“PaveM”, Caltrans’ Pavement Management System

By Tom Pyle, Caltrans

This article provides status of the new Caltrans Pavement Management System, “PaveM”, developed to help manage Caltrans 50,000-mile highway system in a better way.

The goal is clear. California’s highways need some attention. Well, a lot of attention. They are getting better, but still it’s of little consolation that California’s highway condition ranking by the Reason Foundation has moved from the basement rank of 48 to 47. Since 2000, California’s highways have been consistently in the bottom 10. It is clear that new tools are needed.

The ‘how-to’ would be easy if we had all the money we wanted. Since we don’t, we need to figure out the optimum project strategy for each mile of pavement. Thus, the idea of a new, more automated pavement management system was born a few years ago to assist pavement engineers with this difficult problem.

Why is this so difficult? We have money, smart engineers and willing contractors. What gives? Pavement Management is like a war. The enemy is not clear though. It shows up as rain, heat, axle loads, smaller tire foot prints, repeated loadings, age, etc. California also has some unique problems that no other state faces. Here are five important considerations in our California battle:

1. Unique climate – 5 zones: dry blistering deserts, rainy coastal zones, snowy Sierra’s, etc.
2. Large ports: 5 of the nation’s 9 largest ports truck goods to the continent.
3. A need to perform pavement work at night, in short construction windows.
4. Heavy seasonal agricultural truck traffic.
5. Extremely high commute traffic: 300,000+ vehicles per day on some routes.

In addition, there are thousands of miles where the pavement in one lane is different than in the lane next to it. Why does this matter? Because if the HOV lane is asphalt with 10 years of life remaining and the next lane is concrete with 20 years of life left, meaning then the treatments and schedules to repair are very different.

Given all these considerations, visionaries at "PaveM", Caltrans' Pavement Management System

Continued, next page
Caltrans decided in 2008 to create a new tool to assist with pavement management.

Enter the new Pavement Management System. Those who crafted the original scope- ing documents made it clear that Caltrans could not carry on the business of pavement management as it had in the past. In the past, California has led the nation in cutting edge pavement technology, and the next wave of technology was targeted to be more automated to meet the demands of this diverse state.

Automation: So how do you automate the selection of projects over 50,000 lane miles of a war zone given changing budgets and high demands? By breaking it into tiny pieces and then rebuilding those pieces - with decades of institutional knowledge - in a computer program. The automation is broken into three simple areas to answer essential questions.

1. What’s below the surface?
2. What’s the condition of the surface?
3. Where are the optimum projects?

What’s below? A company of geophysicists used vans to scan our highways with Ground Penetrating Radar (GPR) to determine what’s below the surface. While we think we know everything about our highways, there are surprises on some of the old routes. Surprises are not good during construction. On one route we found an old rail line that was forgotten and overlaid with asphalt. Also, there are countless miles of rural highways that started as horse trails, then were widened for wagons, to eventually be laid with gravel and then perhaps some oil sprayed on before it became a street and then a highway.

Bottom line is we have to know what’s below the surface and GPR can tell us that.

The surface condition: Engineers are now receiving more accurate data on the pavement surface condition. Today’s surface condition data is in an entirely different realm than what we collected for the last 30 years. In January 2015 Caltrans ‘sun-setted’ its old visual surveys of the pavement condition. That effort involved a crew of 6 who drove the state and looked at the first 100 feet of every mile every 18 months. Under our new system, annually, from January to August, a fleet of high-speed vans (Figure 1) will collect this data with lasers and high definition scanners and report it to the Pavement Program Office. Lasers and high definition scanners and report it to the Pavement Program Office.

And the data is pouring in! This is exactly what the visionaries imagined. Table 1 shows what the surface condition data will look like. With the new system, we’re now receiving GPS coordinates on every crack, rut and bump, and

Table 1.

Caltrans Maintenance Program

2011 Pavement Summary
Caltrans Drive Order
District 8, SBD, Rte 395, PM R3.981 - 73.518

**Table 1.**

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* * Last AFCS survey data collected updated using Pavex performance model to year: 2012

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an International Roughness Index (IRI) rating is produced for every one-tenth lane-mile of pavement (Figure 2). The new data even includes the condition of every concrete slab.

At publication of this article, we are more than half way through this 9-month data collection cycle.

**Figure 2. Image of the Automated Pavement Condition Survey Showing IRI Color Ratings of the Highway, and also Forward and Downward Photo Images.**

**Optimum projects:** Handling and processing terabytes of data does, however, create new challenges. Fortunately Caltrans has some pretty powerful processing tools, which allow us to sift, sort and combine the data for our needs. The new PaveM Pavement Management System provides the pavement data and allows engineers to “drive” the highways from their computers. PaveM not only provides historical projects information, but suggests potential new projects depending on what the budget is. Table 2 shows a view of how engineers can see the past and programmed projects along with potential future projects. The bottom line, PaveM is an aid to help make decisions about what, where and when to focus on a highway.

**Improved decision making is the goal.** There is a wide variety of maintenance and repair strategies to attack not only the existing cracks and ruts, but also the future distresses that have not yet arrived. And our engineers have countless years of great decision making experience. While in the past, a small sample of surface condition data was collected and

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**Table 2: Information on Past Pavement Treatments**

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used to aid in project development, future decisions will include input from a complete picture of the surface condition.

These kinds of decisions will help with the question of, “What /where is the optimum project?” Where should we focus for best results - on a route?, a District?, for delaying rehabilitation?, for the truck network?, for preserving pavement life? ... etc. The optimum project thus has many possibilities. As the department builds on computing power for pavement management decision making, you can rest assured that terabytes of data were sorted and sifted behind every project you see. And as Caltrans works smarter, we will be better equipped to make the best use of our limited transportation funds.

For more information go to contact Tom Pyle at: tom.pyle@dot.ca.gov

Caltrans Constructs Cold In-Place Recycle Pilot Project on SR 198 in District 6
By Hamid Moussavi and Dallia Foster, Caltrans and Ding Cheng and Lerose Lane, CP2 Center

Introduction
Caltrans has been using Cold-In-Place Recycling (CIR) as a pavement preservation strategy since the 1980’s. In recent years, Caltrans has attempted to expand its preservation tool box through an initiative to evaluate CIR through pilot projects like this one in District 6 (Fresno), on SR 198 near Lemoore.

CIR is a green strategy that recycles the existing Asphalt Concrete (AC) pavement in place without heating the materials prior to placement. The existing AC pavement is milled into reclaimed asphalt pavement (RAP) and a small amount of cement is added, as well as an asphalt emulsion with a rejuvenating agent and additional water. The CIR mixture uses very small amounts of new materials and the CIR specifications require an approved mix design developed by a laboratory using field core samples of the existing pavement obtained from various locations throughout the project.

This pilot project includes four Performance Evaluation Sections (PES), which were established for performance monitoring. Each PES is 500 feet long, and the existing condition of each PES was evaluated by the CP2 Center for cracking. The CP2 Center found that the initial pavement condition for all four PES’s was severe fatigue (alligator) cracking for both wheel paths with block cracking between the wheel paths. The individual cracks were too numerous to measure. This pavement condition was found throughout the project.

Test Section Layout
Figure 1 shows the PES locations for this pilot project, where the CIR was constructed in the Westbound No. 2 lane of SR 198.

CIR Construction
The CIR construction started in the morning from June 16th-19th, 2015, by Pavement Recycling Systems, Inc, (PRS), a firm well versed in this process. This was after the top 0.15 foot of existing AC pavement had been ground off due to its poor condition. In some areas, a deeper grind was performed to remove existing AC pavement that had delaminated. Figure 2 shows the ground pavement surface after the top 0.15 foot of existing AC pavement was removed, prior to the 0.35 foot of CIR treatment.
Figure 3 shows the CIR train.

Figure 2. Ground Pavement Surface Prior to Start of CIR

The CIR mixture is produced using the RAP, portland cement at a rate of approximately 0.3%, and Pass-R, asphalt emulsion from Western Emulsions. The emulsion was added at a rate of 3%. The mix was then placed in a windrow, as shown in Figure 4.

Figure 3. CIR Equipment Train

The asphalt paver comes in directly behind the CIR train (Figure 3), picks up the mix from the windrow and spreads the CIR - essentially the same operation as paving with HMA (Figure 5). The exceptions include:

- No heating of CIR is required during production
- No fumes are generated from the CIR process
- No additional aggregate or HMA needs to be blended
- No hauling is needed to bring additional aggregate or HMA materials to the site to be blended

These differences make the CIR an extremely “green” product compared to HMA, and can provide an economical approach to pavement rehabilitation.

The use of CIR minimizes the required thickness of the new HMA overlay for the overall structural section. Caltrans requires that CIR have an HMA wearing surface placed over it, even if additional HMA material is not required for the structural section. On lighter class-3 roadways, the wearing course can be a chip seal.

This project had 0.15 foot of HMA placed over the 0.35 foot CIR on July 16th -17th, 2015, and 0.10 foot of rubberized hot mix asphalt (RHMA) was placed in mid-August 2015.

Figure 4. CIR Material in Windrow

Figure 5. Cold In-Place Recycle (CIR) Placed with Paver
CIR Compaction

Intelligent Compaction (IC) was used on this project to help establish the number of times the section needed to be rolled by a steel wheel tandem roller and a rubber tired roller, to reach peak compaction. A nuclear gauge was used for monitoring the CIR compaction after each roller pass to establish the optimum number of passes for each roller. IC helps to prevent over-rolling the CIR and possibly losing density. Also, each nuclear gauge reading location was identified by GPS coordinates, so the re-rolling operation – 5 to 7 days later – could be measured by the nuclear gauge in the same location as measurements taken during the first compaction effort. Data from the GPS is transferred electronically to a computer program to help track compaction effort on the CIR.

After the CIR was placed by the paver and compacted, the CIR product looked very similar to conventional HMA, as shown in Figure 6.

Coring and Testing

PRS attempted to take cores after the initial placement of the CIR but was unable to, due to the initial weakness of the material. For future testing, Trinity Engineering manufactured specimens with a gyratory compactor while the CIR material was fresh, and the cement had not hardened. The CP² Center is in the process of testing these specimens and the cores taken by PRS.

The CIR was re-rolled 5-7 days after the placement, using the same compaction equipment used in the initial compaction. PRS again attempted coring both before and after re-rolling, and their success was highly variable. On PES No. 2 none of the cores taken were good, and on PES No. 3, eight good cores were obtained. Four cores were taken before re-rolling and four additional cores were taken after re-rolling. Two cores were taken in the wheel paths, and two cores were taken between the wheel paths to determine what effect traffic had on the compaction of the CIR material. Figure 7 shows PRS’s coring machine used on this project.

Lessons Learned from Construction

Overall, the project went smoothly. The equipment appeared to be in good condition, and there weren’t major breakdowns. The emulsion arrived on time.

- Swell testing needed to be performed on the existing materials for CIR in different sections of the project. The CIR swell varied throughout the project limits. This was a problem due to only one lane having the CIR strategy. The CIR in the No. 2 lane was confined between the No. 1 lane and the shoulder, so the CIR cross-slope could not be extended to the edge of pavement with the paver. The contractor needs to be prepared to waste material when cross slope and CIR depth requirements one to be met.
- Due to the CIR cross slope being out of tolerance, some grinding/milling was necessary.
- Coring CIR on the first day after placement could not be achieved, however most cores were able to be extracted within 5 to 7 days.
A summary of project information is found below in Table 1.

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Future Plans
Caltrans needs to know how well the CIR product will perform in comparison with replacing failed surfacing with new HMA prior to overlaying. The CP² Center will perform laboratory performance testing on the CIR material from this project for comparison with cores that are to be taken after completion of HMA and RHMA overlays. This project’s performance, along with the comparison of laboratory and field data, is expected to result in improved Caltrans specifications for future CIR projects.

The CP² Center is tasked with monitoring this pilot project for future performance. Test results will be included in the published construction report, and will be available on the CP² Center’s website after the report is finished. Go to: http://www.csuchico.edu/cp2c/ For more information contact Dr. Ding Cheng at (530)898-5114 or dxcheng@csuchico.edu.

Best Practices - Crack Treatment and Patching
By Roger Smith, CP² Center

A nyone involved with pavement maintenance will likely need to know something about crack treatment and patching. Two newer references that should be on everyone’s ‘favorites’ list are:

"Best Practices For Crack Treatments for Asphalt Pavements" (NCHRP Report 784, 2014)

The Report summarizes current best practices for crack treatment, distinguishing between crack sealing and crack filling. It proposes a method for selecting the proper sealant for the climate, discusses proper preparation of the crack area and stresses the need for proper training of workers, who are often entry level personnel. View the full report at:http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_784.pdf

"Pavement Patching Practices, A Synthesis of Highway Practice" (NCHRP 463, 2014)

This Synthesis summarizes best practices for patching both asphalt (HMA) and concrete (PCC) pavements, focusing on smaller scale surface defects. It covers materials, methods, equipment, specs traffic control and even common administrative issues. View the full report at:
On July 15th, 2015, Telfer Highway Technologies (THT) placed a new and innovative product for Placer County - a premium micro surfacing, which incorporates a special emulsion, “eFlex”, developed by Ergon Asphalt and Emulsions.

Telfer was finishing up the Placer County “Summer 2015 Roadway Surface Treatment Program”, and Steve Olsen, Slurry Division Manager, introduced the idea of the new product to Kevin Taber, Placer County Engineer. Kevin was eager to try “eFlex” after hearing about the potential added benefits that it offers. The test was placed on two different roadways, side-by-side with standard micro surfacing for a comparison of performance. Initially, there is less raveling and the eFlex is proving to be a tougher material than the standard micro surfacing.

In addition to the initial two project sites, Placer County will do some additional sites in higher elevation and snowplow areas to evaluate the ability of the “eFlex” to hold up to tougher environmental conditions. The projects will continue to be evaluated over time.

Below is the information on the initial project:

- Owner: Placer County: Kevin Taber P.E. and Corinne Allen
- eFlex Supplier: Ergon Asphalt and Emulsions - Scott Metcalf and Mark Ishee
- Streets: Lomida Lane and Mammoth Road in Granite Bay area
- Total Yardage: 19,096 sy
- Quantity: 211.49 tons
- Application rate: 22 lbs/sy

“eFlex” premium micro surfacing emulsion is an innovative new product which is significantly tougher than its conventional counterparts. An increased level of polymer modification in the base asphalt enables roads to be more tolerant of higher temperatures and more resistant to potential damage that can be caused by snowplows and scuffing from power steering – especially in hot climates.

The product is placed by conventional micro surfacing equipment and retains the benefits of conventional micro surfacing.

According to the Placer County’s Kevin Taber, “Steve Olsen approached us with the idea of placing the eFlex side by side with the specified MSE for a real life comparison. The jury is still out, but I suspect for not too long. As promised, there is less shedding, and the cured surface is definitely harder than the adjacent micro surfacing. We are excited to evaluate its performance in the Tahoe area where our plows will put it to the test.”

For more information contact Scott Dmytrow at: scott.dmytrow@telfercompanies.com

Figure 1. Micro Surfacing Equipment

Figure 2. Finished Product

New Micro Surfacing Tried by Placer County
By Scott Dmytrow, Telfer Highway Technologies
Caltrans Statewide Deployment of High Speed Inertial Profilers

By Rupinder “Bobby” Dosanjh, Caltrans

In February 2013, Caltrans introduced a new pavement smoothness specification. This new specification required the use of an Inertial Profiler (IP) in lieu of a California Profilograph to collect pavement smoothness data as acceptance criteria for new paving done by Caltrans’ contractors.

An IP operates at highway speeds and utilizes lasers in conjunction with accelerometers to collect wheel path profile data. The data is then analyzed using software to evaluate the smoothness. Caltrans, like many other agencies, now uses International Roughness Index (IRI) as their smoothness descriptor, identifying areas of localized roughness (e.g., bumps) and a Mean Roughness Index (MRI) to indicate overall lane smoothness.

Inertial Profiler Acquisition

Caltrans has been adding IP’s to its fleet in the past couple of years with a goal to provide each District with its own IP. As of June 2015, the final two IPs were acquired and deployed. Now, all twelve Caltrans Districts have an IP.

Inertial Profiler Training & Certification

New equipment requires training and certification. As part of the IP deployment process, selected Caltrans personnel were provided training by the equipment vendors. This training consisted of how to verify, calibrate, maintain, and operate the IP.

Once the Districts were proficient in the use of the IP, the next step was to get the operators and equipment certified.

Caltrans has its IP testing and certification facility located in Sacramento.

Figure 1. Caltrans Inertial Profiler Truck

Figure 2. Caltrans Inertial Profiler Certification Facility, located in Sacramento

The certification process consists of testing the IP operator and equipment. The IP operator must pass a written test as well as a practical test to be certified. The practical test evaluates the operator’s aptitude to verify, calibrate and operate the IP. The equipment certification consists of passing a repeatability and reproducibility test as outlined in Caltrans Test Method 387. At this time, all Caltrans-owned IP equipment has been certified, and all Districts have certified IP operators.

Contractors’ operators and equipment must also go through a similar certification process before performing work on a Caltrans project.

Software Training

So the IP operators know how to collect data using certified equipment. Now what? Well, the smoothness data needs to be analyzed for specification compliance. The specific software that Caltrans requires for smoothness data analysis is called ProVAL. ProVAL is a ‘freeware’ that is owned by Federal Highway Administration (FHWA). Most of the District IP operators are trained in ProVAL.

Caltrans has also been working with FHWA to provide free ProVAL training to its contractors annually. FHWA has provided four of these trainings so far, alternating between northern and southern California.

Inertial Profiler Uses

The District IP’s will be used to provide Caltrans’ construction Quality Assurance (QA). As per Caltrans specifications, contractors must collect smoothness data using an IP as part of...
their Quality Control (QC) process. In the past, Districts that did not have an IP had to rely on the contractor’s smoothness data for both QC and QA. Now that the Districts have IP’s, they will be able to provide QA and ensure data consistency.

In the future, the District IP’s will also be used to collect existing roadway smoothness data during the design phase for projects. This existing smoothness data can then be used to assist in determining project strategy and scope, estimate grinding quantities and could also be provided to potential bidders as information handout at time of bid.

By now, if your pavement preservation tool-box has micro surfacing or cape seals, you will be dealing with updating curb ramps to be Americans with Disabilities Act (ADA) compliant. The US Department of Justice, in the ruling released in July 2013, required that any pavement “alterations” will need to have a new curb ramp installed if it is not meeting the requirement. These alterations are defined as including micro surfacing and cape seals.

Avoidance or change of treatment plan might get you out of the compliance requirement, but this strategy may cost you more in the long run. Just look at the litigation cases between United States vs. City of Sacramento, and Caltrans. Both agencies had to pay dearly for not being in compliance with the law.

Many agencies in the Bay Area also face the same issue. Rather than treating a curb ramp as a last minute add-on, agencies should include the installation cost during the project planning phase. Others may simply include the additional costs in the unit costs in their pavement management program. However, this may artificially inflate additional costs because not all micro surfacing or cape seal projects require an upgrade of curb ramps. The best management practice recommends the use of an asset management approach to manage curb ramps, whereby one can assess the condition and manage maintenance needs -just like the screen shot below from MTC’s “StreetSaver Plus” pavement management program, which shows two curb ramp installation costs of $4,000 being included for the Adams Court overlay project.

The City of Los Altos has a simple inventory of curb ramps with ADA compliance information. This database has been imported into the new “StreetSaver Plus” Curb Ramp module. This module provides solutions for the agency to gauge the maintenance needs of curb ramp upgrades, alongside pavement maintenance needs.

Common Curb Ramp

This new requirement has caught many local agencies off guard because the conventional micro surfacing and cape seals, which are typically considered as preventive maintenance, are considered “alterations” through resurfacing. The additional costs to install new ramps have essentially killed many of the much-needed road maintenance projects. This is because curb ramp installation has added additional 30 to 40% of the total project costs.

Final

Smoothness is a critical aspect of pavement management and needs to be appropriately addressed. It is currently a pavement quality indicator used by Caltrans, and by many California local agencies on their higher speed, high-traffic roadways. At the national level, smoothness is one of the characteristics that is often considered as a performance measure for pavement. So measuring pavement smoothness is here to stay and Caltrans is geared-up for it.

For more information contact Bobby Dosanjh with Caltrans at: rupinder_dosanjh@dot.ca.gov

By Sui Tan, Metropolitan Transportation Commission (MTC)
MTC “StreetSaver Plus” Pavement Management Program

This needs assessment is essentially putting their existing ADA Transition Plan into action. The City of Los Altos can not only plan when and which ramps to upgrade at the most optimal time, but the curb ramps upgrade is coordinated with the road maintenance schedule. With economies of scale, the city will be able to pave the streets and upgrade the curb ramps at the same time, thus reaping additional cost savings. In planning out their maintenance program, StreetSaver has included the costs to upgrade curb ramps whenever there are treatments involving cape seal, micro surfacing, overlay or reconstruction.

Going forward, all road maintenance projects will include any necessary costs to upgrade the curb ramps in the budget planning phase. The MTC “StreetSaver Plus” program is able to step up to the challenge and provide solutions for local agencies.

For more information contact Sui Tan with MTC at: stan@mtc.ca.gov

FHWA Update  By Steve Heallow, FHWA, California Division

Those of you following the Strategic Highway Research Program (SHRP) noted that on August 7th AASHTO and FHWA announced 21 new grant awards to underwrite 34 new projects under the SHRP2- Phase 6 program, with emphasis on highway capacity, road and bridge renewal and improved reliability. There are now over 300 SHRP2 projects completed or underway nationwide. The 7th and final round of SHRP2 applications will open April 1, 2016. See the announcement here: http://onlinepubs.trb.org/onlinepubs/shrp2/shrp2announcements.pdf Caltrans is the recipient of two SHRP2 grants, one for the Composite Pavement Systems (R21) initiative and the second for Pavement Renewal Solutions (R23). See: www.pavementrenewal.org for more information.

Concrete Pavement Preservation Workshops are coming to California, co-sponsored by Caltrans, the National Concrete Pavement Technology Center and FHWA. These 1-day workshops are scheduled for October 5 in Sacramento, October 8 in Fresno, October 20 in Fontana and October 22 in San Diego. There is no charge to attend, but seating is limited.

Interested Caltrans people let your supervisor/manager know, and interested people in the private sector contact Mehdi Parvini (mehdi.parvini@dot.ca.gov) to reserve a seat.

MTF “StreetSaver Plus” Pavement Management Program

| Year: 2015 |
| Street Name | Begin Location | End Location | Street ID | Section ID | FC | Surface | PCI | Cost | Treatment |
| ADAMS CT | END | PUTNAM ST | ADAMSR | 0100 | R | AC | 100 | $14,740 | OVERLAY W FABRIC |
| ALBANS CT | BARMOUTH DR | END | ALBANS | 0100 | R | AC | 100 | $25,916 | OVERLAY W FABRIC |
| ALUMROCK DR | ROCKFORD DR | EAGLERIDGE DR | ALUMRO | 0100 | R | AC | 100 | $109,461 | OVERLAY W FABRIC |
If you work at a city or county and would like to use federal highway trust fund dollars for your programs and projects consider visiting the “Federal-aid Essentials for Local Public Agencies” site at: http://www.fhwa.dot.gov/federal-aid-essentials/index.cfm There you’ll find over 100 instructional videos, which were produced to explain and clarify the applicable laws, regulations and policies to observe during the course of your federal-aid project.

In November of 2012 many of us benefited from the half-day workshops in Sacramento and Fontana entitled “Best Practices for Longitudinal Joints” sponsored by the Asphalt Institute and FHWA. This winter, look for another workshop in the series entitled “Tack Coat Best Practices”. See also: http://www.asphaltinstitute.org/tack-coat-best-practices-webinar-recording/

As noted in the last CP2 Center newsletter, the national Foundation For Pavement Preservation (FP2) Inc. continues to be engaged with the reauthorization of a MAP-21 plan for federal funding. As you have probably read, in late July the Senate passed the Developing Roadway Infrastructure for a Vibrant Economy Act (DRIVE), which provides six years of program authorization and three years of funding. The House of Representatives did not have the opportunity to take up the bill before the August recess and as a result, the Congress passed a short term extension to MAP-21 which will expire October 29, 2015. Both Senate and House leaders indicate that they are going to work closely together in the fall to finalize a reauthorization bill. Finding mutually agreeable funding for a long term bill will be the major challenge, and it is impossible to predict if a long term bill will be signed into law - and exactly what does “long term” really mean - two, three, or six years. We would encourage you to contact your representative and senators and urge them to pass a long-term bill. Visit http://www.fp2.org/benefits-of-pavement-preservation/ for more information.

The placement of a number of pavement preservation treatments on US 280 in Alabama, as part of the NCAT/MN Road joint research effort, began on Tuesday, August 25. Chip seal, microsurfacing, scrub seal, and various combinations of them will be placed on the 17,000 ADT, four-lane divided highway for evaluation and assessment of their life-extending benefits. Some of the treatments are also scheduled to be placed on the NCAT test track, and similar treatments will be placed and studied in Minnesota.

For more information contact Jim Moulthrop at: jmoulthrop@fugro.com
The 34th annual County Engineers Association (CEAC) Conference was held July 29-31. This popular meeting is held each year at Camp Conery adjacent to Lake Almanor. The meeting allows for County Engineers to exchange ideas on a variety of topics. A total of 60 people attended to listen to speakers covering the following pavement or policy related topics:

- Contracting Solutions for Routine Maintenance, Repair and Modernizations, via Job Order Contracting, by Paul Burns of the Gordian Group
- CEAC updates by Mike Penrose, Kiana Buss, and Chris Lee
- Hot In-place Asphalt Pavement Recycling, by Gary Plunkett, Coral Partners LLC
- Local Assistant Program Update, by Ray Zhang of Caltrans Local Assistance
- Roller Compacted Concrete (RCC), by Clay Slocum of California Nevada Cement Association

Other topics (e.g., environmental, bridges, tire-derived aggregate) were covered during the 2-day event, but they were not related to pavement preservation or funding issues, so are not reported here.

One of the highlights of the meeting was the presentation by Kiana Buss and Chris Lee, legislative representative and legislative analyst, respectively for the California State Association of Counties (CSAC), on the transportation and infrastructure special legislative session. They pointed out that both houses of the Legislature have formed special transportation and infrastructure committees to discuss how to provide funding for roads and streets, and are setting hearings on various legislative proposals on both the funding and reform side of the equation.

The most significant Senate funding proposal yet to be introduced is SB X11 by Senator Jim Beall (D-San Jose), which was similar to his regular session vehicle SB16. The bill was amended in July 2015 to include the following:

- A gas tax increase of 12 cents per gallon
- A diesel tax increase of 22 cents per gallon
- Indexing the taxes to the rate of inflation beginning in 2018
- Once a jurisdiction has dropped to an overall pavement condition index (PCI) of 85, it would be able to use the funding raised by the bill for transportation purposes
- Retains the $100 registration on zero-emission vehicles and the $35 fee on all other vehicles
- Eliminates the Vehicle License Fee hike, and replaces revenues with a $35 “Road Access Fee”
- No longer includes a 5-year sunset, thus constituting a permanent funding package

Other bills have been introduced by Senator Huff (R-Diamond Bar) that would constitutionally guarantee truck weight fees and other revenue for transportation purposes, dedicate cap-and-trade funding generated from fuels to roads and streets, and several measures aimed to streamline project delivery and environmental review.

On the Assembly side, spot bills were introduced by Transportation Committee Chairman Jim Frazier (D-Oakley) and Assembly Members Luis Alejo (D-Watsonville) and Henry Perea (D-Fresno) introduced measures related to the truck weight fee transfer and to establish public-private partnerships.

CSAC, in partnership with the League of California Cities, the California Alliance for Jobs, and many others, have developed list of priorities for any new transportation funding package and has asked for $3 billion/year in additional funding for local streets and roads.

Continued, next page
and $3 billion for state highways. This amount of funding would bring the average local road from a pavement condition of 66 (at risk) to a condition of 73 (fair) and provide similar increase to the overall condition of the state system too. The $3 billion per year ask also reduces the funding shortfall by $35 billion over 10 years on the local system alone.

CSAC continues to work with the broad coalition of stakeholders to achieve new funding in 2015. While California is often criticized for having some of the highest gas taxes in the nation, it’s important to remember that motorists are paying for the bad roads already. Crumbling roads and potholes are an annoyance to drivers and cost us all more than $700 per year in added vehicle maintenance according to a new report from the national transportation research group, TRIP. At the same time, motorists on average pay $368 in all federal, state, and local transportation taxes. If we wait longer to make the needed repairs, the worse the problems will become and the more expensive it will be to fix. It is way past time for action.

For more information contact Kiana Buss with CEAC at: kbuss@counties.org

According to Brian, “Working at the CP² Center gave me the opportunity to develop my skills as a Civil Engineer and explore the field of pavement road materials. As part of the Graniterock community, I have also participated in the Salvation Army and KSBW’s Share Your Holiday Toy Drive as well as interacting with the community while collecting toys, clothing, food, and money for needy families.

In addition, Brian is also serving as the Chair for the safety committee for the Research and Technical Services (RTS) Branch. Being chair of the Safety Committee has given him the opportunity to shape and implement safety policies and practices at RTS. As part of the Graniterock community, he has also participated in the Salvation Army and KSBW’s Share Your Holiday Toy Drive as well as interacting with the community while collecting toys, clothing, food, and money for needy families.

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According to Brian, “Working at the CP² Center gave me the opportunity to develop my skills as a Civil Engineer and explore the field of pavement road materials. As part of the CP² Center family, I got to perform research on projects such as the development of the TDA Handbook, the use of polyester grout for dowel bar retrofit on US 50, performance of fog seal in Northern California, and asphalt binder research using the DSR, RTFO, and BBR lab test methods. Working for CP² Center provided valuable experiences that helped me explore many facets of road materials and prepared me for my transition to a more permanent career path. Thank you CP² Center!”
The CP2 Center’s “Patrons Program” gives our partners from industry and other pavement oriented groups a way to provide more “general” sustaining support for the Center, and to help direct and even participate in the Center’s activities.

The California Pavement Preservation Center (CP2C) was established in 2006 at CSU, Chico, to provide assistance with the development and use of appropriate pavement preservation strategies. The Center was originally funded by Caltrans and continues to work closely with them, as well as other agencies. We maintain a very experienced staff of pavement experts, and a state-of-the-art laboratory facility.

But the Center is funded only by contracts with agencies such as Caltrans and CalRecycle and other clients, and work under those contracts is narrowly defined, so that funding may only be used for specific contract tasks. The Center, therefore, has no contingency funding to sustain “overhead” activities, such as maintaining lab equipment, preparing contract proposals, organizing meetings and conferences, participation in events to promote pavement preservation, and delivering training classes. This funding must come from non-contract sources such as our Patrons Program.

Co-Chairs for the group are Dr. Gary Hicks, CP2C, and Dr. Hans Ho, Telfer Highway Technologies.

For more information on joining our Patrons Program, please contact Co-Chairs, Dr. Gary Hicks at rghicks@csuchico.edu and/or Dr. Hans Ho at handsho@telfercompanies.com. More information on the Program can also be found on the Center’s website at www.cp2info.org/Center.

### COMING EVENTS

**Maintenance Superintendents Association (MSA) Training Conference & Equipment Show**

(October 1-4, San Diego)

Numerous training sessions, including several on paving and pavement preservation will be included in this year’s big annual event. In addition, sessions on supervision, playground safety, equipment, parks and trees will also be featured.

For more information and the various MSA chapter meetings around California go to: [http://mainsupt.com/conference/conference.html](http://mainsupt.com/conference/conference.html)

**Pavement Smoothness Technology Forum**

(September 28, Sacramento / online)

The Inertial Profiler (IP) and ProVAL analysis software are now being utilized on Caltrans pavement projects. Join industry and state experts in an interactive forum to help you understand how this new technology can help you meet pavement smoothness requirements. Seats are limited and registration is on a first-come, first-served basis. Registration is required for all attendees.

To register go to: [https://www.eventbrite.com/e/hma-pavement-smoothness-technology-forum-registration-18040933919](https://www.eventbrite.com/e/hma-pavement-smoothness-technology-forum-registration-18040933919)

**Asphalt Rubber Conference**

(October 4-7, Las Vegas, NV)

The 2015 Rubberized Asphalt Rubber Conference (RAR2015) will be held in Las Vegas, at the Luxor Hotel, October 4-7, 2015.

RAR2015 will focus on any and all rubberized asphalt materials containing scrap tire rubber, from a low percentage such as 5 percent to higher percentages above even 20 percent. Since there have been so many recent significant changes in the testing, specifying and application of scrap tire rubber in asphalt, this Conference’s focus is literally on all types of asphalt binders or asphalt hot mixes containing any percentage of scrap tire rubber - both wet and dry applications. This conference attracts a worldwide audience.

2015 Caltrans Standard Specifications Coming Soon!

The Caltrans ‘Bible’ for materials specifications is their Standard Specifications. Historically, this reference has been updated and published about every 5 years – the latest being 2010. The 2015 version is scheduled to be available in October, at least on-line, with a printed version to follow. Various committees and task groups have been working to update the many section of this venerable document, including Section 39, “Hot Mix Asphalt”, and Section 90, “Concrete”.


CalAPA Fall Asphalt Conference & Equipment Show (October 28-29, Sacramento)

Hear from top policy-makers and respected experts from across the country on topics that will directly impact your business or your agency now and in the future. Topics will include: best practices in Hot Mix Asphalt design; specifications; testing; paving; future trends; research projects and more. Updates on legislation and funding for road construction and maintenance will also be included.

For more information go to: www.calapa.net

“Pavement Maintenance For Local Agencies” Class (December 10, San Bernardino)

This popular half-day class, taught by Roger Smith of the CP² Center, provides a solid working knowledge of the most common pavement maintenance and preservation practices. Transportation agencies at the city and county level can maximize the value of their huge investment in streets and roads by using proper pavement maintenance strategies. Topics include pavement management systems, pavement distress, asphalt materials, maintenance vs. rehabilitation concepts, repair options and common pavement maintenance / preservation strategies.

For more information go to: https://registration.techtransfer.berkeley.edu/wconnect/CourseStatus.awp?&course=142IDM041203

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Caltrans established the California Pavement Preservation (CP² Center) at 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.

CP² Center News is published quarterly by the CP² Center, Langdon Hall Suite 205, California State University, Chico, Chico, CA 95929-0603

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