City and County Pavement Improvement Center (CCPIC)

Pavement Financial and Environmental Sustainability, Some Best Practices

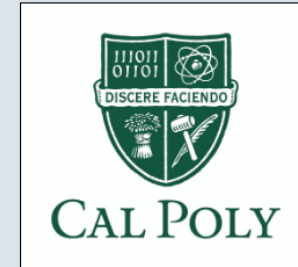Shadi Saadeh, Ashraf Rahim, Erik Updyke, John Harvey

City and County Engineers Association
March 04, 2021

- Sponsored by League of California Cities, County Engineers Association of California, and California State Association of Counties
- Chartered 28 September 2018

www.ucprc.ucdavis.edu/ccpic

Agenda

- Welcome and Introductions
- CCPIC:
  - Mission and Vision, Scope, Organization
  - Certificate Program
  - Planned Certificate Curriculum and New Course Development
- Worklist
- Technical Presentation
- Questions and Answers

CCPIC Mission and Vision

- Mission
  - CCPIC works with local governments to increase pavement technical capability through timely, relevant, and practical support, training, outreach and research

- Vision
  - Making local government-managed pavement last longer, cost less, and be more sustainable

CCPIC Organization

- University of California Partners
  - University of California Pavement Research Center (lead), administered and funded by ITS Davis
  - UC Berkeley ITS Tech Transfer, administered and funded by ITS Berkeley

- California State University Partners
  - CSU-Chico, CSU-Long Beach, Cal Poly San Luis Obispo
  - Funding partner: Mineta Transportation Institute, San Jose State University

CCPIC Organization

- Governance:
  - Chartered by League of California Cities, California State Association of Counties, County Engineers Association of California, also provide staff support
  - Governance Board consisting of 6 city and 6 county transportation professionals

- Current Funding
  - Seed funding for CCPIC set up and initial activities from SB1 funding through the ITS at UC Davis and UC Berkeley, and Mineta Transportation Institute at San Jose State University

CCPIC Scope

- Technology Transfer: training

- Technical resources: technical briefs, guidance, sample specifications, tools, and other resources

- Pavement engineering and management certificate program for working professionals: through UC Berkeley ITS Tech Transfer

- Resource center: outreach, questions, pilot study documentation, and forensic investigations

- Research and development: for local government needs that are not covered by State and Federal efforts

CCPIC Training: Certificate Program

- Pavement Engineering and Management Certificate Overview
  - For engineers, asset managers, upper-level managers, technicians and construction inspectors
  - 92 hours of training
    - 60 hours in core classes, 32 hours elective
    - Majority of classes to be offered online
  - In four categories:
    - Pavement Fundamentals
    - Pavement Management
    - Pavement Materials and Construction
    - Pavement Design

Status
- Plan approved by Governance Board
- Initial classes being delivered, including updated Tech Transfer classes and newly developed classes

Berkeley UNIVERSITY OF CALIFORNIA TechTransfer INSTITUTE OF TRANSPORTATION

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CCPIC Training: Planned Certificate Curriculum

	Fundamentals	Hrs	Management	Hrs	Materials and Construction	Hrs	Design	Hrs
CORE 60 required	CCA-01 Introduction to Pavement Engineering and Management	10	CCB-01 Life Cycle Cost Analysis	4	CCC-01 Asphalt Concrete Materials and Mix Design	8		
	CCA-02 Pavement Sustainability	6	CCB-02 Pavement Management Systems and Preservation Strategies	16	CCC-02 Pavement Preservation Materials and Treatments	8		
					CCC-03 Pavement and Hardscape Construction Specifications and Quality Control Management	8		
	Fundamentals, CORE	16	**Management, CORE**	20	**Materials and Construction, CORE**	24	**Design, CORE**	0
ELECTIVE 32 required 106 offered			CCB-21 Financing and Cash Flow for Pavement Networks	4	CCC-21 Concrete Materials	8	CCD-21 Asphalt and Concrete Pavement and Rehabilitation Structural Design	16
			CCB-22 Integrated Asset Management	8	CCC-22 In-Place Recycling	8	CCD-22 Design of Integrated Hardscape Assets	8
					CCC-23 Gravel Roads Engineering, Construction, and Management	8		
					CCC-24 Asphalt and Concrete Pavement Construction Processes and Scheduling	6		
					CCC-25 Construction Inspection	16		
					CCC-26 Pavement and Hardscape Construction Inspection	8		
					CCC-27 Asphalt Pavement Maintenance Construction	8		
					TS-10 Work Zone Safety	8		
	Fundamentals, ELECTIVE	0	**Management, ELECTIVE**	12	**Materials and Construction, ELECTIVE**	70	**Design, ELECTIVE**	24
TOTAL	**Fundamentals**	16	**Management**	32	**Materials and Construction**	94	**Design**	24

CCPIC Training: New Course Development

Code	Title	Instructor(s)	Expected	Format	Duration
CCA-01	Introduction to Pavement Engineering and Management	Harvey	Completed	Online	10 hours
CCA-02	Pavement Sustainability	Harvey	Completed	Online	4 hours
CCB-01	Pavement Life Cycle Cost Analysis	Hicks, Cheng	Completed	Online	4 hours
CCB-02	Pavement Management Systems and Preservation Strategies	Yapp, Signore	Spring 2021	Online	10 hours
CCC-01	Asphalt Concrete Materials and Mix Design	TBD	Summer 2021	Online	8 hours
CCC-02	Pavement Preservation Materials and Treatments	Hicks, Cheng	Completed	Online	8 hours
CCC-03	Pavement and Hardscape Construction Specifications and Quality Control Management	Updike	Fall 2021	TBD	8 hours
CCC-23	Gravel Roads Engineering, Construction, and Management	Jones	Spring 2022	Online	8 hours

Worklist

- **Pavement Condition Index (PCI) 4-Pager**
  - A four page paper describing how PCI is measured, what it doesn't measure, and how a similar or the same PCI for different road segments may have different implications for pavement preservation and pavement rehabilitation strategies.
  - *Final version is ready to in March 2021.*

- **Tech Topics/Pavement Technology Updates**
  - Review the publications from 1998 through 2011. Prioritize for editing, updating, and posting on the CCPIC web site.
  - *In Progress*

Worklist

- **Superpave Lite ("Hot Mix Asphalt – Local Government" [HMA-LG])**
  - Lead the development of specifications for a Superpave specification for use by local agencies.
  - Establish mix design criteria and other appropriate technical requirements.
  - *Final version is almost ready.*
  - *Looking for sponsors for a pilot section.*

Worklist

- **Local Agency Survey:**

  – Conduct a survey of local agencies on the use of Superpave, interest in a Superpave specification, RAP, warm mix, and other related . Develop a contact list of each Agency's "go to" person. Results will provide insight and serve as a basis for future CCPIC initiatives.

  – *In Progress*

Worklist

- Interested in being on the "Go to" list?

  - ✓ Go to the CCPIC website. Under "Pavement Contact List", click on "Click to join …" and complete the form. Thank you!

Proposed New Technical Projects

- **Site Investigation Guidance Manual**
  - ➢ Prepare and publish a site investigation guidance manual for local agency projects based on the manual currently being developed for Caltrans. Contents will include a discussion of destructive and non-destructive tests and frequencies.
  - ➢ *Begin review and editing once Caltrans version is complete.*

- **Specifications for Cold-In-Place and Cold Central Plant Recycling**
  - ➢ Review current Caltrans and local agency specifications. Prepare specifications suitable for statewide adaptation. Address processes using engineered emulsion and foamed asphalt.
  - ➢ *Begin once UCPRC completes research, analysis, and recommendations, and publishes report for Caltrans.*
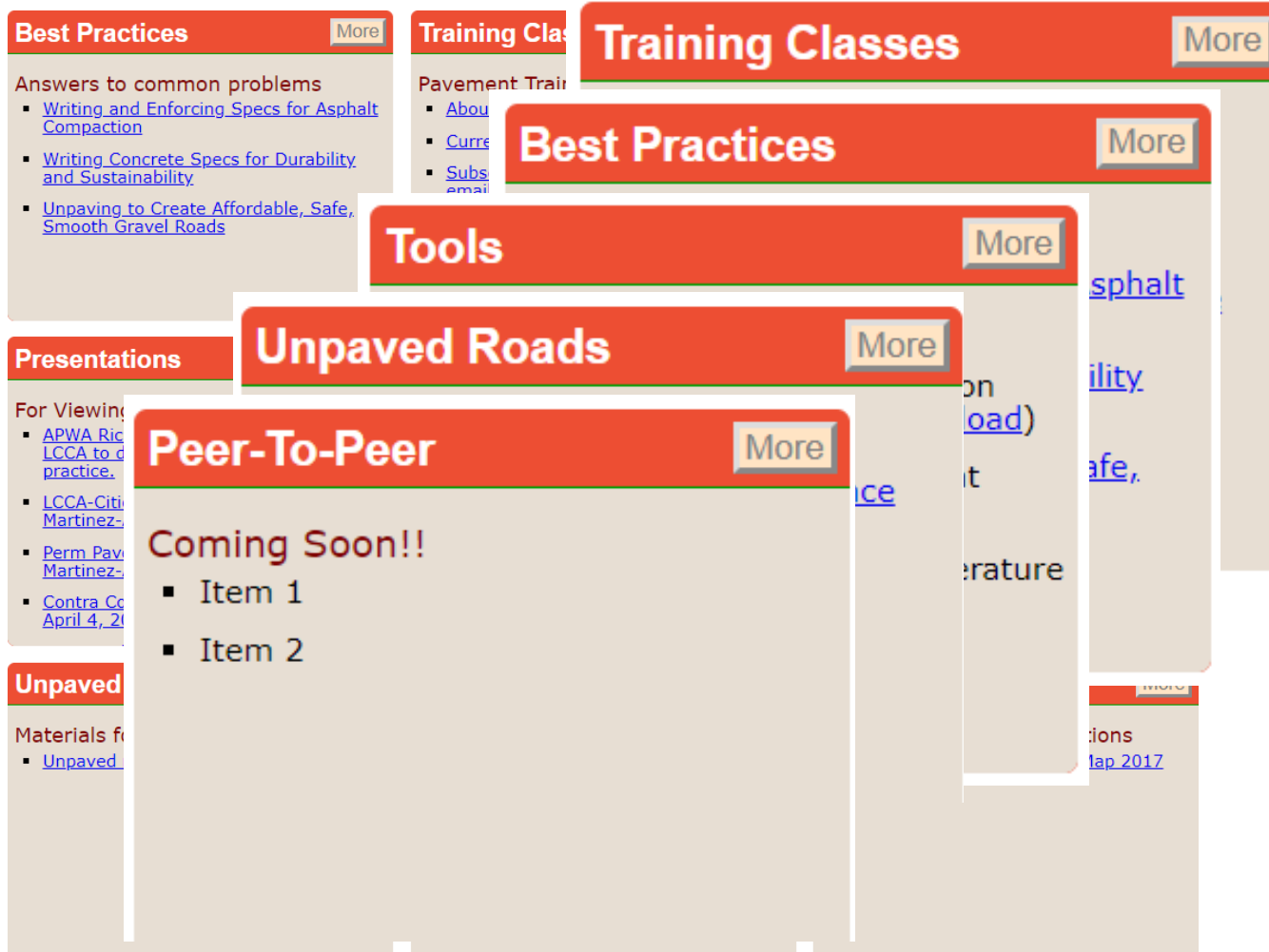
Proposed New Technical Projects

- **Reclaimed Asphalt Pavement (RAP) 101**
  - ➢ Prepare and publish a four-page technical brief on RAP, its effect on PG binder grades and HMA/AC mixtures, percent binder replacement, fractionation, and recycling agents.
  - ➢ *Begin once PCI 4-pager is published and posted.*

- **Long Life/Perpetual Pavements for Local Agencies**
  - ➢ Prepare and publish a four-page technical brief on the fundamentals and principles of long life and perpetual pavements and how they can be applied to Local Agency projects.
  - ➢ *Not scheduled*

CCPIC Website
www.ucprc.ucdavis.edu/ccpic

Best Practices `More`

Answers to common problems
- Writing and Enforcing Specs for Asphalt Compaction
- Writing Concrete Specs for Durability and Sustainability
- Unpaving to Create Affordable, Safe, Smooth Gravel Roads

Training Clas **Training Classes** `More`

Pavement Trai
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Best Practices `More`

Tools `More`

Unpaved Roads `More`

Presentations

For Viewing
- APWA Ric LCCA to d practice.
- LCCA-Citi Martinez-
- Perm Pave Martinez-
- Contra Co April 4, 20

Peer-To-Peer `More`

Coming Soon!!
- Item 1
- Item 2

Unpaved

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Map 2017

`More`

- Pavement training
- Best practices technical briefs
- Tools
- Unpaved roads
- Peer-to-peer

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Pavement Improvement Center

How to get involved?

- Get training
- Get your organization to take training
- Host in-person training classes!
- Read the tech briefs and see if your agency can make improvements
  - See the draft specification language
  - We can support you
- Get involved with governance board
- Start a peer-to-peer chat group
- Take a look at the tools on the website

References/Links

- University of California Pavement Research Center (UCPRC):
www.ucprc.ucdavis.edu

- Maintenance Technical Advisory Guides:
https://www.csuchico.edu/cp2c/library/caltrans-documents.shtml

- FHWA "Distress Identification Manual:"
https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/ltpp/13092/13092.pdf

- FHWA "Towards Sustainable Pavement Systems:"
http://www.fhwa.dot.gov/pavement/sustainability/ref_doc.cfm

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