



CP2 CENTER NEWS

Newsletter of the California Pavement Preservation Center

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Changes in the Division of Maintenance at Caltrans

Basem Muallem, was appointed as the Interim Chief of the Division of Maintenance effective June 9, 2010. He replaced Steve Takigawa who was appointed the Deputy Director for Maintenance and Operations for Caltrans. Mr. Muallem has been the District 8 Deputy District Director Program/Project Management and R/W for the past two and a half years. Prior to this position he served as the Deputy District Director for Maintenance in District 8 for three years. He has over 25 years of experience with Caltrans having worked in design, operations, surveys, maintenance, project management and right of way. Mr. Muallem earned his Master of Science and Bachelor of Science degrees in Civil Engineering at the California State University, Long Beach. He has been very active with pavement issues, including pavement preservation.

In August, a permanent replacement for the Chief, Division of Maintenance was appointed. Tony Tavares was appointed effective August 9, 2010. Mr. Tavares has 20 years of State experience. He began his career at Caltrans in 1990 as a Transportation Engineer and worked through the ranks of Senior, Supervising and Principal Transportation Engineer. In September 2009, he was appointed the Chief, Division of Right of Way. Additionally, he served as the acting District Director for District 10 where he provided strategic direction to a staff of over 900 multi-disciplinary professionals responsible for all functions and activities within the District. He has broad knowledge of departmental policies and procedures, as well as experience working with state policies and procedures, and state and federal laws, rules and regulations. Further, he has extensive contact with entities at various levels of local, state and national government, as well as management experience. This experience has allowed him to develop skills in working with highly visible and politically sensitive issues. He will bring his expertise and knowledge to the Division Chief position. Mr. Tavares graduated



Basem Muallem and Tony Tavares at a listening session with Industry (photo by Russ Snyder)

with a Bachelor of Science degree in Civil Engineering at the University of California, Davis. He also participated in the Department's Executive Development Program and Leadership Training Program.

Center staff met with Mr. Muallem in early August, 2010 to discuss the changes in the Division of Main-

tenance and he provided responses for the following questions.

Please describe the new organization in the Division of Maintenance and indicate how the old Division of Pavement Management fits into it.

The Division of Maintenance consists of about 6,000 personnel and has an annual budget of about \$1.4 billion. The Pavement Management Group is now part of the Division of Maintenance as of July 1, 2010. It will join several other groups including roadside and roadway maintenance, bridge maintenance management and structures maintenance, structural analysis and design and many other management and budgeting groups. The Maintenance Division is one of the largest Divisions within Caltrans. The new State Pavements Engineer will now report directly to Tony Tavares,

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the State Maintenance Engineer, and he reports to Steve Takigawa, now the Deputy Director for Maintenance and Operations.

Describe the current organization for the new Pavement Management group that is under your Division.



Amarjeet Benipal

We have had several changes since Shakir Shatnawi's departure in April, 2010. First, Susan Massey replaced Dr. Shatnawi on April 16, 2010, as the Interim State Pavement Engineer. She was replaced by Tom Pyle on July 15, 2010, until a permanent State Pavement Engineer was appointed. The new State Pavements Engineer, Amarjeet Benipal, was appointed on August 9, 2010. He will be the new Assistant Division Chief, Pavement Management, in the Division of Maintenance which includes serving as the State Pavement Engineer. Amarjeet has been with Caltrans for 20 years and has proven his skills and leadership abilities through assignments that have included Project and Design Engineer in Central Design and Project Manager in District 3 where he rose to Principal Transportation Engineer, Division Chief of Project Development. He has also assisted the department by taking on the role of Acting Division Chief of DES and Acting Division Chief of the Division of Pavement Management. Amarjeet obtained his B.S. in Civil Engineering in 1984 from Punjab University and earned his Project Management Professional status. He has extensive experience with partnering with our stakeholders. His collaborative leadership style and his participation in the SHOPP process will enable him to successfully guide our Pavement Management efforts. Amarjeet joined the Maintenance team on September 7, 2010.

According to the strategic plan dated March 2010, the Pavement Management Group consists of 4 major offices:

Consultation and Investigation Support headed by Peter Vacura. The role of this office is to provide construction and investigation guidance and support on premature failure problems as well as the monitoring of test sections and the assessment of new products and processes.

Engineering and Specification Development headed by Bill Farnbach. The role of this office is to develop and maintain pavement design and analysis methodologies, develop plans, specifications, pavement materials and strategy selection.

System Performance and Data Collection headed by Tom Pyle. The role of this office is to develop and operate the new pavement management system that will support the department in the selection and prioritization of paving projects. This will occur through an annual assessment of the statewide pavement conditions and the analysis of this data.

Programming and Planning headed by Susan Massey. The role of this office is to communicate

with the districts in the planning, prioritization and programming of SHOPP pavement projects.

Pavement preservation falls under the auspices of Bill Farnbach.

Some of the major efforts going on in the PM group include the development of a new pavement management system, a ground penetration radar (GPR) project, an Automated Pavement Condition Survey (APCS) project, the development of guidelines for performing forensic investigations, the development of new specifications for products, and training for Caltrans personnel.

Can you provide an update on the new Pavement Management System your staff is overseeing?

Currently, the PM group is responsible for overseeing the development of a new pavement management system which will have the capability of answering the "what if" questions Caltrans cannot currently answer, such as the following:

- What is the current condition of the 50,000 mile pavement network?
- What is the expected life of various pavement preservation or pavement rehab treatments? Also, what is the life extension of the existing pavement for each of these treatments?
- What is the effect of climate on the deterioration of various pavement types? For example, how do various treatments perform in different climates?
- What will happen to the network condition if the budget decreases or remains level?
- How much would it cost to increase the network pavement to a fair condition or to a good condition?

The first contract for pavement structure data collection and inventory services was let to Fugro West Inc. (Fugro) and the project is being managed out of its Roseville, Calif., office. Fugro is using Ground Penetrating Radar (GPR) technology to collect pavement structure data for the entire state highway network, a total of approximately 51,000 lane miles. The GPR equipment used by Fugro is mounted on an Automatic Road Analyzing (ARAN) vehicle that is able to collect data at traffic speeds with little disruption to road users. The ARAN vehicle is shown below.

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To meet the contract specification, four GPR antennas are being used. One is a high resolution radar horn antenna mounted on an arm extending out of the back of the ARAN. This radar scans shallow depths, and can detect thin surface layers. The other three GPR units are mounted in a pod slung beneath the ARAN. These lower frequency radars scan to depths of up to approximately 6 feet. While ground radar offers a comprehensive range of data, it cannot be used in isolation. Some cores are needed to ground proof the GPR data and provide a physical record of the material types and thicknesses to calibrate radar data thickness interpretation.

Video imagery is also an integral part of the project. The ARAN is equipped with a 90-degree field of view high definition camera that collects right-of-way imagery from which non-pavement fixed assets can be identified. This data helps provide a physical reference for where the GPR data has been recorded. As of July, 2010, GPR data has been collected for a total of approximately 19,000 miles in Districts 1, 2, 3 and 8.

A second contract for collection of pavement condition data has also been let to Fugro. Under this two-year contract, downward perspective images and pavement surface profiles will be collected using a similar ARAN vehicle as for the GPR contract, but using a different array of sensing equipment.

In the first year of the contract, data for approximately 15,000 lane miles of National Highway System (NHS) Interstate and 18,800 lane miles of non-NHS roads will be collected. In the second year data for approximately 17,000 lane miles of NHS non-Interstate and 18,800 lane miles of non-NHS roads will be collected, for a collection total of approximately 70,000 miles. This work is expected to

begin in September 2010 and will be completed by June 2012.

The last contract to be let will be the procurement and implementation of a new pavement management system (PaveM) software. It will also involve integrating all the databases including as-builts, traffic, pavement condition and the like. It is likely this contract will be let in the fall of 2010 and will take 2 years to complete. The information generated in the first two contracts will be included in the pavement management program developed as a part of this contract. Caltrans hopes to have the new PMS up and running by the end of 2012. The PaveM will improve data integrity and access, provide the capability to produce timely and accurate reports, optimize investment in the state highway network, establish a centralized system to track pavement management history, and create a system that provides tools to model and predict pavement performance. The PaveM will be an off-the-shelf product that has the capabilities to forecast the performance of the state highway network's pavements, and identify an optimum set of future projects that will most economically extend the network's useful life.

Summary

Many changes have taken place, but the new management team in the Division of Maintenance is now in place. Basem Muallem and Tony Tavares have met with industry in August 2010 to discuss partnering efforts. Both emphasized the need to develop strong relationships with industry. Issues covered included specification development and review, logistics during the construction process such as timely mix designs and materials test results, and funding.



Caltrans District 2 begins work on a hot in place recycling of polymer modified open graded asphalt concrete

By Ding Cheng and Brandon Fraser, CP² Center and Lance Brown, Caltrans District 2 Maintenance Engineer

Caltrans District 2 has implemented as an 'Innovative Pavement Strategy' the use of hot in place recycling (HIPR) to repave a 10-mile section of SR 299 near the Big Bar area of Trinity County. This project is to recycle the top two inches of the existing asphalt paving materials, add corrective virgin asphalt mix, and Recycling agent that will produce two inches of dense graded HMA. This is a Caltrans innovative pavement recycling and pavement preservation technique because the top two inches of the existing pavement include one



Third Generation hot in place recycling train in Big Bar area of California

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Field testing of recycling train


inch of open-graded polymer modified HMA over a dense graded mix. District 2 and other state pavement engineers have recognized that open graded hot mixes have a tendency to ravel as they age and oxidize over time. HIPR of the existing open graded hot mix could be a more cost efficient strategy for preservation than removing the existing top 1 inch and replacing it with new HMA. This HIPR strategy will recycle the top two inches for the cost of removing and replacing one inch.

HIPR is an in-place method of pavement surface preservation that consists of softening the existing asphalt pavement with heat, milling or scarifying to a maximum depth of 2 inches, and thoroughly

remixing, leveling, and compacting the milled or scarified material. HIPR can include the addition of recycling agents and virgin hot mix asphalt (admix) as needed.

The hot in place recycling (HIPR) strategy is developing rapidly, however Caltrans has had little experience with the actual recycling process. Hot In-Place Recycling of the pavement located at SR-299 PM 26.1/36.0 will be completed using a Martec AR 2000 single-pass operation train (see photos). This third generation equipment is manufactured in Japan and owned by Canadian Equipment contractor Martec Recycling Corp, Inc. The equipment design uses diesel to fuel all power and heating units. Hot in-place recycling using the AR 2000 train is accomplished using four unique pieces of equipment that recycle existing pavement on site, in a single pass. The first two pieces of equipment are preheating machines. The third piece is a Preheater/Miller machine, and the fourth piece of equipment is a Postheater/Mixer machine.

The project started September 1, 2010. CP² Center will work with Caltrans D2 to monitor the innovation project. It is expected to be completed by the end of September, 2010.

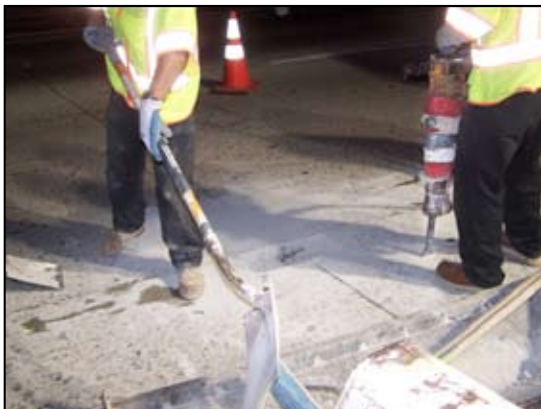


Partial depth repair adds life to Interstate -10 concrete pavements

By Craig Hennings, ACPA-Southwest

Interstate 10 in San Bernardino County has seen a lot of traffic. The original rigid pavement in use today was built in the 1960s, with lanes added later to increase capacity as traffic demands grew. While it's true that everyone considers concrete pavements low maintenance, after 40 years some maintenance is required. Surface spalls had appeared at random joints, and needed to be repaired. Partial Depth Repair (PDR) is a shallow depth repair procedure used to address pavement deterioration

Preparing the spall with lightweight jackhammers.



that does not fully extend through a concrete slab. This method is used to repair spalling and fraying of concrete slab edges at joints and cracks as well as localized scaling. Spalling, which can occur on both jointed and continuously reinforced pavements, reduces pavement serviceability and can become hazardous to highway users. This type of deterioration can be caused by a

number of factors including late sawing, poor joint design, inadequate joint/crack maintenance and

material durability issues such as Alkali-Silica Reactivity (ASR). Once initiated, spalls tend to grow under repeated thermal stresses and traffic loadings.

The purpose of PDR is to repair surface defects, re-establish joint reservoirs and restore localized areas of deterioration. PDR replaces unsound concrete to restore rideability and discourages further deterioration. Further, PDR is an excellent preventative maintenance technique as it is proven to last more than 20 years when properly constructed using quality materials and workmanship.

PDR has traditionally been done with various materials. Rapid strength Portland Cement Concrete, hydraulic cement concrete, polymer concrete, and polyester concrete have all been used in the past as a patching material. Recently, new products have been developed for this application which show promise and are easier to work with. Hot-applied polymer resin-based concrete, polyurethane concrete, and rapid strength hydraulic cements using fly ash have all recently entered the market. On this section of I-10 in Indio, Caltrans District 8 maintenance personnel chose to use a new product to repair these spalls. Working with industry, Caltrans decided to use CeraTech D.O.T. Line rapid repair concrete. This is a bagged product that comes pre-blended with aggregate. Each 54-pound bag is



The prepared area, clean and ready for the patch material.



Patch material in place, I-10 east-bound lanes.



Larger patch area, I-10 east-bound lanes.

mixed with two quarts of water for seven minutes. It gains compressive strength of 2,500 psi in two hours or less, which is considered the minimum strength to open to traffic. As a fly-ash based cementitious material made from waste by-products, CeraTech D.O.T. Line is an environmentally friendly material. The product finishes like traditional Portland-based concrete and cleans up easily with water.

Working with a local contractor, John M. Frank Construction and the CeraTech technical representative Kyle Dagnen, a section of I-10 east-bound lanes near the Jackson Street exit was identified to have spalling and surface defects and marked for repair. Starting in mid-July, working at night in a lane closure, the contractor then used the process of chipping to remove the deteriorated concrete. First, a shallow vertical saw-cut, approximately two to four inches deep, was made around the perimeter of the spalled area. A light (15–30 pound) jackhammer was then used to remove the deteriorated concrete. Caltrans specifications require that the perimeter extend six inches in to sound concrete. The resulting area was rectangular in shape, deep enough to

expose sound concrete (minimum two inches), free of loose material, and clean. As most spalls were next to a transverse or a longitudinal joint, a foam board was placed in the existing joint to prevent the patch material from filling the joint.

The foam board extended four inches beyond the area where the patch was placed.

A small mobile concrete mixer was used on site to mix the product. Following the manufacturer's instructions for mixing, the contractor mixed the product in the quantity for each repair area. The result was concrete with a four inch slump and a 25 minute working time. The clean, prepared, chipped out spall area was dampened with water, and the D.O.T. Line material was placed, screeded off, and finished with a trowel. A broom texture was then applied. As the product is self-curing, no additional curing compound is needed. The repaired areas were then allowed to gain strength for 1 ½ hours before opening to traffic.

Caltrans Maintenance and the contractor expected to place 1,700 bags of material for the project. Their production rate of 300 bags of material per night allowed them to complete all the spall repairs in six nights.

Caltrans Area Supervisor Anna Hernandez and Area Superintendent John Hubbs were encouraged by the results of the new product. They are anxious to see how the material holds up through the summer heat with 110-120° F days and the cool winters. In August, Caltrans and industry personnel recently went on a van tour on I-10 and saw the repairs first hand. After a month of being open to traffic, there was no visible distress in the repairs. They are holding up well.

For more information on the process of partial depth repair or other concrete pavement repair strategies, visit the American Concrete Pavement Association Southwest chapter website www.acpa-southwest.org, or the International Grooving and Grinding Association website www.igga.net.



Lake County crews look to FDR for cost-effective alternatives

Steve Stangland, Road Superintendent, Lake County Department of Public Works

Is full depth reclamation (FDR) possible without resurfacing with asphalt? Can FDR give us a structural section without adding to the subgrade? Can a chip seal perform as well if not better than open graded asphalt? Can this all be accomplished for a fraction of the cost? With advances in PMRE and base stabilization, the answer is YES!

In 2005, the County of Lake successfully obtained grant funding through tribal gaming funds (SB 621) to overlay the primary access to the Big Valley Rancheria and Konocti Vista Casino (Highland Springs/ Big Valley Roads). At the time, this funding should have been adequate to overlay the roadway with a new 2" asphalt concrete surface and provide for a few base failure repairs. However, other priorities pushed this project back while material costs skyrocketed and the budgeted amount was no longer adequate to complete this project.

The County had to find a better solution

That solution came to us in innovations in FDR, Permazyme 11X and PASS. In 2005, the County purchased an Asphalt Zipper and began using Permazyme 11X. Since Asphalt Zipper recommends spraying water on the cutters to keep them cool and extend their service life and since Permazyme 11X comes in a liquid form, why not add the Permazyme via the spray bar on the zipper and let the pulverizer do the mixing and the blending? This proved to be a cost effective method to stabilize the soil and the easiest way to thoroughly mix the majority of the water/enzyme solution into the sub-grade.

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The “roads” leading us to where we are today

In 2005, on Spruce Grove Road in the Lower Lake area, we had a 10-mile section of roadway that had seen the effects of development, increased traffic and deferred maintenance. This road needed 150,000 SF of base failure and edge line repairs. Traditional dig out and replace methods would have required up to two months for crews to perform these repairs. Using the Zipper and Permazyme, our crews were able to complete these repairs in only two weeks!

After the 2005/2006 storm events, Big Canyon Road outside of Middletown became riddled with potholes to the point it was closed to through traffic. The County just did not have the funds to rebuild this roadway and FEMA wasn't about to fund the necessary repairs (complete re-construction). The decided remedy: pulverize the worst four-mile section of the road, treat with enzymes and leave it un-surfaced. This remedy has been so successful that no substantial repairs have been necessary since it was “turned to gravel”.

In 2007, the county pulverized two miles of subdivision roads using enzymes and repaved the surface. The sub-grade consisted primarily of clay and volcanic rock. The treated subgrade became so hard that our 770 John Deere Grader (with the blade rolled into the full cutting position) would only slide on the top of the cured subgrade. We also tried to add crushed rock for traction in anticipation of a rain storm, and the rock was crushed between the steel drum roller and the cured subgrade! Although we were not able to rework the subgrade we were still able to reactivate the enzymes enough for excellent asphaltic concrete adhesion.



FDR with Lake County's Asphalt Zipper

Highland Springs Road/ Big Valley Road 2009

This project gave us the opportunity to compare various FDR methods of incorporating native soil shoulders into the road section to widen the roadway to create bike lanes. To keep cost to a minimum, we wanted to limit the FDR, and chip seal the entire surface. In addition, we wanted to compare the performance of a chip seal on existing pavement to that on an enzyme treated sub-grade.

The Highland Springs Road segment was a candidate for full width FDR, as the entire asphalt section had failed and was deteriorated beyond saving with a chip seal. On the other hand, the Big Valley Road segment fit very well for FDR of just the shoulders.

Prior to start of the FDR project, County engineering and road staff dug test pits to determine the Highland Springs Road structural section. What we found were various thicknesses of chip seal and asphalt from years of patching and six inches of “river run” gravel over the native adobe type clay. The consensus was to pulverize the AC/Chip seal with the river run gravel and bring up an additional two inches of the native adobe clay. On the other hand, the shoulder areas of Big Valley Road consisted of limited “river run” with a much higher proportion of native clay within depth of the FDR.

Once the FDR was completed for both roadways, a chip seal using PASS was applied followed the next day by Fast Set Fog Seal Oil. In the year following the project, we have not seen any difference in performance between full-width and shoulder only FDR. Nor have we seen any difference between the chip seal on pavement vs. the enzyme treated sub-grade.

Application

The manufacturer recommends one gallon of Permazyme to 150 cubic yards of material mixed into enough water to bring the soil to optimum moisture. We have found that this mixture stabilizes the soil without the need to add aggregates, as long as your soil contains enough clays and silts. A major plus to using enzymes is the ability to re-activate the cured material (most of the time) and either re-work it or to allow for penetration of emulsion or asphalt. We found that PASS CR and the Permazyme will actually seek each other out and bond together, obtaining as good if not a better bond as chip seal over asphalt.

Another facet of this project was to test our rock specification (special thanks to Steve Urbanek with Sonoma County Department of Transportation for sharing his chip rock specification) to see if we could have a chip seal with the same properties as open graded asphalt (OG), without the mainte-

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Before the project



Finished project

nance and deterioration headaches associated with OG asphalt. For the Highland Springs/Big Valley project, we shot the emulsion at .57 gallons per CY, and used 1/2" X 3/8" chips.

Chip sealing over gravel roads is nothing new, but we needed a product that would provide a long lasting wearing surface in a single application. Counties across the nation have been using this option for years and the majority of rural roads in Northern California were constructed with only having a chip seal with no asphaltic concrete. The big news here is that by using a Permazyme treated FDR with a polymer modified recycling emulsion (PMRE chip seal) you can create a superior sub grade with a long wearing, skid resistant surface for a fraction of the cost.

Utilizing FDR, chip seals and ground stabilizing products has saved Lake County nearly \$200,000 on this one project alone!

Where we have evolved:

Currently, our County road crews are working to perfect our base failure and pothole patching using

the pulverizer/enzyme treatment. What once took over eight hours, a base failure repair now takes only four hours total. Staff believes that with time we will streamline this process even more. Crews are also chip sealing these dig-outs instead of placing asphaltic concrete plugs for even more cost savings.

Lessons learned:

- Know where you need to leave your finish grade! It is impossible to add a thin layer of aggregate over the top of an enzyme cured subgrade.
- Know what is under your road, both to know how deep to pulverize and for the safety of your staff and equipment. The pulverizer does not discern between subgrade and culverts, but it does not like reinforced concrete or large rocks!
- "Rock pockets" can develop during final grading if gradation is lost. These areas normally become potholes over time. However, they can be repaired by simply reactivating the enzymes followed by scarifying, re-blending, re-shaping then compacting the surface.
- Use a higher volume of enzymes when starting your project and reduce to the desired amount as you determine how much moisture your soil type needs to reach optimum moisture. Enzyme treated soil generally requires a lower optimum moisture to achieve maximum density.

As budgets shrivel, Permazyme treated FDR with a PMRE chip seal provides agencies with another innovative technology to help stretch these ever shrinking dollars.



Pavement preservation practices in the City of Santa Ana

By Souri Amirani and Jason Gabriel, City of Santa Ana

The City of Santa Ana, Calif., became the seat of the County of Orange over 110 years ago with just 4900 people, 74 acres and a 24 block village. Today, still the County seat and the largest city, Santa Ana is called "Downtown Orange County" and has a population of over 353,000, 27 square miles and over 400 miles of roads to maintain. Santa Ana is a true urban area with one of the oldest infrastructures in the County.

In an effort to effectively manage the maintenance of its aging street network, the City of Santa Ana began using pavement management software in 1991. Santa Ana was one of the first agencies in Orange County to implement a pavement management program (PMP). After using a number of available software packages, the City finally chose

the product that best fit its needs: Micropaver, the software developed by the Civil Engineering Research Laboratory of the Army Corps of Engineers and available through APWA. To determine the pavement condition of all the streets in the network, a field inventory was performed for the 112 miles of arterial streets and 311 miles of local roads in the City. The inventory has been updated on a biennial basis since implementation. Maintaining the pavement management program is now an eligibility requirement for grant funding from the Orange County Transportation Authority (OCTA), Orange County's Metropolitan Planning Agency (MPA).

The City has been very aggressive in obtaining grant funding for arterial streets through OCTA. With the

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Lingan Street before CIR

funding obtained and the local match, the City has been able to maintain a pavement condition index (PCI) over 80 for the arterial network. Unfortunately, the City of Santa Ana has not had a reliable funding source for local residential streets to meet the ever increasing main-

tenance backlog. Projects were historically funded based on a "worst first" philosophy. Only the worst streets, requiring total reconstruction and the highest construction costs were considered. These projects were also based on citizen complaints using "the squeaky wheel gets the grease" concept. Based on the \$1.5 million historically committed to these streets, it was an insurmountable task to bring the entire network up to a condition that was maintainable. Clearly an alternative to the current funding strategy was necessary.

In 2007, the inventory assessment of the City's street network determined the maintenance backlog for neighborhood streets was over \$350 million, with an average PCI less than 45. In an effort to make a large dent in the backlog and to stop the decline in the pavement condition, a surge of funding was required since the "pay as you go" strategy had not been working. Options considered included assessment districts and bonds. An assessment district was not selected due to lack of public support. The bond option seemed to be viable especially since the City was considering a Certificate of Participation (COP). This bond option doesn't require voter approval as long as the City Council approves it. Unlike general obligation bonds, which are a loan taken out by a city against the value of the

taxable property in the locality, COPs are tax-exempt lease obligations. The investor buys a share of the lease revenues of an agreement made by a municipal or governmental entity, rather than the bond being secured by those revenues. COPs pay tax-exempt interest and enjoy the liquidity of a market-

able security similar to a municipal bond. COPs also fall outside of the constitutional debt limitation.

The planning for the COP got underway with the Mayor and City Council leading the team. Their

leadership was supported by the City Manager's office, which coordinated the efforts of Public Works, Finance, and the City Attorney. A bond task force was set up to do an extensive financial analysis for the City and a \$60 million COP was determined to be affordable. Once the COP was approved by the City Council, they began outreach to inform residents of this exciting new program. The outreach included presentations at neighborhood meetings, meeting the press and media as well as monthly articles in the City newsletter and on the City webpage.

The Residential Street Repair Program (RSRP) departs from typical city standard methodology of funding and implementing projects. By leveraging City funds to obtain the \$60 million COP, the City was able to fund a program that invests up to \$100 million in the neighborhood street network citywide over five years to reduce the maintenance backlog to a point where existing funding streams could be used to maintain it. This investment will make a serious dent in the City's maintenance backlog!

The use of a "best streets first" philosophy, which will maximize the available funding and is more in keeping with the intent of the pavement management program, is another difference. One tenet of pavement management is that the older the street section, the more extensive and expensive the required maintenance activities. By focusing on the better streets first, the City is maximizing the funding available to protect these streets at their current levels, rather than fixing the worst streets while allowing the best to continue to deteriorate. In the first year of the program, 64 miles of streets were overlaid with a thin asphalt layer. In the following years, more invasive and costly techniques were used.

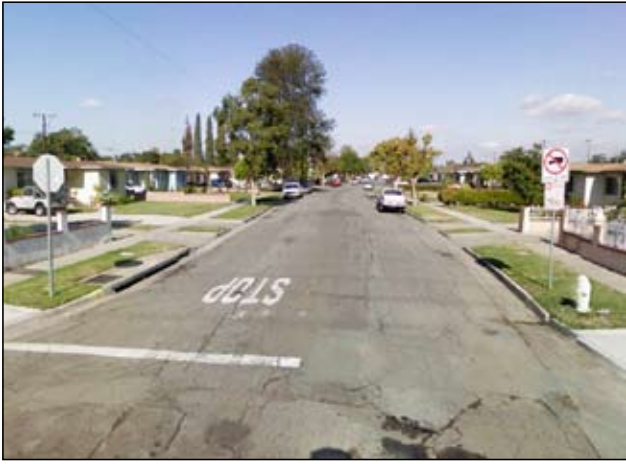
Yet another difference is the use of a "specifications only" bid package. Typically, street projects put out to bid include a set of plans detailing all the improvements. Preparing these plans is labor intensive and time consuming. Instead, design staff focused on cataloging all necessary improvements and presenting them in tables in the specification. Design staff also supports the construction inspector in laying out proposed improvements in the field, increasing communication and coordination. By eliminating the plans, the design effort is reduced. This reduces design costs and these savings are applied to construction. The reduced design effort also gets projects under way quicker and the improvements get in the ground faster.

A final difference is the use of alternative strategies to maintain the streets. Historically, the only treatments used in Santa Ana were slurry seal, thin overlay and total reconstruction. The assumptions made in the inventory report were based on these conventional construction techniques. As the price of

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Lingan Street after CIR



Baker Street,
before FDR

building materials, including asphalt, began to escalate quickly, it was evident alternative strategies were necessary to maximize the use of available funds. The Public Works Agency was tasked with finding new, innovative ways to rehabilitate the pavement. Staff has investigated

several alternative maintenance/rehabilitation techniques that are environmentally friendly to reduce construction costs as well as waste. One solution, Cold In-Place Recycling (CIR), shows promise in its ability to rehabilitate existing pavement at a greatly reduced cost. The process involves grinding off the existing pavement, treating it with a recycling agent and relaying it as the new pavement. The CIR process is then sealed with a thin layer of new asphalt. Another advantage of CIR is that the existing asphalt is recycled in place, reducing the cost of hauling and disposal of the spoils as well as the greenhouse gas (GHG) emissions from this hauling. According to several Canadian studies conducted by the Ontario (Canada) Ministry of Transportation, CIR uses up to 80% less energy compared to the traditional Hot Mix Asphalt with roughly half the CO₂ and NO_x emissions and roughly a third the SO₂ emissions. For a given length of street, CIR emits approximately 50% less GHG, consumes 62% fewer aggregates, and costs 40-50% less when compared to conventional mill and overlay treatments.

Another pavement rehabilitation process not used extensively in Santa Ana until recently is cement treated base (CTB). CTB involves pulverizing the existing pavement, mixing it with existing base material and adding cement. This then becomes the base layer for new asphalt pavement. While not as cost effective as CIR, CTB is less expensive than full depth conventional pavement reconstruction. Recent successes on arterial street projects convinced staff that this treatment would be a cost effective way to handle the worst neighborhood streets.

The City's Residential Street Repair Program is now in its third and final year. By the end of the program, 260 miles of pavement will have been improved. This is more than twice as many miles envisioned at the beginning (100 miles) at 70% of the estimated costs and two years ahead of schedule. The total program costs will be \$72 million instead of \$100 million. Using green materials for pavement preservation not only saved the City's infrastructure budget but helped reduce GHG emissions and limited materials sent to landfills. As the City moves toward the end of the program, it will



Baker Street, after FDR

continue to focus on pursuing the best alternatives to preserve its multimillion dollar investment.

During the last three years the City staff along with contractors, pavement engineers, inspectors and field personnel have refined and improved the process. Following are some highlights of the challenges and lessons learned:

Challenges encountered on the Residential Street Repair program

- The majority of residential streets were built more than 40 years ago and there are limited as-built documents available. Even when as-built plans are available, they are not always indicative of the actual pavement sections. The lack of as-built plans and/or recorded documents contributed to the inaccuracy of the existing pavement section which in turn made it difficult to determine the desired depth of pavement milling during the Cold-In-Place Recycling (CIR).
- Most streets in Santa Ana are very flat with only 0.1% to 0.3% longitudinal slope. Some streets don't have concrete gutters and the existing AC pavement at these locations have deteriorated, which complicates the establishment of flow line during the construction process.
- On streets where there is an existing AC swale, using the CTB process created a much steeper profile slope through the intersection and a situation that cars often bottomed out.
- The focus of the bond program was pavement rehabilitation and preservation. In order to meet the budget and the goal of the program, very limited amounts of concrete repair for curbs, gutters, ramps, cross gutters, and sidewalks were accounted for in the project. The challenge was to determine how to stay within the budget and address the critical areas.
- When the program started in 2007, cold-in-place recycling (CIR) could only be performed

Continued, next page

during the warm weather season which required a temperature of above 80 degrees, which eliminated construction during the winter months.

- During the cement treated base (CTB) construction, shallow utilities were encountered. While performing the micro-cracking on the CTB, the utility lines broke and the project was halted for repair and essentially delayed the project.

Lessons learned from the challenges

- The solution for lack of as-built and accurate pavement data was to perform several pavement cores on every street segment prior to construction. This way, if the existing pavement lacks adequate asphalt thickness, CIR might not be the best pavement strategy.
- The streets that lack gutters were surveyed to establish flow lines prior to construction. Flow line issues on very flat streets were also resolved by constructing new curbs and gutters. Some driveways were required to be replaced so that the new flow line could be

established. The majority of the driveways were protected in place by allowing the gutter plate to flush with the driveway or having a maximum one-inch lip.

- Concrete cross gutters were installed in areas where AC swales have deteriorated the existing pavement.
- Concrete repairs were limited to resolve ADA issues and/or major water ponding, which affected the pavement. Guidelines were established prior to the determination of the repair locations.
- The City researched an alternative method to mix CIR that can perform in cold weather. The new process, which is known as Cold In-place Recycling Expanded Asphalt Mix (CIREAM), utilizes foam mix design instead of emulsion mix. The CIREAM and CIR methods are similar to each other. This way, the City was able to use CIR all year long.
- To reduce damage to shallow utilities during micro-cracking of CTB process, the micro-cracking equipment was performed without vibration.



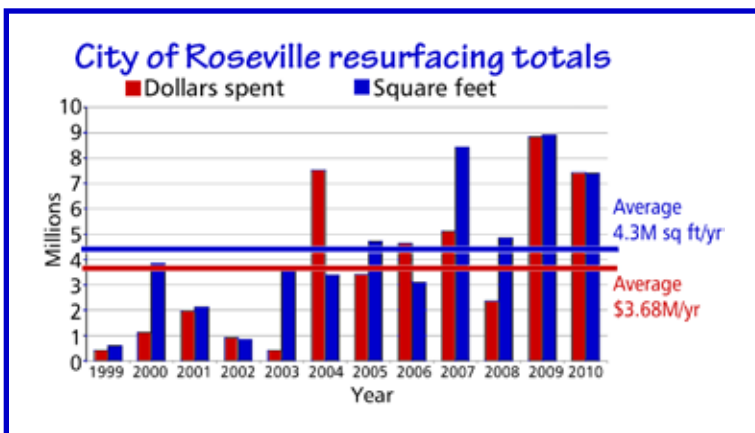
City of Roseville resurfacing program

By Jerry Dankbar, City of Roseville.

In 1999, the City of Roseville initiated a pro-active resurfacing program by resurfacing a few neighborhoods with slurry seals and conventional cape seals. At that time, there were a total of 272 centerline miles of roads in Roseville. In 2009, that number grew to 410 centerline miles. The goal of the resurfacing program is to maintain our arterial roads at a Pavement Quality Index (PQI) of 72 and our residential streets at 65. In 2009, the average PQI for ALL city streets combined was 82. To accomplish this, we needed to seal all roads before they become dry and cracked, or when the road is between five and seven years of age. We are accomplishing our goals, but this is because there are many new streets in the City that are not yet showing signs of wear. Their PQI ratings will decline rapidly if we do not seal the roads at the correct time.

Funding for the resurfacing program comes from a combination of general funds, gas tax funds, and revenue from city utility departments. All of the road preparation work prior to resurfacing is performed by city crews, as we have found this to be cost effective. The resurfacing phase is contracted out via competitive bidding. We also repair and replace all damaged drainage structures and damaged curb and gutter with each resurfacing project to ensure the integrity of the road. Below is a chart showing how much Roseville spends each year on resurfacing contracts, excluding the cost of city labor, materials, and equipment. The city spends an average \$3.6 million per year on resurfacing. Although that may sound like a lot, it is not enough to maintain our roads long term at our established PQI goals set by our City Council.

The city's resurfacing program has many products in its resurfacing tool box. For arterial roads, we use rubber asphalt overlay, microsurfacing, thin bonded wearing course, and cold foam in-place recycling. For residential roads, we use rubber and conventional chip seals, cape seals, Type I and Type II slurry seals, double chip seals, and chip seal over fabric. We do not limit ourselves to these resurfacing treatments and we always keep our minds open for new products that will last longer and need less maintenance. We know that sealing the roads with any product to keep the water and sun off the surface is the best offense and the best defense to road preservation and longevity.



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Foothills Blvd before BWC (bonded wearing course)



Foothills Blvd completed with BWC

The city uses a pavement management program to help budget and determine which roads to resurface each year and which roads can afford to wait a few more years. The system (Stantec) performs a condition analysis of the roads to determine which roads will benefit the most given available funding. The list of roads is then reviewed, evaluated, and adjusted as needed by city staff. A condition assessment of the roads is performed every three years by private contractor and the data is plugged into the pavement management system to give us our updated PQI rating.

The pavement resurfacing program has started to show its cost effectiveness over the last few years. City crews are spending less time, effort and money each year on patching potholes and repairing pavement failures than they did at the beginning of the program, which gives the crews more time

to spend on preparing the roads for contract work. Sealing the roads to keep the water from reaching the road base and also blocking the sun from drying out the pavement is helping us keep our roads in good condition which is stretching our maintenance dollars. We still have roads that need reconstruction or an overlay and we are continuously working on removing these roads from our reconstruction list to reach and maintain our PQI goals.

For more information regarding Roseville's roadway maintenance program, contact Jerry Dankbar at jdankbar@roseville.ca.us or (916) 774-5790.



Hidden Hills Rd before rubber cape seal



Hidden Hills Rd completed rubber cape seal

Los Angeles County places a warm mix demonstration asphalt rubber chip seal

By Erik Updyke, Los Angeles County Department of Public Works and Dragos Andrei, Cal Poly Pomona (and CP² Center)

The Los Angeles County Department of Public Works placed an asphalt rubber (AR) aggregate membrane (chip seal) warm mix demonstration on Smith Avenue in the unincorporated community of Acton on August 26, 2010. This demonstration, which was proposed to the County by Intermountain Slurry Seal, Inc. (Intermountain), was the second project of this type Intermountain has placed in California in the summer of 2010.

The first project, in the City of Roseville, was placed in June and reported in the Center's June newsletter. The application rates for the AR warm mix binder containing 18% crumb rubber were between 0.60

and 0.66 gal/yd². The placement temperature of the AR warm mix binder was 335° F, considerably lower than the typical application temperature of 400°F when no warm mix additive is used. The additive supplied was manufactured by Engineered Additives blended at 1.5 % by weight of the asphalt rubber binder. The chip was a 3/8 inch pre-coated aggregate and its application rate was 32 to 34 lbs/yd².

Observations included the following:

- There appeared to be less smoke coming from the spray bar when using the warm mix additive than from around a distributor

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Spray application, rock spreader and compaction.



Finished chip seal surface.

equipped with a smoke reduction device observed with conventional asphalt rubber binder.

- The viscosities were on the lower side, 1500 and 1700 centipoise, but were within the specification range.
- When walking beside the distributor, perhaps five feet to the side, for over 50% of the project, the effect of smoke was not felt.

It was very hot in Acton. Ambient temperatures were in the high 90s. Work began at 10 a.m. and distribution and spreading were completed by 12:30 p.m.. Sweeping continued until the end of the day.



Warm mix asphalt rubber spray application. Notice the lack of smoke.

The chip seal will be covered with a type II micro-surfacing in September 2010. For more information on this project please contact Erik Updyke at EUP-DYKE@dpw.lacounty.gov or steve.olsen@gcinc.com.



FHWA Expert Task Group on pavement preservation meetings in Boston, Mass.

By David Peshkin, Applied Pavement Technology, Inc.

The FHWA's Pavement Preservation Expert Task Group (PPETG) has as its mission "to advance and improve the state of the practice in pavement preservation by working collaboratively with federal, state, and local agencies, industry, and aca-

Organizations; Lita Davis, formerly of San Diego County; Dr. Shakir Shatnawi of Shatec (formerly Caltrans Pavement Engineer); Steve Healow, FHWA's Caltrans Division Office; and Craig Hennings of AC-PA-Southwest.

The format of the ETG meetings includes presentations by attendees, subcommittee meetings, and discussion. The following is a listing of some of the informal presentations that were made during the meeting (along with the presenter) and shows the breadth of topics covered by this group:

- FHWA Funding and an Update on the American Recovery and Reinvestment Act, Chris Newman, FHWA Office of Asset Management
- Rubberized Pavement Preservation Strategies, Shakir Shatnawi, Shatec Engineering Consultants
- MassDOT and NH DOT Policies and Procedures, Ed Naras, MassDOT and Eric Thibodeau, NH DOT
- FP2 Update, Jim Moulthrop, FP2
- ADOT SPR 628: Evaluation of Maintenance Strategies, David Peshkin, Applied Pavement Technology
- FHWA's Pavement Management Roadmap, David Peshkin, Applied Pavement Technology



Jerry Geib, Craig Hennings, Eric Thibodeau, Ed Denehy, Yelktin Yidirum, and Larry Galehouse listening to a presentation.

ademic interests." In existence for about 20 years, this group of about 30 members and another 20 or so "friends" meets twice annually to further its mission. The most recent meeting was July 25 to July 27, 2010, in Boston and included both PPETG members and another 25 participants attending the concurrently held meeting of the Emulsion Task Force. Incidentally, the meeting had a very strong California presence, including the following: Sui Tan from MTC, representing Metropolitan Planning

Continued, next page

- State Highway Agencies and Small Private Companies Preservation Focus, Ed Denehy, Gorman Group
- FiberMat, Ed Denehy, Gorman Group
- Chip Seal Survey, Larry Galehouse, National Center for Pavement Preservation
- Novachip Update, Andrew Fox, RoadScience
- NCHRP 41-21, Microsurfacing Synthesis and NCHRP 41-01, Sustainable Pavement Maintenance Practices, Caleb Riemer, Oklahoma DOT
- Update on Accelerated Joint Deterioration Study, Craig Hennings, ACPA Southwest
- SHRP 2 R26, Preservation Approaches for High-Traffic Volume Roadways: Status Report and 9/8/10 Webinar, David Peshkin, Applied Pavement Technology
- NCHRP 14-17, Development of a Cost-Effective Chip Seal System for Pavement Preservation. Ed Denehy made the presentation for Scott Shuler of Colorado State University who is the principal investigator.
- Roles of MPOs in Pavement Preservation Strategic Plan, Steve Mueller, FHWA
- Update on National Association of County Engineers relationship with regional Pavement Preservation Partnerships, Jon Rice, NACE
- Local agency requests for State DOTs use of federal funds for pavement preservation, Jon Rice, NACE and Craig Olson, APWA
- Update on document postings on the PPPC and Chico websites, Craig Hennings, ACPA
- FHWA Technical Appraisal Database Update, Larry Galehouse, NCPP
- Update on the Seal/No Seal Concrete Joint Performance study, Joe Huerta, FHWA and Craig Hennings, ACPA
- Safety Impacts of Pavement Edge Drop-Offs, Steve Healow, FHWA

There are also five active PPETG subcommittees: Pavement Preservation Acceptance and Implementation, Research Programs, Pavement Preservation Centers and Regional/State Organizations, Pavement Preservation Training and Certification, and Rigid Pavements. Some of these subcommittees are quite active between meetings, holding monthly conference calls and undertaking activities essentially equivalent to research. For example, the subcommittee on Pavement Preservation Centers polled LTAP programs about their involvement with pavement preservation and generated excellent baseline data on the state of local agency training needs and practices in pavement preservation. This information will be useful in developing and customizing pavement preservation training for local agencies and in addressing research needs.

The Training and Certification subcommittee took advantage of the meeting of agency and industry representatives to solicit input on their needs and interests. Among highway agencies there is strong interest in developing a certification program for pavement preservation contractors, but there are also many questions and concerns about how this might be applied. A possible alternative to certification is more widespread application of performance-related specifications and/or warranties. In the coming months this group will assess how one or more of these approaches could help to improve the performance of pavement preservation projects.

While the meetings only lasted 1½ days, the activities of the PPETG are ongoing. The subcommittees will continue their work over the next several months in preparation for the next meeting to be held this winter. In the meantime, look for meeting minutes and more information regarding the presentations to be available soon on the CP² Center website.



Jim Moulthrop,
Executive Director,
FP²

FP² Inc. update

By Jim Moulthrop, Executive Director

The foundation continues to advocate for pavement preservation in whatever emerges as a successor to SAFTE-LU. Our firm in Washington, DC, Williams and Jensen, continues to advise staff and members of Congress on the need to “keep good roads good”. Just before the August recess, I had the opportunity to meet with Senate staffers from the Environment and Public Works Committee to discuss the need to include language in the bill addressing pavement preservation as a program area. In all our discussions with Congress, everyone agrees that preserving what pavement assets exist is sound public policy.

The foundation also continues to attract new supporters, the latest being Crafcro, Pavement Technology Inc., and Unique Paving Materials. Their contributions are appreciated and we certainly need the continuing support from Industry to accomplish our goals of advocating for pavement preservation, promoting the benefits of preservation activities, and promoting funding for the FHWA Transportation System Preservation Research, Development and Implementation Roadmap.

Recently, we sponsored an exhibit at the annual AASHTO Subcommittee on Maintenance meeting in Savannah, Ga. The pavements task force met several times during the meeting and sponsored a program during the general session. The local arrangements committee did a marvelous job of

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arranging a tour of equipment manufacturer JCB's facilities (www.jcb.com) and also hosting a low country boil with all the fixings.

The FHWA Pavement Preservation Expert Task Group met in Boston, Mass., during late July and attracted a large audience of practitioners. Many issues regarding preservation were discussed, not the least of which are the budget deficits facing most agencies. Chris Newman of FHWA and Denny Jackson of KBA are the Agency and Industry Co-Chairs of the Task Group which is the longest serving FHWA Task Group. Composed of five subcommittees, each reported on their existing short and long term goals

and then proceeded to caucus and update and expand them where necessary.

Finally, The American Public Works Association (APWA) Congress and Exposition was held in mid-August in Boston, Mass., and FP² Inc. participated and exhibited at the event. Over 8,000 people from all over the world were in attendance. A number of presentations were made relating to sustainability of pavements and pavement materials and preservation and sustainability were key issues throughout the four day program. Next year's Congress will be held in Denver in mid-September.



PPTG news

By Larry Rouen, Caltrans, and Hans Ho, and Craig Hennings, PPTG industry co-chairs

All Members Meeting

There will be a general meeting of the PPTG members on Tuesday December 8, 2010, at the Los Angeles County Public Works Building located in Alhambra, Calif. A meeting notice with agenda will be sent to the membership in early November. Topics to be covered at the meeting include:

- Update on the Division of Pavement Management
- Update on the CP² Center
- PPTG subgroup reports
- Priorities of work, including deadlines for completion

We look forward to seeing you at the meeting. The CP² Center will help with the organization of the meeting.

Accomplishments in 2010

MTAG training was held in March 2010, in Sacramento. Approximately 60 Caltrans and local agency engineers attended. Priorities were developed for each of the PPTG subtask groups. The PPTG co-chairs met once this year on April 12, 2010, in Newport Beach. One of the major activities was the development of just in time training modules for slurry surfacings and chip seals.

Priorities for the PPTG were established. Most involve the development of Standard Special Provisions (SSP), Non-Standard Special Provisions (NSSP), and conducting field test sections as summarized below:

- Fog seals- draft NSSP
- Cold in-place recycling – more test sections and SSP
- Rubberized slurry seal – test section and NSSP
- Bonded wearing courses – adjust freeze-thaw area requirement

- Full depth and partial depth concrete repair
- Polymer modified chip seals – test sections and SSP
- Warm mix asphalt rubber chip seals – test section and NSSP
- Tining specifications for concrete – NSSP
- Scrub seals – test sections and NSSP
- Hot in-place recycling – test sections and NSSP
- Chip seal JITT – develop and deliver
- Partial depth repair using a polymer modified resin – test sections and NSSP
- Dowel bar retrofit using a polyester backfill-test sections and NSSP
- Extraordinary smoothness – test section and NSSP
- Microsurfacing JITT – develop and deliver
- Concrete sealer or hardener – test section and NSSP
- Double chip seal over fabric – test sections and NSSP

Plans for 2011

Despite the state budget crisis, an MTAG training seminar is currently planned for late 2010 in Southern California. Just in time training activities are being developed by some of the other sub-task groups.

After a very successful 2010 International Conference on Pavement Preservation (ICPP), the organization team is anxious to follow up with the return of the California Pavement Preservation Conference for 2011. Preliminary planning is in progress. As usual, the conference will take place in April or May, 2011. This time the conference will return to Northern California. Due to the budget crisis, Caltrans participation is expected to be very limited. Therefore, any help from other organizations would be greatly appreciated.

Innovation projects

Innovation projects for this year include Hot In-Place Recycling (HIR) in District 2, an asphalt rubber warm mix chip seal scheduled for District 6, and a

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new generation concrete surface (NGCS) diamond grinding in District 11.

In District 2, the HIR is currently underway on route 299 in Trinity County. Work began on August 10th. This is the first time in recent years that Caltrans has attempted a conventional HIR. In 2008 the hot in-place transformation (HIT) technology from Japan was used in Districts 2 and 8.

Caltrans placed their first warm mix asphalt rubber chip seal in early September in District 6. The City of Roseville did their first one in June 2010 and LA County did their first one in August 2010. The City

of Roseville plans its second project in mid September 2010. The benefit of using warm mix is that placing the asphalt rubber binder at lower temperatures (320 – 360 °F vs. 385-415 °F) greatly reduces smoke from the asphalt rubber. The use of warm mix will allow the expanded use of asphalt rubber chip seals in areas that had been previously restricted due to the excess smoke.

The NGCS will begin this December in San Diego on Interstate 5. NGCS promises to provide even quieter portland cement concrete pavement than conventional diamond grinding.



Upcoming pavement-related events

International Conference on Sustainable Concrete Pavements: Practices, Challenges, and Directions to be held on September 15-17, 2010, in Sacramento

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

ACPA workshop on Concrete Pavements to be held at Cal Poly Pomona

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

California Asphalt Pavement Association "Paving Green" Conference to be held in Sacramento, October 28, 2010

Caltrans Deputy Director for Maintenance & Operations, Steve Takigawa, is scheduled to be the keynote speaker at the 2010 California Asphalt Pavement Association "Paving Green" conference scheduled for Thursday, October 28, at the Radisson Hotel in Sacramento. Topics to be covered at the day long conference include the latest on the deployment of warm mix

asphalt in California, recycled asphalt pavement (RAP), porous pavements for storm-water control, rubberized asphalt pavements, incorporating recycled asphalt shingles in asphalt mixes and more. A limited number of sponsorships are available. For more information, contact CalAPA at (916) 791-5044, or visit the CalAPA website at www.california-pavements.org.

California Asphalt Conference on "Stretching Your Dollars" to be held in Ontario on November 4, 2010



This year's 3rd annual asphalt pavement conference will be held on Thursday, November 4, 2010, at the Doubletree Hotel in Ontario. The theme for this year's conference is "Stretching Your Roadway Dollars." A trade show will again accompany this very popular annual event. Keynote speakers include Larry Lemon (President of NAPA) and Will Kempton (Director of the Orange County Transportation Authority).

Sponsored by the Asphalt Pavement Association of California, this conference offers important up-to-date information regarding asphalt pavements that is crucial as we face the challenges of new specifications, more stringent environmental regulations, and limited material resources. Topics will include:

- Warm Mix Asphalt
- Reclaimed Asphalt Pavement
- Pavement Management Systems
- Local Agency Funding
- Pavement Preservation Strategies
- Asphalt Supply

For additional information call or e-mail Ann St Martin at (949) 855-6489 or astmartin@apaca.org. The final program will also appear on the association website at <http://www.apaca.org/>





2011 California Chip Seal Association Annual Meeting, February 2-3, 2011

The Pavement Preservation Conference sponsored by the CCSA will be held at the Doubletree Hotel/Conference Center in Ontario. For more information, please check out the association website at www.chipseal.org. The program and registration information will be posted on the website in the near future.

California Pavement Preservation Conference, May 2011

Since the International Conference on Pavement Preservation, there has been considerable discussion on the importance of having a California-focused conference again in 2011. While Caltrans will not be able to support such a conference because of funding issues, we are confident that local agency and industry support will be sufficient to make this popular conference possible. We will hold a planning meeting in September, 2010, to discuss the need for and to begin planning the 2011 California Pavement Preservation Conference to be held in Northern California, most likely in May, 2011. If you are interested in participating in the planning process, please contact either Laura Melendy at melendy@berkeley.edu or Gary Hicks at rghicks@csuchico.edu.

Question of the day

Many local agencies or homeowner associations have problems in the pavements from tree roots. If you have solutions to this problem, please let us know by contacting the Center at cp2c@csuchico.edu.



Photo by Joseph LaForest, University of Georgia

Other upcoming events

October 2010

- 3-9 - MSA Annual Conference. Pechanga Resort, Temecula, Calif., Conference Flyer, www.msa.org
- 11 - Bitumen Emulsion Producers Day. Lyon, France, www.ibef.net
- 12-14 - Fifth World Congress on Emulsions. Lyon, France, www.cme-emulsion.com
- 13-15 - 11th International Symposium on Concrete Roads. Seville, Spain [Announcement, www.2010concreteroads.org](http://www.2010concreteroads.org)

November 2010

- 2-3 - AEMA Emulsion Technology Workshop. Sheraton Fallsview, Niagara Falls, Ontario, Canada, www.aema.org
- 8-9 - ARRA Semi-Annual Meeting. Hyatt Regency, Chicago Ill., www.arra.org
- 17-18- NAPA Sustainability Conference: Paving Greener with Asphalt. Crown Plaza Denver Airport, Denver, CO, www.hotmix.org

January 2011

- 23-27 - TRB 90th Annual Meeting, Sheraton Washington., Washington, DC, www.trb.org
- 25-28 - Slurry Systems Workshop. Holiday Inn International Dr., Orlando, Fla. www.slurry.org

February 2011

- 2-3 - Pavement Preservation Conference. Doubletree Conference Center/Hotel, Ontario, Calif, www.chipseal.org
- 6-9 - NAPA's 56th Annual Meeting. Waldorf Astoria Orlando and the Hilton of Bonnet Creek, Orlando, Fla, www.hotmix.org
- 21-25 - AEMA-ARRA-ISSA Annual Meeting. Westin La Paloma Resort, Tucson, Ariz., www.aema.org

Center news

CalRecycle projects

Warm mix study



The Center is now underway with two projects funded by CalRecycle. The first deals with the documentation of projects where asphalt rubber or terminal blends are being used in combination with warm mix technology. We have already monitored one project in District 1 (see District 1 story) and will be monitoring the following projects:

- Warm mix project in L.A. County. This will involve the use of warm mix technology with an AR spray application near Palmdale. This project took place in August 26, 2010.
- Warm mix project in the City of Stockton. This involved the placement of a warm mix HMA using additives Rediset and Sasobit. This project took place in late August 2010
- Warm mix terminal blend project near Mammoth Lakes will take place in early September, 2010. This is a Caltrans project.
- Warm mix asphalt rubber chip seal in the City of Roseville. This will take place in mid September 2010.

There are a number of projects that will be placed in District 3 by Caltrans. The scheduling of these projects is still to be determined. If there are projects you would like the Center to monitor, please contact rghicks@csuchico.edu.

LCCA study



This project will collect data from state and local agencies in California on the life of a treatment and the cost of a treatment. We will be looking to update the cost effectiveness of different preservation products including chip seals and thin HMA that contain the following binders:

- Conventional binders
- Polymer modified asphalt binders
- AR binders
- Terminal blend rubberized asphalt binders.

We have sent out a survey form to select cities, counties and Caltrans districts to collect the needed information. If you have projects of this type and wish to be contacted, please contact Ding Cheng, Interim Center Director at dxcheng@csuchico.edu.

Caltrans-Center contract

This contract started in August 2010. Due to state budget issues, the contract amount was decreased from \$1.8 million to \$800,000 for a period of three years. The reduced tasks associated with the new budget will include the following:

- Education and training. This will include putting on workshops on the MTAG and other topics as needed. It will also include support for the annual pavement preservation conference to be held in northern California next year.
- Innovation. We are supporting Caltrans to monitor innovation projects. The first is the HIR project in District 2 (see companion story). The second will be warm mix asphalt rubber spray application in District 6. The HIR project started in August, 2010, while the AR spray application is scheduled to take place in early September, 2010.
- Technical assistance. We will continue to operate the Help Desk and assist Caltrans with developing specification for preservation products or treatments.
- Promotion of preservation. We will continue to develop technical briefs, fact sheets, and a quarterly newsletter. Please contact Gary Hicks at rghicks@csuchico.edu if you have something you would like to include in future newsletters.

Pavements Academy contract

This project began in 2009 and its purpose is to develop training modules for Caltrans personnel. Broad topics will include:

- Pavement design
- Pavement materials
- Pavement management
- Pavement preservation

Several modules have been identified which will be developed under these broad categories. Caltrans is currently prioritizing the modules they want developed first. Ding Cheng is the project director and will be assisted in the project by Dragos Andrei, Shadi Saadeh, Rose Lane, Gary Hicks and others. We expect to begin work on the modules in September 2010. For more information on this project, please contact dxcheng@csuchico.edu.



Ding Cheng

Continued, next page



Leros Lane

Staff addition

Leros Lane, who retired from Caltrans as the District 2 materials engineer, is now working for the Center. We are glad to have her on board. She will help on a number of projects.

Alaska DOT & PF project

The Center also will begin a project with Alaska DOT & PF in September 2010. The purpose of this project is to develop a pavement preservation program for the State of Alaska. They currently have a strong pavement management program. The Center will evaluate the treatments used in Alaska and help them integrate the pavement preservation program into their existing PMS. We are working with the University of Alaska at Fairbanks and Anchorage on this project. Dr. Gary Hicks is the project manager for the Center.

Help Desk

Dr. Gary Hicks continues to man a help desk for the Center even though there was a gap in the funding for this effort. Topics he gets calls on include:

- Problems with surface treatments from cities and counties
- Technical questions on pavement issues from Caltrans and others



Gary Hicks



Please provide us your feedback on the CP² Center Newsletter

Please let us know what you think about our newsletter by providing input on the following:

- What do you like about the CP² Center newsletter?
- What other stories would you like included?
- Is the newsletter too long?
- Are the stories too long?
- Has the newsletter been of use to you?

You can do this by completing the web-based survey that can be found at

<http://www.ecst.csuchico.edu/cp2c/seminars/CP2Csurvey.htm>



Also let us know if you work for an agency, industry or academia. Thanks for your feedback. This will help us improve our service to you.

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