



CP² Center News

Newsletter of the California Pavement Preservation Center

No. 68

December 2023

3rd NPPC Conference A Great Success!

By Gary Hicks (CP2 Center) and Bouzid Choubane (NCP)



Bouzid Choubane (NCP)

Over 650 people participated in the 3rd National Pavement Preservation Conference (NPPC) held in Indianapolis, IN, from September 18 to 21, 2023. The first two were held in Nashville in 2012 and 2016. This Conference featured timely technical presentations, relevant panel discussions, as well as live demonstrations of different asphalt and concrete pavement preservation (P2) treatments. It also provided a venue to interact with attendees from state and local agencies, industry, academia, and FHWA. The next Conference is scheduled for 2027.

Day 1 of the Conference consisted of meetings of the four regional P2 partnerships followed by the opening session of the conference. Bouzid Choubane, Director of the National Center for Pavement Preservation (NCP) at Michigan State University, welcomed the participants to the Conference and introduced the keynote speaker, George Conner of Alabama DOT, the current chair of the AASHTO Committee on Maintenance. Mark Ishee, President of the Foundation for Pavement Preservation (FP2), presented the Jim Sorenson Award to Arkansas' Pulaski County. The Award Ceremony was followed by presentations from industry, local agencies and FHWA. All conference presentations can

be found at: <https://nationalpavement2023.org/presentations/>

Day 2 consisted of presentations on fundamentals of preservations basics, materials used in asphalt and concrete preservation, advancing the practice, and data analysis. Gary Hicks of our California Pavement Preservation Center (CP2C) gave a presentation on the workforce development resources provided by California's City County Pavement Improvement Center (CCPIC). Presentations on establishing effective,

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Dr. Ding Cheng (CP2C)

pavement preservation programs, training, safer pavement surfaces, certification, recycling, sustainability, and performance were also given. Dr. Ding Cheng, Director of our CP2C delivered a presentation on the Center's 'Pavement Preservation Academy', now in its third year. The next Academy is planned for March 2024.

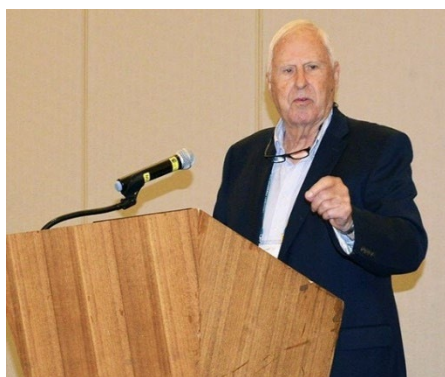
The morning of Day 3 consisted of insightful presentations on the NCAT and MnRoad test tracks, followed by an introduction to the afternoon field demonstrations of P2 tools for both asphalt and concrete pavements. The live demos were well received by the participants and included hot-in-place recycling (HIR), mastics and crack sealing, pavement re-texturing, fog seal with a rejuvenator, scrub seal, microsurfacing, and concrete patching materials. It appears that the future has arrived and will even include robotics equipment as shown below.



HIR recycling by Gallagher Co.



Reclaimite rejuvenator fog seal application



Dr. Gary Hicks, CP2 Center

Day 4 of the NPPC included presentations on TSP2 future, regional partnerships updates, and closing remarks given by Dr. Gary Hicks (CP2C). The closing remarks addressed the history of pavement preservation, and pavement preservation treatments, benefits, challenges, opportunities, and the path forward.

The next National Pavement Preservation Conference is scheduled for 2027.

For more information go to:
<https://nationalpavement2023.org>

(Photos in this article were provided
 by Tom Kuennen, courtesy of FP2.)



Pioneer robotic laser crack sealer

In-Place Recycling Guide Available

by Roger Smith, CP2 Center



The *Guide for Partial- and Full-Depth Pavement Recycling in California* was produced for Caltrans by the UC Pavement Research Center (UCPRC) at UC Davis, by authors D. Jones, S. Louw, and J. Harvey.

This informative document was prepared to guide practitioners on project investigation, recycling strategy selection, pavement structural design, environmental life cycle and life cycle cost analysis, mix design, and construction of in-place pavement recycling assessment projects on flexible (asphalt) pavements in California. It provides information specific to California conditions to supplement the current Caltrans Highway Design Manual (HDM), specification documents, and other available design guides.

Hot and cold pavement recycling is an evolving field of pavement engineering, and over time, different recycling approaches and technologies have been developed, perfected, and implemented. Terminology for the different recycling processes, especially those that do not involve heat, has also evolved over time. This has resulted in inconsistencies in naming conventions and definitions across the spectrum of in-place recycling processes, with overlap in some areas. This in turn can lead to confusion for practitioners and decision makers, especially those new to pavement recycling who are unfamiliar with pavement recycling, but are considering a recycling project.



Checking recycling depth using a Rock Pick on a PDR project.

To prevent this continued confusion and to promote consistency, a more consistent and descriptive set of terms and acronyms has been developed. These new descriptors are outlined in the Guide, along with a lot of other valuable information about in-place recycling of asphalt pavement.

The manual was developed for Caltrans and tends to focus on their projects, which are not that common in urban areas and not subject to the constructability concerns that cities and counties may have. Regardless, there is valuable information for cities and counties.

Worth noting is that the 2024 edition of the 'Greenbook' will include a new Part 10, which includes specifications for CIR and CCP using engineered asphalt emulsion.

To view the Guide go to: <https://escholarship.org/uc/item/54z679x4>

Concrete Overlays

from FHWA TOPS News



Concrete overlays of either old concrete or asphalt pavements are a strategy in FHWA's Targeted Overlay Pavement Solutions (TOPS) program.

Concrete overlays can help extend pavement life, improve safety, and meet drivers' expectations for a reliable, comfortable system, all without requiring reconstruction. But how do you select the right treatment for the situation? A recent FHWA [webinar](#) outlined possible feasibility considerations and next steps.

Feasibility Considerations

When determining the feasibility of a concrete overlay, gathering information is important:

1. Can the existing pavement provide a uniform subbase to overlay?
2. If not, what pre-overlay repairs may be necessary to obtain uniformity?
3. If targeting a concrete on asphalt (COA) bonded or concrete on concrete (COC) bonded overlay solution, will enough structure remain after repairing and milling?
4. What interlayer treatment is needed to bond or separate the overlay?
5. Can a COA unbonded or COC unbonded work within constraints such as vertical clearances, shoulders, etc.?



Concrete overlay being placed (Source: Jerry Voigt)

Possible Evaluation Steps

Once the feasibility is determined, evaluation steps could include:

1. Identify the existing pavement type and general condition. Know what you're dealing with.
2. Make a preliminary determination of typical section layers or thickness.
3. Perform an on-site review and evaluation.
4. Assess any profile grade adjustment and vertical constraint issues.
5. Validate existing pavement conditions by coring and material testing.
6. Select the overlay option.

Watch the FHWA concrete overlay feasibility strategies [webinar](#) to learn more.

For more information, visit the [TOPS website](#) or contact TOPS co-team lead [Robert Conway](#) (concrete) or [Tim Aschenbrener](#) (asphalt).

CRCP Rehab of the 'Aerospace Highway'

by Mark Gudenas; Edited by Roger Smith, CP2 Center

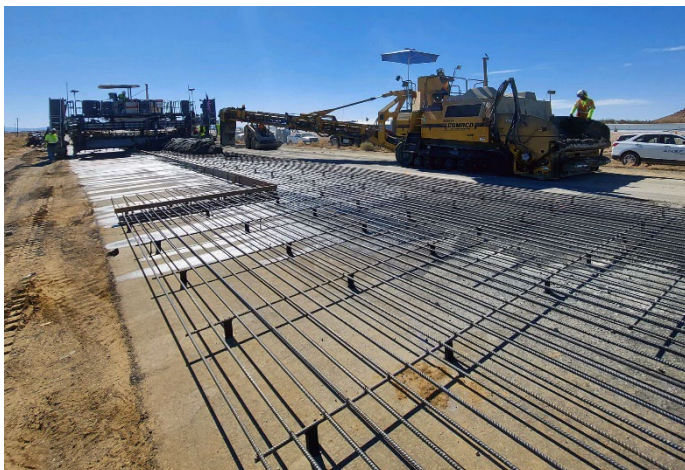
State Route 14 out of Mojave is also known as the 'Aerospace Highway', and runs due south from the Mojave Air & Space Port. On October 3, 2020, work began on the rehabilitation of this eight-mile stretch of SR 14 in Kern County, that begins 1.4 miles south of the Dawn Road overcrossing and runs to just north of the Silver Queen Road overcrossing. Roughly 36,500 vehicles travel this stretch daily, according to a 2019 traffic study.

The Caltrans District 9 (Bishop) Engineering, Project Management, and Project Design Departments teamed up with District 11 (San Diego) to design the Rosamond-Mojave Rehabilitation Project, and work slated to be done included a complete pavement rehabilitation of the two northbound and two southbound lanes, for a total of 32 lane miles. The scope of work also included on- and off-ramps, adjacent shoulders, an upgraded metal beam guardrail, upgraded traffic loop detectors, and other facilities.

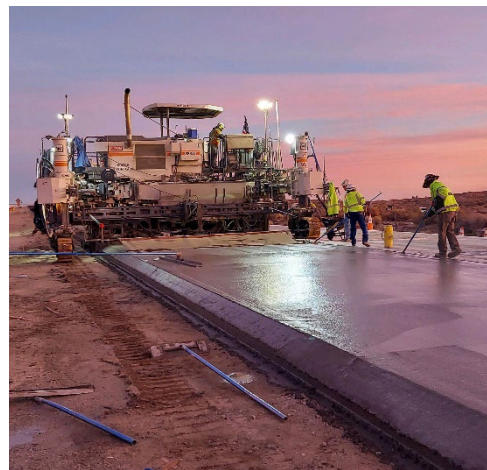
Over the 50-year-old, 7.8" thick PCC, the design called for a thin HMA interlayer topped with 10" of CRCP. Grinding or significant repairs to the existing concrete pavement were not required. The old concrete pavement was reused in-place as a stabilized base for the new continuously reinforced concrete pavement (CRCP) overlay.

The total project cost came in at \$53 million, with \$43 million identified as construction costs. Partial funding came from the 2017 SB-1 fuel tax increase.

The construction contract was awarded to Guy F. Atkinson Construction, who rehabilitated this stretch of SR 14 with a CRCP overlay of existing concrete (PCC) pavement. This was the first pavement project in which Atkinson used CRCP.



Continuous Reinforcement in Place



Atkinson paving crew working in arid desert environment. (Caltrans)

"We're proud to have this one on our resume," Guy F. Atkinson Construction Area Manager Geoffrey Lister said. "We looked at this project as an opportunity to bring this into our wheelhouse."

"The company used GPS to help guide installation of the concrete pavement, providing crews with real-time information about how smooth the roadway was being laid," Lister stated. "The smoothness has been fantastic, the smoothest our team has ever placed."

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Spraying curing compound onto the fresh concrete. Photo courtesy of Caltrans.



The completed southbound CRCP lanes – ground and grooved.

The Caltrans District 9 Planning Team took advantage of the divided highway configuration of SR 14 in this stretch, which also does have any major intersections, and scheduled the CRCP work first on the southbound lanes, diverting both directions of traffic to the northbound lanes. The speed limit was reduced to 55 mph, and K-rail and concrete barriers separated the two traffic lanes. ArmorGuard gates gave emergency personnel access through the K-rail every two miles. When construction on the southbound lanes was completed, traffic was diverted from the northbound lanes onto the newly paved southbound lanes on the other side of the median, and the same safety measures put into place.

Though this configuration slowed traffic during the construction period, it enabled Atkinson to work more efficiently, expedite the schedule, and complete the project 45 days ahead of targeted completion date. Thanks to the Caltrans District 9 traffic diversion plan, the time savings lowered the project cost through reduced traffic-management expenses, and it reduced the potential for traffic incidents by keeping vehicles separate from construction activities.

Photo by District 9 PIO Michael Lingberg

For more information on this project or CRCP pavement go to: www.SWCPA.org



FDR-C Project with Double Chip Seal Surface Treatment

By John Miller (Glenn County), Scott Dmytrow (Pavement ACES) and Gary Hicks (CP2 Center)



Glenn County, in northern California, used an innovative approach to restore service levels on portions of County Road 306 between Elk Creek and Chrome in the foothills west of the town of Willows. The project was done using full depth reclamation with cement (FDR-C) and was scheduled to be completed by County forces applying a double chip seal. The work was done in Aug/Sept 2023 under a contract with Hat Creek Construction using Pavement Recycling Systems (PRS) for the FDR work. The total project was about 8 miles long, but only a portion of it consisted of FDR-C (70,400 sq.yds). Due to delays at the start of the project and the weather, the project will go through winter suspension with only a single chip seal surface (112,640 sq yds).

Work consisted of pulverizing the existing asphalt pavement, base, and subgrade to a 12" depth. Cement and water were then added to the blended material, mixed to the prescribed depth, shaped, and compacted to 97 % of the maximum dry density. A fog seal was applied at the end of each work shift using SS-1h asphalt emulsion applied at a 0.13 gal/sy application rate.

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Figure 2. Adding water to the cement and mixing



Figure 3. Finishing the grade



Figure 4. Fog sealed surface

Microcracking of the stabilized base was done using vibratory roller. It occurred 48-72 hours after compaction was done, and followed Caltrans specs, which require the use of a vibratory roller with 3 passes. The reason for microcracking is to mitigate drying shrinkage. Some sections were microcracked, while some were not in order to evaluate the effectiveness of the microcracking process.

The existing pavement section was pulverized using a Wirtgen 240i reclaimer/stabilizer prior to the distribution of cement (Figure 1).

Per the engineers mix design, Type II/V Portland cement was applied at a rate of 3.5% by weight of the combined asphalt pavement and base mixed with 9-10% water (Figure 2).

The design specification compressive strength of the FDR-C was 300-600 psi, and the final product ranged from 270 to 800 psi in the field. The variability in strength may have resulted from variations in the underlying soil conditions. Compaction had to be completed within 2 hours from the initial application of water. Curing of the FDR was aided through the use of a fog seal. Sand was applied at a rate of 2-6 lbs/sy to minimize pick up by traffic until the chip seal was applied. The surface was finished by Hat Creek Construction (Figure 3) and then the fog seal was applied (Figure 4). Traffic was able to use the partially completed FDR-C with minimal interruption.

A single chip seal was to be applied within 3 days after the completion of the FDR (Figure 5). The first course consisted of a PMRE binder with a 3/8-inch rock and the application rates were 0.48 gal/sy for the emulsion and 24 lbs/sy for the aggregate.

From Station 160+00 to Station 200+00, there were some problems with the raveling of the finished FDR surface due to the grading operation, which delayed the application of the first chip seal layer. According to Caltrans specs, these spots were repaired using a thin layer of hot mix. This delayed the completion of the chip seal until September 2023.

The second layer of chip seal used a PMCRS-2h binder with an application rate of 0.31 gal/sy, with a 1/4" chip placed at 21 lbs/sy was not completed this season because of cool temperatures. The chip seal work was done using County forces and contract trucking. The second layer will be placed during the spring of 2024. Photos of the job to date (with first chip seal) including temporary striping are shown in Figures 6a and 6b.

Overall, the work to date went well with the exception of the early raveling of the FDR in some areas that had to be repaired with grader-placed HMA. Glenn County expects that the project, when fully completed, will last 10-15 years before resurfacing is needed.

For more information contact: John Miller at jmiller@countyofglenn.net or Gary Hicks at rghicks40@outlook.com (It is expected we will update the article along with lessons learned once the job is finished in 2024.)

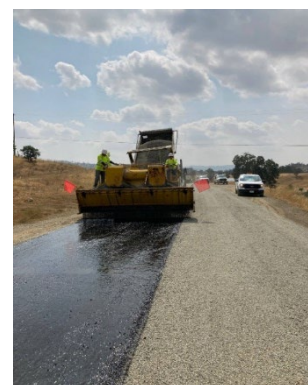


Figure 5. Applying the first chip seal

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Figure 6a. First chip seal applied (overview)

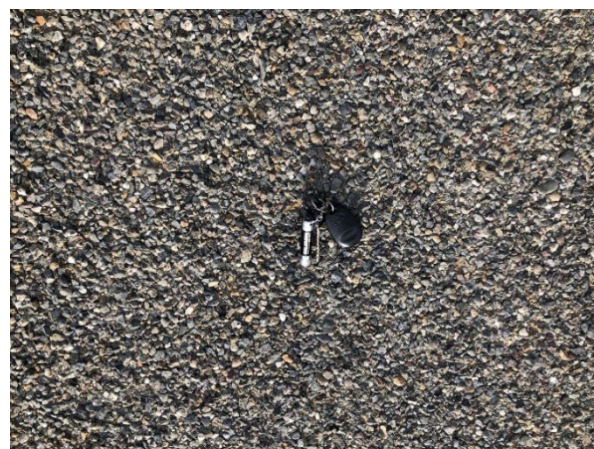


Figure 6b. First chip seal (close-up)



WRAPP Update

by Matthew Conarro, for WRAPP



**Sergio Aceves,
Caltrans**

Educational Events

The Western Association for Pavement Preservation (WRAPP) has had a busy fall season with educational activities. We completed two live training sessions in a partnership with Caltrans.

WRAPP presented at the Caltrans South Regional Lab on Oct 18th (and online) with over 85 people in attendance. The WRAPP board and guest presenters covered the following topics:

Pavement Preservation 101 and *'Multilayered Preservation Systems* (Matt Ferguson, VSSI)
Fog Seals (Todd Vargason, Ergon)

New Caltrans Fog Seal Specifications (Steve Lee, Caltrans). (It's anticipated that Section 37 of the Caltrans Standard Specs will be updated to include the new fog seal requirements.)

WRAPP presented another seminar in Sacramento (and online) on Oct 26 with over 100 attendees. The WRAPP board and guest presenters covered:

Pavement Preservation 101 and Extending your Budgets (Scott Dmytrow, Pavement ACES)
Slurry Seal, Micro Surfacing, and Chip Seals (Rick Cross, VSSI)
Fog Seal New Specifications and Uses (Todd Vargason, Ergon, and Steve Lee, Caltrans)

An extensive question and answer session were held at both locations, and some very good questions were asked of our panel of experts. These events were very well received and provided valuable information on pavement preservation for personnel from Caltrans and local agencies. Additional training events will be held in 2024.

2024 WRAPP Workshop Planned

The 2024 Annual Pavement Preservation Workshop is scheduled for February 7th and 8th at the Holiday Inn in downtown Sacramento. The 2-day workshop features presentations covering all aspects of pavement preservation, and there will be ample time to visit with member companies at their numerous vendors displays.

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Keynote speaker is scheduled to be **Sergio Aceves, Caltrans' Division Chief of Maintenance**. Sergio is responsible for providing statewide policies, guidance, and funding for all Highway Maintenance operations in the State Highway System.

Under his leadership, the Division of Maintenance administers a yearly budget of \$2.1-Billion dollars.

Additional presentations will cover everything from Pavement Management Systems, surface preparations and crack filling, chip seals and scrub seals, micro-milling, slurry seals and microsurfacing, multi-layered systems, and aggregates (including RAP use). There will also be an Agency- Contractor Roundtable discussion.

Dr. DingXin Cheng will also be providing an update from the California Pavement Preservation Center (CCP2) at CSU Chico.

Registration includes meals, raffle tickets, and reception.

The 2024 WRAPP Golf Tournament is scheduled for February 6th at Teal Bend Golf Course in Sacramento.

Please visit www.wrapp.org for details of schedule, hotel, and registration for the 2024 Workshop



CCPIC Update

By John Harvey (UCPRC), Erik Updyke (CCPIC), Laura Melendy (UC Berkeley, Tech Transfer), and Gary Hicks (CP2 Center)

About CCPIC

The City and County Pavement Improvement Center (CCPIC) was officially formed in 2018 to work with local governments to increase pavement technical capability through timely, relevant, and practical support, training, outreach and research. The vision for the Center is to make local government-managed pavements last longer, cost less, and be more sustainable. The scope of the Center's work is to:

- Increase knowledge through **training**, peer-to-peer exchanges, and tech briefs
- Develop sample **specifications** and other resources,
- Establish a pavement engineering and management **certificate program**, and
- Serve as a **resource, research and development center**.

CCPIC is currently supported by SB-1 (fuel tax) funds provided to the University of California, and to the California State Universities. Campuses involved include UC Davis, UC Berkeley, CSU Chico, CSU Long Beach, Cal Poly San Luis Obispo, and funding partners CSU San Jose (Mineta Transportation Institute), UCLA and UC Irvine.

For more information on the CCPIC activities please go to our website at: <http://www.ucprc.ucdavis.edu/ccpic/> or email us at: eupdyke@ucdavis.edu

CCPIC Governance Board Recruitment The Center is looking forward to filling one County Board seat. If interested, please contact Merrin Gerrety at: mgerety@counties.org. The work required from a board member is minimal consisting of participating in 2 meetings per year and encouraging other agencies to improve their pavement practices.

Training & Certificate Programs The CCPIC Pavement Engineering and Management certificate and the courses to complete it are offered through UC Berkeley's TechTransfer Program. CCPIC training is developed with SB1 funding and registration fees are currently partially subsidized for local and state agencies through Caltrans, reducing the cost. Registration and other information are available at: <https://www.techtransfer.berkeley.edu/training/pavement-courses>

The core courses for the Pavement Engineering and Management (PEM) Certificate have been developed and are now being offered at least once per year. Several elective courses are also being offered now.

Classes currently open for enrollment include:

- CCA-02 Pavement Sustainability, February 13-15, 2024
- CCB-02 Pavement Management Systems and Preservation Strategies, March 4-8, 2024
- CCC-03 Pavement Construction Specifications and Quality Assurance, March 12-20, 2024
- CCC-01 Asphalt Concrete Materials and Mix Design, April 22-25
- CCC-02 Asphalt Pavement Preservation Treatments, Materials, Construction and Quality Assurance, TBA

The CCPIC governance board, made up of city and county pavement officials, has also requested development of a Pavement Construction Inspection (PCI) Certificate. This certificate program includes several of the Pavement Engineering and Management Certificate classes as well as new classes to ensure agencies are able to properly inspect all types of pavement projects. Self-paced (recorded) courses offered in 2024 will include:

- CCI-04, Pavement Preservation Construction Inspection
- CCI-06, Construction Inspection of Asphalt Rubber Pavement Materials

There is now a streamlined way for agencies to purchase CCPIC certificate training packages for employees. Agencies can purchase a prepaid training 'package' for employees to complete an entire certificate program for \$2,110 per person. This price covers over 80 hours of training and includes all core classes and electives to complete either the Pavement Engineering and Management Certificate or the Pavement Construction Inspection Certificate program. For more information go to: <https://www.techtransfer.berkeley.edu/news/prepaid-training-packages>

Technical Guidance Tools

Information, guidance and technical tools are downloadable from the CCPIC website at www.ucprc.ucdavis.edu. Some of the key topics are:

- Superpave 'HMA-LG' Specification for Local Governments Specification

This newer Superpave specification for hot mix asphalt can be found at: [HMA-LG Special Provision \(Greenbook format\) \(3-10-22\).docx \(live.com\)](#)

- Best Practices for Pavement

- Writing and enforcing specifications for asphalt compaction
- Writing concrete mix specifications
- 'Unpaving' to Create Affordable, Safe, Smooth Gravel Roads
- Pavement Condition Index: There's More (and Less) to the Score

- Tools and Model Specifications

- Pavement life Cycle Cost Analysis Spreadsheet Software
- Asphalt Compaction Model Specification Language

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- Concrete Pavement Model Specification Language
- Tack Coat Model Special Provisions
- Superpave for Local Government Model Specification Language (HMA-LG)

➤ Other technical guidance efforts include:

- Site Investigation guidance manual for local agencies
- Recycling Guide for Cold In-place (CIR) and Cold Central Plant (CCPR)
- Economic analysis of improvements in local agency pavement practices
- Environmental life cycle assessment tool for local governments
- Interlocking concrete pavement specifications
- Soil Stabilization Guidance for local agencies
- Catalog of pavement designs for local agencies based on CalME software
- Guidance on pavements for bike and walking paths

Let us know if you have other ideas we should consider by sending an email to:

eupdyke@ucdavis.edu.

Technical Topic Event For your Agency

The CCPIC has numerous PowerPoint-based presentations on how to get maximum value from condition survey data used in pavement management systems, and on the importance of asphalt compaction and tack coats on pavement life and specifics on how to get maximum value out of investments in asphalt treatments. If your agency is interested in hosting a session, whether in-person or by web meeting, please contact eupdyke@ucdavis.edu

More information on the subjects covered at recent events is available on the CCPIC website [at: http://www.ucprc.ucdavis.edu/ccpic/pdf/PCI%204-Pager%20final%20v2.pdf](http://www.ucprc.ucdavis.edu/ccpic/pdf/PCI%204-Pager%20final%20v2.pdf) and http://www.ucprc.ucdavis.edu/ccpic/pdf/CCPIC_4-pgr_asph%20compact_final_May%202017.pdf

Help For Local Agencies

During 2023, CCPIC has helped agencies including the Town of Paradise, the City of Lincoln, Napa County, and Santa Clara County with specific pavement related problems. If interested in getting help from the Center, please contact either John Harvey or Erik Updyke.

For more information on all CCPIC activities please go to our website at:

<http://www.ucprc.ucdavis.edu/ccpic/> or email eupdyke@ucdavis.edu



2024 Pavement Preservation Academy

By Roger Smith, CP2 Center

A big achievement of the Center has been the development and delivering of the Pavement Preservation Academy (PPA) developed using SB-1 'fuel tax' funds, as a resource for Workforce Training.

The 2024 fourth offering of this online Academy will be offered over 5 days - April 2, 3, 9, 10 and 11 - from 9am to noon each day.

Instructors are Roger Smith, Gary Hicks, Leros Lane, Ding Cheng and Erik Updyke. The five 3-hour segments of the PPA are based on manuals that have been developed by the CP2 Center and are published on the MTI website. In addition to being used in the Academy, these manuals are free to the public and downloadable using the following links:

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- Asphalt Pavement Repair and Resurfacing Preparation: https://scholarworks.sjsu.edu/mti_publications/414/
- Chip Seals: <https://transweb.sjsu.edu/sites/default/files/1845A-Chip-Seal-Manual.pdf>
- Slurry Surfacing: <https://transweb.sjsu.edu/sites/default/files/1845B-Cheng-Manual-Slurry-Surfacing.pdf>
- Multi-layered Seals: <https://transweb.sjsu.edu/sites/default/files/1845C-Cheng-Cape-Seal-Manual.pdf>
- Thin Asphalt Overlays: <https://transweb.sjsu.edu/sites/default/files/1906-RB-Cheng-Manual-Thin-Asphalt-Overlay.pdf>

The registration site for the Academy is open at the CP2 Center's website: <https://www.csuchico.edu/cp2c/educational-opportunities/pp-academy.shtml>.

If you need more information regarding the CP2 Center, please contact Dr. Ding Cheng at dxcheng@csuchico.edu or got to: <https://www.csuchico.edu/cp2c/>



Pavement Guest Lectures at Chico State

By Ding Cheng, CP2 Center

Several engineers visited Chico State this semester and gave some interesting lectures. On November 6, a group of people from the Federal Highway Administration (FHWA) and Caltrans (Figure 1) visited the material lab of CP2 Center and Civil Engineering department. In the transportation engineering class, Chu Wei of FHWA introduced the FHWA California division office, headquarters office in Washington DC, Turner Fairbank Research Center in Langley VA , and FHWA resource centers located in various parts of the USA. He gave an overview of FHWA's pavement design, materials, construction, pavement preservation, pavement management, recycling, and quality control programs. In addition, four people from the Caltrans office of concrete pavement and foundation: Allen King, Reimond Garcia, Siyoum Woldemichael, Joseph Hammack, and three people of the Caltrans office of asphalt pavement: Cathrina Barros, Sri Holikatti, and Kee Foo introduced themselves and describe career opportunities within the Caltrans organization.



**Figure 1. People from Caltrans and FHWA
Gave a Guest Lecture and Visited Chico State**

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Allen King, acting office chief of office of concrete pavement, gave an overview of the concrete pavement office including concrete specifications, concrete pavement design, maintenance, and preservation as well as foundations and soil stabilization. He mentioned sustainability, supplementary cementitious materials, recycled materials. He also introduced multiple interesting projects. Several pilot projects this year use fiber reinforced concrete. A lab study of fiber reinforced concrete was conducted here at Chico State University.

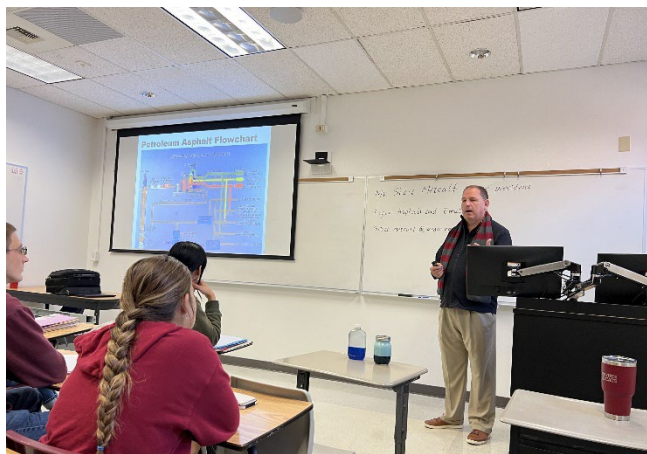


Figure 2. Scott Metcalf of Ergon Asphalt Gave a Guest Lecture at Chico State

Cathrina Barros, office chief of office of asphalt pavement, started by introducing her own career path with Caltrans. Then, she mentioned that asphalt pavement office work on developing asphalt pavement specifications such as asphalt pavement design, materials, construction, pavement recycling, and preservation. She mentioned using recycled tire rubber, recycled plastic, and recycled aggregates for sustainable pavement. In the end, she also introduced the organization of Women of Asphalt sponsored by California Asphalt Pavement Association and National Asphalt Pavement Association.

On November 13, Scott Metcalf, Ergon Asphalt, gave a guest lecture on asphalt emulsions for the transportation engineering class. He showed where asphalt came from and how asphalt emulsion was produced. Then he introduced some applications of emulsions such as slurry surfacing. He also gave a quick overview of slurry seal mix design, pavement repair and surface preparation, and construction. The guest lecture provided civil engineering students with an excellent lesson on real world engineering experience.



COMING EVENTS

by Roger Smith, CP2 Center

WRAPP Workshop

February 7-8 (Sacramento)

The 2023 Pavement Preservation Workshop will feature informative presentations by Industry experts on pavement preservation systems proven to extend pavement life - as well as presentations on specifications and preservation strategies used by multiple agencies. Vendor booths will also be part of this popular Workshop.

For more information go to: www.wrapp.org

CalAPA Fall Conference & Equipment Expo

March 6-7 (Ontario)

The California Asphalt Pavement Association (CalAPA) will again hold its Spring Conference at the DoubleTree Hotel in Ontario. In addition to various expert speakers on timely pavement topics, the Conference will feature vendor booths and equipment displays.

For more information go to: www.calapa.net

Pavement Preservation Academy

April 2,3 – 9, 10, 11 (Online)

The CP2 Center's 2024 Academy will be offered over 5 days in April, from 9am to noon each day. Instructors are Roger Smith, Gary Hicks, Leros Lane, Ding Cheng and Erik Updyke.

The five 3-hour segments of the Academy are based on manuals that have been developed by The registration site for the Academy is open at the CP2 Center's website: <https://www.csuchico.edu/cp2c/educational-opportunities/pp-academy.shtml>

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Berkeley Tech Transfer / CCPIC Pavement Classes

Three classes below are developed in partnership with the City and County Pavement Improvement Center (CCPIC), funded by California Senate Bill 1, the Road Repair and Accountability Act of 2017. This class delivery is supported by the Caltrans Division of Local Assistance, which offers reduced registration fees to employees of California's city, county, regional, and other public agencies. For more information go to:

[Home | TechTransfer \(berkeley.edu\)](#)

Pavement Sustainability

February 13-15, 2024 (Online)

The course will introduce definitions and metrics for assessing and improving the sustainability of pavements across the life cycle using the concept of life cycle thinking. Strategies and approaches for different stages of the life cycle, different contexts, and differing goals of agencies will be discussed.

Pavement Management Systems and Preservation Strategies

March 4-8, 2024 (Online)

Pavement networks are often the most valuable asset that an agency owns. This asset is not only expensive to replace, but it is an essential component to the traveling public's safety. Agencies are looking for more cost-effective ways to perform engineering, maintenance, management, and rehabilitation of roadways more than ever before to stretch funding allocations. A pavement management system is an essential tool to assist in cost-effective roadway maintenance planning.

Pavement Construction Specifications and Quality Assurance

March 12-20, 2024 (Online)

This course presents information regarding construction contract documents, quality assurance as applied to pavement construction, construction specifications for the components of pavement structural sections, and preparation of specifications, special provisions, and estimates.

'Asphalt Pavement 101" Classes

(online & various locations)

The popular "Asphalt Pavement 101" class will be offered periodically by CalAPA. This half-day class is a good review of the basics of asphalt pavement including materials, design, construction and acceptance testing. Next session is January 11, 2024 (Ontario).

For upcoming dates & locations go to: www.calapa.net.



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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. Mr. Rukesh Maharjan is the current Contract Manager of Caltrans.

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.

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