International Society ISCP for Concrete Pavements

INTERNATIONAL SOCIETY FOR CONCRETE PAVEMENTS

ISCP e-NEWSLETTER
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MAY 2014

IN THIS ISSUE

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ISCP NEWS

ISCP Hiring an Executive Director

Introduction The goals of the International Society for Concrete Pavements, Inc. (ISCP) are to further engineering, research, and technical education in all areas related to the analysis, design, construction, materials, maintenance, rehabilitation and management of concrete pavements. The ISCP organization is headquartered in the USA with voluntary service by all board members and officers. The members and board of ISCP are from various countries, although English is the official language chosen for communication by ISCP.

Executive Director Role & Responsibilities The Executive Director of the ISCP will manage the day-to-day administration of the Society, implement policies and business plans as established or directed by the ISCP President and Board of Directors, and coordinate its affairs and activities - especially concerning membership and technology transfer. It is a part-time position that will require time and effort commitments that vary in intensity throughout the calendar year (e.g., increased activity with periodic meeting planning and membership renewal efforts) and between years (e.g., more efforts in years involving the planning and execution of major conferences). The Executive Director will report directly to the ISCP President.

Minimum Skills This position will require a well-organized, highly motivated, self-starter with excellent "people skills." It is preferred that the Executive Director have an understanding of concrete pavement research, design and construction activities. Experience in managing professional societies or associations will be considered favorably. The successful candidate for this position must possess several skills (described in the online advertisement).

In order to avoid potential conflicts of interest, the Executive Director cannot be a current Officer or Director of ISCP.

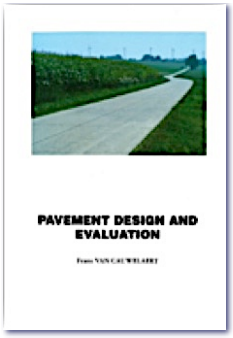
For the entire advertisement of the Executive Director position, including detailed descriptions of the **Skills, Work Scope**, **Employment Terms**, **Office Location** and **Facilities**, please go to: http://www.concretepavements.org/ISCP_executive_director_ad_2014.pdf.
Or go to the ISCP Website, at: http://www.concretepavements.org.

Application Applicants must submit a cover letter highlighting experience and a vision for this position as well as a detailed resume to: president@concretepavements.org.
Applications are requested by June 25, 2014 or until the position is filled.

Dr. Frans Van Cauwelaert, ISCP Honorary Member, Passes Away

Dr. Frans Van Cauwelaert, renowned pavement engineer and Honorary Member of ISCP, passed away on May 22, 2014.

Frans was born in Ghent, Belgium in 1932. He graduated in Civil Engineering from the University of Louvain (Belgium) and obtained a PhD in Technical Sciences from the Federal Polytechnic School of Lausanne (Switzerland). Dr. Van Cauwelaert was a modern leader around the world in the field of pavement engineering and was well-known for his rigorous mathematical solutions to pavement analysis problems, as well as for his ability to put advanced pavement theories into everyday practice. He held different positions during his career including designer, consultant on the field, researcher in the laboratory, and professor. During the latter part of his career, he was the head of the Department Promotion, Research and Development of FEBELCEM, the Belgian Cement Association.



Throughout the years, his passion grew for the rational design of pavements, from the analytical method and mathematical equations to the development of design software, some of which are still being used today. After his retirement, Frans found the time to write a book with his advanced theory on pavement engineering, titled "Pavement Design and Evaluation: The Required Mathematics and Applications". The book was sponsored and edited by FEBELCEM and copies are still available. To obtain a copy, please e-mail: info@febelcem.be.

He was known for his intelligence and research spirit, but Frans was foremost characterized by his eternal humor and the smile on his face. Besides math and science, he loved classical music and played the flute and piano. He was adored by his five children and eleven grandchildren. Frans will be missed across the world but his contribution in the field of concrete pavement design will live on.

ACPA Websites:
Main website:
www.acpa.org
Concrete Wiki:
http://wiki.acpa.org/

App Library:
http://apps.acpa.org/
Desktop Software:
http://software.acpa.org/

Resources:
http://resources.acpa.org/

On-Demand Training:
http://ondemand.acpa.org/

Live Online Training:
http://webinars.acpa.org/

Local ACPA Contact:
http://local.acpa.org

ACPA Launches New Generation Website

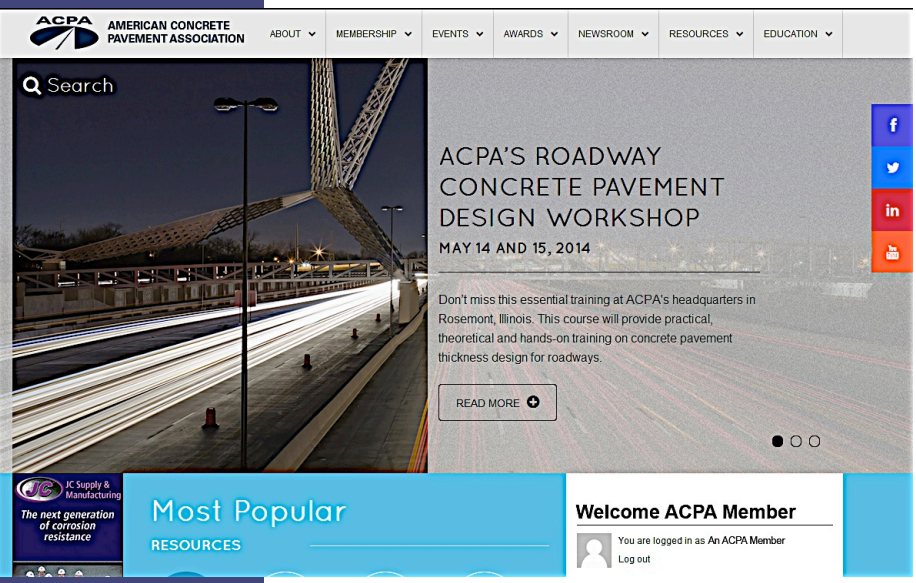
. . . a one-stop website . . . quick access to information, membership benefits, industry events, awards, news, stats, etc . . .

The American Concrete Pavement Association (ACPA) has completely redeveloped its primary website, combining the latest digital technology to perform the two-fold functions of delivering content and serving as a resource for conducting association business. The result is a one-stop website that allows quick access to information about the association (including members, affiliates, and staff); membership benefits; industry and association events; and paving and distinguished service awards. The site also includes industry statistics; breaking news (including industry, association, and legislative/advocacy news); technical and promotional resources; and education and training opportunities.

"The mobile-friendly website features a modern look and employs the latest technology to engage and inform visitors," said Andy Gieraltowski, *Vice President of Operations* and *IT, ACPA*. Site visitors will see the dynamic format of the website, which features bold graphics and a snapshot view of the latest showcased items, most popular features, latest news items, and events posted to a searchable web calendar.

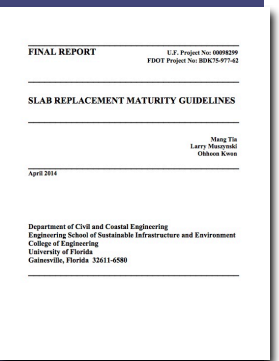
Members-Only Portal and Members-Only Benefits

Gieraltowski explained that the site goes far beyond the traditional role of simply delivering static content. New interactive features of the site will present content dynamically and allow members to participate in committee/task force business online through a revamped members-only portal. The portal includes functionality that will allow staff and affiliates to connect, collaborate, and engage in association business activities online; to communicate with each other; and share resources. In addition to the features in the Members-Only Portal, ACPA members can visit the 'online benefits' section to enjoy a wide range of benefits available exclusively to members.



To read about major improvements, Members-Only Portal features, Members-Only Benefits and more on the ACPA website update, please go to: http://www.acpa.org/acpa-launches-new-generation-website/.

For additional information, please contact:
Bill Davenport, *Vice President, Communications, ACPA*
Phone: 847.423.8703
E-mail: bdavenport@acpa.org.


FINAL REPORT

U.F. Project No: 00098299
FDOT Project No: BDK75-977-62

SLAB REPLACEMENT MATURITY GUIDELINES

Mang Tia
Larry Muszynski
Ohkoon Kwon

April 2014

Department of Civil and Coastal Engineering
Engineering School of Sustainable Infrastructure and Environment
College of Engineering
University of Florida
Gainesville, Florida 32611-6580

New Report: "Slab Replacement Maturity Guidelines"

The Department of Civil and Coastal Engineering, Engineering School of Sustainable Infrastructure and Environment College of Engineering from the University of Florida in Gainesville, Florida, USA, has published the Final Report of "Slab Replacement Maturity Guidelines" (U.F. Project No: 00098299 FDOT Project No: BDK75-977-62). This study investigated the use of maturity method to determine early age strength of concrete in slab replacement application. Specific objectives were:

1. To evaluate effects of various factors on the compressive maturity-strength relationship of concrete at early age
2. To develop appropriate test procedures for applying maturity method to predict early-age strength of concrete
3. To validate the accuracy of the prediction of maturity method using the proposed test procedures.

The maturity method using the Arrhenius maturity function was found to be quite reliable and convenient for use in predicting the early-age compressive strength of concrete in replacement slab application. Some limitations of maturity-strength prediction supply, such as the strength loss due to high curing temperature and insufficient moisture, were observed in the laboratory studies. However, these limitations were observed at the later age of the concrete when the compressive strength reached around 3,000 to 3,500 psi, and thus the observed limitations did not have any negative effect on the early-age-strength prediction of the concrete in the replacement slab.

Using the strength of the protection specimens as strength determination of the in-place concrete is unreliable and may result in over-prediction of its strength. The maturity method using the *Arrhenius* maturity function is recommended for use to estimate the early-age compressive strength of concrete in slab replacement application. A testing protocol for the generation of maturity-strength curve for prediction of early-age compressive strength of concrete was recommended. The concrete used in the replacement slab must have exactly the same water-cement ratio, mix ingredients, and fresh concrete properties as those of the laboratory concrete used to develop the maturity curve. In the event that differences in fresh concrete properties, with more than ±1 inch in slump and/or ±1 % in air contents, are observed between the actual concrete used at the project site and the concrete which has been used to develop the maturity-strength curve, the maturity-strength curve should not be used to make strength predictions without proper adjustments of the predicted strengths due to effects of the variations in the fresh concrete properties.

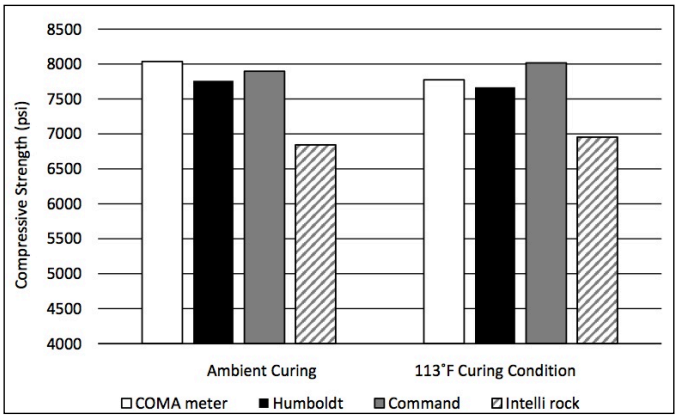
1. Pre-installed temperature sensors in the 10-cm x 20.3-cm (4-in x 8-in) cylinder molds

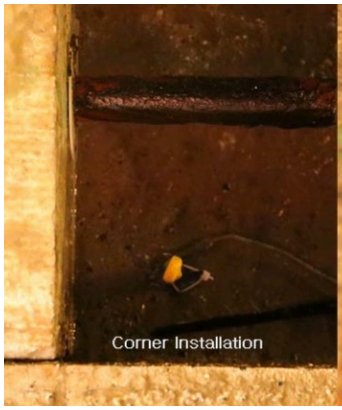
2. Chart: Comprehensive strengths of 10-cm x 20.3-cm (4-in x 8-in) concrete specimens with different embedded temperature sensors

3. Installed temperature sensors at four different locations in the slab.

4. Installed temperature sensors at the corner and edge of the slab.

To download the PDF of this report, please go to: http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_SMO/FDOT-BDK75-977-62-rpt.pdf.






A SHRP 2 Renewal Project Brief

PROJECT R21

Composite Pavement Systems

MAY 2014

Constructed and Field Survey Sections

SHRP 2

TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

Publication: "SHRP 2 Renewal Project Brief: Project R21 Composite Pavement Systems" [in Europe & USA]

Composite pavements have been in use for many years and have been proven in Europe and in the United States to have long service life with excellent surface characteristics, structural capacity, rapid renewal when needed, all while being economical and sustainable. Composite pavements also reflect the current direction of many highway agencies to build economical, sustainable pavement structures that use recycled and locally available materials. In almost all cases they are not designed as composite pavements initially, but become composite pavements through maintenance overlays.

However, while many transportation agencies may have performance data and models for conventional pavement systems, the behavior of **new** composite pavements is not well understood. Models for the performance of these hybrid systems are needed for design, performance prediction, and life-cycle cost analysis. Guidance on specifications, construction techniques, and quality management procedures are also needed.

SHRP 2 Renewal research project R21: "Composite Pavement Systems" investigated the design and construction of new composite pavement systems that could provide longer-lasting facilities with lower life-cycle costs, then developed design and construction methods for the new composite pavements. Two composite pavement design strategies were determined to provide both excellent surface characteristics (low noise; very smooth, nonpolishing aggregates; and durability) that can be rapidly renewed and long-lasting structural capacity for any level of truck traffic. This project conducted the validation and produced needed documentation so that transportation agencies can have confidence that the composite pavement systems they install and maintain will be long-lasting and have predictably low life-cycle costs.

SHRP 2 Renewal research project "Composite Pavement Systems" investigated the design & construction of new composite pavement systems that could provide longer-lasting facilities with lower life-cycle costs.

For this newest publication (May 2014), **"SHRP 2 Project Renewal Brief: Project R21: Composite Pavement Systems"**, as an Adobe PDF, please go to: http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_PB_R21_2014-05.pdf.

For related publications preceding this brief, including the May 2008 survey of in-service composite pavement sites in the Netherlands, Germany and Austria, conducted to assess the design, construction, and performance of composite pavement systems:
First Fruits Report S2-R21-RW-1: 2008 Survey of European Composite Pavements (online only);
The final report "Composite Pavement Systems" (2013), available in 2 volumes (PDFs):
Volume 1: HMA/PCC Composite Pavements and **Volume 2: PCC/PCC Composite Pavements**, please go to: http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2173.

Projects that comprise the SHRP 2 Renewal Research Plan: "Highway Renewal Detailed Planning For Research On Accelerating The Renewal Of America's Highways" are shown in the Project Database, which is organized by project number. For the project database, please go to: http://www.trb.org/StrategicHighwayResearchProgram2SHRP2/Pages/Renewal_Projects_303.aspx.
For the SHRP 2 "Highway Renewal Detailed Planning For Research On Accelerating The Renewal of America's Highways", please go to: http://onlinepubs.trb.org/onlinepubs/shrp2/RenewalResearchPlan.pdf.

TRB's Webinar: "TRB Transportation Research Circular E-C171: Durability of Concrete: Second Edition"

Thursday, June 19, 2014

2:00 pm to 3:30 pm (EST) | 1:00 pm to 2:30 pm (CST) | 11:00 am to 12:30pm (PST)

A certificate for 1.5 Professional Development Hours (PDHs) will be provided to attendees who register and attend the webinar as an individual.

This webinar will focus on "TRB Transportation Research Circular E-C171: Durability of Concrete: Second Edition" which provides information on producing durable concrete for transportation structures and pavements. This circular (2013) is an update to a 1999 circular. Participants must register in advance of the webinar, and there is a fee for non-TRB Sponsor or non-TRB Sustaining Affiliate employees.

Webinar Presenters: Peter Taylor, *National Pavement Technology Center*
Paul Tennis, *Portland Cement Association*
Tom VanDam, *NCE*
Webinar Moderator: Prashant Ram, *Applied Technology, Inc.*
Webinar Outline: PART 1: Materials selection and testing
PART 2: Proportioning and construction practices
PART 3: Specifications and case studies
PART 4: Question and answer session
Learning Objectives: At the end of this webinar, participants will be able to:

- Discuss the desired materials characteristics for durable concrete
- Identify proper construction practices to aid in concrete durability
- Summarize the testing required on fresh and hardened concrete to ensure durable concrete.

The first 60 minutes of the webinar will be for presentations, and the final 30 minutes will be reserved for audience questions.

To register and for more information, please go to: http://www.trb.org/Calendar/Blurbs/170610.aspx. After registering, you will receive a confirmation email containing information about joining the webinar. Individuals who are registered as a Florida P.E. are required to send an email, with their license number to: Reggie Gillum | E-mail: RGillum@nas.edu | Questions? Please e-mail Reggie Gillum

To download the PDF of the project report, please go to: http://www.trb.org/main/blurbs/169467.aspx

For notices about upcoming webinars, please subscribe to the TRB Transportation Research E-Newsletter at: http://www.trb.org/Publications/PubsTRBENewsletter.aspx.

Reminder: ICDCS 2014: 4th International Conference on Durability of Concrete Structures to be Held July 23-26, 2014 in West Lafayette, Indiana, USA

. . . with 2 Pre-Conference Short Courses July 22-23 . . .

PURDUE EXTENDED CAMPUS

The School of Civil Engineering, Purdue University will host the 4th International Conference on Durability of Concrete Structures (ICDCS 2014), July 24-26, 2014 at Purdue University in West Lafayette, Indiana, USA. Two pre-conference short courses will be offered that will take place on Tuesday and Wednesday, July 22 and July 23, prior to the conference. This conference is the fourth consecutive international meeting on durability of concrete structures under the ICDCS series. It is co-sponsored by Purdue University, West Lafayette, IN, USA; Queen's University Belfast, UK; Zhejiang University, China; and Hokkaido University, Japan.

Please refer the article on this conference in the ISCP March issue: http://www.concretepavements.org/Membership/Newsletter/MARCH2014Newsletter.pdf.

. . . & Architectural Tour of Chicago & Riverfront Luncheon

Departing from the Union Club Hotel Lobby, participants are invited to enjoy a 75-minute expert guided architectural tour through the all three branches of the Chicago River. This boat tour offers the highlights of the rich architectural heritage of the city which is considered to be the birthplace of the skyscraper and home of many renewed landmarks.

Lunch on the riverfront and transportation to Chicago's O'Hare Airport is included in your cost.

Registration deadline is July 10, 2014.
To register and for more information, please go to the conference website: http://www.conf.purdue.edu/landing_pages/icdcs/.

The preliminary program will soon be available online.

Reminder: 2014 FAA Worldwide Airport Technology Transfer Conference to be Held August 5-7, 2014 in Galloway, New Jersey, USA

The 2014 FAA Worldwide Airport Technology Transfer Conference will be held August 5-7, 2014 at the Stockton Seaview Hotel in Galloway (Oceanville), New Jersey, USA. Key FAA officials; national and international airport executives; technology personnel; safety, planning and design specialists; airline and helicopter industry representatives; and general and state aviation agency officials will be present.

This Technology Transfer Conference, sponsored by Federal Aviation Administration (FAA) and The Richard Stockton College of New Jersey, provides a unique opportunity for airport operators, aviation consultants, construction contractors, research engineers and academic researchers to study problems and to share their findings and ideas for development of new and more efficient means of pavement design, computer applications to airport pavements, environmental issues and more. Aviation, technology and software consultants, as well as suppliers of airport and airline products and services, will be on hand to share their expertise and exchange ideas. Also attending will be airport master planners, design and construction representatives and specialists in safety, the environment, lighting, signs and markings, among others. Paper topics will include:

Airport Pavement:
Design and Evaluation
Pavement Management
Full-Scale and Accelerated Pavement Testing
Construction Materials and Methods
Case Studies

Airport Safety:
Aircraft Rescue and Firefighting (ARFF)
Runway Surface Technology
Visual Guidance
Airport Wildlife Hazards
Runway Incursion Reduction
Planning/Design for New Large Aircraft

For the Conference website, please go to:
http://EMCVenues_Meetings.cvent.com/FAA2014.

Toronto Workshop Held in Toronto, Canada

The American Concrete Pavement Association (ACPA), in partnership with Cement Association of Canada (CAC) and Ready-mixed Concrete Association of Ontario (RMCAO), hosted a two-day advanced concrete pavement training workshop on April 28 and 29, 2014 in Toronto, Canada. The focus of this workshop was concrete pavement design methods and details. Another key theme was construction means and methods - and the interdependence between these means and methods and design.

This was truly an international partnership, leveraging regional technical and marketing resources to host a successful workshop that disseminated essential concrete pavement information to the local agency and consulting engineering communities. There were 25 participants including Ontario Ministry of Transportation, Region of Waterloo and major pavement consulting engineering firms. The workshop was moderated by Rico Fung, *CAC* with 5 speakers:

- Robert Rodden, P.E., *Director of Technical Service and Product Development, ACPA*
- Kelly Steeves, *Paving Account Manager - North America, Leica Geosystems*
- Bart Kanters, P.Eng., MBA, *Director of Technical Services, Ready Mixed Concrete Association of Ontario (RMCAO)*
- Mick Prieur, P.Eng., *Senior Pavement Engineer, RMCAO*
- Mark Popik, P.Eng., *Senior Pavement Engineer, Thurber Engineering, Ltd.*

The first day consisted of discussions on new concrete pavement and concrete overlay design methods, materials and resources. The second day covered joint layout; construction methods and tools; and inspection and testing . . . all tying back to design and how each affects the other. Upon completing the workshop, the participants had learned which design software and tools to turn to for a given project, and are now able to design better-performing and more cost-efficient concrete pavements due to the knowledge and appreciation they gained for the construction side of the equation.

ABSTRACT

Service Life Prediction of Concrete: Considerations of Specimen Conditioning & Testing Methods

. . . study evaluates the impacts of accelerated curing, leaching of alkali species during wet curing, & degree of saturation of air voids on the transport properties of cementitious materials

By Yiwen Bu
Purdue University, School of Materials Engineering
Professors Jason Weiss and Carol Handwerker

Chloride induced corrosion is one of the major causes behind the degradation of concrete materials. Service life models have been designed to predict the rate of chloride ingress and the time of corrosion initiation. Current service life models rely directly on the inputs of experimentally measured transport properties, such as porosity and diffusion coefficient of chloride. Therefore the possible influence of various factors, such as specimen conditioning and testing methods, on the measurement of transport properties need to be better understood.

This study evaluates the impacts of accelerated curing (curing at an elevated temperature), the leaching of alkali species during wet curing, and the

degree of saturation of air voids on the transport properties of cementitious materials. This study compares the porosity measurements obtained following the immersion and boiling method (ASTM C642-13), and the measurements using vacuum saturation. This study discusses the difference between diffusion coefficients of chloride obtained using Fick's second law (ASTM C1556-11) and using a Nernst-Planck approach, with particular regards to the influences of boundary conditions such as immersion duration, chloride concentration and co-present anions and cations. The results of this study demonstrate that both specimen conditioning and testing methods can alter the measured transport properties and consequently are necessary considerations during the service life predictions of concrete materials.

UPCOMING EVENTS

JUNE 2014

ASCE T&DI 2nd Congress
June 8-11, 2014 in Orlando, Florida, USA
http://content.asce.org/conferences/tdicongress2014/index.html

RILEM International Workshop on Performance-Based Specification and Control of Concrete Durability
June 11-13, 2014 in Zagreb, Croatia
http://www.grad.unizg.hr/rilem_psc

Concrete Innovation Conference
June 11-13, 2014 in Oslo, Norway
http://www.tekna.no/event?p_kp_id=29806

JULY 2014

14th COTA International Conference of Transportation Professionals (CICTP2014)
July 4-7, 2014, in Changsha, China
http://cictp.csu.edu.cn/

AUGUST 2014

2014 FAA Worldwide Airport Technology Transfer Conference
August 5-7, 2014 in Galloway (Oceanville), New Jersey, USA
http://www.airporttech.tc.faa.gov/conference/2014TC/

2014 World Congress on Advances in Civil, Environmental, and Materials Research (ACEM14)
August 24-28, 2014 in Busan, South Korea
http://acem.cti3.com/acem14.htm

SEPTEMBER 2014

8th International DUT-Workshop on Research and Innovations for Design of Sustainable and Durable Concrete Pavements
September 20-21, 2014 in Prague, Czech Republic
http://www.citg.tudelft.nl/..../road%20and%20railway%20engineering

12th International Symposium on Concrete Roads "Innovative Solutions – Benefiting Society"
Organized by EUPAVE
September 23-26, 2014 in Prague, Czech Republic
http://www.concreteroads2014.org

NOVEMBER 2014

2014 International Conference on Construction Materials and Structures
November 24-26, 2014, in Johannesburg, South Africa
http://www.iccmats-wits.co.za/Intro.html

For events in 2015 and beyond, please go to: http://www.concretepavements.org/calendar.htm.

Find us on: facebook
https://www.facebook.com/pages/International-Society-for-Concrete-Pavements/127114450634305?ref=ts&fref=ts.

LinkedIn
http://www.linkedin.com/home

Questions?
Please contact moderator
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jroesler@illinois.edu

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& **Rico Fung**, P.Eng., *LEED®AP Director, Markets & Technical Affairs-Ontario Region - Cement Association of Canada*
for contributions to this issue.

ISCP invites ISCP members and friends to submit articles and calendar items to the Editor-in-Chief for future issues.

ISCP President: **Neeraj Buch, Ph.D.** president@concretepavments.org
Vice-President: **Jeff Roesler, Ph.D.** vice-president@concretepavements.org
Secretary/Treasurer: **Jake Hiller, Ph.D.** secretary-treasurer@concretepavements.org

Please visit the **ISCP Website** at www.concretepavements.org for more information about ISCP.