



# CP2 CENTER NEWS

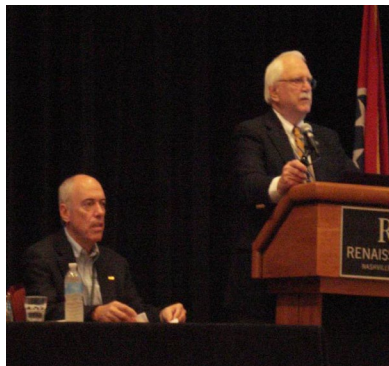
Newsletter of the California Pavement Preservation Center

No. 23

September 2012

## First National Conference on Pavement Preservation held in Nashville, Tennessee, By R. Gary Hicks, CP<sup>2</sup> Center

Over 500 attendees participated in the First National Conference on Pavement Preservation held August 27-30, 2012. The conference was sponsored by FP<sup>2</sup> Inc and was organized by the National Center for Pavement Preservation (NCP<sup>2</sup>). The conference not only consisted of meetings with the four regional AASHTO pavement preservation partnerships, but also presentations by preservation experts throughout the United States as well as field demonstra-



Opening session, Larry Galehouse and Jim Moulthrop

tion of selected pavement preservation treatments. Over 40 exhibitors participated in the conference.

The opening session included presentations from the Tennessee DOT, TRB, NACE, TAI, FHWA, and AASHTO in which the importance of pavement preservation to state and local agencies was discussed. The new federal highway bill, MAP-21, was discussed. The bill includes pavement preservation in the language, mentioning it over 60 times. FP<sup>2</sup> and its members were instrumental in getting preservation language into the bill. This was followed by presentations on accomplishments and future directions from each of the AASHTO TSP<sup>2</sup> Pavement Preservation Partnerships. A few of the highlights of these sessions included discussions on:

- Success stories with existing treatments and monitoring their performance
- Development of pavement preservation guides

AASHTO Pavement Preservation Partnership chairs: Pat Kennedy (RMWPPP), Geoff Hall (NEPPP), Eric Pitts (SEPPP), and Jerry Geib (MWPPP).



- Marketing pavement preservation and communicating the need for preservation to the public and elected officials including the need to keep the message simple
- Innovations in pavement preservation
- Cost effectiveness of preservation treatments

More can be found on the accomplishments at the website [www.tsp2.org](http://www.tsp2.org).

The second day included field demonstrations on slurry surfacings, cape seals, and scrub seals as well as pre-staged demonstrations on fog seals, chip seals, dowel bar retrofit, and more. This was considered by many to be the highlight of the conference. Industry did an outstanding job with the demonstrations. This session included a number of widely used tools for pavement preservation and was extremely well received by the attendees. Industry followed up with discussions on the importance of pavement preservation to their groups. Representatives of ACPA, IGGA, ISSA-ARRA-

*Continued, next page*

### In this issue

1 First NCP<sup>2</sup> Conference  
ASPHALT PAVEMENT NEWS

3 RAP and RAS in HMA

4 Fog Seals for Preventive Maintenance

7 Caltrans Moves to Superpave

PCC PAVEMENT NEWS

10 Polyester Grout for DBR on US-50  
GENERAL NEWS

12 Maintenance Management Conference

12 CalAPA Honors Jim St. Martin

14 FHWA Update

14 FP<sup>2</sup> Update

CP<sup>2</sup> CENTER NEWS

15 Patron's Meeting in January 2013

16 COMING EVENTS

Tim Harrawood (Vance Bros)  
and Mark Ishee (Ergon), demo  
on microsurfacing

AEMA and NAPA made presentations at this session. Concurrent sessions on the following topics ended the second day of the conference:

- Flexible pavement surface treatments
- Achieving long term goals
- Implementing a local agency program, and
- Implementation issues

The third day of the conference consisted of concurrent sessions on:

- Effective education programs and delivery methods
- Treatment selection
- Hot in-place recycling
- Asphalt material properties
- Quantifying the benefits of pavement preservation
- Integrating pavement preservation into pavement management
- Rigid preservation treatments
- Using innovative technologies
- Pavement surface properties
- Thin overlays
- Best local agency practices
- Innovative materials
- Cold in-place recycling
- Surface preparation prior to applying treatments
- Impacts on financial, environmental and social indices, and
- Concrete pavement case studies

All the sessions included excellent presentations, but unfortunately, it was difficult for one to attend all sessions. All the presentations can be found on the conference website at <http://nationalpavement2012.org/>. The results of these sessions led to considerable discussion on all topics.

A major highlight on this day was the presenta-



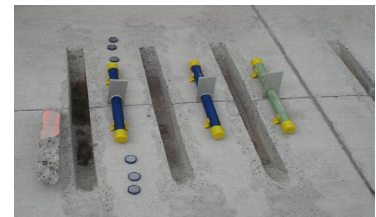
tion of the James B. Sorenson Pavement Preservation awards for 2011 and 2012. The 2011 award was presented to Tennessee DOT while the 2012 Award was presented to Bexar County (San Antonio), Texas

for distinguished work on pavement preservation. Prior winners of this award can be found on the FP2 website located at [www.fp2.org](http://www.fp2.org). In addition to these awards, Gene Arnold of Ergon and Jay Norris of Tennessee DOT were recognized for their role in the demonstration projects conducted earlier in the conference. Finally, James Moulthrop, Executive Director of FP2, was recognized for his contributions to pavement preservation by being

elected to the "Pavement Preservation Hall of Fame". He joins a group of distinguished individuals including James Sorenson (FHWA-deceased), Bill Ballou (FP2), Mike Buckingham (FP2) and Larry Galehouse (NCPP).



Skidabrader demo to improve surface texture



DBR demo by John Roberts of IGGA (below).



Jim Moulthrop (center) being inducted into the hall of fame by Mike Buckingham (right) and Pete Grass (left)

The conference concluded with meetings of the regional partnerships followed by the closing session which focused on driving the message for change. Guides for delivering the message to the media, the public, and elected

officials were presented including:

- Relate the benefits of preservation to jobs, the economy, and to the public pocket book. Fixing and maintaining pavements are not acceptable or interesting messages.
- Doing more with less is a good message, as well as those on the "greenness" of preservation treatments.

Continued, next page

- Keep the message simple, and provide something the media can easily use.
- Need to educate reporters and others that fixing good roads prevents further distress and preserves their values.
- Media is interested in "Gee Whiz" and not "how to" discussions.

Judith Corley-Lay of NC DOT wrapped up the conference by identifying important take-aways. Some of them are identified below.

- New Federal legislation, MAP 21
- Pavement preservation studies at NCAT and planned by LTPP
- Cost effectiveness of preservation treatments
- Pavement preservation guides from various states
- Information on in-place pavement recycling
- Sustainability issues
- Asphalt rubber
- Treatment selection
- Best practices on preservation
- Innovative materials and equipment

Presenters from California included:

- Gary Hicks, CP<sup>2</sup> Center, "Treatment Selection for Flexible Pavements"
- Theresa Rommel, MTC, Bay Area "Sustainability Issues"
- Irwin Guada, UCB, "Tire Pavement Noise Evaluations"

- Phil Demery, Sonoma County, "Sonoma County's Pavement Preservation Program"



Steve Healow and Shakir Shatnawi

- Marlene Demery, City of Napa and Jim Emerson, Pavement Recycling Inc, "Experience from California's Climate Initiative Innovation Program"
- Shakir Shatnawi, Shatec Engineering, "Dowel Bar Retrofit using Polyester Polymer Concrete"
- Craig Hennings, ACPA, "Urban Slab Replacement"

Over 20 people from California attended this conference representing industry, academia, FHWA and local agencies, Caltrans could not participate because of travel restrictions. The conference offered an opportunity for all to see what others are doing in the pavement preservation arena. The attendees came away feeling good about the conference. If you did not attend, you missed a great conference.

The 2<sup>nd</sup> International Conference is planned for Paris France in 2015. It will be organized by FP<sup>2</sup> with the assistance of Mike Krissoff, the Executive Director of the Pavement Preservation and Recycling Alliance. Plans for a second national conference are in the discussion stages.



## Caltrans is Moving Forward with Higher Recycled Asphalt Pavement and Recycled Asphalt Shingles in Hot Mix Asphalt

Joe Peterson, Chuck Suszko, and Peter Vacura, Caltrans

The use of Reclaimed Asphalt Pavement (RAP) as part of hot mix asphalt (HMA) provides a great cost benefit by reducing both the percentage of virgin aggregate and asphalt binder required. Caltrans specifications currently allow the use of 15 percent RAP based by weight of virgin aggregate replaced in hot mix asphalt. The Asphalt Task Group of the Caltrans/Industry Rock Products Committee (RPC) has recently formed a High RAP/RAS Sub Task Group to develop a high RAP specification with the objective to increase the percentage of RAP allowed in HMA by implementing a contractor option for allowing 25 percent

RAP in HMA and ultimately allowing up to 40 percent RAP in HMA.

Caltrans has developed a non-standard special provision (nSSP) that is currently being piloted on six projects that requires contractors to utilize 25 percent RAP. This pilot specification has been inserted into the six Superpave pilot projects and in three long life pavement projects. These pilot projects are being monitored and evaluated to measure the success and viability of an increased percentage of RAP.

The High RAP/RAS Subtask Group project is to

*Continued, next page*



create a high RAP standard specification which allows 25 percent RAP in HMA with a target date for completion in January 2013. On a parallel track the Subtask Group is to develop a new specification that defines the inclusion of RAP by the percentage of binder replacement of the total mix in lieu of being based on a replacement percentage by weight of virgin



Processed RAP

aggregate. This approach will be more beneficial in controlling the amount and quality of RAP used in a mix. The specification to be developed to account for percentage replacement binder in lieu of percentage RAP should be completed by summer 2013.

The use of Recycled Asphalt Shingles (RAS) has gained attention and momentum across the country as a way to reduce solid waste. Caltrans has begun an effort to develop a specification that allows for inclusion of RAS in hot mix asphalt. The major benefit of using RAS in hot mix is cost savings. The high amount of asphalt in RAS reduces the amount of virgin asphalt binder needed in a mix by relying on the binder available in the shingles. Shingles can be either used, tear off type, or waste from newly manufactured shingles. Caltrans is proposing to allow 3-5 percent RAS asphalt with some restrictions based on the amount of virgin binder replacement.

Caltrans has developed a non-standard special provision (nSSP) that requires the use of 5 percent RAS in HMA. The RAS nSSP is currently being piloted on two projects and the projects will be evaluated to determine if any specification changes are necessary. The High RAP/RAS



Unprocessed asphalt shingles used to make RAS

Subtask Group is tasked with developing a standard specification for RAS.

In summary, the initial goal of Caltrans is to increase the percentage of RAP allowed in HMA to 25 percent and ultimately allow up to 40 percent RAP and a specification for RAS that allows 3-5 percent RAS. The ultimate goal of Caltrans is to develop a specification that allows the contractor an opportunity to use one or both of these recycled products and base the use of RAP and/or RAS on the binder replacement criteria versus the current method of limiting RAP to 15 percent based on weight of virgin aggregate replaced.



## Caltrans Using Fog Seals on State Highways with Polymer Modification and Rejuvenating Agents for Preventive Maintenance

By Lerosé Lane and Ding Cheng, CP2 Center; Lance Brown, District 2, and Peter Vacura, Headquarter, Caltrans

Caltrans is again implementing fog seals coats for preventive maintenance on various highways throughout California. These projects will give many state routes a new look and provide additional life to many miles of aging pavements. Fog seals have required special permission from Caltrans Headquarters since a moratorium was enacted in the mid-1990's. This moratorium was placed due to improper applications to a fog seal project on Interstate 5 and may have resulted in inadequate skid resistance.

Fog seal coats, using asphalt emulsions, have

been a common preventive maintenance treatment for asphalt pavements for many years. Polymerized emulsions with rejuvenating additives are new technologies presently being incorporated into fog seals for preventive maintenance. The intent is to place fog seals, using the newer polymer formulas, to achieve a long lasting preventive maintenance treatment. Fog seals can prevent or delay premature raveling or cracking on various asphalt concrete surfacing. This new technology will prevent or delay pavement deterioration due to traffic and adverse climate

Continued, next page

conditions, and slow the aging process even longer than fog seals with traditional emulsions.

Altogether, over 30 fog seals were scheduled to be placed throughout the State. Caltrans District 2, which is located in the northeast section of California, has placed four fog/rejuvenating seal coat projects on various highways with different climatic and traffic conditions in August 2012. The Center has been tasked by Caltrans headquarters to observe and test these projects for emulsion application rates, surface texture, and friction during before and after applications.

The CP<sup>2</sup> Center is to determine the best test methods to identify pavements that will be good candidates for fog seal projects by measuring

surface texture, application rates, and skid characteristics. The various pavement surfacing includes open-graded friction coarse, gap-graded rubberized asphalt concrete, and other pavement types with the objective of maintaining an adequate skid resistance with enough macrotexture before and after the fog seal treatments. On July 31 and August 1, 2012, the Center's staff was on site at a Modoc 395 project, the first fog seal to be placed in this series of planned projects in District 2. The Center's staff included Ding Cheng, Leros Lane, David van Atta, Katie Fitzgerald, Brandon Fraser, and Brian Winter. The Center is working to tie the macrotexture numbers to application rates and skid resistance, both with and without sanding. A project report for the fog seals will be completed by the Center's staff, and the individual projects will be placed into the Center's pavement preservation database. The emulsion for SR 395 in Modoc County was supplied by VSS Emultech, and the project was



**Figure 1 Ring Test at 3 Application Rates**

administered by Caltrans District 2, Lance Brown, Maintenance Engineer, and Tim Crooms, Maintenance Superintendent. The emulsion used for the project was Styraflex, which was delivered as an emulsion with more than 60% asphalt residue, and it was diluted again with water by about 50:50 ratio. The diluted emulsion was applied at rate of approximately 0.10 gal/yd<sup>2</sup>, which calculates to a residual asphalt application rate of 0.03 - 0.04 gal/yd<sup>2</sup>.

Four different test methods were used for the Modoc 395 project in District 2 included the Ring Test, Sand Patch Test, Dynamic Friction Test, and a mean profile depth (MPD) measured with a laser device, CTM.

**Ring Test** --This test is performed to determine optimum emulsion application rate for a 20 minute break time. Figure 1 shows the emulsion at 3 different application rates.

**Sand Patch Test** --This test is to determine the mean texture depth of pavement by spreading 25 ml. of

glass beads specified by ASTM E965 into a circular shape and measuring the diameter of the circle. These beads are to pass a No. 60 sieve. Figure 2 shows a completed sand patch test being examined by Ding Cheng and Lance Brown.



**Figure 2 Ding Cheng and Lance Brown Examining Sand Patch Test**

**Dynamic Friction Test (DFT)** --This test is done with a specialized piece of equipment to simulate the friction created from tires meeting the pavement at various speeds of from 0 to 60 mph. Figure

**Figure 3 Dynamic Friction Test Apparatus (foreground). Figure 4 (top) Friction Testing Head of the DFT**

3 shows the friction testing using the DFT apparatus. Figure 4 shows the friction testing head of the DFT.

*Continued, next page*



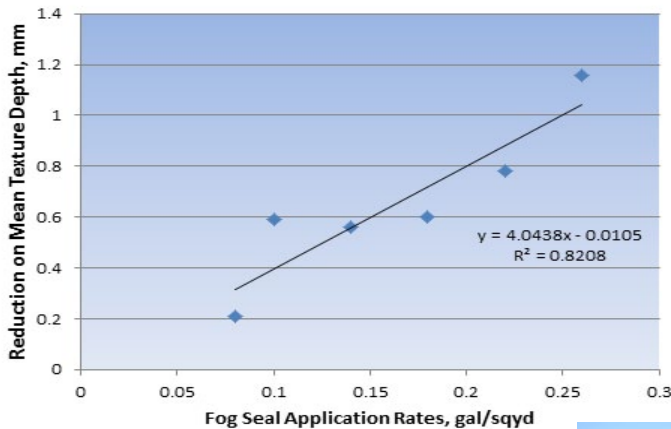




**Circular Track Meter (CTM)** for ASTM E2157 – 01, “Standard Test Method for Measuring Pavement Macrotexture Properties”, is shown in Figure 5. This is a laser device that is used for measuring the mean profile depth of a pavement surface to determine the macrotexture.

**Figure 5**  
**Circular Track**  
**Meter**

The existing pavement on Modoc 395 is a 1/2 inch RHMA-G that had aggregate quality issues with some soft sandstone materials, and some compaction issues due to it being placed at cooler temperatures. The existing pavement surface had a texture that appeared similar to



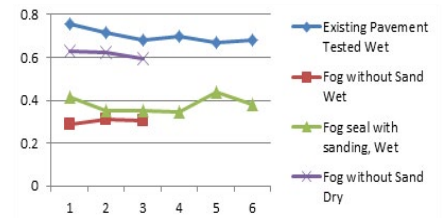
**Figure 6** Pavement Macrotexture Depth Reduction due to Varied Fog Seal Application Rates

Figure 7 shows a graph of the measured friction recorded for the various pavement conditions for 3-6 locations by the DFT.

The project was placed during daylight hours and proved to provide a seal coat with a uniform finish as shown in Figure 7 (after sanding) below with Caltrans' and Center's staff. The project went down without any significant problems on this rural highway located on the high desert plains. With no emissions, low cost, and fast application rates, this strategy is a desirable preventive maintenance treatment.

The initial testing results appear promising for establishing a correlation among application

**Figure 7**  
**Dynamic**  
**Friction Test**  
**Results from**  
**Modoc 395**



rates, macrotexture depth, and friction. The Center is looking forward to defining proper macrotexture and microtexture of pavement for suitable and proper fog or rejuvenating seal applications.

Instead of being bid as formal construction projects, the District 2 projects were placed by the District Maintenance Department by purchasing “Materials in Place”. The emulsion suppliers placed the materials under the direction of the Maintenance Engineer, and the areas were sanded directly after the fog seal coat breaks. Caltrans is concerned about the fog seal coats maintaining standard skid resistance in wet conditions, so sand is being placed on the fresh fog seal coats and then swept to leave a light sand coating on the highway surface. This strategy is being used to increase the microtexture of the surfacing.

The CP<sup>2</sup> Center also performed testing on the

other three District 2 projects including SR 96 near Happy Camp, SH 299 in Redding, and I-5 north of Anderson. The CP<sup>2</sup> Center's purpose is to establish criteria for proper emulsion application rates to properly preserve the existing pavement while maintaining adequate friction for skid resistance.

Special appreciation is given to Caltrans headquarters for allowing the CP<sup>2</sup> Center the funding to work on these fog seal projects. Lance Brown,

Tim Croom, Caltrans, District 2 Maintenance, and Mike Heath, VSS Emultech were instrumental in allowing the Center time and traffic control for conducting our testing.



**Figure 8** From Left to Right, Ding Cheng, Lance Brown, David van Atta, Brian Winter, Brandon Fraser, and Katie Fitzgerald standing on the finished seal coat after sand application (photo by Leros Lane)



## CALTRANS MOVES TO SUPERPAVE By Joe Peterson, METS, Caltrans



Figure 1 Joe Peterson talking about superpave

The California Department of Transportation (Caltrans) is transitioning to Superior Performing Asphalt Pavement technology, or Superpave, for asphalt concrete mix design. With the increase in traffic loadings and volumes, changes in axle configurations, depleting aggregate sources, and the inability to obtain, repair or calibrate current outdated equipment, Caltrans

recognizes the need to change from Hveem mix design methodology for asphalt concrete (AC). As a result of implementing this change

in mix design methodology, Caltrans has developed a Superpave website: <http://www.dot.ca.gov/hq/esc/Translab/ofpm/superpave/index.htm>.

Superpave is a performance based standard of test procedures for AC that was developed under the

AASHTO Strategic Highway Research Program (SHRP). It is a comprehensive method of designing asphalt mixes tailored to specific unique performance requirements governed by the traffic, environment (climate), and project location. It also facilitates selecting and combining asphalt binder, aggregate, and any necessary modifier to achieve the required level of pavement performance including warm mix asphalt (WMA), Rubberized Hot Mix Asphalt (RHMA), and Rubberized Warm Mix Asphalt (RWMA).

### Equipment

Superpave utilizes the Superpave Gyratory Compactor (SGC) as a method of compacting test specimens during the mix design process and for Quality Control and Quality Acceptance testing during production.

The Superpave gyratory compactor has the

ability to produce asphalt mix specimens to densities achieved under actual environmental and traffic loading conditions. Utilizing a 150 (5.90 inch) diameter mold, the SGC can accommodate large aggregate mixtures.

The SGC, shown in Figures 2 and 3, consists of a rigid reaction frame, loading system, and specimen height measurement. Depending on the model used, it has the ability to compact asphalt mixture specimens at a variety of pressures. The mixture is compacted by a gyratory kneading action using a compaction angle of 1.25 degrees external and 1.16 degrees internal. The SGC typically gyrates at 30 RPM.

In addition to the SGC, Caltrans will be utilizing the Hamburg Wheel Tracker (HWT) shown in Figures 4. The HWT measures the rutting and moisture susceptibility of an asphalt paving mixture by rolling a steel wheel across the surface of an asphalt concrete specimen shown in Figure 5 that is immersed in 50°C

Figure 4 Hamburg Wheel Tracker (HWT)



Figure 5 Hamburg Wheel Tracker (HWT) Inside View



(122°F) water. The HWT

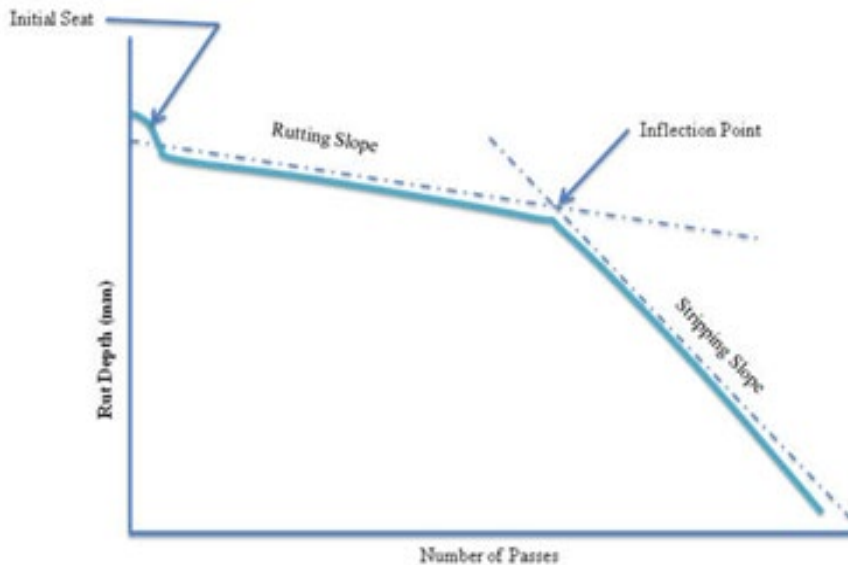
evaluates the combined effects of rutting and moisture damage. It measures the rutting rate (creep slope) of depth of rut verses number of passes of the steel wheel.

Continued, next page



Figure 3 Troxler Gyratory Compactor, Distributed by Troxler





**Figure 6** HWT measures the rut depth versus the number of Hamburg wheel passes

Moisture susceptibility is measured as the intersection of the creep slope and the stripping slope (Inflection point) shown in Figure 6. The stripping slope is nothing more than the creep slope change in rutting rate.

Caltrans will continue to utilize CT 371 (AASHTO T 283) for determining tensile strength ratio, where a low number is an indicator for possible asphalt stripping in AC.

#### *Test Procedures*

As part of the transition to Superpave, Caltrans will use a combination of California Test Methods and AASHTO/ASTM national test methods. The AASHTO/ASTM test procedures are internationally recognized and widely used by other state DOTs and industry. Test methods include:

- AASHTO T 11 -- Materials Finer Than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing
- AASHTO T 27 -- Sieve Analysis of Fine and Coarse Aggregates
- AASHTO T 84 -- Specific Gravity and Absorption of Fine Aggregate
- AASHTO T 85 -- Specific Gravity and Absorption of Coarse Aggregate
- AASHTO T 176 -- Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- AASHTO T 209 -- Theoretical Maximum Specific Gravity and Density of Hot Mix Asphalt (HMA)
- AASHTO T 269 -- Percent Air Voids in

Compacted Dense and Open Asphalt Mixtures

- AASHTO T 275 -- Bulk Specific Gravity of Compacted Hot Mix Asphalt (HMA) Using Paraffin Coated Specimens
- AASHTO T 283 -- Resistance of Compacted Hot Mix Asphalt (HMA) to Moisture-Induced Damage
- AASHTO T 308 -- Determining the Asphalt Binder content of Hot Mix Asphalt (HMA) by the Ignition Method
- AASHTO T 312 -- Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyratory Compactor
- AASHTO T 324 -- Hamburg Wheel-Track Testing of Compacted Hot Mix Asphalt (HMA)
- AASHTO T 329 -- Moisture Content of Hot Mix Asphalt (HMA) by Oven Method
- AASHTO T 335 Determining the Percentage of Fracture in Coarse Aggregate
- ASTM D2172 -- Quantitative Extraction of bitumen from Bituminous Paving Mixtures

#### *Specifications*

Pilot Specifications have been developed for Superpave. They include a new Superpave Section 39, non-Standard Special Provision and support specifications. The Superpave website used to have special provisions listed below, but are updated to reflex the new Non-Standard Special Provision (NSSP) {XE" Section 39\_2010\_09-04-12"} which replaces the entire Section 39 and will supersede four of the NSSP's. Project specific requirements are included in the new NSSP. A detailed comparison between Hveem and Superpave mix requirements is also available at:

<http://dot.ca.gov/hq/esc/Translab/ofpm/superpave/index.htm>

- SP\_Section\_39-SSP\_D05-08-12.pdf, HOT MIX ASPHALT, SUPERPAVE GENERAL. Superseded by (NSSP) {XE" Section 39\_2010\_09-04-12"}.
- 39-050-SP\_D12-10-11 , HOT MIX ASPHALT, SUPERPAVE GENERAL, this specification that possibly triggers 3901XX Hot Mix Asphalt, Superpave (Type A); 3901XX Rubberized Hot Mix Asphalt, Superpave (Gap Graded); and 390135 Hot Mix Asphalt

*Continued, next page*



- (Leveling) BEES codes. Superseded by (NSSP) {XE "Section 39\_2010\_09-04-12"}.
- 39-100-SP\_E\_D12-10-11 This specification is for use in pilot projects with open graded friction course (OGFC) type hot mix asphalt (open graded)[HMA-O] and when requiring contractor to produce HMA-SP (Type A) or RHMA-SP-G utilizing the Superpave mix design method. Superseded by (NSSP) {XE "Section 39\_2010\_09-04-12"}.
  - 39-200-SP\_E\_D12-10-11 This specification is for use in projects with rubberized hot mix asphalt (open graded) and when requiring contractor to produce HMA-SP (Type A) or RHMA-SP-G utilizing the Superpave mix design method RHMA-O mixes with higher binder contents are referred to as RHMA-O-HB. These mixes are very durable; however, the increased binder content in RHMA-O-HB can plug air voids and affect its ability to reduce splash and spray and decrease hydroplaning. Use RHMA-O when an open-graded drainable surface is desired. Superseded by (NSSP) {XE" Section 39\_2010\_09-04-12"}.
  - S5-230-SP\_E\_D02-27-12 This nSSP is necessary because the Optimum Binder Content (OBC) for Superpave is determined as percentage of the total weight of the HMA mix versus the current Hveem HMA mix design method where OBC is determined as a percentage of dry weight of dry aggregate. The formulas for calculating the quantity of asphalt in HMA and RHMA have been revised based on OBC as a percentage of the total weight of the HMA or RHMA mix. fication is a general statement for Superpave projects.
  - SN-0XX\_E\_D02-22-12 Superpave --This specification is a general statement for Superpave projects.

#### *Pilot Projects*

Table 2 lists nineteen Caltrans pilot projects that are planned for 2012 and 2013 throughout the State.

#### *Implementation Timeline for Superpave*

Table 3 shows the Superpave implementation timeline for the major "mile stones". A more detailed implementation timeline is available in the "Amended Caltrans issue Memo Superpave Transition 05-21-12" in a spreadsheet format. A web link for this document is

District	EA	Co/Rte	PM	AC Tonnage and Type
02	360701	Sha-299	30.4/40.3	35,000 HMA, Type A
04	3E4401	CC-580	0.0/5.8	41,000 RHMA; 500 HMA
04	0A5344	Sol-8	11.3/12.9	12,530 RHMA; 33,920 HMA
04	2G5104	CC-4	31.1/32.4	3,490 RHMA; 10,480 HMA
04	229101	CC-680	10.5/15.1	3,160 RHMA; 22,000 HMA
04	0A0801	CC-80	3.8/5.3	1,265 RHMA; 19,025 HMA
05 *	0161E4	Mon-101	TBD	50,000 HMA, Type A
06	430701	Tul-216	1.9/2.9	14,000 HMA, Type A
06	0P5901	Tul-190	0.0/4.4	5,800/9,200 HMA, Type A
06	0G8501	Ker-58	R52.4/54.4	12,999/27,182 HMA, Type A
06	0C9401	Ker-178	R6.7/79.2	122,181 HMA, Type A
07 *	3Y3001	IA-405	16.4/19.4	9,280 RHMA-G
07 *	3Y9401	IA-110	20.1/30.5	5,200 RHMA-G, WMA LSM
07	25200	IA-405	34.3/48.6	25,200 RHMA-G
08	0K2300	SBd-10	44.0/R53.0	9,940 RHMA-G
08	0P8601	SBd-10	R57.6/R60.9	35,000 RHMA-G
09	351601	Iny-395	45.5/50.3 NB 50.9/52.9 SB	20,000 HMA, Type A
10 **	0M8004	Tul-99	30.9/38.7	31,247 HMA, Type A
11	27520	Imp-98	21.8/31.3	T3D

\* In construction

\*\* Project completed

**Table 2 Pilot Projects per District**

also available on the Superpave website.

The switch from Hveem mix design to Superpave mix design will allow Caltrans and industry to implement use of state of the art equipment and test procedures. The new specification will ultimately allow industry more flexibility for AC mix designs.

The pilot projects will allow Caltrans and industry to refine the current specifications and mix design methodology so that the implementation of Superpave will move forth smoothly. This implementation has been anticipated for over 6 years, since Caltrans switched to PG graded asphalts.

For more information contact Joe Peterson, Office of Roadway Materials Testing, phone: 916-227-7303 and email: [Joe\\_Peterson@dot.ca.gov](mailto:Joe_Peterson@dot.ca.gov).

2012	Implement approximately 6 pilot projects
Nov 2012	Revise Superpave specification
2013	Implement approximately 6 to 13 pilot projects
Nov 2013	Revise Superpave specification
Jul 2014	Full Implementation

**Table 3. Implementation Timeline**

## Polyester Grout for Dowel Bar Retrofit Project on US 50

By Brian Winter and Ding Cheng (CP<sup>2</sup> Center), and Doran Glauz (Caltrans)

Experience in California with dowel bar retrofits (DBR) has been less than stellar resulting in maintenance due to de-bonding between the original concrete pavement and the backfill material (magnesium phosphate or high alumina based grouts). Through finite element analysis modeling, Caltrans discovered that the bond stress is reduced when a more flexible backfill material is used such as a polyester based grout. As a result of these findings, Caltrans used polyester backfill grout on the US-50 DBR project near Sacramento in 2010. The expected outcome is that the increased bond strength and reduced bond stress will reduce the de-bonding issue between grout and existing concrete leading to an extended life of the effectiveness of the DBR. The CP<sup>2</sup> Center is evaluating the as constructed performance of the polyester grout DBR.

### Test Sections

In January 2012, Doran Glauz of Caltrans Headquarters and Ding Cheng of CP<sup>2</sup> Center established four test sections within the US 50 DBR project to compare the performance of different preservation measures. The first section was retrofitted with dowel bars (three in each wheel path); the second section also included a DBR with an overlay of hot mix asphalt; the third section was given a hot mix asphalt overlay with no DBR; and the last section was the control section without DBR or overlay. All sections were ground smooth; in the case of the overlain sections grinding was done before the overlay.

### NDT studies and Visual Inspection

To evaluate the de-bonding issue and effectiveness of DBR, a series of Non Destructive Testing (NDT) studies as well as a visual inspection were performed on the DBR test sections in the spring of 2012. The NDT tests on the DBR without overlay test section included the Falling Weight Deflectometer (FWD), a tomographer with MIRA technology, a Spectral Analysis of a Surface Wave (SASW), and a

Slab Impulse Response (SIR). Some tests were also performed at the control section in order to establish baseline values for the FWD and SIR. The NDT was a collaborative effort among Caltrans, CP<sup>2</sup>C, FHWA, University of Minnesota, and Olsen Engineering. CP<sup>2</sup>C performed the visual inspection of all four test sections by documenting the condition of the slabs and of the grouted slots that held the dowel bars. Kyle Hoegh from University of Minnesota and Tom Yu and Jagan Gudimettla from FHWA performed testing with MIRA tomographers. The SIR and SASW tests were both performed by Patrick Miller of Olsen Engineering with the help from CP<sup>2</sup>C, and the FWD tests were performed by Brent Erikson from Caltrans District 3. The following describes each of the tests and what it is looking for:

- **MIRA System** - The MIRA system is an ultrasonic tomography device designed for use on PCC to determine the properties of the structure and to detect the presence of defects such as honeycombing, flaws, cracks, or foreign inclusions. The scanning array is made up of 10 channels with 4 transducers each (for a total of 40) that transmits low frequency shear waves to penetrate the concrete pavement structure. The amount of reflection from the



Figure 1 (Left) Jagan Gudimettla, FHWA and (Right) Kyle Hoegh, UMN performing MIRA tests

scans helps determine the condition of the bonding between the polyester grout and the in-situ concrete, and the thickness of the slab. Figure 1 shows the testing using MIRA devices.

- **Falling Weight Deflectometer (FWD)** - The FWD induces a dynamic load, equivalent to the wheel load of a single unit truck, directly to the pavement surface by dropping a weight. The pavement responds with

Figure 2 FWD run by Brent Erikson, Caltrans District 3



Continued, next page



vertical deformations which are measured by a series of geophones, shown in Figure 2, that are positioned at different intervals from the loading plate. The readings help determine variations in the pavement layer and the stiffness of the subgrade along the measured length of the pavement. For this project the FWD was used to help determine the effectiveness in load transfer between the slabs with the addition of the DBR.

- *Spectral Analysis of a Surface Wave (SASW)*

- The SASW measures the variation in shear wave velocity (stiffness) by dropping a small weight that transmits surface waves through the pavement structure. The shear wave velocity profile can be used to determine the Young's modulus and the shear characteristics of the layers. The SASW



**Figure 3 (Left) Brian Winter, CP2C and (Right) Patrick Miller, Olsen Engineering preparing a SASW test**

apparatus, shown in Figure 3, includes an arm that has a small hammer as the source of the impulse and two inline accelerometers. For this application the transducers were positioned across the grouted slot to read the transmitted surface waves. The transmitted surface waves were used to analyze any de-bonding and the locations.

- *Slab Impulse Response (SIR)* - To determine what the load transfer was between the slabs, the SIR test was employed along the joints. This test is based partially on relative changes and therefore requires a second set of tests performed on the control section to establish a baseline. The SIR utilizes a low strain hammer that impacts the surface with a load cell protected by a rubber head. The impact

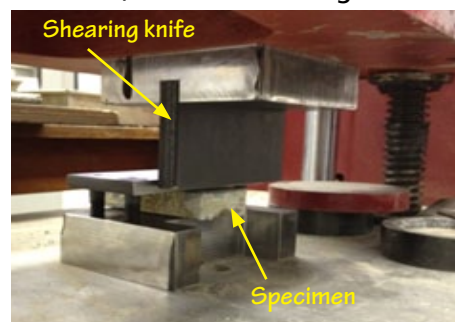
sends the stress wave through the concrete slab that is received by the geophones shown in Figure 4. Geophones were posi-

tioned on both sides of the joint and three impulses were applied and averaged. This test is similar, in principle, to the FWD.

#### *Coring and laboratory studies*

In July 2012, Caltrans and CP2C returned to the jobsite so that core samples could be taken to verify the findings of the NDT analysis. A total of 24 core locations were chosen positioned over the dowel bars. Each core underwent a visual inspection; and in addition, shear and pull out tests were performed in the material laboratory of Chico State University. The shear tests were performed to determine the shear strengths of the original paving concrete, the interface between the concrete and the polyester grout, and within the grout itself. The pullout tests were performed to determine what load was required to pull the dowel bars from the cores. If the dowel bar coating performed well, the pull out force should not be very high. The following describes each of the tests:

- *Shear Strength Testing* --To determine what the shear strength of the materials and the interface between them, CP2C designed and manufactured a specialized shearing device for testing. As illustrated in Figure 6, this device is placed in a UTM and pressure applied until the material fails. Cores were cut into rectangular blocks with an approximate shear area of 1 in by 2.5 in. Each block was tested for shear strength within the concrete, at the concrete/grout interface, and within the polyester grout. The results concluded that the mean shear strength of the concrete was 1095 psi, the interface was 382 psi, and the grout was 611 psi. Compared to other grout materials, the shear strength is within the same value range.



**Figure 6 Sample loaded into the shear device**

**Figure 4 (From left to right) Liz Santillan, CP2C, Katie Fitzgerald, CP2C, Patrick Miller, Olsen Engineering, gathering data with the SIR equipment**



- **Pullout test** --To perform the pullout test, the dowel bar was first drilled and fitted with a threaded 3/8 inch rod. The core was then strapped to the UTM with the rod held firmly by the UTM's clamp shown in Figure 7. By applying tension slowly, the dowel bar was pulled out and the pullout strength could be determined. Preliminary findings show an average pullout strength of 21 psi which means there is little resistance as planned.

**Figure 7**  
Pullout test being performed using a UTM



#### *Status of the project and future plan*

Currently the project report is being drafted and is awaiting the final results of the pullout tests. After the final tests are performed and the data has been properly analyzed, the report will be finalized and submitted to Caltrans in September 2012.

The US 50 DBR with polyester grout project will continue to be monitored in the next five years to obtain more reliable performance information for Caltrans.



## 2012 AASHTO/TRB Maintenance Management Conference By Ding Cheng

**A**ASHTO and TRB co-sponsored the 13th maintenance management conference on July 14 – 19 in the beautiful west coast city of Seattle, Washington. The conference was successfully hosted by the Washington State Department of Transportation. The purpose of the conference is to allow for the exchange of new ideas and to learn about new developments in the maintenance and operations management of transportation facilities including roadway, bridges, tunnels, and others. More than 240 people from the world attended the conference.

The conference had several pavement related sessions and technical working group meetings. The conference papers were included in the TRB publication E-circular ISSN: 0097-8515.

The website is <http://pubsindex.trb.org/view.aspx?id=1146678>. Ding Cheng participated in

the conference representing the CP<sup>2</sup> Center. He also gave a presentation regarding to the lessons learned from utilizing warm mix additive in the asphalt rubber chip seal applications. The presentations can be viewed from the following link: <http://www.wsdot.wa.gov/partners/scom2012/confglance.htm>



**Steve Mueller of FHWA with Ding Cheng of CP<sup>2</sup> Center**

The AASHTO Subcommittee on Maintenance and the TRB Maintenance and Preservation Committees normally organize and conduct these conferences every three years to provide information on the state-of-the-art and state-of-the-practice in maintenance operations and management to professionals responsible for maintaining and preserving highways.



## California Asphalt Pavement Association Celebrates a Career of Dedication and Support from Industry Leader Jim St. Martin

**F**riends, family and industry professionals gathered at Disney's Grand Californian Hotel on June 7th to celebrate the life long accomplishments of Jim St. Martin and his retirement from the California Asphalt Pavement Association. After serving as the President / Executive Director for the Asphalt Pavement Association of California over the past 13 years (1998-2011) and having served another 4 years prior as the association's Regional

Director. Jim will continue to work for the association as a technical consultant through 2012 or until a replacement has been found. Both the association and industry in general are pleased and fortunate to have his expertise for the remainder of this year.

Jim St. Martin's career in the construction industry goes back more than 40 years with an emphasis on heavy highway construction,

*Continued, next page*



aggregate mining, and material production. He has been involved in these industries in several capacities, beginning as a project engineer, project manager, and V.P. of construction operations for a heavy highway construction company. Jim then moved on to organize and manage an asphalt production and construction company in San Diego, before becoming



**Jim and Ann St. Martin ready to slice retirement cake**

the President & Executive Director of the Asphalt Pavement Association of California. St. Martin is a licensed Civil Engineer and a licensed contractor in the State of California. He also serves as one of the voting members of the Greenbook Committee representing the AGC of California. In addition, Jim has planned, organized, and conducted classes on asphalt production and construction for the University of California Berkeley's Institute of Transportation Studies since 1994. He is also one of the in-

dustry Co-Chairs of the Asphalt Task Group (ATG), which is part of the Joint Caltrans / Industry Rock Products Committee. Jim continues to participate and Co-Chair various other Sub-Task Groups within the Rock Products Committee structure, while also remaining involved with the State of California (Caltrans).

Jim has also represented the industry on a national basis with the National Asphalt Pavement Association (NAPA), the State Asphalt Pavement Associations (SAPA) and the Asphalt Pavement Alliance (APA). He has served on a wide variety of committees with NAPA focusing on technical, environmental, and legislative concerns. His involvement with SAPA was broad and varied, which included serving as their Chairman during 2007 / 2008. As a member of the APA, he participated in several of their committees and national efforts, most recently, as the Co-Chair of the Environmental Team.

Jim's list of accomplishments under his reign as President / Executive Director is long and impressive. Len Nawrocki, one of Jim's peers and the Director of Marketing for Valero Marketing & Supply said, "Jim's participation and tireless work on the I-710 project was directly connected to the projects overall success. Jim always led by example and everyone benefited from his hard work. I will always have fond memories of the APACA 50th Anniversary

celebration on the Queen Mary back in 2003. Both Jim and Ann worked so very hard and the event was just a resounding success. I would also like to credit Jim for building a relationship and bringing Carl Monismith of UC Berkeley on board with the association. This was just one of several ways that Jim helped make our association better and better each year." Another friend and colleague from Valero Marketing & Supply, Don Goss, added, "Jim was always for quality. He helped build our Association's relationship with Caltrans and has always been a great mediator and diplomat for our industry."

Jim received several honors and awards from government and industry officials at his retirement event, including one from Martin Payne, District Director for Senator Mimi Walters, who presented him with a framed Legislative Proclamation recognizing his contributions to the industry and the State of California. He also received tremendous accolades and a medalion from Bob Humer from the Asphalt Institute in appreciation of his service to the industry.

Len Nawrocki also presented Jim with the Director's Award from CalAPA in recognition of his many years of service.

Several industry legends and Life Members of the association, like Paul Rademacher, Carlos Hernandez, Juan Forster, Rita Leahy, Len Nawrocki, Don Goss, Bob Humer and Dan Chapman were in attendance and recognized Jim's contributions. These individuals spoke to those in attendance, detailing their relationship and tremendous respect that they have gained for Jim St. Martin over the years. Jim's entire family was also there to support him at the event. Jim is well known throughout the industry as a family man who has been blessed with a 36 year marriage to his wonderful wife, Ann St. Martin. Together Jim and Ann have

**Martin Payne, Dist. Director for Senator Mimi Walters presenting Jim with a Legislative Resolution**



*Continued, next page*

raised three incredible children, Christopher (Melissa), Anthony (Tamara), and Jeanie; and now, have two beautiful grandsons (Evan and Landon). The impact that Jim St. Martin has had, and will continue to have on our industry, was extremely evident to all that were in at

tendance. I don't think we have seen the last of Jim St. Martin and the continued positive impact he will have on the California asphalt industry.

*Reprinted with permission of the California Asphalt Pavement Association*



## FHWA Update

By Steve Healow, FHWA California Division Office

In cooperation with the American Public Works Association (APWA), FHWA launched a new and innovative transportation resource called Federal-aid Essentials for Local Public Agencies. This resource puts key information about Federal-aid requirements at [www.fhwa.dot.gov/federal-aidessentials](http://www.fhwa.dot.gov/federal-aidessentials). Project sponsors now have a centralized hub for guidance, policies, procedures, and best practices for administering Federal-aid projects. The Web site includes a library of videos covering key aspects of the project development and delivery process. The videos are accessible from any computer or mobile device with Internet access.

I'll bet you didn't know there are nearly 28,000 local public agencies, (i.e. cities, counties, and towns), which own and operate 75% (2.9 million miles) of the USA highway network. These agencies receive close to \$7 billion annually in Federal-aid funding, or around 15 percent of Federal highway trust fund disbursements. In California over 600 local agencies participate in the Federal aid highway program.

The Moving Ahead for Progress in the 21st Century Act was signed into law by the president on July 6. Earlier, the president signed a two-month extension of SAFETEA-LU, which remains in effect through September 30th. MAP-21 will take effect on October 1st. Several innovative features in MAP-21 are:

- It allows expansion of the National Highway System (NHS) to incorporate principal arterials not previously included.
- It emphasizes safety programs, freight

movement, road, bridge, bicycling, walking improvement projects, and encourages private sector investment in transportation projects

- It reduces the number of programs from 115 to 30 by combining some and eliminating others. Funding under the old programs will remain available until allocated or lapsed.
- It establishes national performance goals in the following categories:
  - **Safety** -- reduce traffic fatalities on public roads.
  - **Infrastructure condition** -- maintain the highway infrastructure asset system in a state of good repair.
  - **Congestion reduction** -- achieve a significant reduction in congestion on the NHS.
  - **System reliability** -- improve the efficiency of the surface transportation system.
  - **Freight movement and economic vitality** -- improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
  - **Environmental sustainability** -- enhance the performance of the transportation system while protecting and enhancing the natural environment.
  - **Reduced project delivery delays** -- accelerating project delivery and promoting innovation.

You will be relieved to learn the law is only 584 pages and can be viewed in its entirety at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr4348enr/pdf/BILLS-112hr4348enr.pdf>

See also <http://www.fhwa.dot.gov/map21/>



## FP<sup>2</sup> Update By Jim Moulthrop, Executive Director

FP<sup>2</sup> Inc was successful in getting pavement preservation language into the transportation reauthorization bill, Moving Ahead for Progress in the 21st Century Act (MAP-21)

that the President signed into law on July 6, 2012. It is a 27 month bill at current spending levels and we would like to thank all our

*Continued, next page*



supporters over the past 36 months in their efforts to assist us in our mission. Preservation language is "sprinkled" throughout the bill and we have posted on our website, [www.fp2.org](http://www.fp2.org), an itemized listing of those sections in the 600+ page bill where preservation language can be found.

FP<sup>2</sup> will continue to be engaged in Washington to ensure that guidelines that will emanate from FHWA regarding implementation of the bill will represent the intent of the legislation. In addition, since the bill is only 27 months in duration beginning October 1, 2012, work will soon begin on the next legislation and we want to be involved.

As mentioned in the last newsletter, FP<sup>2</sup> had been in discussion with NCAT regarding a pavement preservation group experiment during the next loading cycle at the NCAT track. Since that time, FP<sup>2</sup> became a full funding partner with seven state DOTs to place treatments on the track when consensus distress trigger values are reached and also to place treatments on a supplemental site, Lee County, AL road 159 near the NCAT office in Auburn, AL. During the second week of August, a number of preservation treatments including crack sealing, scrub seal, chip seal, micro-surfacing, cape seal, Fiber Mat, and thin HMA overlays were placed on Lee Road. Companies

supporting FP<sup>2</sup>'s efforts participated in the selection of materials, mix design, and application of the techniques along with the seven states. The goal of the study is to develop life extension and life cycle cost information for the different treatments as well as performance information. You can access information about the study at [www.pavetrack.com](http://www.pavetrack.com).

If you weren't in Nashville, TN for the National Pavement Preservation Conference, shame on you because you missed a whale of the meeting (see cover story). Over 95 invited speakers presented papers on a variety of topics, live demonstrations of both rigid and flexible pavement techniques, and the James B. Sorenson Excellence in Pavement Preservation Award Luncheon were just some of the highlights. Over 500 registered delegates participated with over 235 agency representatives. So many vendors exhibited that extra space had to be found to accommodate them. Several people said this was the best and most interesting conference they had ever attended. Many thanks go to Gary Hicks and Ding Cheng of the CP<sup>2</sup> Center for their participation as part of the Organizing and Technical Committees for the conference. Highlights of the meeting will be posted on the National Center website, [www.pavementpreservation.org](http://www.pavementpreservation.org) and in the next issue of the Pavement Preservation Journal.



## CP<sup>2</sup> Center Plans to Hold a Patron's Meeting in January 2013

By Ding Cheng, Director of CP<sup>2</sup> Center

We are writing this story to invite your participation in our effort to educate and conduct studies to support the pavement preservation effort in the State of California and beyond. Caltrans established the California Pavement Preservation Center at California State University, Chico in July 2006. California State University, Chico was founded in 1887 in Chico, CA. Chico is located in northern California approximately 90 miles north of Sacramento. CSU, Chico is one of the oldest undergraduate universities in the State and amongst the highly ranked public universities in the west according to US News and World Report. The Center is administered by the College of Engineering, Computer Science and Construction management.

The Patrons Program for the Center was established in 2007 and consists of group of industry leaders who work in conjunction with the

Center at CSU, Chico. CP<sup>2</sup> Center Patrons are individuals or corporations who both actively and financially support the program. They include members of the asphalt and concrete industry as well as aggregate producers and engineering firms. A list of the members is available upon request or can be found on the Center's website: [www.cp2info.org/center](http://www.cp2info.org/center).

Caltrans, CalRecycle, and other clients have provided significant financial support to help this program grow. After 5 years in operation, the Center now has a good infrastructure to support Caltrans and other agencies and industry with their efforts in the pavement-preservation arena. We still need your continued support to extend these services to local agencies. The CP<sup>2</sup> Center Patrons assist the Center by providing guidance and support for the training and research efforts in the area of

*Continued, next page*



pavement preservation. Contributions from the patrons program are used to support:

- Student recruitment
- Promotion of pavement preservation (e.g. newsletter)
- Seed money for research
- Laboratory equipment and facilities
- Field testing equipment

- Scholarships and internships
- Center staff travel and conference support

The planned patron's meeting will be a one day meeting held in Chico during January 2013. If you are interested in participating this meeting or becoming a patron, please contact Dr. Ding Cheng at (530) 898-6032 or [dxcheng@csuchico.edu](mailto:dxcheng@csuchico.edu). We appreciate your support very much!



## COMING EVENTS or MARK YOUR CALENDAR

The *International Conference on Long-Life Concrete Pavement-2012* is scheduled for September 18-21 in Seattle Washington. The 3-day conference organized by the Federal Hwy Admin (FHWA) is part of technology transfer activities under the Advanced Concrete Pavement Technology (ACPT) Program within FHWA. The international forum will address various aspects of concrete pavement design, construction, and materials technologies that result in long life for concrete pavements and are sustainable. For more information visit: <http://www.fhwa.dot.gov/pavement/concrete/2012conf.cfm>.



*4th International Conference on Accelerated Pavement Testing* cosponsored by TRB will be held September 19-21 in Davis, California. The conference will explore various aspects and benefits, future needs, and upcoming trends in accelerated pavement testing. Information at <http://www.ucprc.ucdavis.edu/APT2012/>.

*7th Symposium on Pavement Surface Characteristics: SURF 2012* will be held September 19-22 in Norfolk, Virginia. The focus is on providing smooth, safe, quiet, and sustainable travel through innovative technologies. SURF 2021 provides an opportunity for practitioners and researchers to share knowledge and expertise. Visit <http://www.cpe.vt.edu/surf2012/index.html> for more information.

*2012 Asphalt Pavement Maintenance Class* will be available to join online. Class will meet

December 11-13 from 1:30 PM to 3:30 PM. This course provides a solid working knowledge of the most common pavement maintenance and preservation practices including basic principles, best field practices, and safety issues. For more information visit: <https://registration.techtransfer.berkeley.edu/CourseStatus.awp?~122IDM041211>

*The AR 2012 Conference* will be held in Munich, Germany on October 23-26. This Conference, like previous AR Conferences, will mainly focus on all aspects of the design, life cycle cost, construction, research, energy and environmental benefits, maintenance, recycling, tire/pavement noise reduction and production of asphalt rubber as a binder or use in a hot mix. Papers on Environmental aspect related to the use of asphalt rubber binders are also encouraged. For more information visit: <http://www.consulpav.com/ar2012/english/>.

*2012 CalAPA Asphalt Pavement Conference* is scheduled for November 1 from 7:30 AM- 4:30 PM PST at the Doubletree Hotel, Sacramento, CA. Emphasis is on the latest developments in asphalt technology, best practices, new specifications, cutting-edge research, real-world projects and more. Featured are noted industry experts including representatives from Caltrans, the University of California, and the National Asphalt Pavement Association. <http://eventsbot.com/events/eb244211152>.



Caltrans established the California Pavement Preservation (CP<sup>2</sup> Center) CSU, Chico in July 2006, and fully funded the Center in January 2007. Dr. DingXin Cheng is the current Director of the Center.

The purpose of the Center is to provide pavement preservation support services to Caltrans and other public agencies, and to industry. Unique services include developing educational programs in pavement preservation, providing training and staff development opportunities, providing needed technical assistance to public agencies and industry, and managing/conducting research and outreach services, such as this newsletter.

The Center works closely with the Pavement Preservation Task Group (PPTG), a statewide volunteer group consisting of members from Caltrans, Federal Highway Administration (FHWA), industry, various public agencies and academia to help promote cost-effective pavement preservation.

CP<sup>2</sup> Center News is published quarterly by the California Pavement Preservation Center  
CP<sup>2</sup> Center, 35 Main Street, Suite 205, California State University, Chico, Chico, CA 95929-0603  
Subscriptions by e-mail: contact [CP2C@csuchico.edu](mailto:CP2C@csuchico.edu) to add your name to the distribution list