

PROGRAM

“CONCRETE PAVEMENTS:
THINKING BIGGER,
THINKING BETTER”

ELEVENTH INTERNATIONAL CONFERENCE ON CONCRETE PAVEMENTS San Antonio, Texas USA AUG 28-SEPT 1 2016

Organized by: International Society for Concrete Pavements
In Collaboration with: Australian Society for Concrete Pavements (ASCP)
European Concrete Paving Association (EUPAVE)
Texas Department of Transportation (TxDOT)
U.S. Federal Highway Administration (FHWA)
In Cooperation with: San Antonio Convention & Visitors Bureau

ISCP GRATEFULLY ACKNOWLEDGES THE CONTRIBUTIONS
OF ITS SPONSORS & COLLABORATORS, INCLUDING:

GOLD

CEMEX



Lehigh Hanson
Heidelberg Cement Group
Lehigh Hanson
HEIDELBERGCEMENT Group

SILVER

American Concrete
Pavement Association (ACPA)



AZZ Galvanizing/
International Zinc
Association



National Precast
Concrete Association (NPCA)



BRONZE

LafargeHolcim



Otto Alte-Teigeler GmbH



Texas Lehigh Cement LP



Organized by: International Society for Concrete Pavements
In Collaboration with: Australian Society for Concrete Pavements (ASCP)
European Concrete Paving Association (EUPAVE)
Texas Department of Transportation (TxDOT)
U.S. Federal Highway Administration (FHWA)
In Cooperation with: San Antonio Convention & Visitors Bureau



Sponsors and Collaborators	1
Welcome Message	3
Reviewers	4
ISCP Officers & Directors, ISCP Mission, ISCP Membership Information	5
General Information	6
Conference and Exhibit Hall Floor Plan	7
Schedule-at-a-Glance	8 - 9
List of Exhibitors & Exhibit Hall Floor Plan	10 - 11
Detailed Schedule	12 - 19
Student Poster Competition Presentations	20-21
Special Workshop: Streets and Local Roads	22
“Hot Topic” Workshops:	22 - 31
1: Roller-Compacted Concrete	
2: Continuously Reinforced Concrete Pavements CRCP	
3: Concrete Recycling	
4: FAARField Airport Pavement Design	
5: Full-Depth Reclamation (FDR)	
6: Performance-Engineered Mixtures PEM	
7: Precast Pavement Systems	
8: Concrete Overlays	
9: Industrial Concrete Pavements	
10: Lightweight Aggregate/Internal Curing	
Technical Visits/Field Trips	32-33
Personal Day Planner	34
Sponsors	back cover

The International Society for Concrete Pavements (ISCP) is holding the 11th International Conference on Concrete Pavements (11th ICCP) August 28-September 1, 2016 in San Antonio, Texas, USA in conjunction with the National Concrete Consortium (NCC) Fall Meeting. This conference is held every 4 years and carries on the tradition of a series of international conferences begun in 1977 by Purdue University, and now organized by ISCP. As with the previous international conferences, the focus of the eleventh conference is to present information on new technologies related to the design, construction and rehabilitation of various types of concrete pavements. ★ This conference is targeted for pavement, materials, and geotechnical engineering professionals who are involved in any aspect of concrete pavement design, construction, testing, evaluation, and rehabilitation including:

- ★ Federal, state, provincial and municipal engineers ★
- ★ Consulting engineers ★
- ★ Contractors ★
- ★ Materials suppliers ★
- ★ Academia ★

CONFERENCE CHAIR
Leif Wathne, *American Concrete Pavement Association*

CONFERENCE CO-CHAIR
Tim Smith, *Lafarge-Canada*

LOCAL ORGANIZING COMMITTEE CHAIR
Corey Zollinger, *CEMEX*

TECHNICAL PROGRAM/PAPER REVIEW
Tom Burnham, *Minnesota DOT*

STUDENT COMPETITION
Somayeh Nassiri, *Washington State University*

INTERNATIONAL PROMOTION
Mark B. Snyder, *Engineering Consultant*

WORKSHOPS
Peter Taylor,
National Concrete Pavement Technology Center

EX OFFICIO
Jeff Roesler, *President-ISCP, University of Illinois*
Jake Hiller, *Secretary-Treasurer-ISCP &
Michigan Technological University*

Dear Conference Participant:

It is with great pleasure that we welcome you to the **11th International Conference on Concrete Pavements**! We hope that the technical and social activities will meet or exceed your expectations, and that your visit to San Antonio, Texas will be pleasurable. We anticipate having more than 400 attendees representing more than 30 countries. Please enjoy this opportunity for professional development and friendship within this gathering of international colleagues! A few items to note . . .

CONFERENCE PROCEEDINGS — The Conference backpack that you will receive on site will include a USB flash drive with electronic versions of the Conference Proceedings, the student posterboards and selected workshop materials. Hard copies of the Conference Proceedings may be available for a fee upon request (request forms are available at the Conference registration desk). Please visit the registration desk for more details.

MEALS & BREAKS — will be provided in the Exhibit Area.

REGISTERED DELEGATES — Please wear your conference badge for all conference activities. Only registered delegates should be attending presentation sessions, workshops, and field trips—badges are required, or you may be asked to leave. There will be a Welcoming Reception on Sunday evening and a Reception and Gala Awards Banquet on Wednesday evening. Admission to these two events is included with your conference registration.

SPOUSE-GUEST HOSPITALITY ROOM — A Hospitality Room will be available for the enjoyment and relaxation of registered spouses and guests from Monday morning though noon Thursday. Light refreshments will be available.

TECHNICAL DISCUSSIONS — of any published paper may be submitted in writing before September 15, 2016. Authors will have until September 30, 2016 to provide written responses. The discussions and responses will be available on ISCP's website after October 15, 2016.

Enjoy the Conference!



Leif Wathne
11th ICCP Conference Chair


Jeff Roesler
ISCP President



ISCP EDITORIAL COMMITTEE:

Tom Burnham, Editorial Chair, Minnesota DOT
Michael Darter, Applied Research Associates, Inc.
Rico Fung, Cement Association of Canada
Daba Gedafa, University of North Dakota

Charlie Greer, MACTEC (Retired)
Tom Kazmierowski, Golder Associates Ltd.
Lev Khazanovich, University of Minnesota
Qiang Wang, SRA International



REVIEWERS

The 11th ICCP would not be possible without the efforts of all of the authors and reviewers of all of the manuscripts that were submitted for consideration. The 11th ICCP committee gratefully acknowledges the contributions of the following reviewers:

Gina Ahlstrom Federal Highway Administration	Sunghwan Kim Iowa State University
Kevin Alland University of Pittsburgh	Jeffrey R. LaHucik University of Illinois at Urbana-Champaign
Ahmad A. Ardani Federal Highway Administration	Todd Laker Holcim (US) Inc.
Jamshid Armaghani Global Sustainable Solutions, LLC	Carl Lenngren SWECO Civil
Geoff Ayton MIEAust	Hui Li University of California Pavement Research Centre
Manik Barman University of Minnesota-Duluth	Xinkai Li Harbin Institute of Technology
Marina Beaudoin Ministry of Transportation of Quebec	Litao Liu Entech Civil Engineers, Inc.
Anne Beeldens Belgian Road Research Centre	James W. Mack CEMEX
Fatih Bektas Iowa State University	Swati Maitra Indian Institute of Technology-Kharagpur
Ronald Blab Vienna University of Technology	Tim Martin CTLGroup
Peter Bly U.S. Army Engineer Research and Development Center	Ben McWade Regional Municipality of Durham
Abbas Booshehrian University of Minnesota	Alan Meadors American Concrete Pavement Association
Amanda Bordelon University of Utah	Richard C. Meininger Turner-Fairbank Highway Research Center
Alexander Brand National Institute of Standards & Technology	David Merritt The Transtec Group, Inc.
Rolf Breitenbücher Ruhr-University Bochum	T. Reed Miller Massachusetts Institute of Technology
David Brill Federal Aviation Administration	Dennis Morian Quality Engineering Solutions, Inc.
Anna-Carin Brink AECOM	Feng Mu CEMEX
Wouter C. Brink Applied Research Associates	Hari Nair Virginia Transportation Research Council
Neeraj Buch Michigan State University	Somayeh Nassiri Washington State University
Riaan Burger The South African National Roads Agency SOC Ltd	Tatsuo Nishizawa Ishikawa National College of Technology
Tara Cavalline University of North Carolina-Charlotte	Sam Owusu Ababio University of Wisconsin Platteville
Halil Ceylan Iowa State University	Bryan Perrie The Concrete Institute
George Chang The Transtec Group, Inc.	Linda M. Pierce NCE
Liangliang Chen Broadvision Engineering Consultants	David Pittman US Army Corps of Engineers
Pieter De Winne Flemish Agency for Roads and Traffic	Michael Plei Commercial Metals Co.
Daniel DeGraaf Michigan Concrete Association	Cody Preston Geneva Rock Construction
John Depman Consultant	Shreenath Rao Applied Research Associates
John DeSantis University of Pittsburgh	Luc Rens FEBELCEM
Ellen Dolk Swedish National Road & Transport Research Institute (VTI)	John P. Ries ESCSI Inc.
John Donahue Missouri DOT	Randell C. Riley American Concrete Pavement Association-IL.
Louw du Plessis CSIR Built Environment	Robert Rodden PNA Construction Technologies
Eric Ferrebee American Concrete Pavement Association	Jeff Roesler University of Illinois at Urbana-Champaign
Katelyn Freeseaman University of Minnesota	Rich Rogers Cement Council of Texas
Jeffrey Gagnon Federal Aviation Administration	Pedro Romero University of Utah
Georgene M. Geary GGF&A Engineering, LLC	Steve Sachs University of Pittsburgh
Nasir G. Gharaibeh Texas A&M University	Chhote Saraf Resource International Inc.
Steve Gillen Illinois State Toll Highway Authority	Eric Saunderson Region of Waterloo
Michal Glinicki Polish Academy of Sciences	Charles Scholer Purdue University (Retired)
Marcelo Gonzalez Pontificia Universidad Católica de Chile	Sushobhan Sen University of Illinois at Urbana-Champaign
Kasthurirangan Gopalakrishnan Iowa State University	Johan Silfwerbrand KTH Royal Institute of Technology
Jeremy Gregory Massachusetts Institute of Technology	Kurt D. Smith Applied Pavement Technology
Jim Grove Federal Highway Administration	Peter Smith Fort Miller Group Inc
Jagan M. Gudimetlla Federal Highway Administration/ATI Inc.	Mark B. Snyder Consultant
Edward Guo Private Consultant	Boris Stein Twining, Inc.
Ankit Gupta Indian Institute of Technology (BHU) Varanasi	Erol Tutumluer University of Illinois at Urbana-Champaign
Affan Habib Virginia DOT	Samuel S. Tyson Federal Highway Administration
Syed W. Haider Michigan State University	Jeff Uhlmeyer Washington DOT
Gregory Halsted Concrete Reinforcing Steel Institute	Kejin Wang Iowa State University
Liv Haselbach Washington State University	Leif Wathne American Concrete Pavement Association
Kyle Hoegh Minnesota DOT	Jason Weiss Oregon State University
D. Holmgren Utah Department of Transportation	Craig Whitaker Leighton Holdings Pty Ltd
Santiago Huerta Minnesota Department of Transportation	Nancy Whiting Transportation Research Board
Mustapha A. Ibrahim University of Illinois at Chicago	James Wilde Minnesota State University, Mankato
Takeo Ishida Cement & Construction Materials Co., Ube Industries	Stacy G. Williams University of Arkansas
Bernard Izevbekhai Minnesota Department of Transportation	Moon Won Texas Tech University
Newton Jackson NCE	Yuanjie Xiao Central South University
George Juriaans ECCRA	Xin Xu Massachusetts Institute of Technology
L. R. Kadiyali L.R. Kadiyali & Associates	Shuo Yang Iowa State University
Jacek Katzer Koszalin University of Technology	Hao Yin Gemini Technologies, Inc.
Takayuki Kazato Nippon Expressway Corporation	Isamu Yoshitake Yamaguchi University
Yoshitaka Kazato Nippon Expressway Research Institute Co. Ltd	Kyong-Ku Yun Kangwon National University
John T. Kevern University of Missouri-Kansas City	Matt Zeller Concrete Paving Association of Minnesota

ISCP OFFICERS

EXECUTIVE COMMITTEE

President Jeff Roesler University of Illinois (USA)
Vice-President Bryan Perrie The Concrete Institute (S. Africa)
Secretary-Treasurer Jake Hiller Michigan Technological University (USA)
Past President Neeraj Buch Michigan State University (USA)

DIRECTORS (through January 31, 2019)
Anna-Carin Brink AECOM (Australia)
Juan Pablo Covarrubias TCPavements (Chile)
Rolf Breitenbücher Ruhr-Universität Bochum (Germany)
Erwin Kohler Dynatest Consulting, Inc. (Chile)
Luc Rens FEBELCEM (Belgium)
Peter Taylor National Concrete Pavement Technology Center (USA)
Corey Zollinger CEMEX (USA)

DIRECTORS (through January 31, 2017)
Leif Wathne American Concrete Pavement Association (USA)
Lev Khazanovich University of Minnesota (USA)
Somayeh Nassiri Washington State University (USA)
Tim Smith Lafarge Canada, Inc. (Canada)
Sherry Sullivan Cement Association of Canada (Canada)
George Vorobieff NSW Roads & Maritimes Services (Retired) (Australia)

★ In addition to the elected officers and directors, representatives of regional and international organizations—with strong interests in concrete paving—serve as liaisons to the ISCP Board of Directors. ★ Organizations interested in establishing a liaison with ISCP are encouraged to contact: Jeff Roesler, President-ISCP: E-mail: president@concretepavements.org. ★ For more information, please go to: www.concretepavements.org.

ISCP Mission: Organized in 1998, ISCP's mission is to further engineering and technical education, scientific investigation and research in all areas related to the analysis, design, construction, materials, maintenance, rehabilitation and management of concrete pavements.

ISCP Membership: Several grades of ISCP Membership are available including: Individual ★ Student ★ Organization ★ Honorary Please contact: Jake Hiller, Secretary-Treasurer, ISCP: E-mail: secretary-treasurer@concretepavements.org. ★ For membership information, please go to: www.concretepavements.org.

Current ISCP Members: ISCP is seeking members to serve on various committees and to actively participate in other activities of the Society. If you are interested in being a more active member of ISCP, please contact an ISCP Officer or Director.



GENERAL INFORMATION

Proceedings: The Conference backpack that you will receive on site will include a USB flash drive with electronic versions of the Conference Proceedings, the student posterboards and selected workshop materials. Hard copies of the Conference Proceedings may be available for a fee upon request (request forms are available at the Conference registration desk). Please visit the registration desk for more details.

Official Language: The official language of the conference is English.

Registration: All Conference speakers and delegates must be registered for the event. Registered delegates (including students) are entitled to attend all technical sessions and workshops, the exhibit hall, the *Welcoming Reception* and *Gala Awards Banquet*, all other meals and snack breaks, and will receive an electronic copy of the Conference Proceedings.

Spouses & Guests: Registered spouses and guests are welcome to attend the Sunday Reception and Wednesday Awards Banquet, and will have exclusive access to the Spouse/Guest Hospitality Room. They are also welcome to join the conference delegates for all breakfasts, Monday morning break, and the Wednesday afternoon break. Food may also be provided or available for purchase on the Monday afternoon "Welcome to Our City Tour", the Tuesday all-day "Fredericksburg & Texas Hill Country Wine Tour", and the Wednesday morning "The Mission Only Tour". Please sign up for these tours on the conference website before the conference as space is limited; on-site tour registration will be available at the conference registration desk.

High Speed Internet Access: Wired and wireless internet are available throughout the Marriott Rivercenter. This access is free of charge in the lobby and other public spaces (e.g. restaurants). CEMEX is sponsoring complimentary Wi-fi service in the conference session and exhibitor areas. Delegates staying at the Marriott are entitled to receive a 50% reduction in the cost of basic internet service in guest rooms.

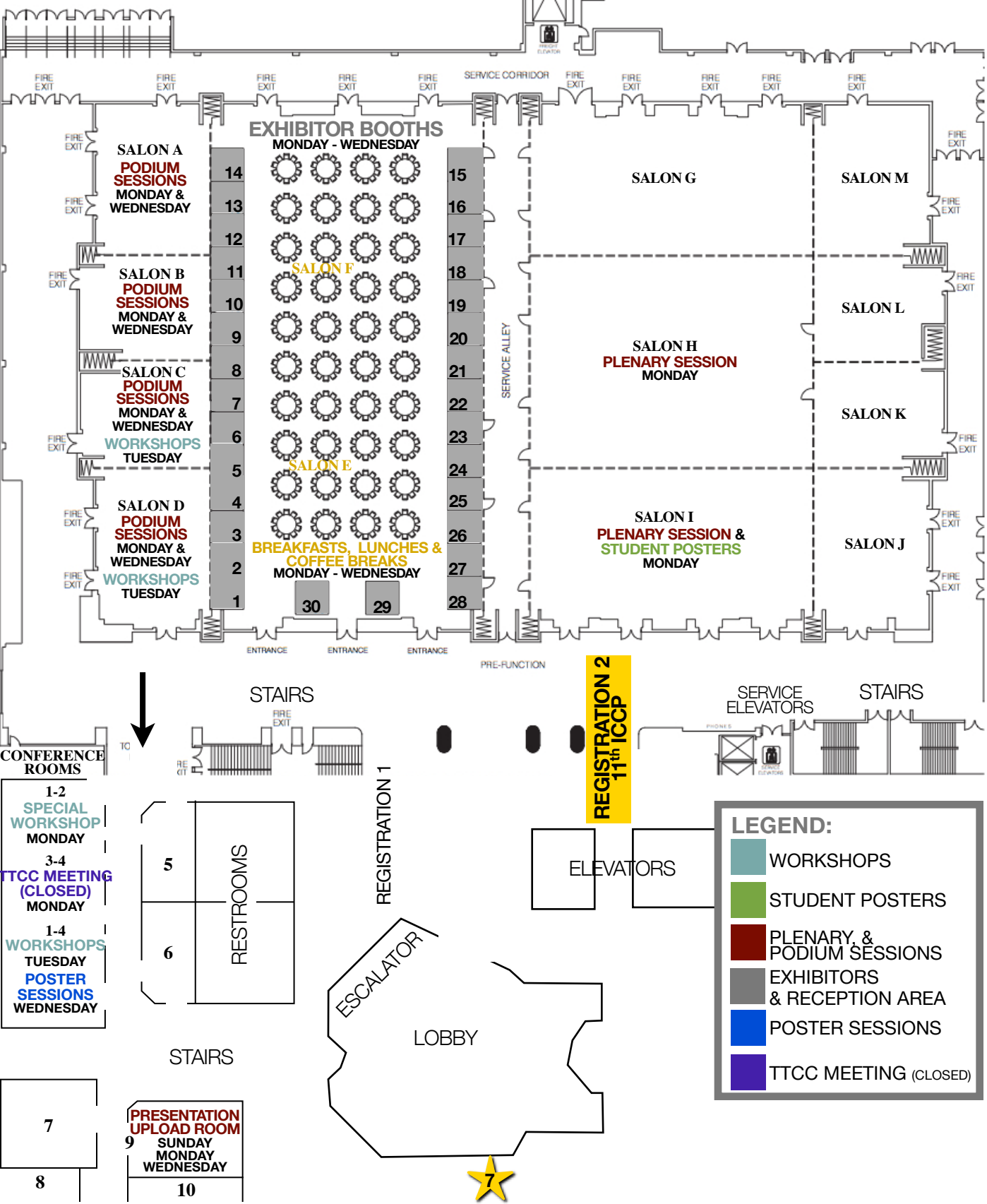
Business Services: Copy service • Fax service • Full-service Business Center • Network/Internet printing • Notary public • Staffed On-site Business Center Overnight Delivery/Pickup • Post/Parcel • Secretarial Service (Please inquire at the Marriott Front Desk)



To view the **Marriott Business Services and Technology** services, please go to: <http://www.marriott.com/hotel-meetings/satrc-san-antonio-marriott-rivercenter/modules/meetings/event-services.mi>.



CONFERENCE & EXHIBIT HALL FLOOR PLAN



SCHEDULE AT A GLANCE

Sunday, August 28
12:00 to 17:00 REGISTRATION (Registration Desk 2 and Foyer)
13:00 to 17:00 EXHIBITOR SET UP (EXHIBIT HALL: SALONS E-F)
13:00 to 17:00 Presentation Upload Room (CONF. ROOM 9)
Open for all speakers appearing in Plenary & Podium Sessions
18:00 to 20:00 WELCOME RECEPTION: Buckhorn Saloon and Museum
(10-minute walk from the Marriott)

Monday, August 29
07:00 to 08:30 BREAKFAST (EXHIBIT HALL: SALONS E-F)
07:00 to 19:00 EXHIBITION HALL OPEN (EXHIBIT HALL: SALONS E-F)
07:00 to 17:30 REGISTRATION (Registration Desk 2 and Foyer)
07:00 to 16:00 Presentation Upload Room (CONF. ROOM 9)
Open for all speakers appearing in Plenary & Podium Sessions
08:30 to 19:00 Spouse/Guest Hospitality Room Open
08:30 to 10:15 Plenary Session Honoring B. Frank McCullough (SALONS H-I)
10:15 to 10:45 BREAK (EXHIBIT HALL: SALONS E-F)
10:45 to 13:30 Student Poster Board Set Up (SALON I)
10:45 to 12:30 Podium Session 1a—Innovations in the Design & Construction of CRCP (SALONS A-B)
Podium Session 1b—Concepts Toward Sustainability (SALONS C-D)
12:30 to 13:30 LUNCH (EXHIBIT HALL: SALONS E-F)
13:30 to 17:30 TTCC—Technology Transfer for Concrete Consortium Meeting
(closed meeting) (CONF. ROOMS 3-4)
Special Workshop: Streets and Local Roads (CONF. ROOMS 1-2)
Student Poster Board Presentation (SALON I)
13:30 to 15:15 Podium Session 2a—Steps Forward in Testing & Instrumentation (SALONS A-B)
Podium Session 2b— Driving Toward Improved Surface Characteristics (SALONS C-D)
15:15 to 15:45 BREAK (EXHIBIT HALL: SALONS E-F)
15:45 to 17:30 Podium Session 3a—Composite Pavements-When One Layer is Not Enough (SALONS A-B)
Podium Session 3b—New Developments in Design (SALON C-D)
17:30 to 19:00 RECEPTION with EXHIBITORS (EXHIBIT HALL: SALONS E-F)
DINNER ON YOUR OWN

Tuesday, August 30
07:00 to 08:30 BREAKFAST (EXHIBIT HALL: SALON E-F)
07:00 to 17:30 EXHIBITION HALL OPEN (EXHIBIT HALL: SALONS E-F)
08:30 to 19:00 Spouse/Guest Hospitality Room Open
08:30 to 12:30 Workshop 1: Roller-Compacted Concrete (RCC) (CONF. ROOMS 1-2)
Workshop 2: Continuously Reinforced Concrete Pavements (CRCP) (CONF. ROOMS 3-4)
Workshop 3: Concrete Recycling (SALON A)
Workshop 4: FAARField Airport Pavement Design (SALON B)
Workshop 5: Full-Depth Reclamation (FDR) (SALONS C-D)
10:15 to 10:45 BREAK (EXHIBIT HALL: SALONS E-F)
12:30 to 13:30 LUNCH (EXHIBIT HALL: SALONS E-F)
13:30 to 17:30 Workshop 6: Performance-Engineered Mixtures (PEM) (CONF. ROOMS 1-2)
Workshop 7: Precast Pavement Systems (CONF. ROOMS 3-4)

Workshop 8: Concrete Overlays (SALON A)
Workshop 9: Industrial Concrete Pavements (SALON B)
Workshop 10: Lightweight Aggregate/Internal Curing (SALONS C-D)
15:15 to 15:45 BREAK (EXHIBIT HALL: SALONS E-F)
17:45 to 19:30 Sesión Especial—Los Pavimentos de Concreto en América Latina (Special Session—Concrete Pavements in Latin America - Presented in Spanish) (SALONS C-D)

Wednesday, August 31
07:00 to 08:30 BREAKFAST (EXHIBIT HALL: SALONS E-F)
07:00 to 15:45 EXHIBITION HALL OPEN (EXHIBIT HALL: SALONS E-F)
07:00 to 16:00 Presentation Upload Room (CONF. ROOM 9)
Open for all speakers appearing in Plenary & Podium Sessions
08:30 to 17:30 Spouse/Guest Hospitality Room Open
08:30 to 10:15 Podium Session 4a—Impacts of Construction Control & Variability (SALONS A-B)
Podium Session 4b—Flying Toward Better Airport Pavements (SALONS C-D)
08:30 to 09:20 Poster Session 4c: Design, Testing and Instrumentation, Economics, Fiber Reinforced Concrete, Sustainability (CONF. ROOMS 1-4)
DESIGN TESTING & INSTRUMENTATION
09:25 to 10:15 Poster Session 4d: Design, Testing and Instrumentation, Economics, Fiber Reinforced Concrete, Sustainability (CONF. ROOMS 1-4)
FIBER-REINFORCED CONCRETE / ECONOMICS & SUSTAINABILITY
10:15 to 10:45 BREAK (EXHIBIT HALL: SALONS E-F)
10:45 to 12:30 Podium Session 5a—Toward Better Understanding of Concrete Overlays (SALONS A-B)
Podium Session 5b—Better Practices for Improved Durability (SALONS C-D)
10:45 to 11:35 Poster Session 5c: Construction Control, Long-Term Performance, Composite Pavements, Recycled Materials (CONF. ROOMS 1-4)
CONSTRUCTION CONTROL & VARIABILITY / LONG-TERM PERFORMANCE
11:40 to 12:30 Poster Session 5d: Construction Control, Long-Term Performance, Composite Pavements, Recycled Materials (CONF. ROOMS 1-4)
COMPOSITE PAVEMENTS/RECYCLED MATERIALS
12:30 to 13:30 LUNCH (EXHIBIT HALL: SALONS E-F)
13:30 to 15:15 Podium Session 6a—Long-Term Performance-How Have They Done? (SALONS A-B)
Podium Session 6b—Recycled Materials-Why Buy New? (SALONS C-D)
13:30 to 14:20 Poster Session 6c: Overlays, CRCP, Internal Curing, Roller Compacted Concrete (CONF. ROOMS 1-4) OVERLAYS / CRCP
14:25 to 15:15 Poster Session 6d: Overlays, CRCP, Internal Curing, Roller Compacted Concrete (CONF. ROOMS 1-4) INTERNAL CURING / ROLLER COMPACTED CONCRETE
15:15 to 15:45 BREAK (EXHIBIT HALL: SALONS E-F)
15:45 to 17:30 Podium Session 7a—Moving Toward Better Economics (SALONS A-B)
Podium Session 7b—Innovations in Rehabilitation (SALONS C-D)
15:45 to 16:35 Poster Session: Various Topics Presented by Members of the Technology Transfer for Concrete Consortium (CONF. ROOMS 1-4)
16:40 to 17:30 Poster Session: Various Topics Presented by Members of the Technology Transfer for Concrete Consortium (CONF. ROOMS 1-4)
18:00 to 18:30 BUSES DEPART MARRIOTT
18:30 to 22:30 RECEPTION AND GALA AWARDS BANQUET AT KNIBBE RANCH
22:30 to 23:00 BUSES DEPART KNIBBE RANCH

Thursday, September 1
08:30 to 12:30 Optional Field Trips (1-2) and Technical Tour
(Breakfast provided to field trip participants)



NOTES

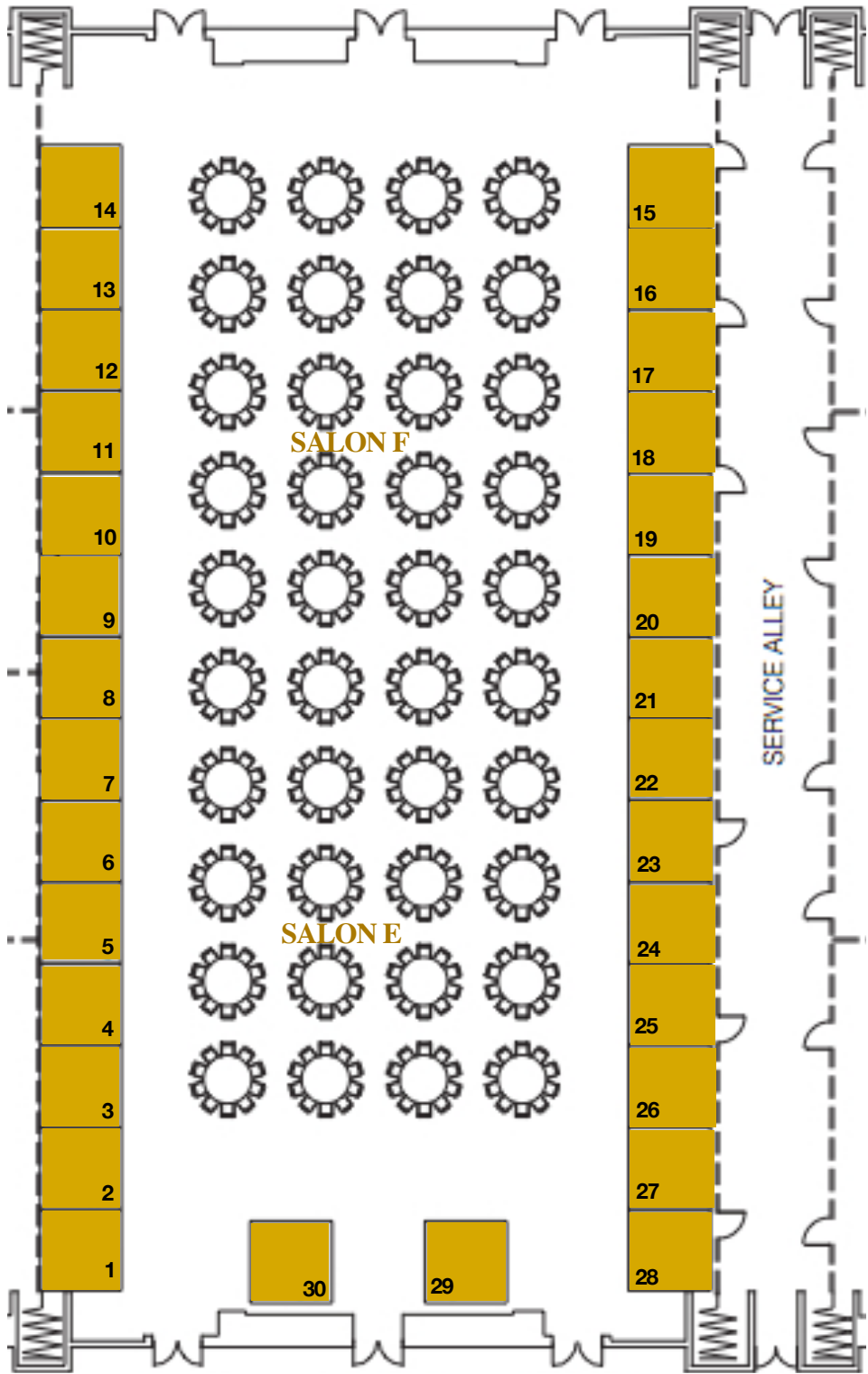
EXHIBITORS' LIST (as of May 31, 2016)

Sunday	August 28	13:00 to 17:00	Exhibitor Set-up
Monday	August 29	07:00 to 19:00	
Tuesday	August 30	07:00 to 17:30	
Wednesday	August 31	07:00 to 15:45	
		15:45 to 17:30	Exhibit Removal

EXHIBITOR	EXHIBIT SPACE
ECSCI	1
RCC Pavement Council	2
Concrete Reinforcing Steel Institute (CRSI)	3
Master Dowel	4
	5
	5
3M	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20
	21
	22
National Precast Concrete Association	23
AZZ Galvanizing / International Zinc Association	24
The Fort Miller Company, Inc.	25
The Transtec Group, Incorporated	26
FORTA Corporation	27
	28
CEMEX	29
LeHigh-Hanson	30



EXHIBIT HALL FLOOR PLAN



**DETAILED SCHEDULE: PODIUM SESSIONS ,
POSTER SESSIONS & PRESENTATIONS & WORKSHOPS**

[illegible]

12:00 to 17:00	REGISTRATION (Registration Desk 2 and Foyer)
13:00 to 17:00	EXHIBITOR SET UP (EXHIBIT HALL: SALONS E-F)
13:00 to 17:00	Presentation Upload Room (CONF. ROOM 9) Open for all speakers appearing in Plenary & Podium Sessions
18:00 to 20:00	WELCOME RECEPTION: Buckhorn Saloon and Museum (10-minute walk from the Marriott)

[illegible]

07:00 to 08:30	BREAKFAST (EXHIBIT HALL: SALONS E-F)
07:00 to 19:00	EXHIBITION HALL OPEN (EXHIBIT HALL: SALONS E-F)
07:00 to 17:30	REGISTRATION (Registration Desk 2 and Foyer)
07:00 to 16:00	Presentation Upload Room (CONF. ROOM 9) Open for all speakers appearing in Plenary & Podium Sessions
08:30 to 19:00	Spouse/Guest Hospitality Room Open
08:30 to 10:15	Plenary Session Honoring B. Frank McCullough (SALONS H-I)
10:15 to 10:45	BREAK (EXHIBIT HALL: SALONS E-F)
10:45 to 13:30	Student Poster Board SET UP (SALON I)
10:45 to 12:30	Podium Session 1a: Innovations in the Design and Construction of CRCP (SALONS A-B) <i>Construction Practices and Details in CRCP</i> Luc Rens (FEBELCEM) <i>Continuously Reinforced Concrete Pavement Terminal Design</i> Anna-Carin Brink (AECOM), and Geoff Ayton <i>Modeling of an Ultra-Thin Continuously Reinforced Concrete Pavement for Design Optimization</i> Riaan Burger (The South African National Roads Agency SOC Lt), P.J. Strauss , and S.J. Bredenhann <i>Ultra-Thin Reinforced Concrete Pavements (UTRCP): Towards the Development of a Structural Design Guideline for South Africa</i> Louw du Plessis (CSIR Built Environment), Erik Denneman , A. Killian , and K. Mngaza
10:45 to 12:30	Podium Session 1b: Concepts Toward Sustainability (SALONS C-D) <i>Albedo as an Engineering Property of Concrete Pavements</i> Sushobhan Sen (University of Illinois at Urbana-Champaign), and Jeff Roesler <i>Emissions-Reducing Benefits of Multi-Functional Photocatalytic Concrete Inlays</i> Daniel King (Iowa Concrete Pavements Asso.), Jeff Roesler , and Sushobhan Sen <i>Approximation Assessment of Photocatalytic Air Cleaning Pavements</i> Jim Alleman (Iowa State University), Joel Sikkema , and Peter Taylor <i>Accelerated Urban Concrete Paving-UDOT SR-39 (12th Street, Ogden Utah)</i> David Holmgren (Utah Department of Transportation), Todd Laker , Mitzi McIntyre , and Cody Preston
12:30 to 13:30	LUNCH (EXHIBIT HALL: SALONS E-F)

12

(MONDAY AUGUST 29 CONTINUED)

13:30 to 17:30 **TTCC—Technology Transfer for Concrete Consortium Meeting**
(Closed Meeting) (CONF. ROOMS 3-4)

15:45 to 17:30 **Special Workshop: Streets and Local Roads (CONF. ROOMS 1-2)**
(DETAILS page 22)

13:30 to 17:30 **Student Poster Competition (SALON I) (DETAILS pages 20 to 21)**

13:30 to 15:15 Podium Session 2a: Steps Forward in Testing and Instrumentation (SALONS A-B)

Xuhao Wang (CP Tech Center at Iowa State University), **Peter Taylor**,
and **Xin Wang**

Coefficient of Thermal Expansion of Portland Cement Concrete for Implementation in Pavement Design

Pedro Romero (University of Utah), and **Michael Rigby**
Characterizing the Movement of Thin Concrete Overlay Slabs Subject to Truck Loads
Tom Burnham (Minnesota Department of Transportation), **Santiago Huerta**,
 and **Manik Barman**

Development of a Portable Device for Measuring Curling and Warping in Concrete Pavements

Shuo Yang (*Iowa State University*), **Halil Ceylan**, **Sunghwan Kim**,
Kasthurirangan Gopalakrishnan, and **Robert F. Steffes**

13:30 to 15:15 Podium Session 2b: Driving Toward Improved Surface Characteristics (SALONS C-D)

Rolling Resistance/Texture on Concrete Pavements in The Netherlands

Wim Kramer (Cement&BetonCentrum), Fred Reinink, and Jan Hooghwerff

Using Neural Networks for Pavement Rolling Resistance

Carl Lenngren (SWECO Civil), and Reus Salini

COPS - Concrete with Open Porous Surface

Rolf Breitenbücher (*Ruhr-University Bochum*), and **Christoph Schulte-Schrepping**

Investigation of Curling and Warping on US 34 near Greeley, Colorado

David Merritt (*The Transtec Group, Inc*), **George Chang** and **Helga Torres**.

15:15 to 15:45 BREAK (EXHIBIT HALL: SALONS E-F)

15:45 to 17:30 Podium Session 3a: Composite Pavements - When One Layer Is Not Enough (SALONS A-B)

Durable Two-Lift Concrete Pavements with Different Cements

Rolf Breitenbücher (Ruhr-University Bochum), **Horst Michael Ludwig**,
Christoph Schulte-Schrepping, and **Matthias Müller**

Construction of a Cement Concrete Pavement in a Hilly Terrain in India

Ramkanwar Jain (Former Chief Engineer Haryana PWD),

C. Mruthyunjaya Swamy, B. B. Pandey, and Shri B. T. Jwalendra Kumar

Variation of Water-Cement Ratio at Cellular Sprayed Concrete for

Two-Lift Concrete Pavement

Kyong-Ku Yun (*Kangwon National University*), **Jin-Woolk Jo**, **Seung-Yeon Han**,
and **Kyeo-Re Lee**

SHRP2 R21 Project Implementation: Two-Lift Concrete Paving on I-65, Nashville
Linda M. Pierce (NCE), Mark B. Snyder, Kurt D. Smith, and Jamie L. Waller

15:45 to 17:30 Podium Session 3b: New Developments in Design (SALONS C-D)

Local Calibration of Joint Faulting Model by Using Resampling Techniques

Syed W. Haider (Michigan State University), **Wouter C. Brink**,

Neeraj Buch, and Lev Khazanovich

Assessment of Load Transfer Across transverse Joints

Katharina Foltin (Vienna University of Technology),

Lukas Eberhardsteiner, Kristina Bayraktarova, and Ronald Blab

13



The Development of Structural Design Method of Composite Pavement in Japan
Takayuki Kazato (Nippon Expressway Corporation), **Keizo Kamiya**,
Shigeki Takahashi, and **Tatsuo Nishizawa**
Need-Based Advancements in Making Concrete Pavements
Vir Vikram Arora (Central Road Research Institute), **Satish Sharma**,
Satander Kumar, and **Puneet Kaura**
Ultra-Thin Concrete Pavement Design, And it's Application in Low Volume Road in Chile
Juan Pablo Covarrubias V (Comercial TCPavements)

Tuesday, August 30 ★

15:15 to 15:45 **BREAK (EXHIBIT HALL: SALONS E-F)**

17:45 to 19:30 **Sesión Especial—Los Pavimentos de Concreto en América Latina (Special Session—Concrete Pavements in Latin America - Presented in Spanish) (SALONS C-D)**

En la última década, Los pavimentos de hormigón han vuelto a la escena en los caminos y carreteras de América Latina. Este Taller se enfocará en mostrar las nuevas tecnología aplicadas y la experiencias reales sobre la incorporación de estas como alternativa. Se presentaran los casos de éxito de México, Guatemala y Chile.

Ing. Victor Roco Herrera (Jefe del Laboratorio Nacional de Vialidad-Ministerio de Obras Públicas),

Ing. Francisco Moreno Fierros (Subdirector de Estudios, Proyectos y Desarrollo Tecnológico-CAPUFE, Mexico),

Ing. Hugo Gonzalez (Cementos Progreso, Gerente I+D Infraestructura-Centro de Investigación y Desarrollo, Guatemala)

14

07:00 to 08:30	BRKFEST (EXHIBIT HALL: SALON E-F)
07:00 to 15:45	EXHIBITION HALL OPEN (EXHIBIT HALL: SALONS E-F)
07:00 to 16:00	Presentation Upload Room (CONF. ROOM 9) Open for all speakers appearing in Plenary & Podium Sessions
08:30 to 17:30	Spouse/Guest Hospitality Room Open
08:30 to 10:15	Podium Session 4a: Impacts of Construction Control and Variability (SALONS A-B) <i>Keys to a Quality Culture</i> Jim Grove (Federal Highway Administration/ATI Inc.), Mike Praul , Jagan M Gudimetla , Peter Taylor , and Peter Capon <i>Impact of Materials and Construction Variability on the Performance of Pavements</i> Michael Darter (Applied Research Associates, Inc.) <i>Development and Demonstration of NDT for Evaluating the Curing Effectiveness of Concrete Pavement Construction</i> Peizhi Sun (Texas A&M University), and Dan Zollinger <i>Impact of Joint Sawing Timing and Depth on Random Cracking: A Case Study</i> Michael Darter (Applied Research Associates, Inc.)
08:30 to 10:15	Podium Session 4b: Flying Toward Better Airport Pavements (SALONS C-D) <i>Concrete Overload Test at the FAA National Airport Pavement Test Facility</i> Hao Yin (Gemini Technologies, Inc.), and David Brill <i>Specifications for Concrete Airfield Pavements: Significance of Test Methods for Avoiding Owner-Contractor Disagreements</i> Toy Poole (CTLGroup), and Tim Martin <i>Development of LCA-AIR—An Airport Pavement Life Cycle Assessment Tool</i> John Kulikowski (University of Illinois at Urbana-Champaign), Mohammed Sawalha , Michael Sladek , and Jeff Roesler <i>Time Line of Airport Use of Continuously Reinforced Concrete Pavement</i> Michael Plei (Commercial Metals Co.) <i>FAA Guidance: Airfield 'Pavement Related' Advisory Circulars</i> Gregory Cline (Federal Aviation Administration)
08:30 to 09:20	Poster Session 4c: Design, Testing and Instrumentation, Economics, Fiber Reinforced Concrete, Sustainability (CONF. ROOMS 1-4) <i>Optimizing Designs of Structurally Stable Open-graded Aggregate Bases (OGAB) In Concrete Pavements</i> Yuanjie Xiao (Central South University), Erol Tutumluer , and James Wilde <i>Considerations to Improve the Aggregate Interlock Model for the Joint Load Transfer in Concrete Pavements</i> Peizhi Sun (Texas A&M University), and Dan Zollinger <i>Sensitivity Evaluation and Optimization of Calibration Coefficients of AASHTOWare Pavement ME Design Jointed Plain Concrete Pavement Faulting Models</i> Orhan Kaya , Halil Ceylan , Sunghwan Kim , and Kasthurirangan Gopalakrishnan Iowa State University <i>Localized M-E Design Tool Based on the AASHTO M-E Design Procedure</i> Lev Khazanovich (University of Minnesota), and Derek Tompkins <i>Analyzing Thermal and Composite Stresses of Prestressed Concrete Pavements Using Finite Element Methods</i> Fereidoon Moghadas Nejad (Amirkabir University of Technology), and Ali Gerami Matin <i>Analysis of the Impact of Deicing Salts On Transport Properties of Concrete—Preliminary Results</i> Haejin Kim (SES Group & Associates, LLC), Jussara Tanesi , and Ahmad A. Ardani

08:30 to 09:20
DESIGN
TESTING &
INSTRUMENTATION

Poster Session 4c: Design, Testing and Instrumentation, Economics, Fiber Reinforced Concrete, Sustainability (CONF. ROOMS 1-4)
Optimizing Designs of Structurally Stable Open-graded Aggregate Bases (OGAB) In Concrete Pavements
Yuanjie Xiao (Central South University), **Erol Tutumluer**, and **James Wilde**
Considerations to Improve the Aggregate Interlock Model for the Joint Load Transfer in Concrete Pavements
Peizhi Sun (Texas A&M University), and **Dan Zollinger**
Sensitivity Evaluation and Optimization of Calibration Coefficients of AASHTOWare Pavement ME Design Jointed Plain Concrete Pavement Faulting Models
Orhan Kaya, **Halil Ceylan**, **Sunghwan Kim**, and **Kasthurirangan Gopalakrishnan** Iowa State University
Localized M-E Design Tool Based on the AASHTO M-E Design Procedure
Lev Khazanovich (University of Minnesota), and **Derek Tompkins**
Analyzing Thermal and Composite Stresses of Prestressed Concrete Pavements Using Finite Element Methods
Fereidoon Moghadas Nejad (Amirkabir University of Technology), and **Ali Gerami Matin**
Analysis of the Impact of Deicing Salts On Transport Properties of Concrete—Preliminary Results
Haejin Kim (SES Group & Associates, LLC), **Jussara Tanesi**, and **Ahmad A. Ardani**



15



(WEDNESDAY, AUGUST 31 CONTINUED)

09:25 to 10:15
**FIBER-
REINFORCED
CONCRETE /
ECONOMICS &
SUSTAINABILITY**

A Developed Method of Analyzing Temperature and Moisture Profiles in Rigid Pavement Slabs

Kaijian Huang (Nanjing Forestry University), **Dan Zollinger**, **Xijun Shi**, and **Peizhi Sun**

Poster Session 4d: Design, Testing and Instrumentation, Economics, Fiber Reinforced Concrete, Sustainability (CONF. ROOMS 1-4)

Age-Dependent Flexural Properties of Fiber Reinforced Concrete Used in Thin Overlays

Min Ook Kim (University of Utah), and **Amanda Bordelon**

Strengthening of High-Volume Steel Bridge with a Thin SFR-HSC

George Jurriaans (ECCRA), and **Huub W.A. Vissers**

Design and Construction of a Roundabout in Fibremix Concrete

Wim Kramer (Cement&BetonCentrum), **Marc J. A. Stet**, **Gerard Huisman**, **Jan de Kruijf**, and **Joris van de Vleuten**

Presence of Competition Between Paving Material Substitutes and Impact on Material Costs

Reed Miller (Massachusetts Institute of Technology), **Mehdi Akbarian**,

Omar Swei, **Randolph Kirchain**, and **Jeremy Gregory**

Evaluation of the Albedo-Induced Radiative Forcing and CO₂ Equivalence Savings:

A Case Study on Reflective Pavements in Four Selected U.S. Urban Areas

Xin Xu (Massachusetts Institute of Technology), **Jeremy Gregory**, and **Randolph Kirchain**

10:15 to 10:45

BREAK (EXHIBIT HALL: SALONS E-F)

10:45 to 12:30

Podium Session 5a: Toward Better Understanding of Concrete Overlays (SALONS A-B)

Using Precast Concrete Inlay Panels for Rut Repair on High Volume Flexible Pavements

Dan Pickel (University of Waterloo), **Susan Tighe**, **Rico Fung**, **Stephen Lee**,

Peter Smith, **Tom Kazmierowski**, and **Mark B. Snyder**

Not Concrete or Asphalt but Concrete and Asphalt—A Discussion

Based on Swedish Pavements

Johan Silfwerbrand (KTH Royal Institute of Technology)

Failure Modes in Unbonded Concrete Overlays

Kevin Alland (University of Pittsburgh), **Julie Vandenbossche**, **Steve Sachs**,

John DeSantis, **Tom Burnham**, and **Lev Khazanovich**

Joint Performance in Bonded Concrete Overlays of Asphalt

Julie Vandenbossche (University of Pittsburgh), **John DeSantis**, **Kevin Alland**,

Steve Sachs, **Tom Burnham**, and **Aldo Montenegro**

10:45 to 12:30

Podium Session 5b: Better Practices for Improved Durability (SALONS C-D)

Best Practices for Concrete Pavements—Technical Briefs by Federal

Highway Administration

Samuel S. Tyson (Federal Highway Administration)

Degradation in Pavement Concretes—Effects of Cyclic Loading

on Fluid Transport Processes and ASR

Robin Przondziono (Ruhr-University Bochum), and **Rolf Breitenbücher**

Evaluation of a Continuously Reinforced Concrete Pavement (CRCP)

Containing Recycled Aggregate and Epoxy-Coated Reinforcing

David McDonald (Concrete Reinforcing Steel Institute)

A Road Map for Research and Implementation of Freeze-Thaw

Resistant Highway Concrete

Tara Cavalline (Oklahoma State University), **Tyler Ley**, **Larry Sutter**,

Jason Weiss, and **Tom Van Dam**

(WEDNESDAY, AUGUST 31 CONTINUED)

10:45 to 11:35
**CONSTRUCTION
CONTROL &
VARIABILITY /
LONG-TERM
PERFORMANCE**

Poster Session 5c: Construction Control, Long-Term Performance, Composite Pavements, Recycled Materials (CONF. ROOMS 1-4)

Experimental Evaluation of Consolidation of Behavior of Slipform Paving Concrete Materials

Sili Li (Research Institute of Highway, Ministry of Transportation)

Implementation of Real-Time Smoothness Technology for

Improving Concrete Pavement Smoothness

David Merritt (The Transtec Group, Inc.), **Robert Rasmussen**,

Gary Fick, and **Stephen Cooper**

20-year Performance of SPS-2 Sections in North Dakota

Daba Gedafa (University of North Dakota)

Failures in Bituminous Joint-Sealing in Concrete Pavements

Rolf Breitenbücher (Ruhr-University Bochum), and **Alexander Fischer**

Concrete Pavement Falkenberg, Sweden—A 20 Year Review

Ellen Dolk (Swedish National Road and Transport Research Institute-VTI),

Johan Silfwerbrand, and **Sigurdur Erlingsson**

CRCP Performance Patterns Gleaned from Texas Pavement Management Data

Litao Liu (Entech Civil Engineers, Inc.), **Amir Rashed**, and **Nasir G Gharaibeh**

11:40 to 12:30
**COMPOSITE
PAVEMENTS /
RECYCLE
MATERIALS**

Poster Session 5d: Construction Control, Long Term Performance, Composite Pavements, Recycled Materials (CONF. ROOMS 1-4)

Curing Performance Indicators of Exposed Aggregate Layer in Two-Lift Concrete Pavement

Michal Glinicki (Polish Academy of Sciences), **Mariusz Dabrowski**,

Michał Skrzypczyński, **Daria Jóźwiak-Niedźwiedzka**, and **Karolina Gibas**

Design of Concrete Pavement For the Ohio Turnpike's Mainline

Pavement Replacement, An Innovative Approach

Kamran Majidzadeh (Resource International Inc.), **Chhote Saraf**,

and **Dennis Albrecht, Jr.**

A New Design of Composite Pavement with Asphalt Interlayer

Between CRCP and Cement Treated Base Course

Takayuki Kazato (Nippon Expressway Corporation), **Shiro Motomatsu**,

Naoki Ssuzaki, **Tatsuo Nishizawa**, and **Hitomi Taketsu**

Dispersibility of Silica Fume in Cellular Sprayed Concrete for Simple

and Economic Two-Lift Concrete Pavement

Kyong-Ku Yun (Kangwon National University), **Daee Kim**, and **Kyong Namkung**

MnROAD SHRP2 R21 Composite Concrete Section Performance

After Five-Years of Service

Derek Tompkins (University of Minnesota), **Lev Khazanovich**, and **Michael Darter**

Construction of Interstate Concrete Shoulders Using 100%

Recycled Concrete Aggregate

Georgene M. Geary (GGfGA Engineering, LLC), **Scott Palotta**,

Mike Boyle, and **David Jared**

Replacement of Coarse and Fine Aggregate in Concrete Pavement

Mixtures with Recycled Concrete Aggregate

Alexander Brand (National Institute of Standards and Technology),

Jeff Roesler, and **Andres Salas**

Engineering and Design Considerations for Steel Furnace

Slag Aggregates in Concrete Pavements

Alexander Brand (National Institute of Standards and Technology),

and **Jeff Roesler**

12:30 to 13:30

LUNCH (EXHIBIT HALL: SALON E-F)

13:30 to 15:15

Podium Session 6a: Long Term Performance—How Have They Done? (SALONS A-B)

Quantifying Effective Built-in Temperature Difference for Decades-Old

Jointed Plain Concrete Pavements in Eastern Washington State

Zhao Chen (Washington State University), **Somayeh Nassiri**,

and **Jeff Uhlmeyer**

(WEDNESDAY, AUGUST 31 CONTINUED)

13:30 to 15:15

Effect of Base Type on the Transverse Cracking of Jointed Plain Concrete Pavements—A Study of LTPP SPS-2 Sections
Feng Mu (CEMEX), and **James W. Mack**
Longitudinal Cracking in Alternate Jointed Plain Concrete Panel Widths in Wisconsin
Sam Owusu Ababio (University of Wisconsin Platteville), and **Robert L. Schmitt**
Plain Concrete Highway Pavements in New South Wales Australia 1983 – 2015
John Hodgkinson (Australian Society for Concrete Pavements)

Podium Session 6b: Recycled Materials—Why Buy New? (SALONS C-D)

Experimental Investigation of a Recyclable Fly-Ash Concrete Pavement Having Moderate Slump
Isamu Yoshitake (Yamaguchi University), **Sunao Fukumoto**, **Takeo Ishida**, and **Koichiro Yamato**
Reclaimed Asphalt Pavement in Concrete Pavements: Properties, Microstructure, and Design
Alexander Brand (National Institute of Standards and Technology), and **Jeff Roesler**
I-80 PDR, Concrete Overlay, and Sustainable Concrete Mix Design
Todd Laker (Holcim-U.S. Inc.), **Mitzi McIntyre**, and **Cody Preston**
Recycled Aggregates in Roller-Compacted Concrete
Jeffrey R. LaHucik (University of Illinois at Urbana-Champaign), and **Jeff Roesler**

13:30 to 14:20
**OVERLAYS /
CRCP**

Poster Session 6c: Overlays, CRCP, Internal Curing, Roller Compacted Concrete (CONF. ROOMS 1-4)
Repair of Concrete Pavements Using Thin Concrete Overlays
Rolf Breitenbücher (Ruhr-University Bochum), and **Amela Cokovik**
Long-Term Evaluation of Unbonded Concrete Overlay Technology: A Municipal Case Study
Aleks Kivi (Applied Research Associates), **Susan Tighe**, **Rico Fung**, and **Jozef Grajek**

Performance of Bonded CRCP Overlay in Texas
Pangil Choi (Texas Tech University), and **Moon Won**
Spragues Road Rehabilitation with an Unbonded Concrete Overlay Region of Waterloo, Ontario, Canada
Eric Saunderson (Region of Waterloo), and **Mick Prieur**
Effects of Base Course Restraint on Early Age Transverse Cracking in CRCP
Tatsuo Nishizawa (National College of Technology), **Yoshitaka Kazato**, **Shiro Motomatsu**, and **Hitomi Taketsu Ishikawa**
Crack Behavior in Asphalt Composite CRCP with Basalt Fiber Reinforcement
Yating Zhang (Zhejiang University), **Zhiyi Huang**, and **Jeff Roesler**

14:25 to 15:15
**INTERNAL
CURING
ROLLER
COMPACTED
CONCRETE**

Poster Session 6d: Overlays, CRCP, Internal Curing, Roller Compacted Concrete (CONF. ROOMS 1-4)
Effect of Fine Lightweight Aggregate on Curling Behavior of Concrete Beams
Armen Amirkhanian (Oregon State University), and **Jeff Roesler**
Evaluation of Internally Cured Concrete for Paving Applications
Chetana Rao (Consultant), **Michael Darter**, and **John P. Ries**
Thoughts on the Service Life of Internally Cured Concrete Considering ASR and FT
Jason Ideker (Oregon State University), **Chang Li**, **Wes Jones**, **Michael D.A. Thomas**, and **Jason Weiss**
Full and Partial Internal Curing in Mortar in Terms of Internal Relative Humidity, Hydration and Performance
Javier Castro (Purdue University), **Alva Peled**, and **Jason Weiss**
Performance of Roller Compacted Concrete in Arkansas
Stacy G. Williams (University of Arkansas), **Alan Meadors**, and **Sarah Tamayo**
Development of a Roller-Compacted Concrete (RCC) Fatigue Curve with a Reliability Component from Published RCC Beam Fatigue Data
Robert Rodden (Independent Consultant), **Gerald Voigt**, **Eric Ferrebee**, and **Andrew Gieraltowski**



(WEDNESDAY, AUGUST 31 CONTINUED)

15:15 to 15:45

BREAK (EXHIBIT HALL: SALONS E-F)

15:45 to 17:30

Podium Session 7a: Moving Toward Better Economics (SALONS A-B)

Life Cycle Cost Assessment of Engineered Cementitious Composite (ECC) Precast Pavement in Singapore
Nen Nguyen Dinh (TUM CREATE LTD), **Teron Nguyen**, **En-Hua Yang**, and **Bernhard Lechner**
Economic and Weibull Analysis of Minnesota's High Performance Concrete Pavements
Bernard Izevbekhai (Minnesota Department of Transportation)
Quantifying the Impact of Pavement Diversity at the Network-Level: A Heuristic-Based Approach for Pavement Management
Omar Swei (Massachusetts Institute of Technology), **Jeremy Gregory**, and **Randolph Kirchain**
Improving Network Investment Results by Implementing Competition and Asset Management in the Pavement Type Selection Process
James W. Mack (CEMEX), **Leif Wathne**, and **Feng Mu**

15:45 to 17:30

Podium Session 7b: Innovations in Rehabilitation (SALONS C-D)

Developing Robust Rehabilitation Scenario Profiles for Life Cycle Cost Analysis
James W. Mack (CEMEX), **Jeremy Gregory**, and **Randolph Kirchain**
CRCP on the N49 – How the Repair of the Longitudinal Joint Leads to a Better View on the Crack Formation of CRCP
Anne Beeldens (Belgian Road Research Centre), **Lucie Pertry**, **Pieter De Winne**, **Marijn Lybaert**, and **Pascal Buys**
Implementation of Precast Concrete for Rapid Renewal of Pavements
Samuel S. Tyson (Federal Highway Administration)
Temporary Precast Panels and Self-Consolidating Concrete for Accelerated Slab Replacement
Jamshid Armaghani (Global Sustainable Solutions, LLC), **Kamal Tawfiq**, **Steven Squillacote**, and **Michael Bergin**

15:45 to 16:35

Poster Session: Various Topics Presented by Members of the Technology Transfer for Concrete Consortium (CONF. ROOMS 1-4)
IN DEVELOPMENT

16:40 to 17:30

Poster Session: Various Topics Presented by Members of the Technology Transfer for Concrete Consortium (CONF. ROOMS 1-4)
IN DEVELOPMENT

18:00 to 18:30

BUSES DEPART MARRIOTT

18:30 to 22:30

RECEPTION AND GALA AWARDS BANQUET AT KNIBBE RANCH

22:30 to 23:00

BUSES DEPART KNIBBE RANCH

Thursday, September 1 ★

08:30 to 12:30

Optional Field Trips & Technical Tour:
Field Trip 1
Commercial Metals Company Americas Plant Visit & CRCP Construction Site Visit
Field Trip 2
History of Cement in Texas, Historic Belknap Place (102-Year-Old Concrete Pavement), Capitol Cement Visit, & Lunch @ Alamo Quarry Market
Technical Tour: Federal Highway Administration Mobile Concrete Laboratory (MCL)
(Breakfast provided to field trip participants)



Monday, August 29 • 13:30 to 17:30 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
STUDENT POSTER COMPETITION PRESENTATIONS
SALON I

Graduate and undergraduate college students have submitted posters concerning their research progress in areas related to the performance of concrete pavement systems. Student posters underwent a review prior to their acceptance, and a final evaluation before their presentation at the 11th ICCP. Posterboard judges have been selected from ISCP's membership to represent academia and industry. An **“Outstanding Student Posterboard and Presentation”** will be identified during the conference and subsequently awarded the **B.F. McCullough Award** at the Gala Awards Dinner Wednesday evening. Please be sure to support the newest members of the international concrete pavement engineering community by visiting the student competition and viewing their work!

Poster Title	Student Name, University Affiliation	Poster Location
Laboratory Investigation of Diamond Grinding and Grooving on Concrete Pavements	Ali S. Alqarni, University of Texas	S1
Title	Hessam Azari Jafari, University of Sherbrooke	S2
Fatigue Analysis of Jointed Plain Concrete Pavements in Eastern Washington State Considering Effective Built-in Temperature Difference Effects	Zhao Chen, Washington State University	S3
Properties of Pervious Concrete Reinforced with Recycled Carbon Fiber Composite Particles	Milena Rangelov, Washington State University	S4
Title	Amanullah Temory, Tokai University-Japan	S5
Structural Analysis of Unbonded Concrete Overlays Considering Permanent Deformation of the Interlayer	Kevin Alland, University of Pittsburgh	S6
Frictional Characteristics and Joint Activation within Unbonded Concrete Overlays of Existing Concrete Pavements	John DeSantis, University of Pittsburgh	S7
Performance of Interlayers within Unbonded Concrete Overlays of Existing Concrete Pavements	Steven Sachs, University of Pittsburgh	S8
Using Precast Concrete Panels for Rut Repair on High Volume Asphalt Highways	Dan Pickel, University of Waterloo	S9
Concrete Pavements as part of the Urban Environment	Sushobhan Sen, University of Illinois-Urbana-Champaign	S10
Predicting Endurance Limits of Partially-Cracked Concrete	Omar Jadallah, University of Illinois-Urbana-Champaign	S11
Prediction of Concrete's Albedo from its Constituents	Juan Pablo Mendez-Ruiz, University of Illinois-Urbana-Champaign	S12
Monitoring Setting and Stiffening of Early Age Concrete Using Contactless Ultrasonic Systems	Quang Tran, University of Illinois-Urbana-Champaign	S13
Crack Development and Strain Response of Continuously Reinforced Concrete with Internal Curing	Sachindra Daha, University of Illinois-Urbana-Champaign	S14
Analytical Prediction of CS and CW for CRCP	Yating Zhang, University of Illinois-Urbana-Champaign	S15

Poster Title	Student Name, University Affiliation	Poster Location
Self-Cleaning and Alkali-Silica Reaction Performance of Photocatalytic Cement and Recycled Glass Aggregate	Aniruddha Baral, University of Illinois-Urbana-Champaign	S16
Use of Gyrotory Compactor for Roller-Compacted Concrete Mix Design	Jeff LaHucik, University of Illinois-Urbana-Champaign	S17
Concrete Pavement Thickness and Shear-Wave Velocity Variation Versus Observed Pavement Distresses	Lucio Salles de Salles, University of São Paulo/University of Minnesota	S18
Assessment of Pavement Deflection-Caused Fuel Consumption via Falling Weight Deflectometer Data	Abbas Booshehrian, University of Minnesota-Twin Cities	S19
Electrically Conductive Concrete (ECON) for Application in Airport Heated Pavement Systems	Ali Sassani, Iowa State University	S20
Superhydrophobic (Super-Water-Repellent) Portland Cement Concrete (PCC) for Ice-and Snow-Free Pavement Applications	Ali Arabzadeh, Iowa State University	S21
Title	Payam Vosoughi, Iowa State University	S22
Determining Optimum Air Void Spacing Requirement for a Given Concrete Mixture Design Using Poromechanics	Syeda Rahman, Texas A&M University	S23
Construction and Performance Evaluation of Roller Compacted Concrete Under Accelerated Pavement Testing	Moinul I. Mahdi, Louisiana State University	S24
Evaluation of Curing Compound Application Time on the Surface Durability of Concrete	Le Pham, University of Wisconsin-Madison	S25
Title	Nguyen Dinh Nen, Technical University-Munich	S26
Paneled Concrete in India—A Success Story	Apurv Ashutosh Sharma, Dehli Technological University	S27
Performance of RCC Pavement in Texas Energy Sector	Tyler Speakmon, Texas A&M University	S28

STUDENT POSTER SESSION FLOOR PLAN
SALON I
UNDER DEVELOPMENT



Sponsor:
Cement
Council
of Texas



NOTES

Special Workshop: Streets and Local Roads

Monday, August 29, 2016 • 13:30 to 17:30
CONF ROOMS 1-2

Overview: UNDER DEVELOPMENT

“Hot Topic” WORKSHOPS

“Hot Topic” Workshops provide global perspectives on emerging design, materials and construction topics. Participants will receive hands-on problem-solving opportunities where possible. Software demonstration and handout material will be provided to allow the participants to leave with both broad and in-depth knowledge and tools on the workshop topic. Attendees are encouraged to bring their laptop computers to the workshops to participate in hands-on demonstrations using the latest PCC-related software.

**WORKSHOP
ATTENDEES
ARE ENCOURAGED
TO BRING THEIR
LAPTOPS**



Workshop 1: Roller-Compacted Concrete (RCC)

Moderator: Fares Abdo | E-mail: fabdo@morgan-corp.com
Tuesday, August 30, 2016 • 08:30 to 12:30

Overview: Roller-Compacted Concrete (RCC) pavements have been used in the United States for more than three decades. This rigid pavement method of construction continues to gain recognition mainly due to its speed of construction, cost savings, early opening to traffic, and longevity. In its infancy, RCC pavements utilized harsh mixes for very heavy loads at industrial facilities and intermodal yards. Over time owners and users have demanded improved surface texture, smoothness, and durability. With significant advancements to meet these challenges, RCC began penetrating pavement markets such as automotive plants, distribution centers, city streets and roads, and more. Branching out in these markets would not have been possible without major improvements in mixture design, equipment modifications, and construction means and methods.

The objectives of this workshop are: (1) take a closer look at performance of RCC pavements (2) share the most recent results of ongoing RCC research in the United States (3) discuss important characteristics and capabilities of RCC paving equipment and (4) conduct interactive sessions on mixture design and thickness design. The ultimate goal is to share information and useful tools that participants can later implement to advance RCC pavements design and construction. **Participants are encouraged to bring their laptops.**

Topics and Speakers:

Introduction to RCC Pavements

Fares Abdo, Morgan Corporation

Design of RCC Mixtures

Fares Abdo, Morgan Corporation

Thickness Design of RCC Pavements

Corey Zollinger, CEMEX

Research Advances in RCC Pavements

Jeff Roesler, ISCP President & University of Illinois-Urbana-Champaign

Accelerated Testing of RCC Pavements over Soil Cement of LTRC

Tyson Rupnow, Louisiana Transportation Research Center

Performance Review and Life-Cycle Cost of RCC Pavements

Pete Schmalzer, NCE

RCC Paving Equipment: Requirements for Durable RCC as a Wearing Surface

Will Gray, AG Peltz



Sponsor:
RCC
Pavement
Council



NOTES



Sponsor:
Concrete
Reinforcing
Steel
Institute
(CRSI) /
Federal
Highway
Administra-
tion (FHWA)

CRSI



NOTES

Workshop 2: Best Practices, Case Studies, and Innovations for Continuously Reinforced Concrete Pavements (CRCP)

Moderator: Greg Halstead | E-mail: ghalstead@crsi.org
Tuesday, August 30, 2016 • 08:30 to 12:30

Overview: Today's pavement engineers and managers are always looking for long-term, low maintenance, and highly functional solutions at a reasonable whole-life cost. Continuously reinforced concrete pavement (CRCP) has a long track record of exceptional low-maintenance service in heavy-duty traffic environments. To this end, the Federal Highway Administration and the Concrete Reinforcing Steel Institute have entered into a technology transfer agreement to develop and deliver guidance for implementing the use of CRCP to practicing engineers and contractors. This Workshop is part of that agreement. The Workshop objectives are: to present current practices and innovations for the design and construction of new CRCP and the rehabilitation of existing CRCP; to assist agencies in assuring the long-term performance of CRCP; and, to enable agency decision makers to determine when CRCP is the most viable pavement alternative. The presenters will cover a broad range of topics including CRCP fundamentals, design features and examples, construction case-studies, and agency experiences. Continuous feedback from Workshop participants will be encouraged.

Topics and Speakers:

CRCP Manual Overview

Sam Tyson, Federal Highway Administration

Fundamentals of CRCP and Structural Design

Jeff Roesler, ISCP President & University of Illinois-Urbana-Champaign (USA)

CRCP Reinforcement Details

Mike Plei, Commercial Metals Co.

Overview of CRCP Construction

Shiraz Tayabji, Advanced Concrete Pavement Consultancy LLC

Maintenance, Repair and Rehabilitation of Existing CRCP

Jeff Roesler, ISCP President & University of Illinois-Urbana-Champaign (USA)

New CRCP Applications/Overlays and Roundabouts

Mike Plei, Commercial Metals Co.

Performance of CRCP in the U.S.

Sam Tyson, Federal Highway Administration



Experience with CRCP in Texas

Rich Rogers, Director of Concrete Pavements Cement Council of Texas

CRCP Initiatives in California

Mehdi Parvini, CA DOT ??

Re-Engineering of CRCP by Illinois Tollway

Steve Gillen, Materials Manager, Illinois Tollway

Innovative Steel Placement Techniques

Shiraz Tayabji, Advanced Concrete Pavement Consultancy LLC

Closure

Greg Halsted, CRSI

Workshop 3: Recycled Concrete Aggregate

Moderator: Tom Cackler | E-mail: tcackler.wci@prairiein.net
Tuesday, August 30, 2016 • 08:30 to 12:30

Overview: This workshop will focus on both USA and Australian agency experience with the use of RCA into various pavement applications. Presentations will include cost savings; performance of RCA with existing material related distress (D-cracking & ASR); and RCA as both coarse and fine aggregate for paving mixtures. Both project case studies and programmatic performance experience will be shared.

Topics and Speakers:

Cost Saving from Using RCA in Illinois Tollway

Steve Gillen, Illinois Tollway

RCA Experience of Pavements in Colorado

Eric Prieve & Valentino Niculae, Colorado DOT

Beneficial Reuse of RCA in Granular and Concrete Pavements

Justin Moss, Arcadis Design and Consultancy

Performance History of I-57 in Illinois

James Kristulovich, Illinois DOT

Case History of 100% RCA Paving Mixture, Houston I-10

Andy Naranjo, Texas DOT

Performance History of Recycling ASR Susceptible Concrete into I-80 in Wyoming

Bob Rothwell, Wyoming DOT

Performance History of Recycling D-Cracking-Susceptible Concrete into TH 59 in Minnesota

Matt Zeller, Concrete Paving Assoc. of Minnesota



Sponsor:
Federal
Highway
Administration
(FHWA)



NOTES



Sponsor:
Federal
Aviation
Administration
(FAA)



Workshop 4: FAARField Airport Pavement Design

Moderator: Jeff Gagnon

Tuesday, August 30, 2016 • 08:30 to 12:30

Overview: The FAARField Airport Pavement Design Sessions will all be presented by **Jeff Gagnon**, *Manager-Federal Aviation Administration*. FAARFIELD (Federal Aviation Administration Rigid and Flexible Iterative Elastic Layered Design) was introduced back in September 2009. FAARFIELD continues the “look and feel” of the Federal Aviation Administration’s software LEDFAA 1.3, but also includes significant changes. The product of over 15 years of research and development effort, the design procedure implements both three-dimensional finite element structural analysis (for rigid pavements and overlays) and layered elastic analysis for flexible pavements, and incorporates the results of full-scale pavement tests conducted at the Federal Aviation Administration’s National Airport Pavement Test Facility. The FAARFIELD design procedure is the Federal Aviation Administration’s standard for airport pavement design and is included in the newly revised Federal Aviation Administration Advisory Circular 150/5320-6F, “Airport Pavement Design and Evaluation”.

This Federal Aviation Administration software workshop is intended for airport consultants, operators and others with a practical interest in airport pavement design. Participants in the workshop will:

1. Learn the principles of pavement design and pavement analysis using Federal Aviation Administration software including FAARFIELD 1.4.
2. Experience hands-on demonstrations of the FAARFIELD 1.4 software, with examples.
3. Understand the major difference between FAARFIELD 1.4 and previous Federal Aviation Administration design procedures.

It is highly recommended that workshop participants bring their own laptops so they can install FAARFIELD to follow along through the training and pavement design examples.

Topics

08:30 to 08:40 **Introduction & Overview of FAA Design Computer Lab**

08:40 to 09:00 **Federal Aviation Administration Advisory Circular- AC 150/5320-6E**

09:00 to 09:30 **FAARFIELD 1.4: Software Overview**

09:30 to 10:15 **FAARFIELD 1.4: Rigid Pavement Design**

10:15 to 10:45 **BREAK**

10:45 to 11:15 **FAARFIELD 1.3: Rigid Pavement Design**

11:15 to 12:00 **FAARFIELD 1.3: Rigid Overlay Design**

12:00 to 12:30 **Questions / Discussions**

ALL Participants



Workshop 5: Full-Depth Reclamation (FDR) with Cement

Moderator: Gabe Nelson | E-mail: gnelson@snyder-associates.com

Tuesday, August 30, 2016 • 08:30 to 12:30

Overview: Full-depth reclamation (FDR) is a pavement rehabilitation technique that recycles an existing asphalt pavement and its underlying base utilizing a reclaimer to pulverize and blend the existing materials to provide an upgraded, uniform base. This workshop focuses on using Portland cement as a stabilizing agent in the FDR base and the properties, design, and construction considerations when using FDR with cement.

Topics and Speakers:

What is Full-Depth Reclamation?

Gabe Nelson, *Snyder Associates*

Material Properties and Mix Design of FDR

Dale Harrington, *National Concrete Pavement Technology Center (USA)*

Design of FDR

Michael Ayers, *Iowa Concrete Paving Association (USA)*

Construction of FDR

Matthew Singel, *Company*

Discussion

All Speakers and Participants

Workshop 6: Performance-Engineered Mixtures (PEM)

Contact: Peter Taylor | E-mail: ptaylor@iastate.edu

Tuesday, August 30, 2016 • 13:30 to 17:30

Overview: Performance-engineered mixtures is a program seeking to address the need to specify and build longer-lasting and more reliable concrete pavements with a focus on the mixture to be used in a given setting. The program is built around understanding the properties that are needed, how the concrete is prepared and placed in such a way that meets the required performance, and how we can be assured that the concrete in place meets those needs. This workshop discusses work underway to prepare better mixtures and to accept them based on a better specification.

Topics and Speakers:

Theme 1—What do we want?

Properties Required to Resist the Environment

Peter Taylor, *National Concrete Pavement Technology Center (USA)*



Sponsor:
Portland
Cement
Association
(PCA)



Sponsor:
National
Concrete
Pavement
Technology
Center —
CPTech
Center



NOTES

Theme 2—How do we get it?

Getting the Mixture we Need

Xuhao Wang, *National Concrete Pavement Technology Center (USA)*

Placing the Mixture

Gordon Smith, *Iowa Concrete Paving Association (USA)*

Theme 3—How do we know we got it?

Test Methods (In Theory)

Tyler Ley, *Oklahoma State University (USA)*

Test Methods (In the Real World)

Maria Masten, *Minnesota DOT (USA)*

Test Methods "Over There"

Bryan Perrie, *The Concrete Institute (So Africa)*

Q & A

Mike Praul, *Company (Country)*

Sponsor:
Precast
Concrete
Manufacturers'
Association of
Texas (PCMA)
& National
Precast
Concrete
Association
(NPCA)



Workshop 7: Precast Concrete Pavement

Moderators: Sam Tyson and Mark B. Snyder

Tuesday, August 30, 2016 • 13:30 to 17:30

"Achieving High-Quality Precast Concrete Pavement Installations"

More than 60 lane-miles of jointed precast concrete pavement have been constructed in 22 states and 2 Canadian provinces over the last 15 years. It is now clear that precast panel fabrication is of high quality but that more needs to be done to ensure consistently high levels of installation quality. The first part of this workshop session will provide an overview of current precast pavement technology, focusing on what measures are now being taken or being proposed to ensure quality installations. A second session, comprising a moderated panel discussion, will provide stakeholders an opportunity to weigh in on such topics as specifications, system approval, training, contractor-generated QA/QC plans and contractor test strips - all for the purpose of identifying techniques that may be useful to ensure high quality precast pavement installations.

Tentative Topics and Speakers:

Session 1—Current Precast Pavement Quality Control Efforts on Recent Projects

Moderator: Sam Tyson, P.E., *Federal Highway Administration*

A Overview of Precast Pavement Systems and QC Measures Necessary for Each

Shiraz Tayabji, *Applied Research Associates, Inc.*

A Case Study on QC/QA Efforts on Recent Kansas City Project

Will Lindquist, *Kansas DOT*

A Precast Pavement Intersection in the Energy Sector

Andy Naranjo, P.E., *Texas DOT*



Quality Aspects of Precast Pavement Design and Construction – a Consultant's Viewpoint

Brian Doherty, P.E., *WSP|Parsons Brinckerhoff*

Precast Concrete Pavement Quality Plan Implementation in California

Mehdi Parvini, Ph.D., P.E., *California Department of Transportation*

Session 2—Future Directions for QC/QA Procedures in Precast Pavement Construction: A Panel Discussion

Moderator: Mark B. Snyder *Consultant*

Panel discussion of the following topics:

Specifications as They Affect QC/QA Procedures

System Approval Processes

Training—Who Gets Trained (installers, inspectors, etc.)? Who Does the Training? And When? And Possible Certification Requirements

Contractor QA/QC program

Contractor Test Strip—Where, How Big Should it Be? When Should it be Done? How Does it get Evaluated?

Invited panelists:

Sam Tyson *Federal Highway Administration*

Shiraz Tayabji *ARA, Inc.*

Will Lindquist *KDOT*

Brian Doherty *WSP/Parsons*

Mehdi Parvini *CalTrans*

Steve Gillen *Illinois Tollway*

David Layton *Wisconsin DOT*

Scott Nussbaum *Utah DOT*

Bill Cuerton *ACPA NY State—formerly NYS DOT*

Tinu Mishra *CalTrans*

Kirsten Stahl *CalTrans*

Michigan DOT Representative *TBD*

Workshop 8: Concrete Overlays

Moderators: Gina Ahlstrom & TBA

Tuesday, August 30, 2016 • 13:30 to 17:30

Overview: While records of concrete overlay construction date to the early 1900s, the growth of this type of paving has increased dramatically in the last 25 years. Concrete overlays of all types now comprise approximately 13 percent of the overall concrete paving market in the U.S. and their use is gaining favor around the world. Much of the recent increase in concrete overlay construction can be attributed to a better understanding of the factors that influence their behavior and performance, and the incorporation of these factors in newer mechanistic-empirical design procedures.

The first part of this workshop will present and demonstrate concrete overlay design procedures that are currently favored, along with vital information for successful staging of overlay construction. The second part of the workshop will feature presentations and discussions by industry and agency personnel concerning lessons learned from the specification, design and construction of concrete overlays.



NOTES

Sponsor:
Federal
Highway
Administration
(FHWA)



NOTES

Topics and Speakers:
Part 1 – New Design Tools and Guidance
Federal Highway Administration Perspectives on Concrete Overlay Implementation
Gina Ahlstrom, Federal Highway Administration
Overview of the Federal Highway Administration/CPTech Center Concrete Overlay Implementation Technical Assistance Program
Dale Harrington, CPtech Center
Best Practices for the Design of Bonded Concrete Overlays of Asphalt Pavement using BCOA-ME (Presentation and Demonstration)
Julie Vandenberg, University of Pittsburgh
Best Practices for the Design of Unbonded Concrete Overlays Using PavementME (Presentation and Demonstration)
Michael Darter, ARA, Inc.
Maintenance and Protection of Traffic During Concrete Overlay Construction
Gary Fick, CPtech Center

Part 2 – State Experiences and Case Studies: Lessons Learned
Moderator: TBA
Tentative Topics and Speakers:
Building the Perfect Beast: 100 Years of Concrete Overlay Evolution in Illinois
Randell Riley, ACPA-Illinois
Lessons Learned Constructing >400 Concrete Overlays in Iowa
Kevin Merryman Iowa DOT
Redeploying Concrete Overlay Technology After 20 Years
Neal Fannin, PennDOT
European Experience with Concrete Overlays
Luc Rens, FEBELCEM
Using Concrete Overlays in Urban Intersection Areas
Speaker, TBA
Q&A Session
All Session Speakers



Workshop 9: Industrial Pavements
Moderator: Nigel Parkes | E-mail: nigel@pna-inc.com
Tuesday, August 30, 2016 • 13:30 to 17:30

Overview: UNDER DEVELOPMENT

Topics and Speakers:
Introduction
Nigel Parkes, PNA Construction Technologies (USA)
The U.S. Approach via ACI Guidance
Robert Rodden, PNA Construction Technologies (USA)
International Guidance, with a Focus on U.K. Approach via the Concrete Society
Robert Rodden, PNA Construction Technologies (USA)
Short Slab Systems with OptiPave
Juan Pablo Covarrubias, TCP Pavements (USA)

Sponsor:
PNA
Construction
Technologies,
Inc.



NOTES

Workshop 10: Internal Curing
Moderator: Ken Harmon
Tuesday, August 30, 2016 • 13:30 to 17:30

Overview: UNDER DEVELOPMENT

Topics and Speakers:
Welcome
Ken Harmon, Company
Overview Internal Curing: Manufacturing, Delivery, Types of Aggregates
Daron Brown, Company
Basics of Internal Curing for Pavements
Jason Weiss, Oregon State University
Curling of Concrete Slabs and Internal Curing
Armen Amirkhannian, Company
M-E Design
Chetana Rao, Company
Field Evaluation of IC Pavement
Jeff Roesler, President ISCP & University of Illinois-Urbana-Champaign (USA)

Sponsor:
Expanded
Shale
Clay &
Slate
Institute
(ESCSI) /
Stalite



TECHNICAL TOURS / FIELD TRIPS (Optional)
Breakfast and Bus Transportation Provided

THURSDAY, SEPTEMBER 1 08:30-12:30 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Two off-site field trips and demonstrations at the on-site US Federal Highway Administration's Mobile Concrete Laboratory (MCL) will be offered on Thursday morning, September 1, 2016.

FIELD TRIP 1: Commercial Metals Company Americas Plant Visit & CRCP Construction Site Visit

Host: Commercial Metals Company
Group Leader: John Hema
Time: 08:30 to 12:30
Distance from Marriott Rivercenter: 35 miles
Group Size: 40 People Maximum
Technical Tour Destination: CMC Steel Group,
1 Steel Mill Drive
Seguin, TX 78155

Commercial Metals Company invites you to Seguin, Texas to visit its largest operating mill in the U.S. and learn how reinforcing steel is made!



Established in 1947, CMC Steel Texas is Commercial Metals Company's first minimill, originally constructed as a rebar producing, rail reroll mill. Through continuous upgrades and technology improvements, CMC Steel Texas has evolved into a world-class, state-of-the-art steel minimill that ships product globally and is capable of producing rebar, angles, channels, flats, rounds, squares, and SBQ engineered products to serve the vast construction marketplace and highway projects.

As part of the 11th ICCP meeting, CMC would like to invite participants to its mill to see the entire production process – melting scrap in its electric arc furnace, production of billets, and rolling of finished goods in its rolling mill.

Attendance is limited to the first 40 participants. If the IH-410 CRCP paving project is being paving during the conference, then the field trip will also visit the project. This technical field trip is free to conference registrants.

FIELD TRIP 2: History of Cement in Texas
Historic Belknap Place
(102-Year-Old Concrete Pavement),
Capitol Cement Visit, &
Lunch @ Alamo Quarry Market

Host: Capitol Cement
Group Leader: Jan Prusinski
Time: 08:30 to 12:30
Distance from Marriott Rivercenter: 12 miles
Group Size: 50
Technical Tour Destination: Capitol Cement
11551 Nacogdoches Road
San Antonio, TX 78217



Visit to the Capitol Cement Plant, as well as Belknap Place (102-year-old Historical Concrete Pavement) ([PDF of NarrativeHistory](#)); and eat lunch at Quarry Market (Historical Alamo Quarry and Kiln). This technical field trip is free to conference registrants.

TECHNICAL TOUR: Federal Highway Administration
Mobile Concrete Laboratory (MCL)

Tour the trailer and participate in test demonstrations. Registration is not required ... **Just stop by Thursday morning!** In an effort to bridge the gap between research and the field, the Federal Highway Administration's *Mobile Concrete Laboratory (MCL)* introduces visitors to the state-of-the-art concrete technology in materials selection, mixture design, field and laboratory testing, and pavement evaluation.

For more details about this unique technology transfer offering, please view the Federal Highway Administration *Mobile Concrete Laboratory* [website](#) or [flyer](#).



Photo: The Federal Highway Administration's Mobile Concrete Laboratory



