ROCKY MOUNTAIN WEST PAVEMENT PRESERVATION PARTNERSHIP
Research Task Group
DOT Survey of Agency Preservation Practices
Summary of Results

By David Luhr
WSDOT

The results of this survey are being distributed on behalf of our Regional Partnership (RMWPPP) to collect information about current pavement preservation research, identify your current research needs, and learn about your preservation practices. The responses shown below are those received by you in response to the survey sent out in August 2012. If you have additional comments or additions, they are welcome. The responses to each question are given below.

1. Please identify if your agency is either conducting or sponsoring pavement preservation research. For each project, the types of research information we are looking for include, but are not necessarily limited to, the following: research project title, research objective, Principal Investigator, length of study, dollar amount, and current status. Feel free to provide a project summary if one is already prepared.

**Alaska**

Title: Developing Guidelines for Pavement Preservation Treatments and for Building a Pavement Preservation Program for Alaska.
Project funding ($200K) by AUTC, ADOT&PF, Caltrans
PI: Prof. Gary Hicks (CSU-Chico)
Length: July’10 to July’12
Current Status: wrapping up

Title: Field Evaluation of Crack Sealing of Asphalt Concrete Pavements in Alaska (To Seal or Not to Seal).
Project funding ($150K) by AUTC & ADOT&PF.
PI: Dr. Jenny Liu, UAF
Length: Aug’11 to Dec’12
Current Status: in progress

**Arizona**

No research at this time
California
- Not a full-fledged research project. Test and evaluate macrotexture testing of pavement surfaces after application of fog seal. Determine acceptable level for traffic safety. Tests include sand patch, circular texture meter. Ring test performed to determine application rate.
- Establishing construction evaluated work plan to compare performance of asphalt rubber seal coats (chip seals) when using the field blended process vs. the terminal blended process.

Hawaii
- Hawaii is not conducting or sponsoring any pavement preservation research at this time.

Idaho
- ITD is not sponsoring Pavement Preservation Research presently.

New Mexico
- The New Mexico Department of Transportation is not currently conducting or sponsoring any pavement preservation research projects.

Nevada
- Evaluate the long term performance of maintenance CIR (*UNR – Eli Haj, $100,000*)
  The objective of this task is to assess the long term performance of maintenance CIR projects throughout Nevada and to establish performance models for the CIR technology under Nevada’s conditions.
- Evaluation of the Pavement Rating System for Flexible Pavements (*UNR-Eli Haj, $100,000*)
  The overall objectives of this task is to assess the correlations between the PRI (Pavement Rating Index) system and the preset time-based schedule that have been used on Road Prioritization Categories 1 – 4 and to examine the possibility of developing a more standardized rating system with a scale of 0 – 100.

Oregon
- Although none of these projects are focused specifically on pavement preservation, Projects SPR 713, 718 and 734 under the “View our active projects” link at the following are related to the subject: [http://cms.oregon.gov/ODOT/TD/TP_RES/pages/index.aspx](http://cms.oregon.gov/ODOT/TD/TP_RES/pages/index.aspx)

Washington
- Optimal Timing of BST’s on HMA and BST Pavements
  Funding: $80,000
  Research Team: University of Washington
  Current Status: In Progress
  This project is a small effort to identify the important factors in identifying proper timing of Bituminous Surface Treatments (chip seals).
- Determining Expected Life and Best Practices for Pavement Maintenance Treatments
  Funding: $150,000
  Research Team: WSDOT In-House
  Projected Completion: June 2013
  This project is a start at developing a comprehensive database to monitor pavement performance as a function of various pavement preservation treatments. The initial effort is the development of a set of experimental test sections statewide that can be monitored over a number of years.
- 760.1: Use of a Double Chip Seal to Correct a Flushing Hot Mix Asphalt Pavement in Washington State
  Abstract  Full Report
  Author(s): Mark Russell, Kevin Littleton, Jim Weston, Jeff S. Uhlmeyer, Brett Johnson, Scott Dunham, Stephen A. Van De Bogert.
  Originator: Washington (State). Dept. of Transportation. Materials Laboratory
  Publish Date: April, 2011

- 697.1: NovaChip: SR-17, City of Soap Lake, MP 75.44 to MP 76.15
  Abstract  Full Report
  Author(s): Mark A. Russell, Linda M. Pierce, Jeff S. Uhlmeyer, Keith W. Anderson.
  Originator: Washington (State). Dept. of Transportation. Materials Laboratory.
  Publish Date: May, 2008

2. What would you say are the top two Research Needs related to Pavement Preservation in your DOT or Agency?

Note: A research study was published in 2008 by FHWA titled: “Transportation system Preservation Research, Development, and Implementation Roadmap”. This document can be found at this link: http://www.pavementpreservation.org/fhwa-resources/tsp-research-roadmap/

A list of the top Pavement Preservation Research Needs Statements from this report are included at the end of this document. Each research need statement has an identifying number (such as Design 03 or Materials 02). In an effort to relate the research needs expressed by the states in this questionnaire to the previously reported research needs from FHWA, next to the responses for each state are listed the corresponding research needs statement numbers that relate to the same (or similar) research topics. Some topics overlap, and some cover more than one topic, so the references to the research needs statement numbers are not precise, but generally indicate similar research topics.

Alaska

- Service Life Prediction/modeling of the different PP treatments; [Design 02; Performance 03]
- Integration of PP and Pavement Management System; [Design 07]

Arizona

- Updating our PMS; [Design 07]
- Generic polymerized emulsions for fog seal; [Materials 05]

California

- Determine performance of preservation treatments for use in Pavement Management Systems; [Performance 03; Design 02; Design 07]
- Pavement preservation scenarios for mechanistic-empirical (ME) design; [Design 06]

Colorado

- Identifying the long-term benefit of typical pavement preservation treatments, chip seals, crack seals, slurry seals, etc. That is: to what extent does preservation truly extend a pavement’s life. [Performance 03; Performance 04; Design 01; Design 02]
- Identifying the appropriate conditions to apply typical preservation treatments. For example, hard data that shows a chip seal (or crack seal, or slurry seal, etc) on a fair condition road is more cost-effective than a chip seal on a crappy road. And, in conjunction with this hard data, the measurable thresholds (rut depth, square footage of cracking, etc) at which a treatment is no longer a cost-effective preventive remedy (and thus becomes a costly, inefficient reactive remedy). [Design 01; Design 03; Materials 06; Materials 07; Performance 03; Performance 04]

Hawaii
- Implement RAP into pavement preservation treatments (e.g. Thin Overlays); [Construction 01]
- Implementing a better Pavement Condition Survey (PCS) Program. [Asset 04; Performance 02]

Idaho
- Life Cycle Cost Analysis related to the various types of Pavement Preservation treatments. [Design 01]
- PG type rating system for Emulsions. [Materials 05]

Montana
- Incorporating pavement preservation into the MEPDG; [Design 06]

Nevada
- Performance Indicators for Pavement Preservation Treatments; [Performance 02; Asset 04]
- Performance Based Specifications for Pavement Preservation Treatments; [Construction 02]

New Mexico
- Effective timing of pavement preservation treatments; [Design 03; Design 02; Materials 07]
- Nationwide State DOT policies for Pavement Preservation; [Performance 06; Asset 03]

Oregon
- Field performance study on thin lift, microsurfacing and chip seal – need to gain experience with cost/benefits of thin (approx. 1”) lift paving and microsurfacing as alternatives to chip sealing for high volume and urban state routes. What are the best practices for thin lift in regards to milling and tack coats? [Performance 03; Construction 01]
- Chip Seal design procedures – currently, agency sets the application rates for asphalt and rock by experience and visual. Would like research to see if there is a cost/benefit to implementing a design procedure such as McLeod method. We are also interested in ways to use emulsion chip seals for higher volume facilities with reduced chip loss and/or which can be opened sooner to full-speed traffic. [Design 06; Performance 05]

Utah
- We’ve requested funding to do a study of surface treatment performance – but have been denied. [Design 02; Performance05]
- A comparative study of performance for a variety of surface seals – bonded wearing course / open graded surface course / ½” HMA / stone matrix asphalt / micro surface would be of value. [Performance 03]
Washington

- What is the expected Remaining Service Life of different preservation treatments (depending on when they are applied, and the type of treatment). [Design 02; Performance 03; Performance 05]
- How can the pavement life cycle cost be optimized through the use of pavement preservation treatments? [Design 01; Design 03]

Wyoming

- Quantifying the improvements and benefits of chip seal and crack seal treatments as they relate to extended pavement life and the pavement deterioration curves. [Design 02; Performance 04; Performance 05]

3. What Pavement Preservation Treatments does your DOT or Agency use and are they used as Regular Maintenance Treatments and or Pavement Preservation Treatments?

<table>
<thead>
<tr>
<th>Flexible Pavements:</th>
<th>Regularly</th>
<th>Regularly</th>
<th>Only</th>
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<tbody>
<tr>
<td></td>
<td>Applied</td>
<td>Applied</td>
<td>Test</td>
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<tr>
<td></td>
<td>Pro-Active</td>
<td>Reactive:</td>
<td>Sections:</td>
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<tr>
<td>Chip Seal</td>
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<td>8</td>
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<tr>
<td>Fog Seal</td>
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<td>3</td>
<td>1</td>
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<td>Slurry Seal</td>
<td>5</td>
<td>2</td>
<td>1</td>
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<tr>
<td>Micro Surface</td>
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<td>2</td>
<td>1</td>
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<tr>
<td>Crack Fill/Seal</td>
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<tr>
<td>Scrub Seal</td>
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<tr>
<td>Thin Overlay</td>
<td>8</td>
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<tr>
<td>Other Specify</td>
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</table>

- 2”-3” overlays and mill/fills (OR)
Concrete Pavements:

- Joint/Crack Sealing: 7 Preventive, 6 Reactive, 0 Test
- Diamond Grinding: 6 Preventive, 4 Reactive, 1 Test
- Undersealing: 1 Preventive, 2 Reactive, 0 Test
- Load Transfer Restoration: 5 Preventive, 5 Reactive, 0 Test
- Other Specify: 2

- We only have flexible roadway pavements (AK)
- CRCP Patching and Terminal Joint repairs (OR)
4. Does your agency’s Pavement Management System currently track the ‘Service Life’ of Pavement Preservation Projects?  
   Yes: 3  No: 10

- The new Pavement Management System upgrade will (NM)
- We have just started tracking service life of maintenance (preservation) activities (WA)
- We have the ability to track performance with our pavement management data, however at this time, we haven’t specifically been tracking the service life specific treatments (WY)

5. How would you rate the overall success (quality and workmanship) of Pavement Preservation Projects constructed in your DOT or Agency?

☐ Almost always successful
☐ Moderately successful  
☐ Often fail to meet expectations

6. Does your DOT or Agency participate in a Regional Pavement Preservation Partnership?
Yes: 12  No: 1

If so, please provide the following information.

Representative’s Name:
Title:
e-mail:
Phone:

7. If you feel it could be useful, can your provide a link to your agency’s web page that contains information about your pavement preservation research?

California
- Research partner, Chico State University: [http://www.csuchico.edu/cp2c/](http://www.csuchico.edu/cp2c/)

Oregon
- The web link below has all of ODOT’s research reports. Unfortunately there is not a search items for pavement preservation, but there are many projects which relate to pavements going back many years. [http://cms.oregon.gov/ODOT/TD/TP_RES/Pages/publications.aspx](http://cms.oregon.gov/ODOT/TD/TP_RES/Pages/publications.aspx)

Washington
- This web link is a central location for all WSDOT R&D reports. There is a search function on the page. [http://www.wsdot.wa.gov/Research/Reports/](http://www.wsdot.wa.gov/Research/Reports/)
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<th>Rank</th>
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<th>Weighted Importance + Priority</th>
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<tr>
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<td>Construction 02</td>
<td>Performance Related Specifications (PRS) for Pavement Preservation Treatments</td>
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<td>2</td>
<td>Design 02</td>
<td>Determining Pavement Preservation Treatment Lives and Related Pavement Life Extension</td>
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<td>Design 01</td>
<td>Determine the Economic Benefits of Pavement Preservation Strategies</td>
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<td>Quantify Performance and Benefits of Various Pavement Preservation Treatments and Develop Pavement Preservation Treatment Performance Models</td>
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<td>Development of a Process for Estimating the Remaining Service Life (RSL) for Transportation Infrastructure</td>
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<td>QA/QC Guidelines for Pavement Preservation Projects</td>
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<td>Performance Measures and Contracting Methods for Pavement Preservation Treatments</td>
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<td>Data and Performance Requirements Needed to Incorporate Pavement Preservation into Asset Management Systems</td>
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<td>Acceptance Criteria for Surface Treatments</td>
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<td>Validates Methodology for Determining Optimal Timing of Pavement Preservation Treatment Applications</td>
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<td>Factors Affecting Pavement Preservation Treatment Performance and Expanded Treatment Selection and Design Guidance</td>
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<td>Adaptable National Guidelines to Identify the Right Pavement/Right Time/Right Treatment</td>
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<td>Mechanistic Binder Properties to Predict Surface Treatment Performance</td>
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<td>New Technologies to Determine Preservation Indicators</td>
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<td>Performance 06</td>
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<td>Asset 08</td>
<td>Convincing the Stakeholders: Communications and Institutional Issues</td>
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<td>Development of Innovative Pavement Preservation Products, Equipment &amp; Construction Methods</td>
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<td>Materials 06</td>
<td>&quot;Triggers&quot; for the Timing of Surface Treatments</td>
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<td>Design 04</td>
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<td>Materials 04</td>
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<td>38</td>
<td>Construction 06</td>
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