SPRING 2015 NATIONAL CONCRETE CONSORTIUM

UPDATE ON CONTINUOUSLY REINFORCED CONCRETE PAVEMENTS

CRSI Concrete Reinforcing Steel Institute

04.23.2015
Reno, Nevada

SPEAKER

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Concrete Reinforcing Steel Institute

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PRESENTATION

- Introduction
- FHWA Cooperative Agreements
  - initial
  - current
- Webinars
- CRCP Acceptance
- CRCP Resources
- Questions

LONG-LIFE PAVEMENTS

Federal Highway Administration (FHWA)
Conference on Long-Life Concrete Pavements
held in October 2006

- What is a Long-Life Pavement?
  - original service 40+ years
  - no premature construction defects or material-related distress
  - reduced potential for cracking, faulting, and spalling
  - smoothness and surface texture easily maintained

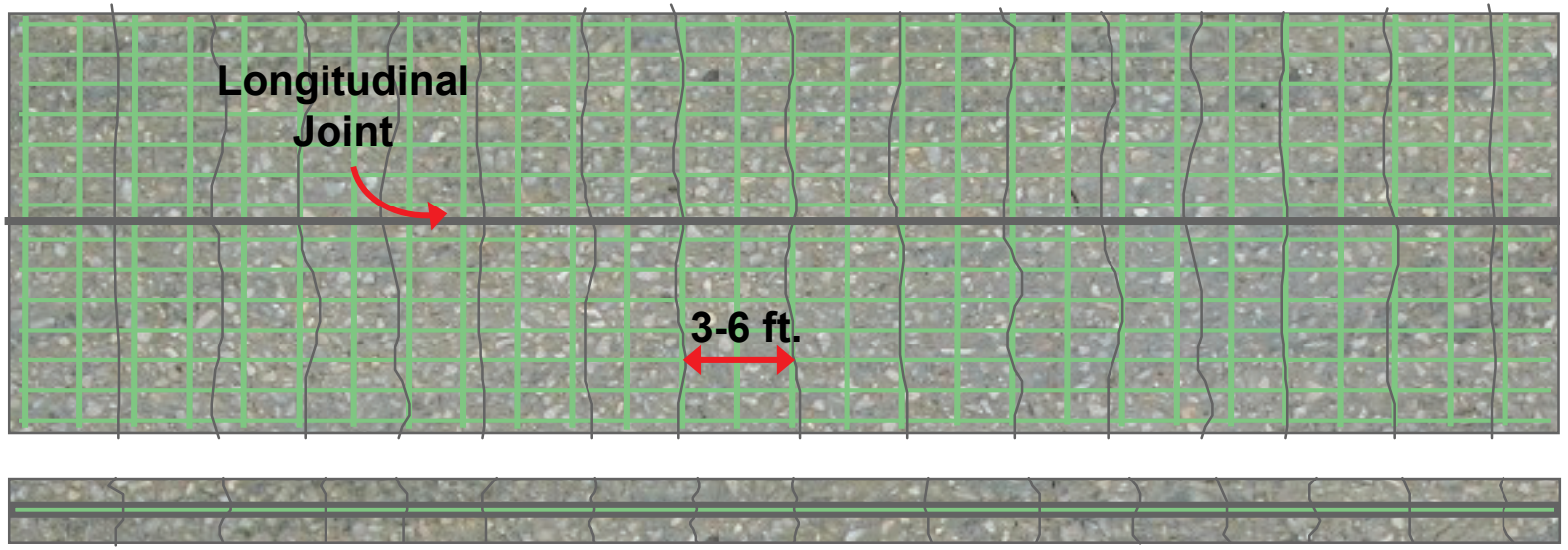
EXPECTED BENEFITS DERIVED FROM LONG-LIFE PAVEMENTS

- Maintenance of Traffic
  - work zone safety
  - reduced user delays
- Life-Cycle Cost
- Sustainability
  - economic impacts
  - environmental impacts
  - social impacts

LONG-LIFE PAVEMENTS: CONCRETE OPTIONS

- **Jointed Plain**
- **Precast Jointed**
- **Precast Prestressed**
- **Bonded Overlays**
- **Unbonded Overlays**
- **Roller-Compacted**
- **Continuously Reinforced**

CONTINUOUSLY REINFORCED



- **Highest load transfer if properly designed and constructed**
- **Cracks are typically 0.02 inches**
- **Solution for your aching joints**

FHWA: HOW TO PROCEED?

- **Compile Available Information**
- **Strategy for Technology Transfer**
  - » *develop printed and electronic documents*
  - » *maintain repository of CRCP guidance*
- **Strategy for Implementation**
  - » *deliver information to DOTs and others in the pavement community*
  - » *assist DOTs with acceptance and modifications, as needed, to utilize CRCP guidance*
- **Partner with CRSI**

INITIAL COOPERATIVE AGREEMENT

DTFH61-07-H-00033

- *Advancement of Continuously Reinforced Concrete Pavement through Technology Transfer and Delivery of Industry Guidance for Design and Engineering*
- "Introduces" Continuously Reinforced Concrete Pavements (CRCP)

Duration

- September 2007 through March 2013
- One Base Year
- Four Option Years
- One 6-Month Extension

Funding

- Total = $800,000
- Federal share = 50%
- Recipient (CRSI) share = 50%
- Based on all CRSI costs to be satisfied through "in-kind" contributions of labor time worked

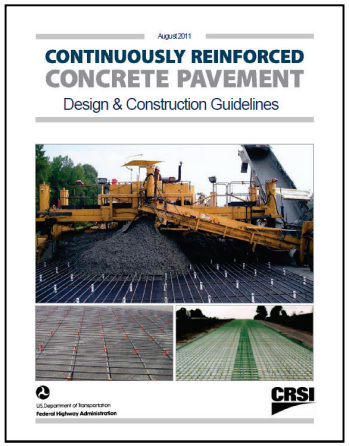
OBJECTIVES AND OUTCOMES

Objectives of Initial Agreement

- Established an advisory Expert Task Group (ETG) of pavement community representatives.
- Created a strategy for technology transfer of CRCP guidance, including a national communications plan and website (www.crcpavement.org).
- Created a strategy for State DOTs to accept and implement industry guidance for design and engineering of CRCP through project visits, workshops, and exhibits.

Resulting Publications

- *TechBriefs*
- *Manuals*
- *Summary Documents*



NEW COOPERATIVE AGREEMENT

DTFH61-13-H-00020

- *Design and Construction of Continuously Reinforced Concrete for Long-Life Pavement Performance*
- "Implements" Continuously Reinforced Concrete Pavements (CRCP)

Duration

- September 2013 through August 2018
- Two Base Years
- Three Option Years

Funding

- Total = $500,000
- Federal share = 80%
- Recipient (CRSI) share = 20%
- Once again, based on all CRSI costs to be satisfied through "in-kind" contributions of labor time worked
- Base Years not subject to Federal budget cuts!

WORK PLAN

This is NOT a Continuation of the Initial Agreement

- Composition of new, leaner advisory ETG is vastly different with a focus on CRCP user agencies instead of consultants
- Involves more “hand holding” of State Highway Agencies (SHAs) with a goal of seeing projects on the ground in both experienced and new states

Specific Agreement Tasks

- National webinars on CRCP technology focusing on design, construction, repair, and rehabilitation in 2015
- Technical sessions at 2016 TRB
- Additional technical documents and manuals to include information on cracking, shoulders, transverse steel, case studies highlighting life-cycle cost, design issues, updates, and a technology synthesis
- Two open houses on active CRCP construction projects to include guest SHAs
- Professors’ classroom instruction

ETG MEMBERSHIP

CRSI
Bob Risser, Schaumburg, IL
Greg Halsted, Bellingham, WA

CRCP User Agencies
Bill Farnbach, California DOT
Tommy Nantung, Indiana DOT
Justin Moderie, Oregon DOT
Andy Naranjo, Texas DOT

Academia
Jeff Roesler, University of Illinois, Urbana-Champaign
Dan Zollinger, Texas A&M University, College Station

Industry
Brad Everett, J. D. Abrams, Austin, TX
John Hema, Commercial Metals Company, Irving, TX
Michael Plei, Commercial Metals Company, Chicago, IL

Consultants
Shiraz Tayabji, Applied Research Associates, Elkridge, MD

FHWA
Sam Tyson, Office of Pavement Technology, Washington, D.C.
Suneel Vanikar, Office of Pavement Technology, Washington, D.C.

2015 WEBINARS COMPLETED

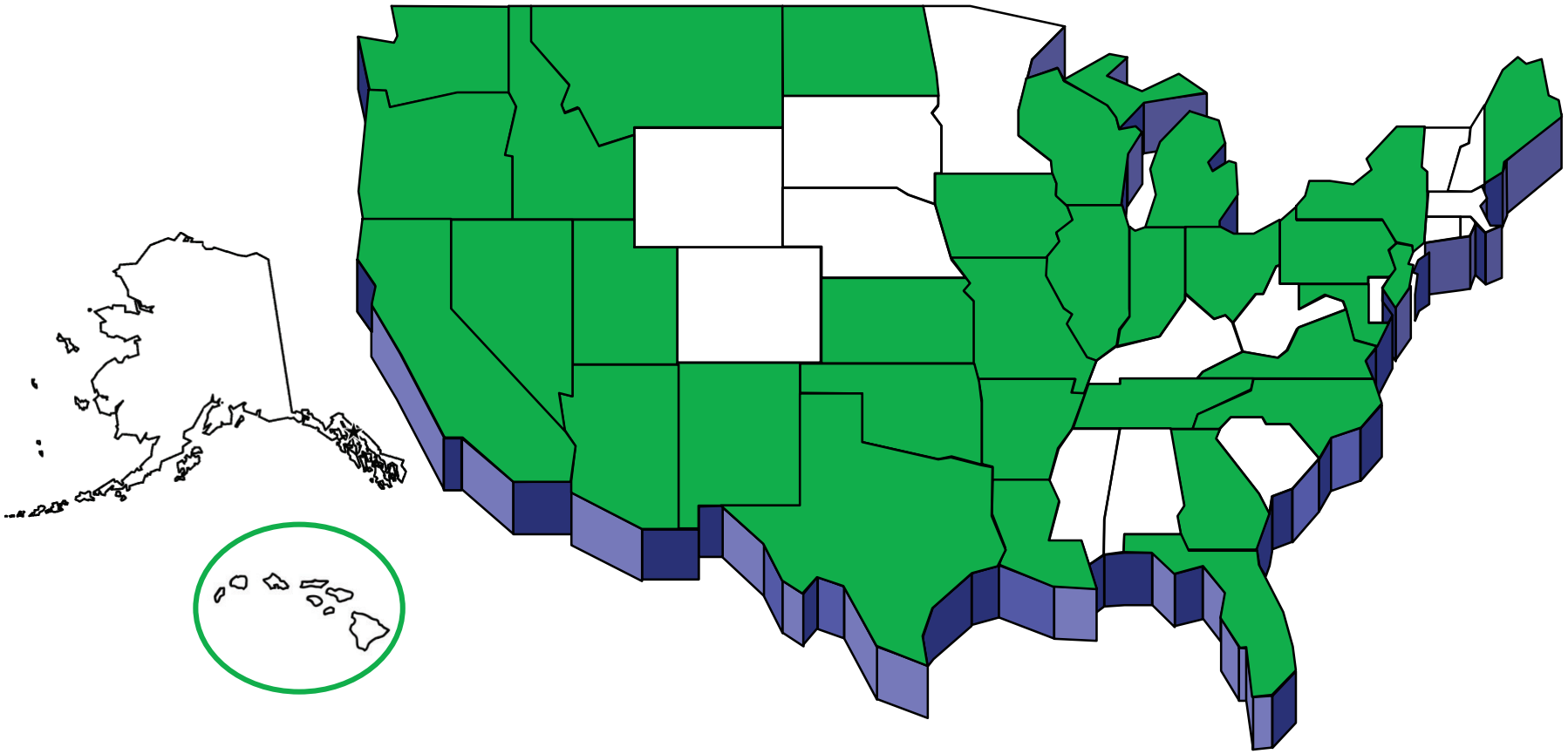
TRB Webinar

Continuously Reinforced Concrete Pavement (CRCP) – Part 1: Considerations for the Selection of CRCP for Projects

Date: Monday, March 30, 2015
Time: 2:00 PM to 3:30 PM ET

- Sponsored by Transportation Research Board Standing Committees on Portland Cement Concrete Pavement Construction, Rigid Pavement Design, and Pavement Rehabilitation
- State DOT perspectives from Oregon, California, and Texas
- 199 sites with 219 participants

STATE DOT PARTICIPATION – WEBINAR #1



166 individuals from 33 State Highway Agencies

2015 WEBINARS SCHEDULED

TRB Webinar

Continuously Reinforced Concrete Pavement (CRCP) – Part 2: Mechanistic-Empirical Design and Details for CRCP

Date: Wednesday, June 3, 2015
Time: 2:00 PM to 3:30 PM ET

- AASHTO ME design for CRCP
- European design procedures for CRCP
- End treatments and other design details

2015 WEBINARS SCHEDULED

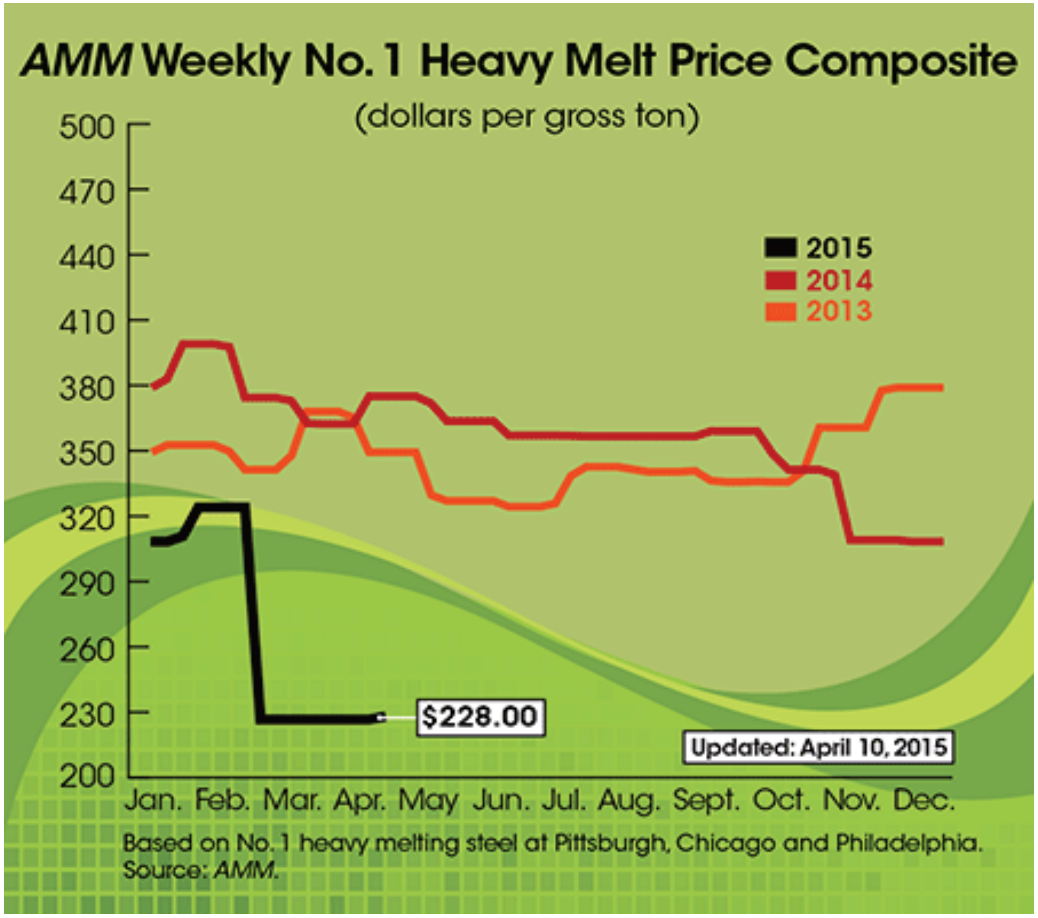
TRB Webinar

Continuously Reinforced Concrete Pavement (CRCP) – Part 3: Best Practices for Construction, Repair and Rehabilitation of CRCP

Date: TBD - Fall 2015
Time: TBD

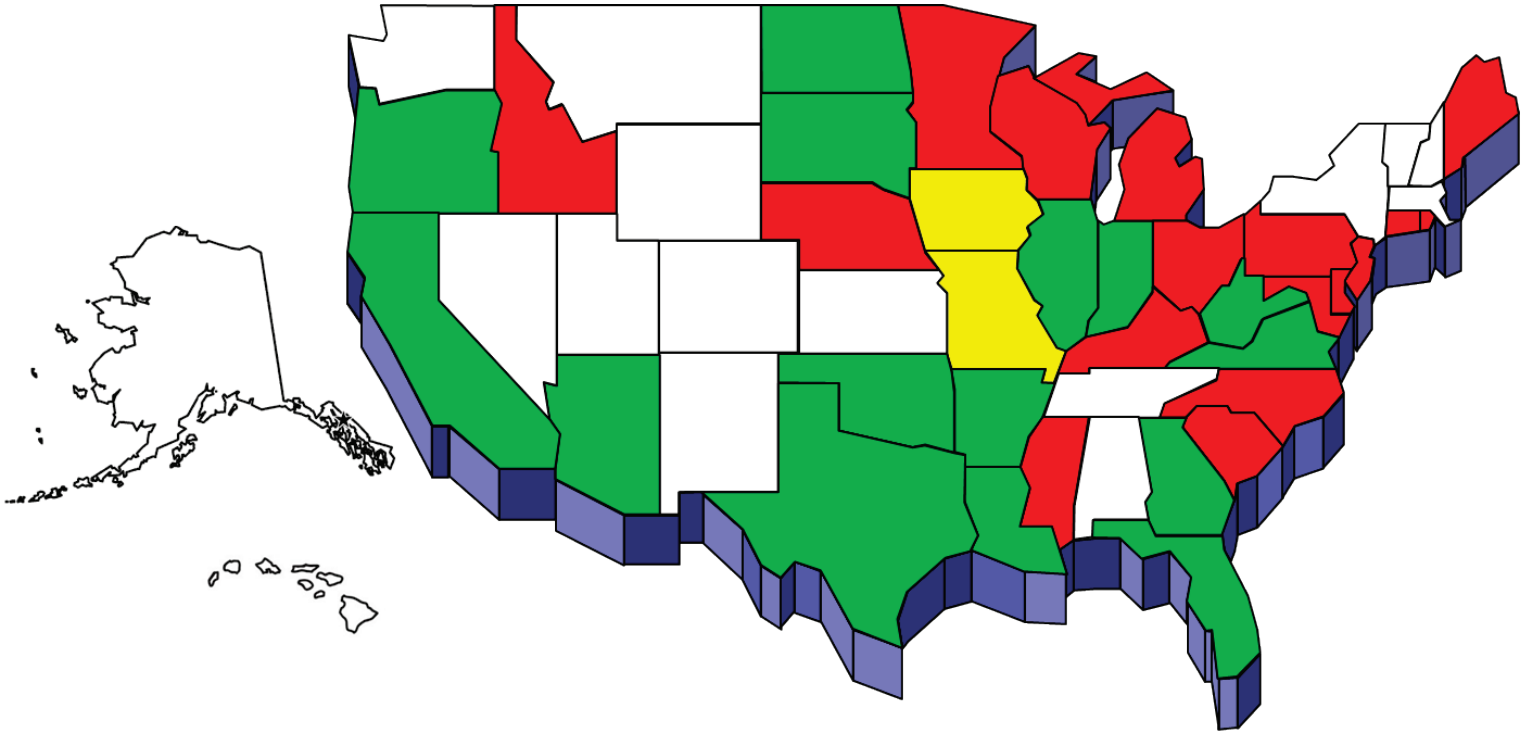
- US construction best practices and case studies
- European construction best practices
- Grinding and overlays for repair and rehabilitation
- Strategies for maintenance of traffic
- Innovative methods for construction

STEEL – A GOOD DEAL



Courtesy of American Metal Market – www.amm.com

CRCP LEVEL OF ACCEPTANCE



- Full understanding of and commitment to CRCP
- Considering the use of CRCP
- Built CRCP in the past but have since discontinued
- Never built CRCP or have no practical experience

As determined by FHWA-CRSI CRCP ETG on 06.04.14.

CRCP WEBSITE

- www.crcpavement.org
- Web-based repository for CRCP information
- Work to be completed by Summer 2015
- Allows for the continuous “seeding” of information
- Will be updated as required

QUESTIONS?