



# TEXAS PAVEMENT PRESERVATION CENTER

## Newsletter

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### Issue 1, Winter 2006

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#### TPPC Vision and Mission

The mission of TPPC, in joint collaboration with the Center for Transportation Research (CTR) of the University of Texas at Austin and the Texas Transportation Institute (TTI) of Texas A&M University is to promote the use of pavement preservation strategies to provide the highest level of service to the traveling public at the lowest cost.

#### Contact Us

Director: Dr. Yetkin Yildirim, P.E.  
E-mail: yetkin@mail.utexas.edu

Mailing address:  
Texas Pavement Preservation Center  
Center for Transportation Research  
The University of Texas at Austin  
3208 Red River, CTR 318  
Austin, TX 78705

Tel: (512) 232-3083  
Fax: (512) 232-3070

#### Texas Pavement Preservation Center

The new Texas Pavement Preservation Center (TPPC) was officially established August 11, 2005 in joint partnership with the Center for Transportation Research (CTR) of the University of Texas at Austin and the Texas Transportation Institute (TTI) of Texas A&M University.

#### 2005 Pavement Preservation Seminar

The 2005 Pavement Preservation Seminar was held on October 4, 2005 at the Austin Convention Center in conjunction with the Texas Association of General Contractors Trade and Equipment Show. Sponsors for the Seminar were FP<sup>2</sup>, Asphalt Emulsion Manufacturers Association, Associated General Contractors of Texas, the Center for Transportation Research, and the Center for Lifelong Engineering Education. Approximately 150 people from governmental and state agencies, professionals from industry, and academia attended the seminar. The seminar gave attendees an excellent overview of the concepts, techniques and materials involved in Pavement Preservation. The UT College of Engineering offered Continuing Education Units (CEUs) and a Certification of Completion for attendance. The program included the following presentations:

- **Asphalt Overlays**  
Gary Fitts, Asphalt Institute; San Antonio, TX
- **Scrub Seal & Fog Seals**  
Steve Douglas, Ergon Asphalt/Western Emulsions, Inc.
- **Crack Sealing Techniques and Materials**  
Vern Thompson, Crafcoc; Chandler, AZ
- **Chip Seal/Best Practices**  
Kevin King, TXI; Tyler, TX
- **TxDOT Questions/Discussions**  
Joe Graff, TxDOT; Austin, TX
- **Hot-In-Place Recycling**  
John Rathbun, Cutler Repaving; Lawrence, KS
- **Micro-Surfacing and Slurry Seals**  
Barry Dunn, Viking Construction; Georgetown, TX
- **Pavement Management Systems**  
David Peshkin, Applied Pavement Technology, Inc.; Downers Grove, IL
- **City of Los Angeles Pavement Preservation Program**  
Bill Robertson, Director and Nazario Saucedo, Assistant Director; City of Los Angeles, Department of Public Works, Bureau of Street Services

#### First National Conference on Roadway Pavement Preservation

Transportation Research Board (TRB), a division of the National Research Council that serves as an independent advisor to the federal government on scientific and technical questions of national importance, organized the First National Conference on Roadway Pavement Preservation in conjunction with joint sessions. The conference was held in Kansas City, Missouri on October 31-November 3, 2005. The First National Conference on Roadway Pavement Preservation addressed all aspects of successfully implemented roadway pavement preservation activities, including management, engineering, economics, the establishment of strategic performance goals, and the implementation of routine maintenance, preventive maintenance, and minor rehabilitation activities.

## **Texas Pavement Preservation Center**

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Section Chairs: Bill O'Leary and Yetkin Yildirim

For more information on the seminar and presentations please contact Dr. Yetkin Yildirim.

- **Asphalt Overlays**  
*Gary Fitts, Asphalt Institute; San Antonio, TX*
  - **Scrub Seal & Fog Seals**  
*Steve Douglas, Ergon Asphalt/Western Emulsions, Inc.*
  - **Crack Sealing Techniques and Materials**  
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### ***Asphalt Overlays - Gary Fitts, Asphalt Institute; San Antonio, TX***

Fitts presented on the proper methods for thin HMA overlays for pavement preservation. A thin HMA overlay is an HMA application that is not intended to strengthen the pavement structure and is used to address functional problems. A thin HMA overlay is a surface replacement (“mill and fill”) and is defined, according to Fitts, as less than 1 ½ inch of compacted thickness. Thin HMA overlays are used for the preservation of existing pavement and for functional improvements in surface friction, ride quality, and surface drainage. Fitts demonstrated how not to let the fresh HMA segregate, but the condition of existing pavement and construction quality directly affects the performance of thin overlays. Regarding surface preparation, Fitts recommended not to use “prime oils” such as MC-30 or AEP as a tack coat material. When truck loading, drop bulk loads of HMA in three piles: first in the front, secondly in the back, and lastly in middle. Regarding the HMA delivery process, Fitts advised never to let fresh HMA cool by stockpiling it onto the ground, never to bump the paver with the HMA-loaded truck, break the load before opening the tailgate, and charge the hopper before it is close to being empty. For the best performance, there must be an even compaction of HMA. This is achieved by keeping the paver at an even speed with the compaction operation. Fitts went over the best techniques for compaction. Some new mixtures/ technologies for thin HMA overlays are “smoothseal” and Novachip®.

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### ***Scrub Seal & Fog Seals - Steve Douglas, Ergon Asphalt / Western Emulsions, Inc.***

Douglas presented an overview of the materials, types, equipment, and construction guidelines for scrub seal and fog seals. Douglas defined a scrub seal as “a chip seal that utilizes an emulsion drag broom, used to rehabilitate roads with extensive cracking without having to apply

crack seal prior to chip sealing.” Fog seals are defined as “an application of diluted asphalt emulsion that protects and extends pavement life, lowers permeability, inhibits raveling, treats minor surface defects, coats and improves binder flexibility, enhances aggregate retention, and provides a uniform appearance.” According to Douglas, fog seals are used because they are inexpensive, effective, efficient, and acceptable.

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### ***Crack Sealing Techniques and Materials - Vern Thompson, Crafcro; Chandler, AZ***

Thompson stated that with pavement preservation, there is a right product for the right pavement at the right time, and that ultimately, the most important aspect of pavement preservation is safety. Crack treatments are useful because they prevent water intrusion into the sub-base, prevent incompressible, improve ride quality, and are cost effective. Crack treatments should be used when pavement failure is imminent and you wish to extend pavement life. Product selection should be based on your climate, whether you want short-term or long-term rehabilitation, and your budget conditions. Thompson strongly advises professionals not to paint the pavement with product when they are crack sealing because this product makes pavement slippery in wet weather conditions, causing accidents.



### ***Chip Seal / Best Practices - Kevin King, TXI; Tyler, TX***

King presented on the best practices for chip seal application. According to King, seal coats

rehabilitate cracks less than 1/4", raveling, bleeding, oxidized pavement, and lack of skid resistance. Seal coats do not strengthen existing pavement, increase load-bearing capacity, smooth out rough pavement, bridge major cracks, or eliminate the need for maintenance or reconstruction. Some factors affecting seal coat quality are the condition of the existing surface, design, equipment, materials, application technique, traffic volume, and weather.

Often, the pavement that is being sealed is too soft, and the newly applied aggregate, regardless of its size, will push into the pavement below. When this occurs, the new seal coat will become flush and will lose skid resistance rapidly. Pavement that is too dry and brittle will soak up the asphalt, prompting early rock loss or shelling. King went over the proper calibration methods for asphalt distributors and proper usage of application equipment. Aggregate selection should be based on the type of roadway, traffic volume and type, noise, aggregate availability, and freight consideration. After rolling, air voids should account for approximately 20% of the area. Aggregate particles should be 40-50% embedded on low volume roads and 30-40% embedded on high volume roads. Proper embedment depends on having good aggregate particle shape. King also went over the best practices for selecting the proper aggregate, aggregate application, spreading, rolling, and sweeping; and inverted prime seals.

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#### ***TxDOT Questions/Discussions - Joe Graff, TxDOT; Austin, TX***

Graff presented on TxDOT's Preventive Maintenance Program. TxDOT's PM has a contract program for seal coat (chip seal), light overlays, and micro-surfacing, and it uses state forces and routine maintenance contracts for crack sealing, spot seals, and fog seals.

The goals of the Preventive Maintenance Program are to extend the life of pavement, improve safety, and reduce cracking and other failures. TxDOT is encouraging preventive maintenance, not simply corrective maintenance. TxDOT emphasizes industry professionals not to put down too much aggregate and to keep chip spreaders as close to the aggregate truck as possible. Graff encouraged the audience to review "Chip Seal Best Practices" by the National Cooperative Highway Research Program (NCHRP) as well as TxDOT's Seal Coat manual.



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#### ***Hot-In-Place Recycling - John Rathbun, Cutler Repaving; Lawrence, KS***

Rathbun encourages people to evaluate their pavement to determine if it is a good candidate for recycling. There are three types of HIR: surface recycling, surface repaving, and remixing. HIR is a surface technique and cannot correct problems with the subgrade. HIR operates by preheating the existing surface, scarifying the surface, and then applying a recycling agent into loosened material.

At Cutler, machines are tied together electronically that can run continuously, so there are no bumps. Before choosing to recycle, some things to consider are the uniformity of the pavement, depth of the existing HMA, presence of chip seals, asphalt properties, bleeding, pavement distress, traffic level, and environment. Some potential benefits of hot-in-place recycling are the repair of distresses, extension of pavement life, completion of work within a single pass, and the improvement of ride quality, friction, appearance, and bonding.

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***Micro-Surfacing and Slurry Seals - Barry Dunn, Viking Construction; Georgetown, TX***  
Dunn presented on the best practices for micro-surfacing and applying slurry seals. Dunn stated that 40% of a pavement's quality is lost in the first 75% of its pavement life, and after this point, its quality plummets dramatically. Therefore, Dunn stressed that preventive maintenance was crucial in pavement preservation within the first 3 years of a pavement's life before the pavement begins to show signs of failure. According to Dunn, preventive maintenance is far less expensive than corrective maintenance in the long run. Slurry seals may be used as a part of a preventive maintenance program, but Dunn warned that slurry seals will not stop reflective cracking. How much slurry costs and how long it will last depend directly on the condition of the existing pavement.



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***Pavement Management Systems - David Peshkin, Applied Pavement Technology, Inc.; Downers Grove, IL***  
Peshkin presented on the software technology available for pavement management. Pavement management is the marriage of systems engineering and pavement engineering; it is a system in which optimum strategies are identified to maintain pavements at a desired level of serviceability. Information such as construction history, maintenance history, traffic

volume, money availability, agency and user objectives, and future performance goals are inputted and stored in a database, where the information gets analyzed. The system provides a "feedback loop," which allows the system to learn from prior mistakes or successes. Information is collected through visual inspection, non-destructive testing, and destructive testing methods. After the data is analyzed, PMS software can offer a multi-year pavement rehabilitation plan, an impact analysis, and data for special studies. PMS is a fiscally responsible method to take care of pavements.

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***City of Los Angeles Pavement Preservation Program - Bill Robertson, Director and Nazario Saucedo, Assistant Director; City of Los Angeles, Department of Public Works, Bureau of Street Services***

Robertson and Saucedo provided a real-life example of how pavement management systems technology has worked to improve the quality of pavement preservation in the City of Los Angeles. Los Angeles has the largest street system in the United States, with 6,400 centerline miles and 28,000 lane miles, and up until the mid 1980s, all of its roads and alleys suffered 30 years of total neglect. Today, two-thirds of Los Angeles' street system needs immediate attention. Robertson and Saucedo have utilized PMS to gain the support of neighborhood councils around Los Angeles and increase their funding allocation to \$80 million dollars, a figure that serves only to maintain rather than improve the city's pavements, but this is a figure that has increased over the years, largely due to the visual representation that PMS has offered to residents and politicians. An estimated \$150 million is needed to actually improve Los Angeles' pavements.

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***First National Conference on Roadway Pavement Preservation (October 31 - November 1, 2005)***

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Representing the Texas Pavement Preservation Center at the conference was Dr. Yetkin Yildirim, P.E. from the Center for Transportation Research. Also attending were Zane L. Webb, P.E., Director of the TxDOT Maintenance Division, and Joe Graff, P.E., deputy director for the TxDOT Maintenance Division. Dr. Yildirim submitted a paper, included in the conference proceedings: "Pavement Preservation Training in Texas." Using the current initiatives used by UT's Center for Transportation Research as his model, Dr. Yildirim described in his paper the available ways of disseminating information about preventive pavement maintenance, identified groups that should be targeted for training, and presented the viable and available training options.

The First National Conference on Roadway Pavement Preservation addressed all aspects of successfully implemented roadway pavement preservation activities, including management, engineering, economics, the establishment of strategic performance goals, and the implementation of routine maintenance, preventive maintenance, and minor rehabilitation activities. The contents of the conference were divided according to the network and project levels. The papers and presentations represented in those parts were on surfaced and unsurfaced roadway pavement program network and project treatment characteristics. All the papers from the conference were published together in the

Transportation Research Circular in October 2005, issue number E-C078, and are also available as a downloadable PDF file at:

<http://www.trb.org/conferences/preservation-asset/Program.zip>.

The conference provided a great opportunity to share information, acquire new skills, and tap into the growing network of asset management professionals. In particular, it offered a unique opportunity for transportation professionals from areas in government, academia, and consulting to gain a more comprehensive understanding of roadway pavement preservation.

For more information on the conferences and future events visit these useful websites:

**Transportation Research Board (TRB):**  
<http://trb.org/>

**First National Conference on Roadway Pavement Preservation:**  
<http://www.trb.org/conferences/preservation-asset/>

**The National Academies:**  
<http://www.national-academies.org>