



# CP<sup>2</sup> CENTER NEWS

Newsletter of the California Pavement Preservation Center

No 5

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## Proactive pavement preservation

An interview with Steve Takigawa



**S**teve Takigawa, the Chief of the Division of Maintenance for Caltrans, has been a strong supporter of pavement preservation in the state. In this article, he discusses his views on pavement preservation and where the state is heading with this effort.

### Background

Caltrans is a leader in national pavement preservation activities. Some of the activities include the following:

- Formed the Pavement Preservation Task Group (PPTG) as the partnering platform for all preservation issues.
- Developed the Maintenance Technical Advisory Guide (MTAG) for both flexible and rigid pavements and these are receiving national attention. Training on these guides will begin in the spring of 2008.
- Initiated the annual pavement preservation conference which attracts more than 300 participants to hear about new topics and best practices for pavement preservation.
- Developed the Five-Year Maintenance Plan to help secure the needed funding for pavement preservation efforts.
- Developed an innovation effort for new technologies by providing \$5 million per year to districts willing to construct test sections using a new technology.
- Promoted partnerships with industry and local agencies to help with all these efforts.
- Established the California Pavement Preservation Center (CP2C) to work with Caltrans and the PPTG to solve important problems dealing with preservation.

### What is meant by proactive pavement preservation?

Caltrans has used pavement preservation treatments for several years. However, there has not been a focus on developing a multi-year statewide plan. The Division of Maintenance plans to focus on

the following to improve the pavement preservation program:

- Think and plan ahead.
- Apply preservation treatments sooner rather than later.
- Educate the districts on the benefits of proactive preservation rather than reactive maintenance.

By focusing on making changes and making them a priority, I am confident we will develop a fully proactive pavement preservation program.

### How does it differ from maintenance practices in the past?

In the 80's and early 90's, we were asked to fix the worst pavement first. The associated funding was not enough to address all the worst pavement needs and some pavement fixes failed after the first year because we applied the treatment too late. Also, the funding was not stable enough to develop a long term pavement strategy for all the needs. Things have changed. We now must do the following:

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- Secure and dedicate funding for pavement preservation.
- Think proactively and be credible with decisions and funding.
- Think long term funding for pavement preservation.

Bad pavement and the lack of funding is a common topic in many states nationally. However, support for pavement preservation has increased over the last few years with the increased focus on pavement research, pavement education, and a strong pavement industry in California. We have been able to educate people that keeping good roads good, is good practice. In 2003/2004, the funding for pavement preservation was \$27 million and in 2007/2008 the pavement preservation funding level has skyrocketed to just over \$206 million. The Department has dedicated these funds specifically for pavement preservation.

**What are your plans for placing maintenance treatments on sooner rather than later?**

To gain the biggest impacts, we will institute the following practices:

- Identify and apply a preservation treatment to major rehabilitation and reconstruction projects that are three to five years old and have less than 10% cracking.
- Prevent the use of pavement preservation funds if the pavement distress exceeds 5-10% cracking.

I personally want to see pavement preservation funds used for the purpose they were intended. They will be applied to good pavements or the districts will not receive preservation funds.

**What are your plans for continuing to expand proactive pavement preservation in Caltrans statewide?**

To convince the districts to fully accept the concept of pavement preservation, we need to do the following;

- Implement a five-year pavement preservation plan.
- Deliver training and education to designers and decision makers.
- Educate the designers and decision makers on the benefits of preservation.
- Change the culture from "worst first" to "pavement preservation is a priority"

To illustrate how important pavement preservation is to the Department, pavement preservation projects are now in the "Contract for Delivery" and their project milestones are tracked and a status report is given to Director Kempton monthly.

**Can you identify some success stories of pavement preservation in California?**

Caltrans maintenance has numerous success stories we can share. Some of the stories that are most important include the following:

- The Five-Year Maintenance plan provides a pavement preservation road map for the Division of Maintenance and helped secure additional funding for preservation.
- Addressing 2,000 lane miles of pavement preservation was promised in 2006/2007 and 2,616 lane miles were accomplished.
- Pavement Preservation funds have increased from \$27 million 2003/2004 to over \$206 million in 2006/2007.

**... we need to ... Change the culture from "worst first" to "pavement preservation is a priority"**

**What are the areas California needs to improve to grow their pavement preservation program and increase the overall health of the state network?**

Some of the things we need to do include:

- Focus on preventive maintenance.
- Continue to grow the dedicated funding for preservation.
- Apply the right treatment, on the right road, at the right time.
- Modify Project Initiation Documents for major pavement projects to include a discussion of cost and timing for future preservation strategies.
- Implement a new pavement management system.
- Plan the work and work the plan.

**What do you need documented on the benefits of pavement preservation to help raise additional funding for pavement preservation?**

Nationally, we need to be able to show the cost effectiveness of pavement preservation. Some of the questions which need to be answered include:

- What is the cost effectiveness of the different strategies? This will help determine which strategies would be best for different levels of traffic and the different environmental areas in the state.
- What is the optimum timing for the pavement strategies related to each individual section of roadways?

Bottom line, as a minimum, we need to treat all pavements at least once every seven years. This equates to treating at least 7000 lane miles of road every year to be successful and truly proactive.





## Western Pavement Preservation Partnership (WPPP) – an update

### Background

The Western Pavement Preservation Partnership (WPPP) is pooling the efforts of participating agencies to provide a focused look at pavement preservation and will partner with other regional and national pavement preservation efforts. Pavement preservation issues include pavement policy, specifications, field investigations, applied research, and materials and training. Some of the issues to be considered include the following:

- Document the economic benefits of pavement preservation by identifying the extended life for various pavement preservation strategies.
- Develop proper timing for pavement preservation treatments.
- Integrate pavement preservation with pavement management systems.
- Improve pavement preservation performance and performance prediction.
- Promote the need for dedicated funding for pavement preservation.
- Understand performance variability of strategies and improve consistency of pavement preservation treatments.
- Communicate cost-effectiveness of various strategies.
- Implement innovation and encourage technology transfer.

### Objectives

The purpose of the Western Pavement Preservation Partnership (WPPP) is to provide a partnering forum for promoting effective pavement preservation strategies through the following objectives:

- Provide funds for an annual workshop for discussion and exchange of information and knowledge about each state's pavement preservation program.
- Provide a means to define, support and share technology of mutual interest in the area of pavement preservation.
- Provide funds for formal training presentations during the annual workshop.
- Provide funds to manage the WPPP's operations and to maintain a web site that would

display meeting reports, state guidelines, and specifications.

- Provide funds for special studies, investigations, and training.

### Expected Benefits

There is an increasing demand for advice and consultation to develop and improve pavement preservation programs. The WPPP pooled fund will be able to provide pavement preservation advancements by offering:

- Shared pavement preservation expertise and exposure to national and international knowledge.
- Fast-track technology transfer, training and deployment of pavement preservation innovations.
- Timely solutions to pavement preservation issues.
- Solutions to overcome agency challenges and business practices.
- Solid working relationships and partnerships with industry, academia and other public agencies.
- Minimum duplication of efforts as a result of working on common objectives.
- Cost reduction as a result of working on common issues.
- Identification of common research needs, funding mechanisms and priorities.

### Membership

Four states were the founders of the WPPP (CA, HI, NV and WA). Their second meeting will be held on April 8, 2008, in Newport Beach, Calif., to finalize the charter, to present activities from the various founding states and to lay out plans for growing the partnership. Each member state or agency provides funding to support the partnership for a three-year renewable period. The three year commitment of funds can be split over the three years or the full amount can be committed in the first year of the program. Other federal and local agencies are invited to join the group.



### Contacts

For more information on the WPPP or information on how to join, please contact Gary Hicks by email at [rghicks@csuchico.edu](mailto:rghicks@csuchico.edu).



## California Pavement Preservation Conference

Presented by the Pavement Preservation Task Group, the 2008 California Pavement Preservation Conference is made possible by the California Pavement Preservation Center, the California Local Technical Assistance Program, and the California Department of Transportation. To register for this conference, please check out the website [www.cp2info.org/conference](http://www.cp2info.org/conference). The agenda for the conference is also included in the website and includes speakers from Caltrans (Randy Iwasaki, Mike Miles), local agencies, industry, FHWA, and academia. We are looking a another great conference at the Radisson in Newport Beach on April 9-10, 2008.

## Pavement Preservation Task Group

### Plans for 2008

#### What is the PPTG?



The Pavement Preservation Task Group (PPTG) is a partnered platform consisting of members from Caltrans, industry, local agencies, Federal Highway Administration and academia. The PPTG was formed in 2004 to provide a level playing field for all groups working in California on pavement preservation issues. It is currently managed by co-chairs representing Caltrans (Shakir Shatnawi), industry (Hans Ho for flexible pavements and Casey Holloway for rigid pavements), and local agencies (George Bradley, City of Lodi). New local agency co-chairs are expected to be named soon. The Charter and the composition of the various committees can be found on the PPTG website [www.cp2info.org/taskgroup](http://www.cp2info.org/taskgroup).

#### Newly elected subtask groups/co-chairs

A total of 22 subtask groups currently defines the composition of the PPTG. The individual groups meet periodically to work on specific tasks that can range from improving specifications, to evaluating new products, to development of guidelines. The new co-chairs for 2008 are identified below.

#### Plans for 2008

The PPTG is active in several areas dealing with pavement preservation including the following:

- Conducting a training session on the MTAG in Lodi during the week of March 17-21, 2008.
- Planning and conducting the 2008 California Pavement Preservation Conference (CP2 Conference) in Newport Beach on April 9-10, 2008.

- Continuing to participate in the evaluation of new pavement preservation technologies. Several products are being evaluated including cold and hot recycling, fog/rejuvenating seals, various interlayers, polymer modified asphalt and asphalt rubber chip seals, and warm mixes.
- Developing non standard special provisions (NSSP's) for new products and evaluating them on full scale field projects.
- Implementing the training for the Maintenance Technical Advisory Guide (MTAG) for Flexible and Rigid pavements. New chapters on recycling and interlayers are included in the next version of the MTAG for flexible pavements.
- Continuing to update the treatment selection guidelines for both flexible and rigid pavements including estimated lives and costs of treatments. Cost effectiveness analysis will be part of the final procedure to be recommended.
- Serving as an advisory board to the CP2 center.

#### Meetings for 2008

The PPTG was formed to improve the process of introducing new innovations and specification. The partnership between Caltrans, industry, and local agencies is successful. Much has been accomplished, but much more needs to be done. The various subtask groups meet regularly and on an as-needed basis. The co-chairs and all members meet twice a year. Planned meetings for the co-chairs are April 10 in Newport Beach and November 5 in Sacramento. Planned meetings for all members are June 9 in Lodi, CA and December 3 in Southern California. Subtask group preservations can be found on the PPTG website [www.cp2info.org/taskgroup](http://www.cp2info.org/taskgroup).



Subtask-group	Caltrans or agency co-chair	Industry co-chair
Innovation	Joe Holland	Scott Metcalf and John Roberts (R)
Education	Larry Rouen	Brandon Milar and Larry Scofield(R)
Recycling	Joe Peterson	Don Matthews
Strategy selection	Al Ochoa	Haiping Zhou and John Roberts (R)
Crack seal/joint resealing	Karen Bonnetti	Lowell Parkinson
Thin overlays	Cathrina Barros	Skip Brown
Fog/rejuvenator seals	John Fox	Jim Brownridge
Chip seals	Shawn Rizzutto	Jim Ryan
Slurry/Micro seals	Hamid Saadatnejadi	Steve Olsen
Binders	Kee Foo	Edgard Hitti
Interlayers	Khalid Ghuzlan	Scott Dmytrow
Diamond grinding	Richard Stubstad	Casey Holloway
Dowel bar retrofit	Kirsten Stahl	Craig Hennings
Surface Characteristics	James N. Lee	Brandon Milar and Larry Scofield (R)
Research	Michael Samadian	Larry Santucci and Erwin Kohler (R)
Warranties	Shawn Rizzutto	Nate Huschka
Quiet pavements	Bill Farnbach	Larry Scofield (R) and Scott Metcalf
Partial/full depth repair	Kirsten Stahl	Vincent Perez (R)
Patching and repair	Milt Apple	Nate Huschka
Pavement management	Sui Tan	Margot Yapp
Outreach and information Service	Gary Hicks	Laura Melendy

(R) Indicates rigid pavements.



# Use of PMS in WSDOT for pavement preservation and rehabilitation

By Linda Pierce, WSDOT

## Introduction

In the mid 1960's the Washington State Department of Transportation (WSDOT) was mandated by the Washington State Legislature to develop a priority programming process which included a system wide pavement condition survey. The first pavement condition survey was conducted in 1969 and continued every two years until 1988 and annually thereafter. Development of the Washington State Pavement Management System (WSPMS) began in the late 1970s and was implemented for identifying projects in need of rehabilitation in 1982.

From 1969 to 1998, pavement distress was collected using a windshield survey where crews of two drove roadway shoulders to identify various forms of pavement distress. Due to safety concerns, improved speed of data collection, data quality and technology advancements, in 1999 WSDOT purchased an automated pavement condition vehicle

to collect digital roadway images, pavement profile, faulting and rutting. The conditions of the pavements in Washington State over time are shown in Figure 1. In part due to the implementation of a pavement management system,

the number of state highways in poor condition (based on levels of cracking, rutting and roughness) has decreased considerably over the last 30 years. As shown in the figure, in the mid 1970's approximately 40 percent of the state highways were in poor condition, while today, there are less than 10 percent.

The WSPMS contains annual pavement condition data, including cracking data since 1969 and International Roughness Index (IRI) and rutting data since 1991, and detailed construction and traffic history data for the approximately 17,900 lane miles of the Washington State highway system. Experimental test sections are also identified in the WSPMS.

The WSPMS is used for both project level and network level analyses. At the network level, pavement data is analyzed, and performance curves for more than 9000 structurally uniform pavement sections are generated and evaluated for programming and engineering purposes.

## Project prioritization and decision making

The WSPMS consists of three pavement condition indicators:

- Pavement Structural Condition (PSC) – has values that range from 100 (no distress) to 0 (very poor) and is a function of cracking and patching. WSDOT attempts to program rehabilitation when the PSC is projected to reach 50 (which correlates to about ten percent medium severity alligator cracking).
- Rutting/wear – WSDOT attempts to program rehabilitation when the rutting level is projected to reach 10 mm.
- Roughness (as determined by the International Roughness Index) – WSDOT attempts to program rehabilitation when the ride level is projected to reach 170 inches per mile.

Using the above indicators, the WSPMS forecasts the optimum timing for the maintenance and rehabilitation of each pavement section. The WSPMS is not used to recommend maintenance or rehabilitation treatments. The types of treatments are determined by each regional office which are more familiar with the project details.

Within the WSPMS is a pavement condition interpretation program that statistically analyzes the pavement condition data (PSC) and rutting data (PRC) to develop maintenance/rehabilitation prediction curves (Figure 2). The roughness prediction curve (PPC) is based on a straight line regression of data.

Implementation of the WSPMS has helped to improve pavement condition. For all route classifications (Interstate, Principal Arterial, Minor Arterial, and Major Collector) the overall PSC are shown below from 1971 to 1998. Noteworthy is the decrease

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Figure 1. Pavement condition

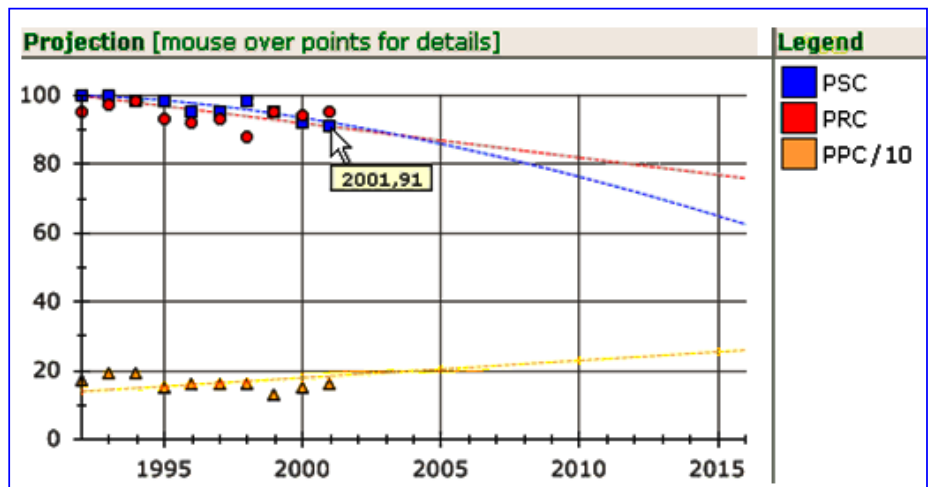
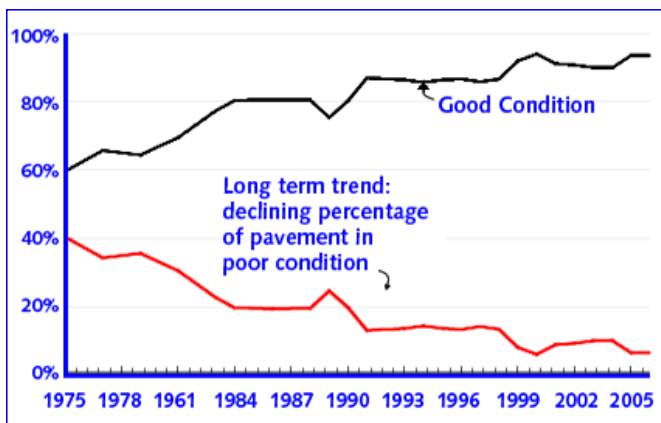


Figure 2. WSPMS performance prediction curves

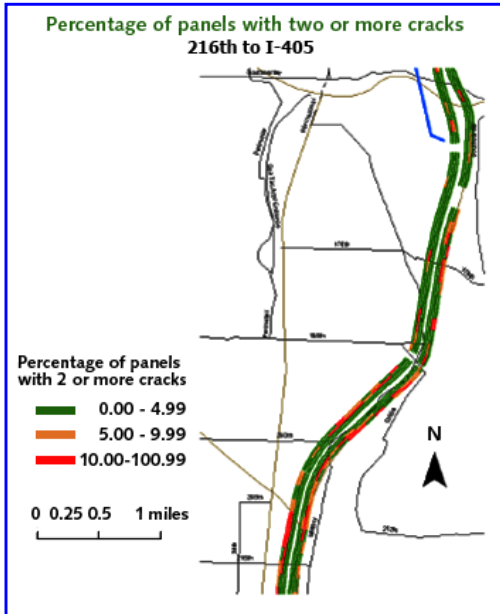


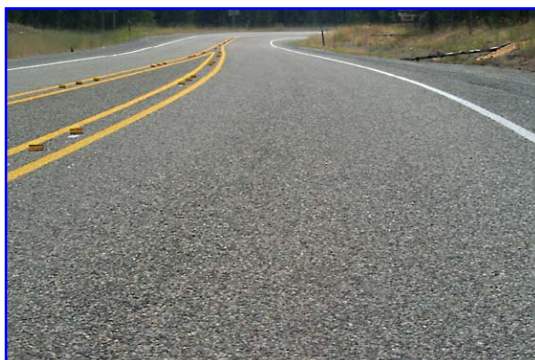
Figure 3. Percentage of panels with two or more cracks

of pavements in poor condition from the early 1970's (with approximately 50 percent of the system in poor condition) to today with approximately 10 percent of the system in poor condition.

### Engineering based investigations using the WSPMS

The following is a brief listing of recent pavement investigations that utilized the WSPMS study to investigate the performance of the existing concrete pavements on Interstate 5 in Seattle, which were constructed during the 1960's and have performed beyond the initial design life of 20 years with

little to no rehabilitation. The WSPMS was queried to aid in identifying rehabilitation/reconstruction timing according to levels of panel cracking, wear due to studded tires and transverse joint faulting.



The WSPMS was used to evaluate the ability of performance graded (PG) binders to resist rutting through intersections with stopped conditions (stop sign or signalized intersections).

## PCC pavement preservation using diamond grinding

By Shreenath Rao and Michael Darter, Applied Research Associates

Figure 1. Diamond ground surface



**D**iamond grinding is a pavement preservation procedure used to restore or improve ride quality on existing aged PCC pavements. It involves removing and literally shaving off a thin layer at the surface of the pavement using closely-spaced diamond saw blades. The level surface is achieved by running the blade assembly at a predetermined level across the pavement surface, which produces saw cut grooves. The uncut concrete between the saw cuts breaks off, more or less, at a constant level above the saw-cut grooves, leaving a smoother and quieter surface with longitudinal texture as shown in Figure 1.

Diamond grinding is used to smooth concrete pavement that have become rougher over time due to a combination of built-in (construction) roughness, faulting at joints and cracks, wheelpath rutting caused by studded tires, and permanent upward slab warping caused by moisture gradient and construction curling. The new surface texture following diamond grinding is also used to restore pavements exhibiting poor macrotexture due to polishing of the concrete surface and those that have unacceptable noise levels. Diamond grinding alone does not add or restore structural capacity to a pavement. However, it does add traffic carrying capacity by increasing the serviceability as shown in figure 2, following.



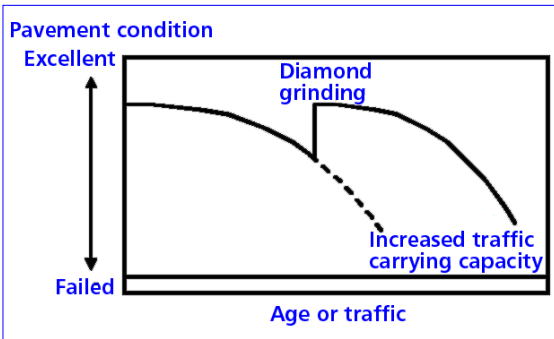


Figure 2. Grinding adds traffic carrying capacity by increasing the serviceability of the pavement.

Because diamond grinding primarily addresses functional deficiencies (such as roughness, noise, surface texture), it is most appropriate for pavements that are not structurally deficient. The most significant factors in a successful diamond grinding project are:

- Condition of the existing pavement structure.
- Traffic.
- Level of concrete pavement restoration (CPR) applied.

Pavements showing moderate to advanced material-related distresses (such as alkali-silica reaction) are not good candidates for diamond grinding.

Through diamond grinding it is possible to extend the service life of many aging concrete pavements



Figure 3. Diamond grinding equipment

at a relatively low cost and with minimal disruption to traffic flow. As in the case of any pavement preservation technique, proper timing is essential for successful, cost-effective treatments. Diamond grinding may not be a cost-effective solution if pavements are diamond ground too early—when the improvement may be minor, or too late—when the pavement is structurally deficient and does not last long enough.

Diamond grinding equipment, shown in Figure 3, works like a wood plane. The front wheels pass over a fault or bump. The blade assembly, set at a predetermined level across the pavement surface, produces closely spaced longitudinal saw-cut grooves. The rear wheel follows in the path left by the grinding head. The three most important aspects of a grinding machine are:

- Weight of the machine.
- Horsepower available to the grinding head.
- Grinding head itself.

Continuous diamond grinding for pavement restoration dates back to 1965 when a 19-year-old section of the San Bernardino Freeway (I-10) was ground to eliminate excessive faulting. Since then, diamond grinding has become a major element of pavement preservation projects. Many states in different climatic regions, including California, Georgia, Pennsylvania, and Minnesota, have had significant success in increasing concrete pavement life through diamond grinding. Based on surface texture life, faulting performance, and survival trends, a diamond-ground surface may be expected to provide a minimum of 8 to 10 years of service with a high degree of reliability, depending on climatic conditions and traffic. At this time, the pavement may be reground to provide further extension to service life up to three times without significantly compromising its fatigue life.

The addition of service life to a concrete pavement from diamond grinding results in an increase in total pavement age since initial construction. The average age of diamond ground pavements based on survival analysis is 37 years. Some of these pavements were diamond ground two or more times, and many sections had survived 40 or more years. The probability that a diamond ground pavement will have to be overlaid or reconstructed by age 30 years (since initial construction) is less than 15 percent as shown in Figure 4. Thus, diamond ground pavements contribute significantly to extension of both pavement age and traffic-carrying capacity.

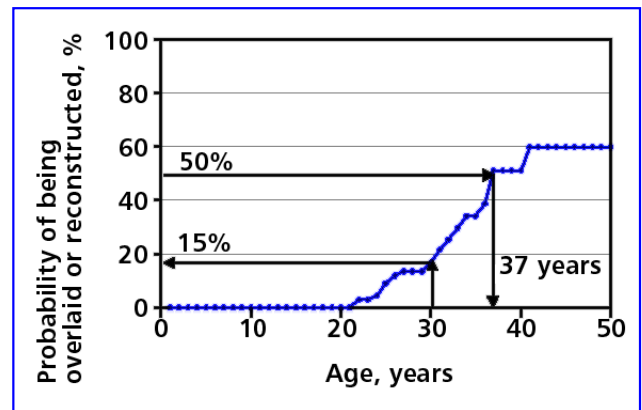


Figure 4. Diamond grinding with CPR results in more than 85 percent of concrete pavements lasting more than 30 years since initial construction and more than 50 percent of concrete pavements lasting in excess of 37 years since initial construction.

#### References:

Rao, S., Yu, H. T., and Darter, M. I. *The Longevity and Performance of Diamond-Ground Pavements*. PCA Research and Development Bulletin RD118, 1999.

ACPA/IGGA Technical Bulletin TB008.01P, *Diamond Grinding and Concrete Pavement Restoration*, 2000.



Figure 1 Five inch wagon rut



Figure 2 Looking east on Humboldt Road

## Preserve these ruts

By Thomas Ferrara, CP2 Center

The ruts in the two photos of Humboldt Road are to be preserved. They are located just outside Chico, California and are part of a historical road that connected Northern California to Idaho.

In 1862, the Owyhee and Black Rock mines of Idaho were yielding a wealth of gold, silver, tin and cinnabar. The California legislature in 1863 franchised the road to a group of investors that included General John Bidwell, founder of Chico. The Chico and Humboldt Wagon Road Company was formed and built the road connecting Chico to Susanville. The full connection with other roads and the steamboat service on the Sacramento River made a

complete connection from San Francisco to Idaho. The first saddle train used the road in 1865 and the first stagecoach left Chico in 1866. The war department used the road to transport military supplies for the surrounding military districts.

In the early 1870's the road was used to transport lumber via wagons drawn by a yoke of four oxen. The junction of the road was in downtown Chico where Broadway, Main Street, and Ninth Street come together. Ninth Street is currently State Route 32 and the original Humboldt Road is now closely matched by the route of State Route 32 as it leaves Chico to the east.

The ruts on this old roadway are to be preserved as part of Northern California's historical heritage. Ruts on our modern traveled roadways are not to be preserved. Little by little ruts on our modern roadways will become a rarity as techniques for pavement preservation are adopted and applied. The Maintenance Technical Advisory Guide (MTAG) provides guidance to correct rutting. Chapter 2, Framework for Treatment Selection, suggests microsurfacing, digouts, and thin blanket asphalt concrete overlays as good treatments for ruts. Please see [http://www.dot.ca.gov/hq/maint/MTA\\_Guide.htm](http://www.dot.ca.gov/hq/maint/MTA_Guide.htm) for the complete MTAG and details on the treatment of ruts and other good pavement maintenance practices.

*Credit: Thanks to Gregory G. White, Ph.D., Director Archaeological Research Program at CSU, Chico for providing information. Much of the historical data was taken from the article "The Humboldt Road" by Helen Sommer Gage in Butte Remembers as presented by the Butte County Branch of the National League of American Pen Women.*



Energy consumption  
HMA production with various levels of RAP

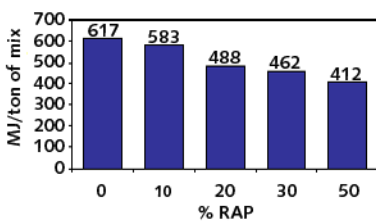


Figure 1. Reduction in energy use with increasing use of RAP.

Energy consumption

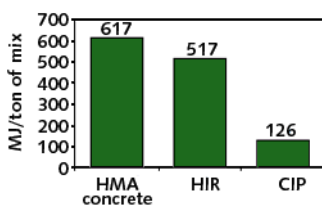


Figure 2. HIR recycling cuts energy consumption

## Green gets greener

By Mary Stroup-Gardiner, CP2 Center

Ask someone to list the most recycled materials in the nation and their response will likely include such materials as paper, plastics, glass, and metals. It is very unlikely that they will list paving materials in their "Top 10". This is an interesting observation, since as long ago as 1998, a report issued by the Federal Highway Administration and the United States Environmental Protection Agency showed that 80% of asphalt pavement removed each year was reused in pavements while the recycling rates were only 60% for aluminum cans, 56% for newspapers, 37% for plastic drink bottles, 31% for glass beverage bottles, and 23% for magazines.

Now it appears that reclaimed asphalt pavement (RAP) is not only almost completely reused in new pavements, but it also reduces the energy consumption requirements for the production of new hot mix asphalt (HMA). The Canadian government recently released the Road Rehabilitation Energy Reduction Guide for Canadian Road Builders (2005). Figure 1 shows energy consumption consistently decreases with the increasing percentage of RAP in the new mix. These data show there is an energy savings of about 7% for every 10% of RAP that is used in the new HMA.

Construction options that fully recycle the asphalt pavement result in further energy savings. Figure 2 shows that hot in-place (HIR) recycling methods use about 16% less energy than when placing new HMA. The cold in-place (CIP) methods result in an 80% energy savings. If only energy usage is considered, the CIP option would be used extensively. However, to obtain a sustainable final highway pavement life expectancy, the CIP method needs to be topped with a thin HMA overlay or a chip seal.





## CCSA meeting

The 2008 California Chip Seal Association (CCSA) Pavement Preservation Conference was held at the Holiday Inn Capital Plaza in Sacramento, CA on January 24 and 25. Over 330 attendees from cities, counties, Caltrans and industry participated in the event. The meeting covered a wide range of

pavement preservation topics including, chip seal, slurry seal, microsurfacing, cape seal, and some innovative products such as polymer modified terminal blend asphalt rubber surface seal, double layer chip seal with fabrics, and many other treatments.

The CP2 Center, as a partner with the CCSA, set up an exhibition booth at the conference. It distributed Center brochures, PPTG brochures, and information on the certificate program on pavement preservation, the



Tom Ferrara, Shakir Shatnawi, and Gary Hildebrand



Ding Cheng and Al Johnson



Gary Hicks and Steve Seeds



Cathy McDade and Mary Stroup Gardiner

Center newsletters, and conference announcements. The Center also sent a strong team, Gary Hicks, Tom Ferrara, Mary Stroup-Gardiner, and Ding Cheng to support the conference and pavement preservation. CCSA has also been a supporter of the Center and the California Pavement Preservation Conference

Caltrans also provided excellent support at the meeting. Steve Takigawa, Caltrans Division Chief of Maintenance, talked about the budget challenges that the

State faces for the next 10 years. He mentioned the most important approach of protecting our highways is through pavement preservation. He announced that Caltrans added another \$85 million in its 2007 five-year plan. Many other speakers from state, local agencies, or industries gave excellent presentations during the conference. The meeting was successfully concluded with awards and many good memories at noon on January 25, 2008.



Board of Directors presenting award to Murl Butler

## Asphalt paving material class at CSU Chico

Sponsored by California Pavement Preservation Center, CSU, Chico offered CIVL 598 Asphalt Paving Materials in the Fall 2007. The majority of students were senior students and some were from local agencies or Caltrans. Pavements comprise the largest component of the assets in the nation's infrastructure system. About 90 percent of paved roads are covered with asphalt pavement. Understanding the aspects of design, construction, and maintenance of asphalt pavement and its materials is critical to utilize and protect the invaluable asset.

This class covered basic knowledge in asphalt paving materials including asphalt binder properties, aggregate properties, conventional and Superpave PG binder grading systems, and Hveem and Super-

pave mix design. Other topics covered included polymer modified asphalt, rubberized asphalt (production, and inspection), recycling, environmental impacts, and pavement preservation. Ding Cheng served as the class instructor. Dr. Cheng studied asphalt technology in his Ph.D. program at Texas A&M University.

Expert guest lecturers in this class included Skip Brown, Dan Haynosch, Hans Ho, Tom Carter, Roger Smith, Andrew Brigg,



Guest lecturers Dan Haynosch (above) and Hans Ho




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Asphalt paving materials course  
Instructor Ding Cheng



Asphalt paving materials classmates

Brandon Milar, and Jack Van Kirk. The knowledge and experience of the guest lecturers greatly enhanced the breadth and depth of this class. Student's demonstrated great interest in

the subjects which they felt significantly increased their knowledge of asphalt materials. The overall impression of the students was that it was a great class. CSU, Chico, will offer it again in the future. 



## MTAG training plans

By Larry Rouen, Caltrans Office of Pavement Preservation

The Caltrans Division of Maintenance with assistance from the Pavement Preservation Task Group (PPTG), MACTEC and the California Pavement Preservation (CP2) Center, have revised the Maintenance Technical Advisory Guide (MTAG) with the addition of several new chapters for flexible pavements. An MTAG for rigid pavements also was developed. The complete list of chapters for both guides is shown below.

### Flexible chapters


- Introduction
- Materials
- Treatment Selection
- Crack sealing
- Patching and edge repair
- Fog and rejuvenating seals
- Chip seals
- Slurry Surfacing
- Thin maintenance overlays
- Bonded wearing surfaces
- Interlayers
- Surface recycling

### Rigid chapters

- Introduction
- Surface characteristics
- Treatment selection
- Joint resealing
- Diamond grinding
- Dowel Bar Retrofit
- Partial depth repair
- Isolated slab replacement


Along with these new chapters, training modules have been developed. The first training session scheduled will be for Maintenance Engineers, Resident Engineers, Field Engineers and Designers. This extensive five-day seminar will cover all chapters in sufficient detail to provide the engineers with a working knowledge of all the techniques. The training instructors will be experts from industry and the

CP2. The seminar will be held in Lodi, Calif., from March 17 through March 21.

The Flexible pavement training will be the first three days and the rigid pavement training will be the last two days. There is no cost for the seminar itself but seating is limited. Please E-mail Larry Rouen to request a registration form at [larry\\_rouen@dot.ca.gov](mailto:larry_rouen@dot.ca.gov). Additional training will be scheduled in 2008 at other locations. If interested in receiving training, please contact Larry Rouen. 



## Center's first online course on strategy selection

The Center is offering its first online course as a part of its certificate program this spring semester (2008) with Mary Stroup Gardiner as the course instructor. Topics to be covered include: Pavement Preventive Maintenance Concepts, Influence of Pavement Condition on Project Selection, and Identifying Feasible Treatments and Strategies. Students currently enrolled include engineers from Caltrans, industry, and local agencies, as well as civil engineering majors at Chico State. The next online course, which is part of the 12 unit certificate program, will be delivered during fall semester 2008 and will deal with asphalt pavement preservation. 





## Coming events

FHWA Expert Task Group Meeting on Pavement Preservation, April 7-8, 2008, Newport Beach, CA  
 California Pavement Preservation Conference, April 9-10, 2008, Newport Beach, CA  
[www.cp2info.org/conference](http://www.cp2info.org/conference). Also PPTG co-chairs meeting on April 10, following the conference  
 Association of Asphalt Pavement Technologists, April 27-30, 2008, Philadelphia, PA  
 Rock products committee meetings, May 1, 2008, Ontario, CA  
 PCCAS conference, May 20-22, 2008, Portland, OR, [www.pccas.org](http://www.pccas.org)  
 PPTG all members meeting, June 9, 2008, Lodi, CA, [www.cp2info.org/taskgroup](http://www.cp2info.org/taskgroup)  
 7th international conference on **Managing Pavements and other Roadway Assets**, June 23-28, 2008, Calgary, Alberta, Canada  
 2008 **WASHTO Maintenance** meeting, July 13-18, 2008, Monterey, CA, Caltrans contact Sherry Liberty-McGarity, 916-651-2002  
 International conference on **Concrete Pavements**, August 17-21, 2008, San Francisco, CA  
<http://www.concretepavements.org/9thiccp/>

## 2008 TRB meeting

The Transportation Research Board (TRB) held its 87th Annual Meeting in Washington D.C., on January 13-17, 2008. The TRB meeting covered all the areas in transportation and attracted over



Left to right, Ding Cheng (CP2 Center), Curt Beckemeyer (ARA) and Haiping Zhou (MACTEC) at the TRB meeting in January



10,000 transportation professionals from the world over. It was an excellent opportunity to promote pavement preservation knowledge as well as the CP2 Center. Many of the Center related documents were distributed at the meeting, including the CP2 Center brochure, Western Pavement Preservation Partnership (WPPP) brochure, the latest Center newsletter, and the announcement for the 1st International Conference on pavement preservation in 2010, and the California Pavement Preservation conference in Newport Beach, in April 9-10, 2008.

The Center appreciates the support of the Foundation of Pavement Preservation (FP2), MACTEC, and ARA for allowing us to distribute our materials at their exhibit booths and/or hospitality suites. Special thanks to Haiping Zhou and Curt Beckemeyer

for promoting the Center at various information booths and at committee meetings, including TRB Task Force on Roadway Pavement Preservation, Highway Maintenance Committee, and the Flexible and Rigid Pavement Design Committees.

**Center is seeking pavement preservation related questions or case histories**

The Center is looking for questions related to pavement preservation that you would like to be addressed as an article in one of our next newsletters. Also, if you want to submit an article on a pavement preservation related case history for consideration for the June newsletter, it should be received at the Center by May 15, 2008. Please submit the questions or articles to: [tferrara@csuchico.edu](mailto:tferrara@csuchico.edu).


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 CP2 Center, Dept. of Civil Engineering, 203 Langdon Hall, California State University-Chico, Chico, California 95959-0930  
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