunities)

Implementation Assistance Rounds 1 – 4



- SHRP2 IAP projects underway in all 50 states and D.C.
- Applications: Over 400 total received
 - from 49 state DOTs + DC DOT
 - from 38 distinct MPOs
 - from several tribal, local, utility agencies and from FHWA Federal Lands Highway divisions
- Awards: 121 recipients received 231 awards (representing work on over 200+ projects)
 - 49 state DOTs + DC DOT
 - 19 MPOs
 - 1 tribe, 1 tollway, 6 FHWA/FLH, 1 other
- Beyond the IAP – successful implementation efforts ongoing in Traffic Incident Management (L12) – 55,000+ trained in 43 states
- All 50 states + DC are engaged in SHRP2 implementation