# CP² Center News

Newsletter of the California Pavement Preservation Center

No 14 June 2010


## First International Conference on Pavement Preservation (ICPP) held in Newport Beach, California, USA

By Steve Mueller (FHWA), R. Gary Hicks and DingXin Cheng (CP² Center), and James Moulthrop (FP², Inc)

Atrium at the Radisson Hotel

The First International Conference on Pavement Preservation (ICPP) was held in Newport Beach at the Radisson Hotel on April 13-15, 2010. More than 400 delegates from 21 countries and over 40 states attended the conference. All papers or presentations, along with the conference summary, can be found on the conference website: www.pavementpreservation.org/icpp/.The compendium of papers is also available for purchase from the University of California, Berkeley. For more information, please contact conferences@berkeley.edu.

The conference started off "with a bang" with Dr. Shakir Shatnawi, the conference co-chair, welcoming the delegates to the 1st International Conference on Pavement Preservation. The conference was inspired by James Sorenson (FHWA), Dr. Shatnawi (Caltrans), and Bill O'Leary (FP² Inc). The idea for the conference originated in July, 2007, and over time many people have been involved in planning this conference. Shatnawi thanked the key individuals involved in the various committees and recognized the contributions of the various people who helped plan the conference.

Randell Iwasaki, former Director of Caltrans, followed with the first of several keynotes. He dedicated the conference to James Sorenson (his friend and colleague) who passed away in June of 2009. There has never been a better champion for pavement preservation than James Sorenson, and wherever you go in the world, Mr. Sorenson's name is recognized. He stressed the importance of pavement preservation to the state and the nation in terms of doing more with less and reducing the carbon footprint in all pavement projects. Mr. Iwasaki discussed how pavement preservation can benefit transportation programs. Caltrans has been a leader in pavement preservation, having developed the Maintenance Technical Advisory Guides (MTAG) for Flexible and Rigid Pavement Preservation, for establishing the CP² Center, and permanently funding pavement preservation.

James Sorenson, FHWA

Mr. Iwasaki was followed by representatives from the asphalt and concrete industries, which are key suppliers for preservation technologies, and were among the many sponsors of the event. Pete Grass, President of the Asphalt Institute, noted that California leads the way in pavement preservation and preservation research in this country, so it is appropriate that this conference is being held in California. He recognized the importance of FP² Inc. in their efforts to promote pavement preservation and discussed some of the most important treatments and some of the factors that need to be considered in selecting one treatment over the other. Most of the preservation treatments discussed provide a functional road service, but do not greatly increase the structural capacity of the pavement. One of the topics which still needs work, according to Mr. Grass, is the optimal timing of treatments. This has been addressed by some, but still needs additional work.

Mike Acott (NAPA) indicated that preservation not only preserves the surface of the pavement, but

Continued, next page

### In this issue

Mike Acott, Jerry Voigt, King Gee, Gary Hicks, John Roberts, Pete Grass

also its structure. He emphasized that the definition of pavement preservation, while good, needs to be broadened to include "structural preservation." The new federal legislation will focus on the preservation of assets, including pavements, which represent over a two trillion dollar investment. He also discussed the importance of perpetual pavements in that they include a sacrificial layer to protect the pavement surface and the structure. We need to be able to document the performance of all preservation treatments using pavement management systems so that cost effective solutions are used. The treatments he discussed included thin hot mix overlays and warm mixes. He pointed out these can improve the smoothness, reduce noise levels, and provide the type of permeability that the agency desires. All of these treatments are sustainable treatments in that they reduce the carbon footprint, are recyclable, produce smoother roads, and have reduced energy consumptions.

After a break in the exhibit hall, the sessions resumed with John Roberts, Executive Director of IGGA, who described the history of preservation for concrete pavements and concrete pavement preservation's role in the world today. He noted that preservation is not new in that it started in California in the 1960s with diamond grinding of a concrete pavement along I-10 near Los Angeles. In the 1970s, Georgia DOT issued a stop order on concrete pavements unless the industry could do something to correct the faulted pavements. Industry responded and concrete pavement restoration was on the move. Georgia continued to be a leader in concrete pavement restoration (now pavement preservation) over the years. Washington State DOT started work on dowel bar retrofit in the 1990s and has used this technique to restore concrete pavements since.

He also discussed the "buried treasure concept". Existing pavements have much to offer. Concrete pavements that have been overlaid with asphalt can still offer extended life if the asphalt is milled off and pavement preservation treatments such as diamond grinding are applied to the concrete. In summary, he said that pavement preservation is not the future of the industry, but rather our reality and one that we must embrace if we hope to remain effective in this competitive world in which we live.

Jerry Voigt, President of ACPA, welcomed the delegates from the international community attending the conference and then mentioned the conference is a very timely one. He said pavement preservation is an issue today in the USA because of traffic growth rates and that highway capacity has not significantly increased. Mr. Voigt said we need to be good stewards of the assets for which we are responsible. Though additional capacity is needed, we all need to preserve the existing pavement assets. He said travel in private vehicles constitutes 88% of the total travel in the USA. Over 70% of all commodities are transported by trucks on our highways and he showed how transportation systems are directly related to Gross National Product, purchasing power, the United Nations (UN) human development index and inversely related to the UN's human suffering index. We must find ways to maintain and improve our transportation systems for our country to remain competitive.

Mr. Voigt then discussed preservation from his industry's point of view. He said the concrete industry:

- Supports preservation. They have been involved in $FP^2$ for many years.
- Views preservation as vital to a healthy pavements program.
- Supports an improved and broader definition of preservation to include some overlays that not only improve functional conditions, but also may add some structural capacity.

The final presenter for the opening session was King Gee, Associate Administrator for the Office of Infrastructure of the Federal Highway Administration (FHWA). He again mentioned the contributions of one of his staff, James Sorenson, for getting the preservation initiative within FHWA and industry started. "Keeping Good Roads Good" is the theme of this conference. Mr. Gee said that pavements need to be managed across their entire life cycle. We have a large investment in the existing infrastructure and we need to maximize the return on that investment. We need a good message to help people understand why we are working on roads in good condition and providing the data that the decision makers need to be good stewards.

He also emphasized that we need to extend the life of the pavements we have and to establish a desired level of service for the different classes of pavements. If we are not able to broaden the viewpoint of the stakeholders, industry, and agencies as to the importance of preservation, we are doomed in preserving our assets. Mr. Gee said that policies and corporate direction need to reflect proactive management. Preservation needs to be institutionalized. This is evident in situations where staff turnover happens, as is currently occurring at Caltrans and other agencies. We have to begin to do more with less. Congress is now talking about levels of performance for interstates, the national highway system and for local agencies. They want to increase the performance levels of our highway system, but it cannot be done without a strong preservation effort. He pointed out the highway trust fund is not sustainable. Revenue is a central issue in the future. We will have to do more to find innovative ways of funding our transportation systems.

Continued, next page

Papers from around the world were included in these sessions. The attendees appreciated the international nature of the conference and exchanging ideas from other countries. Some of the comments resulting from the conference included:

"Good exchange between industry, agency and academia"

"Timely and good topics"

"Very well organized and a broad diversity of presenters and attendees"

"Interactions with vendors was very positive"

The overall evaluations from the attendees ranked the conference good to excellent.

Mr. Gee reviewed a number of FHWA activities which support pavement preservation in his presentation. He suggested that a "Health Index" will be used to assist in measuring system performance. There will be a number of listening sessions over the summer to help FHWA understand user needs and viewpoints and the report will be completed at the end of this calendar year. Mr. Gee reviewed Secretary LaHood's Five Goals, which include "State of Good Repair." He discussed Federal Program Reauthorization Principles, various congressional proposals, and the needs for revenue. The challenge for all of us is to preserve the system.

The opening session was followed by the following sessions:

- Plenary session on Pavement Preservation solutions for sustainability
- Parallel sessions on the following topics:
  - Decisions, Decisions, Decisions
  - Flexible Pavement Preservation Toolbox
  - Pavement Management for Pavement Preservation
  - Rigid Pavement Preservation Toolbox
  - Case Histories and International Pavement Preservation Programs
  - Selecting Materials for Extending Pavement Life
  - Promoting Benefits of Pavement Preservation
  - Recycling Technologies for Pavement Preservation
- Closing session including a conference summary (which can be found on the conference website) and comments from each of the major sponsors.

The closing session consisted of a conference summary by Steve Mueller (FHWA) followed by comments from the three primary sponsors of the event: Caltrans (Dr. Shatnawi), FHWA (Bryan Cawley), and FP$^2$ Inc. (Jim Moulthrop). Mr. Mueller indicated that we have come a long way in the area of pavement preservation. He started the session by reminding the attendees that the conference was dedicated to James Sorenson, one of the original founders for this conference. He was the international champion of pavement preservation and has helped "drive the preservation bus" for the past 20 years. He also recognized the primary sponsors of the conference include Caltrans, FHWA, and FP$^2$ Inc as well as the staff support from the University of California, Berkeley, the CP$^2$ Center at CSU, Chico, and the NCPP at Michigan State University.

"Take aways" from the conference are highlighted in Mr. Mueller's presentation and include the following:

- California and most highway agencies are in a budget crisis, but pavement preservation can help them stretch the limited roadway dollars.
- Industry (both asphalt and concrete) is supportive of preserving our infrastructure. It is cost effective, green and is an appropriate strategy with limited funds.
- There is a long history in both flexible and rigid pavement preservation. However, there is some current debate as to the need to expand the current definition for pavement preservation to include structural preservation.
- Both industry and agencies need to work together to obtain additional funding for preservation
- Pavement preservation needs to be institutionalized within public agencies and it needs to be standard practice for agencies to "Keep Good Roads Good".
- Pavements need to be managed from the "cradle to the grave" to maximize the return on investment. Preservation needs to be an integral part of this process.
- The international conference was a valuable meeting of pavement preservation champions from around the world and participants were able to learn much from one another.

Mr. Mueller concluded with the presentation of several key websites on pavement preservation and an introduction of James Sorenson's successor Bryan Cawley at the FHWA. We wish Bryan Cawley good luck in filling the shoes left by his predecessor in the position of Senior Construction and System Pavement Engineer.

The conference was concluded by a presentation from Jim Moulthrop (FP$^2$, Inc), representing both the flexible and concrete industries. He noted that that the Technical Committee for the program was

*Continued, next page*

*Steve Mueller, Laura Melendy and Jim Moulthrop*

Brent Towns, and Bart Lundgren, and Tom Kazmierowski.

Conference participants "talk shop" and enjoy the company of colleagues in between the sessions.

Frank LI, Ding Cheng, Yu Jia, Zhixiang Zhang, and Chunying Wu


Steve Seeds and David Peshkin.

Below: Etienne le Boutleiller and Alain LeCoroller of Colas.

very appreciative of those who wrote and presented papers for the conference. He also noted that the attendance was outstanding and he thanked all those who participated in the meeting. He wrapped up the conference by noting that there would be a national pavement preservation conference in two years followed by the "Second International Conference" in 2014. The location for both events is still to be determined.

## Big changes at Caltrans

### Key Departures

Caltrans Director Randy Iwasaki left Caltrans effective April 15, 2010, and is now the Executive Director of the Contra Costa Transportation Authority (CCTA) in Pleasant Hill, California. Randy had been with Caltrans for 26 years and was appointed Director in July 2009 by the Governor. He replaced former Director Will Kempton who left for a similar position in Orange County. Randy has been an active participant in pavement preservation having served on the Board for the Foundation for Pavement Preservation ($FP^2$) and a participant in a number of national efforts related to pavement preservation. One of his last official duties was to deliver a keynote lecture at the First International Conference on Pavement Preservation. He can be reached at 925-256-4724.

On the heels of Randy's departure, State Pavement Engineer, Dr. Shakir Shatnawi retired, effective April 15, 2010. He also served as Chief of the Division of Pavement Management overseeing the State's 50,000 lane-mile network. Shakir oversaw a Caltrans pavement program ranging from policy, planning design, pavement management, specifications, pavement preservation and rehabilitation, and more. Shakir had worked for Caltrans for over 20 years and was the state's leader in the pavement preservation effort. His efforts led to the creation of the $CP^2$ Center and a strong agency-industry partnering platform called the Pavement Preservation Task Group (PPTG).

Dr. Shakir Shatnawi has established his own private firm, Shatec Engineering Consultants. As a consultant, Shakir has established work agreements with several private entities. The firm specializes in pavement design, materials, preservation, construction, investigations and dispute resolution and is focusing on innovative technologies. Shakir can be contacted by phone at 916-990-6488 or by e-mail, sshatnawi@sbcglobal.net.

Both individuals have been strong supporters of the Center. We wish them well in their new careers.

### New appointments

#### Cindy McKim appointed new Director of Department of Transportation

On May 27th, Governor Arnold Schwarzenegger announced the appointment of Cindy McKim as Director of the California Department of Transportation (Caltrans).

"Cindy McKim is committed to improving our roads and infrastructure to meet the needs of future generations," said Governor Schwarzenegger. "With many years of experience with Caltrans, she understands the impact that our transportation system has on businesses and job creation. Cindy shares my desire to see California grow and change to meet the needs of an ever growing population."

McKim, 57, has served at Caltrans since 1985, most recently as chief deputy director, a position she has held since 2009. Prior to that, she held the positions of chief financial officer from 2004 to 2009, accounting division chief from 2001 to 2004,

Continued, next page

supervising transportation planner from 1999 to 2001, acting director for the administrative service center in 1999, assistant director for the administrative service center from 1996 to 1999, deputy director for rail, transit and aeronautics from 1992 to 1996, chief for the division of rail from 1990 to 1992, chief for the division of mass transportation from 1988 to 1990 and assistant director for management and policy planning from 1985 to 1988.

### Steve Takigawa named new Caltrans Deputy Director

Steve Takigawa

Shortly after her appointment as Caltrans Director, Cindy McKim took action to fill the vacant position of Deputy Director of Maintenance and Operations. Steve Takigawa accepted the position effective June 1, 2010.

Steve has been the Division Chief for the Maintenance Program for the last six years and has led the development of the Maintenance Level of Service Program and the Maintenance Budget Model, implemented the Integrated Maintenance Management System, and spearheaded the Maintenance Leadership Academy. He also helped establish the CP2 Center in July, 2006, and has been a leader in the California pavement preservation effort.

In her announcement, Ms. McKim also thanked Charlie Fielder for serving as the Interim Deputy Director of Maintenance and Operations over the past few months since Mike Miles left for the District Director position in District 7.

### Changes at the Division of Pavement Management

Susan Massey has replaced Shakir Shatnawi as the interim chief of the Division of Pavement Management. She has worked for Caltrans for over 25 years and has been involved with the Caltrans Pavement Management system and, most recently, the Office of Planning and Programming for 14 years. According to Susan, the Division will be downgraded effective July 1, 2010, and established as a Program under the Division of Maintenance. It is expected that a new State Pavement Engineer will be named sometime during the summer of 2010.

Ms. Massey also explained that the new Caltrans pavement management system is still a high priority for Caltrans. The first contract to determine the as-builts for all pavements within the state was awarded to Fugro Consultants. Fugro is using ground penetrating radar (GPR) to determine the pavement thickness. The second contract for automated pavement data collection has been advertised and interviews for a contractor are underway. It is expected that a contractor will be in place in the very near future. This contract will be used to collect ride and distress on all of the state highways in California. The automated vehicle system will be used to replace the tried and true (but slow) way of collecting distress data using pavement survey crews.

The third and final contract will be let later this year which will deal with the development of the pavement management software. The request for proposal is still under development.

## AAPT meets in Sacramento

The Association of Asphalt Paving Technologists (AAPT) met at the Hyatt Regency on March 7-10, 2010. Over 200 attendees participated in the event. They represented academia, industry, and agencies. Jim Moulthrop presided over the meetings as the outgoing President.

Dr. Shakir Shatnawi, former Caltrans State Pavement Engineer

On March 7 the government engineer's forum featured two speakers, Dr. Shakir Shatnawi (formerly of Caltrans) who spoke on pavement preservation and Harold von Quintus of ARA-ERES who spoke on pavement type selection. The speakers gave a short overview on each topic followed by discussion from the audience. Both topics generated considerable interest and discussion. Topics like this are of practical use to industry and agencies.

On March 8 the meeting started out with two keynote presentations by Randy Iwasaki (former Director of Caltrans) and Jim Roberts (Executive Vice President of Granite Construction, Inc.). Iwasaki stressed that the papers presented at the annual AAPT meetings have been useful to Caltrans and have resulted in improvements to pavement life and to the use of new techniques. However, he stated that more needs to be done in the area of pavement preservation, pavement recycling, warm mixes and other new technologies to allow agencies to select the most cost effective technologies for building and preserving the highway and street system. Caltrans is now focused on finding additional funding and preserving the assets it has in place. They have been using ARRA funds as well as state bonds to fund badly needed projects and working with the congressional delegation to increase California's share of funding in the new federal legislation. The new funding will help California improve and maintain transportation facilities to serve the public and business.

Randy Iwasaki, former Director of Caltrans

Jim Roberts discussed industries' challenges and opportunities. He

Continued, next page

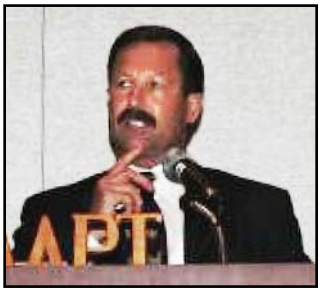
pointed out that the infrastructure is not in good condition and it could get worse since funding is not keeping pace with the needs. Material costs are volatile since they are tied to the cost of crude oil. This provides tremendous opportunities for agencies and industry to try new technologies to reduce energy costs and emissions. However, we must be able to accelerate the implementation of the new technologies and manage the risk associated with their rapid deployment. This was done during WWII and in the construction of the Interstate program. Opportunities include the increased use of pavement preservation, pavement recycling, and new technologies like warm mixes. All of these technologies are considered green and sustainable. Roberts stated "we have the technologies now, but why are they not more rapidly implemented". The answer is in part risk. We must manage the risk so that agencies and industry are more inclined to try new things. Further he stated we should all be committed to:

- Recognizing the current and future condition of the infrastructure
- Adjusting our procedures to declining budgets
- Using new technologies and innovation to help
- Supporting rapid implementation of new technologies
- Adapting to change

Both speakers challenged the association to change and to implement new technologies at a much more rapid pace. The economy is still struggling and the industry needs to make adjustments to do more with less and still provide quality products.

Upon completion of the opening session, 30 technical papers were presented in the following sessions:

- Evolution of tests for asphalt mixture performance and predictions (2)
- Cracking performance of asphalt mixtures (3)
- International forum on asphalt pavements and activities (5)
- Asphalt mix testing for performance (5)
- Modification of asphalt using Polyphosphoric acid (6)
- Advancements in asphalt mixture testing (5)
- Asphalt pavement overlay design (4)



Jim Roberts, Granite Construction.

All of the presentations were followed by lively question and answer sessions. For more information on the papers, please contact AAPT at aapt-info@comcast.com .

Another highlight of the conference was the election of Gary Hicks (the first Technical Director of the CP2 Center) to honorary membership of AAPT. This is the highest honor awarded to a member of AAPT and it has been awarded to about 30 people since the organization was founded in the early 1900s. It recognizes a lifetime achievement of work with the association and in the asphalt field. Dr. Hicks was nominated by Dr. Ray Brown, former Director of NCAT, and graciously accepted the award. He recognized his mentors, former students and others who helped him achieve this honor.


Gary Hicks, Jim Moulthrop, and Ray Brown.

## Pacific Coast Conference on Asphalt Specifications (PCCAS) held in Sacramento

PCCAS

The 37th conference of the PCCAS was held in Sacramento on May 19-20, 2010. The conference was made up of State and Federal agencies as well as asphalt binder producers and asphalt mix contractors. The conference was moderated by Larry Santucci (University of California at Berkeley) and he was ably assisted by the conference co-chairs, Brad Neitzke (FHWA) and Don Powell (San Joaquin Refining). After providing a short history of the conference, Mr. Santucci introduced the keynote speaker, Don Wessel (Poten and Partners) who provided an excellent overview on the future of asphalt. He included discussions on the past and current issues so he could project into the future. A continuing thread on the supply of asphalt is that you need to continue to expect change. Asphalt supply is good now and the United States was an asphalt exporter in 2009 and expected to be one again in 2010.

Brad Neitzke then introduced a number of speakers from his paving asphalt committee. They included:

- Phil Blankenship (The Asphalt Institute) who spoke on the use of polyphosphoric acid (PPA) in pavement asphalts. He mentioned that he is working with Caltrans to determine the impact of this additive on the binder and the mix using laboratory testing. His preliminary findings suggest it does have a positive impact on the behavior of asphalt binders and mixes.
- George Way (Rubber Pavements Association) introduced the new specification for terminal blends (or PG-TR graded asphalts). The new

Continued, next page

specification is still under development, but has been used in the states of California and Nevada. Edgard Hitti (Paramount Petroleum) provided an overview of several of the projects where this new specification has been used.

- Mr. Neitzke concluded by discussing the results of a round robin test program on a new test that has been included in the binder specification for the PG-TR materials, the MSCR test. Not all the tests have been received from the various labs. The committee will continue to work on this effort

Brandon Milar (Telfer Oil)concluded the first day by providing on overview of warm mixes and reviewing the warm mix efforts that have been completed in the State of California. He mentioned that several projects are planned in 2010 which shows the increase in interest in this technology.

Day 2 began with a report of the recycling committee by Steve Escobar (APART). Mr. Escobar reviewed the work done in the developing guidelines for the use of RAP in HMA mixes with a recommendation for adoption. Discussion of future items that need to be addressed included development of guidelines for the use of Recycled Asphalt Shingles (RAS) in mixes and HIR processes.

Shauna TecleMariam (US Oil Trading LLC), reported on the work being performed by the Emulsion Committee which included review of research currently being performed and different mechanisms which could improve the Committee's ability to function. A "strawman" specification for PMCRS materials was also discussed.

Peter Sebaaly (University of Nevada), gave a presentation on work being done at the University pertaining to the use of lime and liquid anti-strip materials in asphalt mixes. Dr. Sebaaly indicated that the report could be found at the UNR or PCCAS (www.pccas.org) website. Dr. Sebaaly then discussed the work being done at the University for the Asphalt Consortium. This work consists of determining RAP binder properties without the need for solvent extraction. The work also is a study in determining the effect of RAP on mix properties.

The Conference concluded with the Co-Chairs expressing their thanks to all that participated in Conference activities and urged that the Conference continues.

## Local agency news

### Budget Impacts on pavement preservation

*By C Bryan Graves, P. E., Butte County Department of Public Works, Superintendent of Maintenance Operations*

Throughout the past years, Butte County has always maintained a high standard of pavement preservation by contract overlay or chip seal surfacing of roadways. With minimal budget years the road fund budget would allow for about 20 miles of road to be completed by county crews. Other years saw upwards of 80 miles of roadways receiving an overlay or chip seal, which included some by contract. This fluctuation of the amount of work that was able to be completed varied with the amount of budget, availability of time to prepare the roadways and the selection type of roads. Regardless, the roads in Butte County are slowly degrading with the fluctuation of a 20 to 50 year pavement preservation cycle for the almost 1,000 maintained miles of surfaced roadways. With the introduction of a Pavement Management System (PMS), values are now placed on pavements to help with the prioritization process. With periodic field reviews and the PMS values telling us what to do, our hands are tied if we do not have the time, manpower and money to keep up with the demands. If we can not keep up, something has to give. So the deteriorating condition of the pavement leads to a reduction in safety and ride comfort for the traveling public.

With expected shortfall of resources, some "outside the box" options are utilized to see what type of benefits are available. The county has started taking some of the information that was available in the PMS program and applied it to help aid in the selection of roadways to be treated. Surfacing with Polymer Modified Rejuvenating Emulsion (PMRE) as a scrub seal, as well as application combinations

*Continued, next page*

*On the immediate right is a typical roadway surface with a pavement condition index of 40: fair condition.*

*Far right is a typical 3/8 -inch chip seal roadway surface with fog seal.*

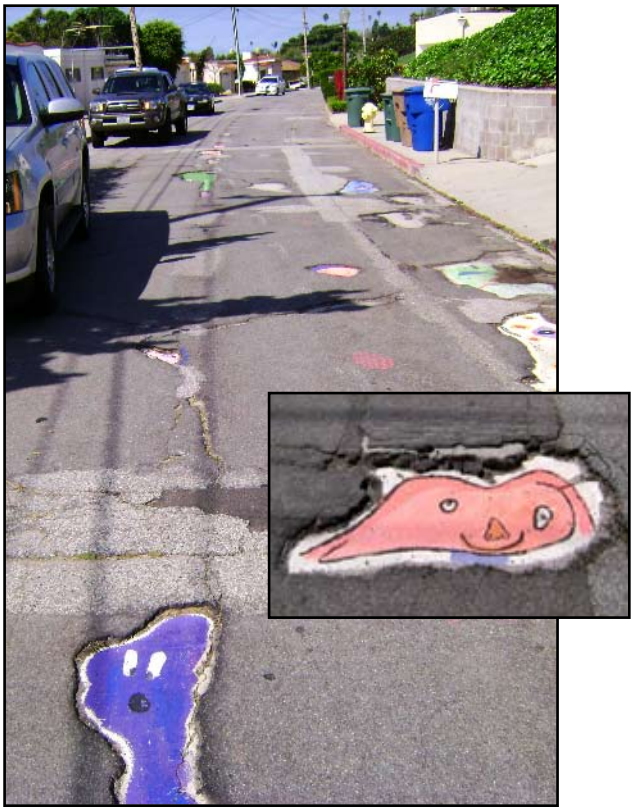
of CRS and PMCRS in single and double seals were placed and analyzed. All surface sealed roads received an emulsified asphalt fog seal. Butte County has also had cape seal projects completed using PMRE base coarse with a microsurfacing or slurry seal as the top course.

All of the products that were applied in the past performed well, but the single seal PMRE applied with a scrub broom was found in most cases to give the most return in terms of value engineering. The cost and time saved with a single shot application gives great rock retention, seals the cracks and in most cases gives a pleasing, functional black open grade asphalt type finish. Some roads are difficult to treat with the scrub broom because of varying widths and the crowning of the roads. The resurfacing treatment that can not effectively be applied by broom, is shot straight from the spray bar using PMRE. In residential and high traffic locations, the standard application is a cape seal with microsurfacing or a slurry seal which provides an excellent pavement preservation option.

As the infrastructure in Butte County is tested by the ever changing society of today, aggressive pavement preservation and management are needed to keep up. As the price of materials increase, the economy experiences downturns, and employee salaries continue to try to keep pace with the cost of living, it is imperative that the partnerships between government and industry are maintained at the highest level. Butte County uses several tools in our toolbox to meet both the unique needs of the roadways and the constraints of the road fund budget. We will continue to maintain a top notch crew at the county level, and allow for the expertise of contractors to provide the best service and sustainable product for the road user now and in the future.

## City of Ventura adds art to pothole treatments

The City of Ventura has an interesting way of treating potholes. Apparently someone has decided to contribute to public art in the streets by painting the concrete pavement that has been exposed by the asphalt overlay peeling off. It is creative, but the cost effectiveness has not yet been established. Here are two examples of the fixes.



## Update on Federal legislation and new funding for highways

By Steve Healow, FHWA California Division

Rep. James L. Oberstar, D, Minn.

It has been nearly eight months since SAFETEA-LU expired. So where is the Surface Transportation Authorization Act (STAA) which Rep. James Oberstar referred to his House Transportation and Infrastructure (T&I) Committee on June 18, 2009? The answer is: it's still there. On the Senate Environment and Public Works (EPW) Committee, Chair Barbara Boxer has invited her members to mark up Oberstar's draft bill, but the EPW agenda has been dominated by climate change, cap and trade, water resources, etc. Members of Congress are expected to debate a five-year transportation bill this year, but cannot agree on whether to raise the gasoline tax or identify funds from other sources to pay for road work.

In the interim Congress has extended SAFETEA-LU three times. The most recent Continuing Resolution (H.R. 2847) runs through December 31, 2010. H.R. 2847 does not continue all highway and transit program earmarks contained in SAFETEA–LU. It provides each state with a percentage of their fiscal year 2009 allocations to carry out selected programs with limited obligation authority, such as the High Priority Projects Program, Transportation Improvements, and the Highway Bridge Program.

Meanwhile the unemployment rate in construction remains around 20%, the highest of any industrial sector. A turnabout may have begun in March, as Bureau of Labor Statistics data shows employment in construction held steady. Prior to March the industry lost an average of 72,000 jobs per month during the previous year. More

Continued, next page

good news appeared in a May 7 report from the U.S. Dept. of Labor, which announced the nonresidential construction industry gained 9,200 jobs in April. In March and April, nonresidential construction employment grew by 21,500 jobs. According to Association of General Contractors analysis the unemployment rate in the non-seasonally adjusted construction industry was 21.8% in April, the highest for this month since records were started in 1976. U.S. Bureau of Labor Statistics estimates there are currently 1.92 million unemployed would-be construction workers in the US.

### What does the White House want in the next multi-year Surface Transportation Authorization?

The Obama administration is determined to make its own mark on transportation policy by completing and repairing the current highway system while adopting a diverse menu of investments in high speed intercity passenger rail, mass transit, bike paths, and pedestrian walkways for neighborhood residents who don't drive.

In June 2009 Transportation Secretary LaHood announced a joint Livability Initiative with the Environmental Protection Agency and the Department of Housing and Urban Development. DOT, EPA and HUD will pool resources and coordinate policies to support existing communities, provide more transportation choices and coordinate their planning with local development. The Livability Initiative encompasses DOT programs such as Safe Routes to Schools, Complete Streets, and the Bicycle/Pedestrian initiative.

*Since 1980 traffic volume and truck traffic have doubled, while lane miles have increased only about 4%.*

In a May 7th Dallas Morning News article Secretary LaHood outlined the administration's broader agenda for STAA: safety, network efficiency, reliability, capacity, mode choices, reducing reliability on foreign oil and reducing greenhouse gas emissions. U.S.DOT has begun restructuring in response to Secretary LaHood's agenda. In a policy shift from the previous administration LaHood maintains that mobility is less of a concern than livability.

A second presidential initiative which will be reflected in the STAA is sustainability. A sustainable transportation system will meet current needs for access and economic growth without compromising the ability of future generations to meet their own needs. In an Executive Order dated October 5, 2009, government agencies are directed to "… set greenhouse gas emission reduction targets, increase energy efficiency, reduce fleet petroleum consumption, conserve water, reduce waste, support sustainable communities, and leverage Federal purchasing power to promote environmentally-responsible products and technologies…" In response, Federal Highway Administrator Victor Mendez announced his "Every Day Counts" initiative to reduce delivery times for highway projects, accelerate the deployment of innovative technologies, and reduce the agency's environmental footprint.

### What does Congress want in Surface Transportation Authorization?

House T&I Committee Chair Oberstar proposes a six-year, $450B Surface Transportation Authorization Act. His quandary is how to pay for the larger proposed program. With the current revenue stream the Highway Trust Fund can sustain spending levels of $34B per year. The House draft STAA calls for spending closer to $50B per year. House T&I priorities include: congestion reduction, freight movement, air quality, user costs and quality of life. The House T&I Committee has shown the best focus toward Surface Transportation Authorization, but they can't advance their bill without finding additional revenue.

Rep. Oberstar and others have expressed concern that highway users are now paying the price of decades of under-investment in infrastructure and that has undermined condition and performance. They cite the following:

- The 2009 ASCE report card assigned U.S. highways a D-, down from a D in the 2005 report card.
- Since 1980 traffic volume and truck traffic have doubled, while lane miles have increased only about 4%.
- In 2006 the People's Republic of China spent approximately $150 billion on the construction of highway facilities. In comparison the U.S. spent approximately $65 billion on the construction and maintenance of highways. China's infrastructure investment amounts to over 8% of their gross domestic product, compared to 6% in India and 1.5% in the U.S.; this is in spite of the U.S. having a road network approximately twice that of China or India.
- Federal highway trust fund money is declining in real terms because the federal gas tax is not indexed to inflation. Consequently, since the gas tax was last raised in 1993 it has lost nearly one-third of its purchasing power.

In summary, debate over how to fund a bill that is likely to cost $500 billion has stalled progress on legislation in the House and Senate as both parties in Congress and the White House debate the direc-

*Continued, next page*

tion of federal transportation policy. An agreement is seen as unlikely before the November election. The White House has had, in the president's words, "a tough legislative year" and has been preoccupied with health care, immigration, cap and trade, energy, the gulf oil spill, two wars, the sub-prime mortgage debacle, the $700B Wall Street bailout and mid-term elections. Look for more continuing resolutions through 2011. House T&I ranking member John Mica (R-FL) recently told the Journal of Commerce "… It may be 2011 before Congress passes a surface transportation bill. I think we're looking at spring, though I haven't given up on December."

### New funding for highways:

There was a time when the U.S. led the world in surface transportation investment. Those days are gone as infrastructure spending in China and India have surged past the U.S. Over the last two decades, as Highway Trust Fund revenues have lagged, Congress and States have sought innovative financing to expand the capacity of the Federal-aid program to deliver projects and meet investment requirements. Historically Congress has funded surface transportation infrastructure through grants from the Highway Trust Fund on a 'pay-as-you-go' basis, i.e. construction occurs in phases as funds become available over a period of years. States and local agencies now have available a growing array of financial tools other than the Federal Highway Trust Fund to finance projects. Tolls, user fees, and other project-based revenue sources, in combination with new finance tools, can increase state and local agencies' ability to deliver projects. The newer financing methods leverage existing financial resources to raise new sources of capital. However the innovative financing methods may run contrary to existing local agency programs and policies and require enabling legislation.

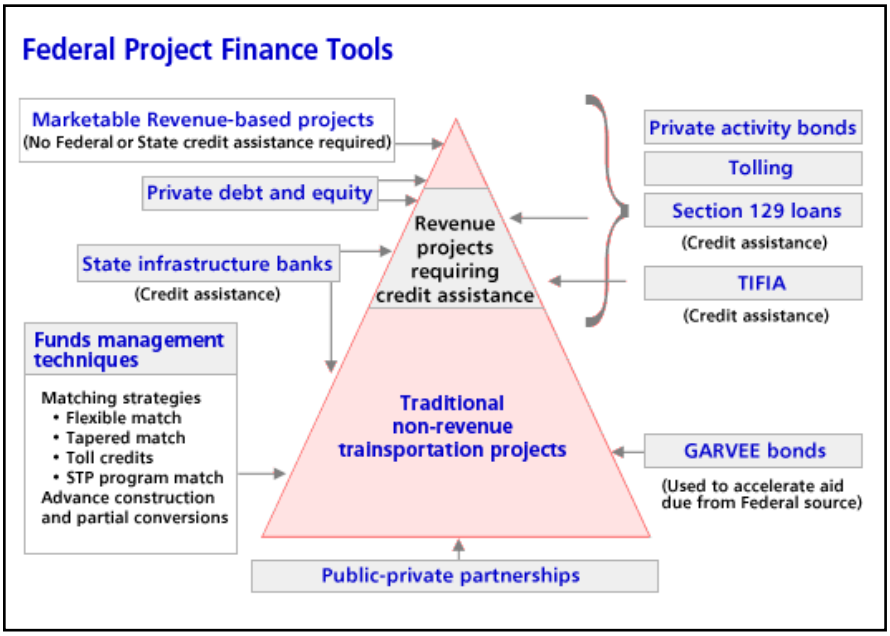



*Figure 1: Pyramid illustrating the different mechanisms used to finance both revenue and non-revenue projects.*

Conventional and innovative Federal-aid financing tools for project sponsors fall within three categories:

- Federal-aid Fund Management Tools such as Advance Construction and other Federal matching strategies. These are intended to increase states' flexibility in providing the required match for Federal-aid programs and facilitate reimbursement.
- Federal Debt Financing Tools like Grant Anticipation Revenue Vehicle (GARVEE) bonds, Private Activity Bonds (PABs) and other bonding and debt instruments. These tools allow state and local entities to borrow against future expected revenue to accelerate and manage project delivery.
- Federal Credit Assistance Tools such as Transportation Infrastructure and Innovation Act (TIFIA) loans, State Infrastructure Banks (SIBs), and Section 129 loans. Their purpose is to improve project sponsors' access to credit through loans and credit enhancements to accelerate and manage project delivery.

Since their debut in 1998 nearly $9.3B in GARVEEs have been purchased. In 2008 eight states issued $1.7B in GARVEEs ($98M in California). In October, 2008, the State of California and Caltrans issued their second series of GARVEEs to finance two State Highway Operation and Protection Program (SHOPP) construction projects. SHOPP projects are typically capital improvements related to maintenance, safety, and rehabilitation of the transportation infrastructure. Revenue from GARVEEs has allowed SHOPP projects to begin construction earlier than traditional funding strategies. Caltrans anticipates another issue of GARVEEs to underwrite twelve additional SHOPP projects worth $2.0 billion through June of 2012.

Since 1998 TIFIA loans, loan guarantees and lines of credit have provided credit assistance to major transportation investments on highway, transit, passenger rail, freight and port projects. In our area this strategy has been used successfully for the San Francisco Transbay Transit Center, San Diego County South Bay Expressway, and the Reno, Nevada Re-TRAC Project.

In 1994 California chartered its own Infrastructure and Economic Development Bank to make loans and issue bonds for any infrastructure project, not just transportation. The Bank has compiled a loan portfolio of $400M with cities and counties. The selection process remains objective since all project applications are judged against the same standardized list of threshold criteria.

The pyramid shape in Figure 1 reflects the relative number of projects in each funding category. The

*Continued, next page*

base of the pyramid represents the majority of projects that do not generate revenues as a matter of public policy and choice; they rely upon funding primarily through grants. The middle layer of the pyramid represents projects only partially funded with debt finance payable from project-related revenues, i.e. projects requiring some form of public credit assistance to gain market access. The tip of the pyramid represents the very small number of projects that generate enough revenue to be financed on a stand-alone basis with limited governmental assistance.

### What types of projects are appropriate for innovative financing?

Project sponsors must evaluate each project and determine the best approach for financing. The optimum strategy may accelerate project delivery, particularly those with potential to generate revenue, such as toll roads, user fees, or dedicated taxes. They are good choices for loans and credit support, since they have a dedicated revenue source. In these cases, the users of the facility pay for the project over a period of years until the debt is retired.

The private sector can also participate in the innovative financing of the nation's surface transportation infrastructure through Public-Private Partnerships, concessions and lease transactions. Public-Private Partnerships (PPP) refers to contractual agreements between an owner agency and a private entity in which the private sector may assume a greater role in the planning, financing, design, construction, operation, and maintenance of a transportation facility compared to traditional procurement methods. Owner agencies typically enter into PPPs on larger, more complex projects to expedite project delivery and tap into private sector specialized expertise, such as technical skills, management and financial resources. PPPs may be advantageous to achieve public agency objectives, such as greater cost and schedule certainty, supplementation of in-house staff, innovative technologies, or access to private capital. A popular PPP is the design-build contract.

There are workshops available to all for more information on innovative financing strategies through the Caltrans Division of Local Assistance and the National Highway Institute.

## Concrete steps to saving fuel: How the choice of road repair methods can save fuel and reduce our dependence on oil imports

By John H. Roberts, Executive Director, International Grooving & Grinding Association

With more attention than ever being focused on energy conservation, vehicle fuel efficiency and new alternatives such as hybrid cars and biodiesel, few people realize the significance of road rehabilitation methods on energy use. But the difference is black and white: according to a Federal Highway Administration (FHWA) report, a traditional 3-inch asphalt overlay uses 3,215 gallons of fuel per mile, while diamond grinding, an alternative solution that restores rideability by removing surface irregularities, uses only 935 gallons of fuel per mile on average.

**Consider this:**

Milling an asphalt overlay of an existing concrete road and then diamond grinding it can be even more fuel efficient than milling and replacing with a 2-inch overlay.

Diamond grinding is a method of restoring concrete pavements by using a cutting wheel studded with diamonds (the hardest substance on earth) to remove faulting, slab warping, studded tire wear and unevenness on concrete pavements. Often used in conjunction with other pavement restoration techniques, such as slab stabilization or joint and crack resealing, diamond grinding creates a smooth, uniform pavement profile. Unlike asphalt overlays, which

***Diamond grinding concrete pavement not only results in a longer-lasting surface and improves safety for motorists, but the method also benefits taxpayers from a financial standpoint. A review of bids from more than 100 jobs let in California from May 2009 to May 2010 indicates that the average price of grinding existing concrete pavements is $3.43/square yard.***

can require a large amount of energy to heat materials up to 325-degrees-Fahrenheit[1] at a production plant, diamond grinding merely dresses the existing pavement surface and therefore does not require the use of additional material. Asphalt overlays also need multiple diesel-powered vehicles for construction: a truck to deliver the hot asphalt from the plant to the job site, plus pavers and compaction rollers to place the overlay. By contrast, the heavy equipment used for diamond grinding — a grinder complete with a vacuum for slurry pick-up and a water tank that cools the blades — operates

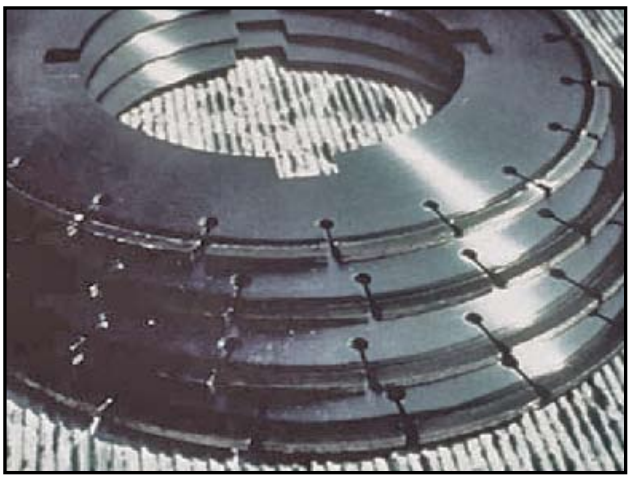
Continued, next page

as one fuel-efficient convoy. The end result is that diamond grinding a concrete pavement is three times more energy efficient than performing a typical asphalt overlay.

## Life-cycle considerations

In addition to the energy costs involved with a pavement rehabilitation project, it is also important to consider the life cycle cost of maintaining both types of pavement surfaces. An asphalt surface needs to be replaced approximately every 8 to 15 years with a new layer of asphalt. This reality dramatically increases the fuel usage per mile of road for asphalt roads over the pavement's life.

Since concrete roads can be rehabilitated using cost-effective Concrete Pavement Restoration (CPR) techniques, life cycle fuel consumption is dramatically less for concrete pavements. In addition, diamond grinding confers certain benefits that help pavements last longer. For example, dynamic loads caused by rough pavements can be up to 1.5 times greater than static loads which results in a decrease of the pavement's service life. The 70-percent smoother pavement profile created by diamond grinding actually increases the pavement's longevity. Joint and crack resealing also helps to extend a pavement's life cycle by minimizing the infiltration of surface water and incompressible material into the joint system. This, in turn, reduces subgrade softening, slows pumping and erosion of the sub-base fines and may limit dowel bar corrosion caused by deicing chemicals.



Diamond grinding blades


Diamond grinding unit in operation in urban setting.

Diamond grinding operation in rural setting.

A study by the California Department of Transportation (Caltrans) found that the average design life of pavement between diamond grindings was 16 to 17 years. Since concrete pavement can be diamond ground up to three times without affecting service life, the life cycle of the pavement stretches to anywhere from 50 to 70 years . The very first diamond grinding project in the country – a section of Interstate 10 in California -- was constructed in 1946. Nineteen years later, the road was diamond ground to eliminate excessive faulting. It was once again ground in 1983 and 1997 and is still carrying heavy traffic loads today.

Diamond grinding also avoids the major traffic disruption and drain on resources of typical asphalt overlay projects. It can be completed with minimal lane closures during a shorter period of time and can be performed during off-peak hours to minimize traffic issues. Because diamond grinding is only targeted at areas that need repair, the material waste and excessive fuel consumption involved with repairing an entire section of roadway is eliminated. Plus, unlike a bituminous overlay, which fill gutters and reduces their drainage capabilities, diamond grinding doesn't affect curbs and gutters on municipal streets. Nor does it require costly, energy consuming adjustments to guard rails, manholes, side slopes and overhead signs.

But diamond grinding doesn't just provide fuel consumption benefits during construction — it also transfers those benefits to drivers. Because hard concrete pavements don't deflect like asphalt, studies have shown that concrete pavement reduces fuel consumption for vehicles. Once pavements have been restored by diamond grinding, the fuel

Continued, next page

savings increase since smooth pavements have been shown to reduce fuel consumption. In fact, a May 2009 report by the American Association of State Highway and Transportation Officials (AASHTO) and The Road Information Project (TRIP), a national transportation research organization, found that driving on rough roads costs the average American motorist approximately $350 a year in extra vehicle operating costs.[2]

In addition to saving fuel, diamond ground pavements offer other valuable benefits as well. In contrast to the transverse texture usually found on 20 and 30 year old concrete pavement, diamond grinding imparts a longitudinal texture, which helps reduce traffic noise. The longitudinal texture also enhances the tire/pavement mechanical interlock, resulting in fewer accidents on diamond ground pavements. A study by the Wisconsin Department of Transportation and Marquette University found that the overall wet weather accident rate for diamond ground surfaces was only 57 percent of the rate for unground surfaces. Plus, the diamond ground pavements provided significantly reduced accident rates up to six years after grinding.

When it comes to reducing fuel use, creating a longer lasting surface and improving safety for motorists, the choice is black and white—repairing pavement through diamond grinding provides a clear advantage over traditional asphalt overlay on existing concrete pavement.

According to Craig Hennings, Executive Director of the American Concrete Pavement Association (ACPA) Southwest (SW) Chapter, this means diamond grinding is even more of a bargain when compared over the 16 year life extension diamond grinding adds to a pavement. On a per year basis, that is only $.21/SY/year!

## How much fuel?

***The Federal Highway Administration (FHWA) provides data about the fuel used in various aspects of highway construction including hauling, site preparation, producing materials and placing (construction). Using FHWA's information, the diesel fuel used to build a mile of asphalt and concrete pavements can be calculated and is compared in the ACPA document QD023P. Using that FHWA information, as well as information from actual diamond grinding and joint resealing operations, the comparison in the box on the right shows the fuel consumption of a typical 3-inch asphalt overlay over an existing concrete pavement, a typical milling and 2-inch overlay operation that repairs a concrete road previously overlaid with asphalt, and a diamond grinding and joint resealing[3].***

## Compare:

- ***It takes an average of 3,215 gallons of fuel per mile to place a 3-inch asphalt overlay over an existing concrete pavement.***
- ***It takes an average of 3,043 gallons of fuel per mile to mill and overlay with 2-inches of asphalt, a concrete pavement previously overlaid.***
- ***It takes an average of 935 gallons of fuel per mile for diamond grinding and joint resealing.***

## For more information:

Please visit the American Concrete Pavement Association (ACPA) website at www.pavement.com or the International Grooving & Grinding Association (IGGA) website at www.igga.net for more information on the best rehabilitation methods for concrete roads, as well as further data on additional environmental advantages to choosing concrete roads.

## About the IGGA

The International Grooving & Grinding Association (IGGA) is a non-profit Trade Association founded in 1972 by a group of dedicated industry professionals committed to the development of the diamond grinding and grooving process for surfaces constructed with portland cement concrete and asphalt. In 1995, the IGGA joined in affiliation with the American Concrete Pavement Association (ACPA) to represent its newly formed Concrete Pavement Restoration Division. The IGGA / ACPA CPR Division now serves as the technical resource and industry representative in the marketing of optimized pavement surfaces, concrete pavement restoration and pavement preservation around the world. The mission of the IGGA is to serve as the leading promotional and technical resource for acceptance and proper use of diamond grinding and grooving as well as PCC preservation and restoration. For more information, visit www.igga.net.

[1] National Asphalt Pavement Association. November 23, 2009. www.hotmix.org/index.php?option=com_content&task=view&id=352&Itemid=760.

[2] *Rough Roads Ahead*. November 23, 2009. http://roughroads.transportation.org/RoughRoads_FullReport.pdf.

[3] *Conserving Fuel When Rehabilitating Concrete Roads.* November 23 2009. www.nebrconc.org/2005_layout/Documents/FINAL%20-%20Conserving%20Fuel%20Fact%20Sheet.pdf_.

## City of Roseville places an asphalt rubber chip seal using warm mix technology

A double chip seal trial was placed on a 1000-foot section of North Cirby Street in the City of Roseville on June 4, 2010. To our knowledge, this is the first time that an asphalt rubber chip seal was placed using the warm mix technology Sasobit. The first chip application consisted of a 3/8-inch precoated aggregate on 0.55 g/yd$^2$ of AR rubber treated with Sasobit. The asphalt rubber was applied at a temperature of 350°F, which is substantially lower than the normal application temperature of 390–400°F. Staff from the City of Roseville commented on the reduction in smoke and odor when the asphalt rubber seal was placed at lower temperatures. In fact, they mentioned the smoke was about 75% less than the normal product. This was confirmed by three inspectors who were certified in visual emissions evaluations.

The asphalt rubber chip seal was covered with a finer chip seal using 1/8-inch precoated rock. The application rate for the PG76-22 TR binder was 0.23 g/yd$^2$ placed at a temperature of 350°F and covered with the aggregate at a rate of 10 lbs/yd$^2$. The terminal blend rubberized binder contained 18% rubber and 3% polymer. Overall, the City was pleased with the trial because of the reduced smoke and odor largely due to lower spray temperatures.

The CP$^2$ Center will monitor this project as a part of a grant from CalRecycle (formerly the California Integrated Waste Management Board). We are hoping other agencies will try this product. For questions on the trial, please contact Steve Olsen or Marc Bertsch of Intermountain Slurry Seal at steve.olsen@gcinc.com and marc.bertsch@gcinc.com, or John Hernandez of the City of Roseville at jhernandez@roseville.ca.us.

Spray application of asphalt rubber. Smoke level and odor have been greatly reduced.

Rolling the chip.

Application of pre-coated chip.


Finished surface after second chip applied.


Ding Cheng moderated a session on pavements.

## The CP² Center's Ding Cheng participates in the GeoShanghai 2010 International Conference

By Ding Cheng, CP2 Center

The GeoShanghai 2010 international Conference was held June 3-5, 2010 in Shanghai, China. The conference was well attended and had a number of interesting keynote speeches. There were more than 200 papers published covering a wide range of geotechnical issues. The pavement design and pavement materials topic had 73 peer reviewed technical papers, all of which will be published in an ASCE Geotechnical Special Publication No. 203.

Dr. Cheng was the chair for the session on Pavement VI – Pavement performance and analysis. There were seven papers in his session covering topics in pavement management, pavement maintenance, safety, long term performance, and life cycle cost analysis by authors coming from the United States, Australia, New Zealand, Netherlands, and China. Five of these papers were presented at the conference.

Dr. Robert Lytton, a professor at Texas A & M University and Dr. Cheng's mentor, was a keynote speaker at the conference.

Sui Tan of the MTC and Dr. Cheng co-presented a technical paper on integrating pavement preservation into the pavement management system (PMS). Dr. Cheng presented the introduction, a history of PMS and pavement preservation (PP) in the United States, the technical approach of integrating PP into PMS, and the level of details and resources required for different levels of integration. Sui Tan presented a case study of using StreetSaver to show the benefits of the integration, followed by the summary conclusion of the paper. There were several questions from the audience of the session regarding the paper. One question related to optimal recommendations on treatment strategies, and another one wanted to know the impact of allocating a different proportion of pavement maintenance treatments and pavement rehabilitation.

The pavement session went very well and Dr. Cheng congratulated all the authors and presenters for their good work and contributions to the conference.

Freeway in Shanghai.

## Upcoming opportunities for professional development in California

### ACPA workshop on concrete pavements

Join ACPA Southwest on October 6, 2010, at the Kellogg West Conference Center in Pomona for a day-long workshop on the design, construction, and maintenance of concrete pavements. It will feature exciting general session speakers and technical breakout sessions for in-depth discussion of the latest in concrete pavement. Registration will be available on the ACPA website: www.acpa-southwest.org.

### International Conference on Sustainable Concrete Practices

This conference is being organized by Federal Highway Administration and the National Concrete Pavement Technology Center and will be held in Sacramento at the Hyatt Regency on September 15-17, 2010. The tentative program can be found on the FHWA website at www.fhwa.dot.gov/pavement/concrete/2010acptpconf.cfm. For more information please contact Sam Tyson, Office of Pavement Technology at 202-366-1326. The University of California Pavement Research Center and the CP² Center are co-sponsors.

### Asphalt Pavement Association of California – Annual Conference

This year's asphalt pavement conference will be held on Thursday, November 4, 2010, at the Doubletree Hotel in Ontario. The theme for this year's conference is "Stretching Your Roadway Dollars." A trade show will again accompany this very popular annual event. Speakers include Larry Lemon (President of NAPA) and Will Kempton (Director of the Orange County Transportation Authority). Additional information on speakers and topics are forthcoming. For additional information please contact the APA of California at 949-855-6489 or 916-239-8315.

Will Kempton

# PPTG News

## MTAG training delivered in Sacramento

Caltrans provided training on the Maintenance Technical Advisory Guides on March 23-25, 2010. The schedule and speakers are shown below.

All speakers were from Caltrans, industry or the CP² Center. The participants generally rated the course as excellent (60%) to good (30%).

Table 1. Agenda for the three-day training

### Tuesday, March 23

| | |
|---|---|
| 7:30-8:30 am | Sign in and pick up course material |
| 8:00-8:45 am | Introduction to Flexible Pavement Preservation – Dr. Shakir Shatnawi |
| 8:45-9:45 am | Materials – Dr. Hans Ho/Dr. Gary Hicks |
| 9:45 – 10:00 | Break |
| 10:00- 10:30 | Flexible Pavement Treatment Selection – Dr. Gary Hicks |
| 10:30- Noon | Interlayers- Scott Dmytrow |
| Noon – 1:00PM | Lunch |
| 1:00 – 2:30 PM | Bonded Wearing Course- Gary Hildebrand |
| 2:30 -2:45 pm | Break |
| 2:45:-3:30 | Fog /Rejuvenator Seals-John Fox |
| 3:30-4:15 pm | Patching and edge repair – Gary Hildebrand |
| 4:15-5:00 pm | Crack Treatment – Wally Smith |

### Wednesday, March 24

| | |
|---|---|
| 8:00-9:30 am | Chip Seals – Jack Van Kirk |
| 9:30-9:45 am | Break |
| 9:45 – Noon | Slurry Seals/Microsurfacing. – Jack Van Kirk |
| Noon -1:00 pm | Lunch |
| 1:00- 3:00 pm | Recycling – Don Matthews |
| 3:00-3:15 pm | Break |
| 3:15-5:00 pm | Thin HMA Overlays – Skip Brown |

### Thursday, March 25

| | |
|---|---|
| 8:00-8:30 am | Introduction to Rigid Pavement Preservation – Craig Hennings |
| 8:30-9:00 am | Surface Characteristics – Dulce Feldman |
| 9:00-9:30 am | Rigid Pavement Treatment Selection – Dulce Feldman |
| 9:30–9:45 am | Break |
| 9:45–10:45 am | Joint resealing – Kirsten Stahl |
| 10:45–11:45 am | Diamond Grinding & Grooving – Craig Hennings |
| 11:45am–1:00 pm | Lunch |
| 1:00–2:00 pm | Dowell bar retrofit – Kirsten Stahl |
| 2:00–2:15 pm | Break |
| 2:15–4:15 pm | Partial and Full Depth Concrete Repair – Vincent Perez |
| 4:15–4:30 pm | Closing |

More than 50 attendees from state and local agencies attended the event. The course was well received by the attendees. Some of the comments from the evaluations are shown below:

"Variety of speakers was a plus. All had different experiences and knowledge. This is better than listening to one speaker all day."

"I really learned a lot about crack sealing and… recycling."

"I appreciated the information on pavement preservation. This is good material to educate management and elected officials."

"I like the presentation ability of the speakers."

"A broad range of treatments were presented. Good level of details for each topic."

Caltrans plans to deliver another MTAG training course in southern California in the fall of 2010. For more information on the time and place of the course, please contact Larry Rouen at larry.rouen@dot.ca.gov . The MTAGs for flexible and rigid pavements can be found at the following websites:

- Maintenance Technical Advisory Guide Volume 1, Flexible Pavement Preservation Second Edition: www.dot.ca.gov/hq/maint/MTA_GuideVolume1Flexible.html
- Maintenance Technical Advisory Guide Volume I, Flexible Pavement Preservation Training Modules: TA_GuideVolume1FlexibleTrainingModules.html
- Maintenance Technical Advisory Guide Volume II, Rigid Pavement Preservation Second Edition: www.dot.ca.gov/hq/maint/MTA_GuideVolume2Ridgid.html
- Maintenance Technical Advisory Guide Volume II, Rigid Pavement Preservation Training Modules:www.dot.ca.gov/hq/maint/MTA_GuideVolume2RidgidTrainingModules.html

## PPTG Co-chairs meeting held in Newport Beach in April

A meeting of the Pavement Preservation Task Group (PPTG) co-chairs met in Newport Beach on April 12, 2010. The meeting was conducted by Larry Rouen (Caltrans), Hans Ho (Telfer Oil), and Craig Hennings (ACPA-SW). More than 40 people attended the meeting.

*Continued, next page*

*PPTG co-chairs Hennings, Rouen and Ho*

Following are some of the items were covered at the meeting:

**MTAG training plans**. A recent MTAG training was completed in March 2010. There were good attendance and good speakers. The evaluations were very good. State and local agencies were in attendance. For the next training session (in southern California), it was suggested that fewer speakers be used which would allow the flexibility to offer more courses.

**Workshops.** A discussion about workshops the Center could offer followed. These could be on any topic and would be ½ or 1 full day. The Center can work with ASCE, APWA, MSA or others on the workshops related to pavement preservation. It was suggested that the Center do a survey on the topics agencies would like delivered. Websites could be used to promote the workshops (Center, APWA, MSA, and LTAP). All workshops need to be coordinated with the LTAP program to eliminate any duplication.

Participants at the PPTG meeting. Mary Stroup-Gardiner and Kirstin Stahl in the foreground.

**Just-in-time training (JITT)**. Doug Ford presented an example of JITT for microsurfacing. He provided an outline of the training and delivered an overview of the training materials. This would be given to engineers, inspectors and construction workers just prior to the project construction. The JITT should be job specific and also include photos of good jobs as well as bad jobs. It was suggested video clips could be included in the presentation. A syllabus would include the presentation as well as some of the job specific information (specs, materials, mix design, and the like).

Bob Ford gave the presentation on JITT.

**Plans and priorities for 2010.** The following items were discussed:

- **Caltrans Pavement Management System.** Larry indicated that the GPR study is currently underway. Fugro is doing work in D1 and D2. The work is slightly behind schedule because of equipment problems. The distress collection RFP has just been released. It will consist of collecting pavement condition data using automated vehicles. The contract for the software development is still being developed.

Ray Myers discussed interlayers

- **Education.** As discussed earlier, the plan is to continue MTAG training and to initiate training using short workshops. The Center will conduct a survey of the PPTG members to determine the needed workshops.
- **Field and HVS testing.** This information is needed to establish the life extension of various preservation treatments. Some of the issues raised include the following:
  - Surface treatments. They deteriorate more from oxidation than climate. HVS testing may not be appropriate.
  - HVS testing is good for load related studies
  - FWD testing is needed for DBR.

Each PPTG subgroup was requested to identify the type of testing they need to establish life extension.

**Next meeting.** This will be a general PPTG meeting to be held on December 7, 2010, at the L.A. County facilities. Larry Rouen and his industry co-chairs will develop the agenda.

## Innovation projects

This summer and fall will see a wide array of interesting innovation projects taking place across the state. They include:

- District 1 will be using warm mix technology on three asphalt concrete overlay projects.
- District 2 will use hot in-place recycling (HIR) to restore the ride quality on route 299 in Trinity County.
- District 11 and District 7 will use a rubberized emulsion aggregate seal (REAS) respectively on routes 76 in San Diego County and 23 in Ventura County.
- District 11 will also be providing Interstate 5 with a New Generation Concrete Surface (NGCS), which promises to be smoother and quieter that previous concrete grinding techniques.

Center staff will be working with Caltrans to document some of these projects.

## Center news

### Caltrans funded projects

The original three-year Center contract ended on February 28, 2010. The new three-year contract is expected to begin sometime in June, 2010. Caltrans has identified a project management team including a contract manager for this project. It has a reduced scope of work because of reduced funding. The major tasks include the following:

- Provide training and education on pavement preservation
- Encourage innovation and new technologies in pavement preservation
- Provide technical assistance on pavement preservation issues
- Promote effective pavement preservation practices

The newsletter and pavement preservation annual conferences are currently included in the scope of work.

The contract on the pavements academy with Caltrans is on hold. Caltrans is currently reviewing the progress to date to determine if the scope needs to be modified.

### CalRecycle projects

The Center completed the project on terminal blends and the feasibility of using warm mix technologies with asphalt rubber. The project ended on May 15, 2010, and the reports can be found on the Center website at www.cp2info.org/center .

Two new projects dealing with: 1) the cost effectiveness of asphalt rubber, terminal blends containing crumb rubber, and polymer modified HMA and chips seals; and 2) the use of warm mix technologies with asphalt rubber and terminal blends are expected to begin in June 2010. For more information on these projects please contact Ding Cheng, Center Interim Director at dxcheng@csuchico.edu or Dr. Gary Hicks at rghicks@csuchico.edu .

### Tom Ferrara, the first Center Director, retires from Chico State

Dr. Tom Ferrara celebrated his retirement after 30 plus years at CSU, Chico on February 27, 2010. Tom arrived at Chico State in 1975 after receiving his PhD from UC Davis. For over 30 years, he taught in Civil Engineering eventually rising to the Department Head in the 1990s. He was the Center Director from 2006-2008 and took over as Interim Department Head (again) for Civil Engineering in 2008 when Mary Stroup-Gardiner was appointed the Technical Director of the Center. Tom had an impact on many students, several of whom became professors in Civil Engineering at CSU, Chico. Over 100 friends, family and former students celebrated with him. The photo on the right shows Tom with one of his former students. His plans for retirement have changed since Tom was diagnosed with Lou Gehrig's disease. He is doing well and as he says, "I am still walking". We all wish Tom the best in his retirement years. You can drop him a line at tferrara@csuchico.edu .

### Caltrans and the Center meet with the Swedish Transportation Authority Administration in Sacramento

On April 6, 2010, members of a delegation from Sweden met with Caltrans, the CP2 Center, and others to discuss the use of asphalt rubber in the State. This was part of a study tour that includes visits to Arizona, UC Davis and its HVS facility, and southern California. The members of the study team included Thorsten Nordgren, Anders Sondell, and Mansour Ahadi.

The meeting began with Dr. Shakir Shatnawi (Caltrans) providing an overview on the use of asphalt rubber in the State of California. He focused on the growth in the use as well as the technical support that has been provided by the MTAG and the Caltrans Asphalt Rubber Usage Guide. His presentation was followed by Jack Van Kirk of Basic Resources who discussed the development of the reduced thickness design process used by Caltrans.

Dr. Gary Hicks of the CP² Center followed with a discussion on the LCCA using asphalt rubber for chips seals and HMA. He demonstrated that asphalt rubber products are cost effective. He also noted that CalRecycle will fund a project to update the work in his presentation to include not only asphalt rubber, but also terminal blends. Other people participating in the meeting included Doug Carlson of RPA, Kee Foo, Paul Burdick, and Haiping Zhou of Caltrans.

Tom Ferrara with Mr. and Mrs. Kevin Handley. Kevin is a former student who now works for Caltrans.

# The Help Desk

## Cape seals (a chip seal followed by a slurry surfacing)

We continue to get a number of calls on early distress and workmanship issues with various pavement types. Since the first of the year, most of the calls have dealt with cape seals, including early distress and workmanship issues such as bad joints, roughness, and overall appearance. The PPTG is working to resolve these problems by developing Just In Time Training (JITT) for chips seals and microsurfacing. Some of the early distress or workmanship issues are illustrated in the photos on this page.

To minimize problems like this, please make sure to attend JITT prior to the job so that the chances of early failure or workmanship issues can be minimized. Contact Larry Rouen at Caltrans for a copy of the latest JITT for these treatments. The PPTG will be developing JITT for all the treatments included in the MTAG.

Early cracking.

Workmanship issues.

Longitudinal joint problems

### New additive available for asphalts

We were just informed of a new additive for asphalt. The source of the additive is "pig manure", another of the many wastes included in asphalt paving. If you are interested in finding out more about this additive, please check out the following link:

www.stltoday.com/stltoday/business/stories.nsf/story/8BD4ECDDEBD84EC686257706000C0410?OpenDocument

We are not sure that it will help improve the performance of asphalt mixes, but it does get rid of another waste product and that is good.

Result of a too-thin application of the microsurfacing.

## Upcoming events

### July 2010

11–14: Western Association of State Highway and Transportation Officials, annual meeting, Bismarck, N,D., www.washto2010.com

12–15 – National Local Assistance Program and Tribal Technical Assistance Program Conference, Oklahoma City, Okla. www.ltapt2.org

### August 2010

1–6: 11th Annual International Conference on Asphalt Pavements. Nagoya, Japan www.isap-nagoya2010.jp/

3–6: Preserving our Highway Infrastructure Assets, Orlando Fla., www.irfnews.org/news-events/event-detail/preserving-our-highway-infrastructure-assets/

4–6: 2nd International Conference on Transport Infrastructures, Sao Paulo, Brazil www.civil.uminho.pt/ICTI2010/index.htm

15–18: APWA Show. Boston Convention & Exhibition Center, Boston, Mass. www.apwa.net

30 – September 3: European Conference on Fracture (ECF 18). Dresden, Germany. www.ecf18.de/

### September 2010

15–17: International Conference on Sustainable Concrete Pavements: Practices, Challenges, and Directions, Sacramento, Calif. www/fhwa.dot.gov/pavement/concrete/2010acptpcconf.cfm

28–30: Best Practices for Asphalt Pavements, NAPA, Seattle, Wash., www.hotmix.org/index.php?option=com_content&task=view&id=557&Itemid=1152

### October 2010

3–9: Maintenance Superintendants Associations (MSA) Conference 2010. Pechanga Resort, Temecula, Calif. www.gomsa.net/

11: Bitumen Emulsion Producers Day. Lyon, France www.ibef.net

12–14: Fifth World Congress on Emulsions. Lyon, France www.cme-emulsion.com

13: ISSA Seventh World Congress. Lyon, France www.slurry.org and www.cme-emulsion.com

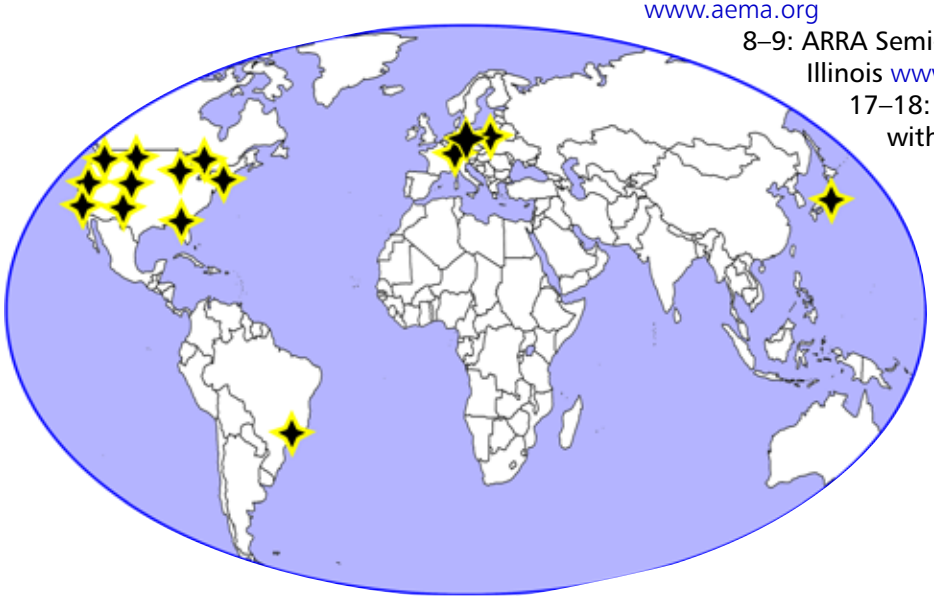
13–15: 11th International Symposium on Concrete Roads. Seville, Spain www.2010concreteroads.org

### November 2010

2–3: AEMA Emulsion Technology Workshop. Sheraton Fallsview, Niagara Falls, Ont., Canada www.aema.org

8–9: ARRA Semi-Annual Meeting. Hyatt Regency, Chicago, Illinois www.arra.org

17–18: NAPA sustainability Conference: Paving Greener with Asphalt, Denver Colo., www.hotmix.org



*Pavement preservation issues have become a global concern. Pavement engineering events are taking place all across the U.S. and all over the world.*

Published quarterly by the California Pavement Preservation Center
CP² Center, 25 Main Street, Suite 202, California State University, Chico, Chico, CA 95929-0603
Subscriptions by e-mail: contact Linda Farrell, lfarrell@csuchico.edu to add your name to the distribution list