



INTERNATIONAL SOCIETY FOR CONCRETE PAVEMENTS

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ISCP e-NEWSLETTER
 VOLUME 8, NUMBER 8
 SEPTEMBER 2011

WHAT'S NEW AT ISCP

ISCP Accepting Nominations for 2012 Board Positions

ISCP is accepting nominations through October 31, 2011 for 7 Director positions. A self-explanatory form for nomination or self-nomination can be found on the ISCP website at: www.concretepavements.org/2011_Director_Nomination_Form.doc. All nominees must be ISCP members who are currently in good standing.

The ISCP Board includes a total of 14 Directors (plus 3 Officers and the past President), and 7 Directors are elected to 4-year terms every other year. Board activities include monthly 1-hour tele-conference meetings, the annual January membership meeting, and at least one full-day-or-longer mid-year meeting, at which ISCP policies and programs are developed. All Directors serve on at least one Standing Committee and are expected to be active leaders in the Society.

Service on the Board is a rewarding experience that involves direction interaction with concrete pavement professionals from around the world and results in the advancement of concrete pavement technology worldwide. For more information, please contact ISCP Past President and Nominating Committee Chair Dr. Dan Zollinger at d-zollinger@tamu.edu.

Remembering ISCP Member, Bill Dearasaugh



It is with great sadness that we announce the passing of long-time ISCP member Daniel W. "Bill" Dearasaugh, Jr., who passed away at his home in Highlands Ranch, Colorado, USA on August 7, 2011.

Bill was one of the first class of Honorary Members inducted into ISCP in 2001. He made many significant contributions to the advancement of concrete pavement technology through his years of service with the Portland Cement Association, the National Cooperative Highway Research Program, and the Transportation Research Board. A brief biography of Bill's professional background can be found on the ISCP website at: <http://www.concretepavements.org/Membership/honorary/dearasaugh.htm>

Bill is survived by his wife, Judy, children (Jill Reasoner (Phil), Lindy Howard (Steve) and Dan Dearasaugh (Missy)) and 11 grandchildren. ISCP is proud to have been able to count Bill as one of its members over the years. His contributions to our industry will continue to stand, but Bill will be missed.

INDUSTRY RESOURCES

PCI to Launch a Web-Based PCCP Information Repository

The Precast/Prestressed Concrete Institute (PCI), in conjunction with the Federal Highway Administration (FHWA), is in the midst of building a web-based information repository specifically focused on concrete pavement. The intent of this web site is to provide informational source material for public-wide education and to stimulate the continued and further development of innovative concrete pavement technologies. The ISCP is pleased to contribute the Vol 7, No 5, Sep 2010 article titled "Precast Concrete Placed Toll Road in Indonesia" to this web site. Please look for future information on this exciting endeavor!

For more information, please contact Wallace N. Turner, PCI, Staff Engineer, Transportation Systems at: 312.873.3590 or wturner@pci.org.



CP Road MAP Latest E-news:

The most recent edition of the CP Road Map E-news included articles which describe promising research and technologies that can be used now to enhance concrete paving practices. [Full-Depth Reclamation for Concrete Pavements](#) has recently been published under [CP Road Map Track 7: Concrete Pavement Maintenance and Preservation](#).

News from the Road highlights research around the country that is helping the concrete pavement community meet the research objectives outlined in the CP Road Map. (continued)



ORGANIZATIONAL MEMBERS: & MAJOR EVENT SPONSORS:



CP ROAD MAP
MAP Brief
Full-Depth Reclamation of Asphalt Pavements with Cement

Introduction
 Full-depth reclamation (FDR) is a process of removing and replacing the top 4 to 8 inches of an asphalt pavement with a new layer of asphalt concrete. This process is used to repair and reconstruct damaged asphalt pavements. The process involves grinding up the existing asphalt pavement, mixing it with a binder and aggregate, and then compacting the mixture to form a new base layer. This new base layer is then topped with a new layer of asphalt concrete.

Benefits
 FDR offers several advantages over traditional asphalt paving methods, including:

- The resulting pavement is stronger and more durable than traditional asphalt pavement.
- The process is faster and less expensive than traditional asphalt paving methods.
- FDR can be used to repair and reconstruct damaged asphalt pavements in a wide range of applications, including highways, airports, and parking lots.

 For more information on FDR, visit the [CP Road Map website](#).



- Innovative Pavement Research Foundation investigates optimum use of fly ash in airfield concrete pavements
 - Minnesota researchers evaluate cold weather performance of pervious concrete pavements
 - Pennsylvania DOT examines premature deterioration of jointed concrete pavement sections
 - New Jersey researcher utilizes nanotechnology to strengthen concrete
 - Updates from the States: California
- For the NEW e-News from CP Road MAP, click on: [e-news homepage](#).
 PDF: [Download MAP Brief](#) To find out more about the CP Road Map or to learn how you can get involved, please contact: Dale Harrington, Program Manager, dharrington@snyder-associates.com or 515-964-2020.

The CP Road Map E-News is the newsletter of the [Long-Term Plan for Concrete Pavement Research and Technology \(CP Road Map\)](#), a United States national research plan developed and jointly implemented by the concrete pavement stakeholder community across the U.S.

CONFERENCE NEWS & UPDATES

ACPA Announces National Concrete Pavement Design Workshop for October 17-20, 2011 in Rosemont, Illinois, USA

Register by September 23rd for ACPA's exclusive National Concrete Pavement Design Workshop, to be held October 17-19 at ACPA's headquarters office in Rosemont, Illinois, USA. On Thursday, October 20, ACPA is also offering an optional half-day Concrete Pavement Joint Design and Layout Workshop.



The National Concrete Pavement Design Workshop is for those who have a basic- to intermediate-level knowledge of pavement design and for anyone who wants to learn about all of the available pavement design methods in one course, including when and how to choose various design methods. Consulting engineers, contractors, cement industry representatives, ready-mixed concrete professionals and government agency engineers may all benefit.

The focus of the Workshop will be on hands-on training, with key experts representing the underlying pavement design and analysis software technologies. The course will cover:

- WinPas Software
- StreetPave Software
- TCP (Thin-Concrete Pavement) design method
- Roller-Compacted Concrete Design Method
- DARWin-ME (TM) Software
- Airport Pavement-Design Programs (Including AirPave, FAARfield and Tri-Service PCASE Software)
- ACPA PerviousPave Software Training

The course will also cover Pavement Analysis Tools (Ever-FE, Westergaard app, HIPERPAV III, etc.).

Registration includes FREE ACPA Software Bundle*
 Registrants for the National Concrete Pavement Design Workshop will receive valuable ACPA software at no additional charge (a \$1,750 value - greater than the cost of the training course!)

Workshop will feature ... pavement analysis software & methods ... pavement design & analysis software programs ...

For all Workshop information, computer software information, computer requirements, PDH information and for an event flyer, please go to: http://www.acpa.org/Events_and_Programs/Education_and_Training/2011-Program/2011-ACPA-National-Pavement-Design.pdf

To register for the ACPA National Concrete Design Workshop online, and for Hotel information, please go to: https://netforum.avectra.com/eweb/DynamicPage.aspx?Site=ACPA_ORG&WebCode=EventDetail&evtkey=e023029f-3b97-47f8-b279-f182156380f6

For registration assistance, please contact Debbie Becker at: 847.423.8710 or dbecker@acpa.org.
Government Employees must call or e-mail Debbie for special rate.

ACPA Rosemont Headquarters, 9450 Bryn Mawr Ave., Rosemont, Ill, USA 60018
 Located 2.5 miles E of O'Hare International Airport.



TTCC and NCC Held "Sustainable Concrete Pavements" Meeting in South Dakota, USA



The semi-annual Technology Transfer Concrete Consortium and National Concrete Consortium (TTCC & NCC) met September 13-15, in Rapid City, South Dakota, USA. Attendees, representing 22 DOTs, FHWA, ACPA, academia, consultants and industry, participated in presentations and open discussions related to the meeting theme, Sustainable Concrete Pavements. Other hot topics included MEPDG implementation, pavement foundations, concrete delivery time, joint deterioration, a new dowel systems guideline and more. The field demonstration highlighted SD/DOTs use of GPR for checking steel placement in newly placed pavements. These meetings provided an opportunity for state transportation concrete engineers, researchers and industry to come together, share experiences, concerns and technology transfer on materials and construction issues in a less formal atmosphere. The agenda and presentations will soon be available via the CP Tech Center website: http://www.cptechcenter.org/t2/2011_TTCC-NCC_Meetings.htm. Several tech briefs, guidelines and reports related to these topics and more are available at: <http://www.cptechcenter.org/publications/index.cfm>.



AMERICAN CONCRETE PAVEMENT ASSOCIATION

NATIONAL CONCRETE PAVEMENT DESIGN WORKSHOP

Highway, Airport, and Roadway Pavement Design

- Pavement Design Software
- Emerging Pavement Design Methods
- Pavement Analysis Tools

Rosemont, Illinois
 October 17-19, 2011
 (National Concrete Pavement Joint Design Workshop - October 20)

The American Concrete Pavement Association will award up to **21 Professional Development Hours (PDH's)** to participants who complete the National Concrete Pavement Design Workshop

21 Earn up to 21 professional development hours for successful completion of this course.

Map of the United States with a star highlighting the location of Rosemont, Illinois.

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HONORARY MEMBERS

Periodically, ISCP features Honorary Members in our Newsletter and we seek nominations for Honorary Membership for consideration by the Board of Directors. Honorary members are individuals who have provided exemplary service to the improvement of concrete pavement technology over their careers and to the International Society for Concrete Pavements. ISCP has honored 18 individuals with Honorary Member status. Current ISCP Honorary Members can be viewed at: http://www.concretepavements.org/honorary_members.htm.

Nominations for honorary membership may be submitted to the ISCP Secretary using the standard nomination form (available at the link above) at any time by any ISCP member in good standing. The ISCP secretary will prepare copies of all active nominations and distribute them to the ISCP Board of Directors for consideration at the January 21, 2012 Board Meeting. Honorary members are inducted at the next annual membership meeting of the ISCP. Please go to <http://www.concretepavements.org/contact.htm> for the standing/technical committee email addresses.

HONORARY MEMBER, Dr. Hermann Sommer

Dr. Hermann Sommer became an Honorary Member of the ISCP in 2008, joining an elite group in attaining the Society's highest recognition. Dr Sommer's induction was a result of the culmination of his dedication and service to the concrete industry, his scientific and innovative achievements and his multitude of awards. He served as the Director of the Austrian Cement Research Institute in Vienna (VÖZ) for over 20 years (1978 to 2000), significantly influencing the development of concrete road construction in Austria. He was instrumental in the decision to renew the autobahns in concrete, rather than previously-planned asphalt. His years of research and dedication to improvement methods led to the development of:

- methods for exposed aggregate concrete recycling (the reuse of old concrete as road aggregate)
- concrete technological preparations for the introduction of noise reduction on highways
- excellent frictional properties in concrete pavements
- improved treatment methods for the drainage of the concrete pad

Dr. Sommer's graduated with a civil engineering degree from the Technical University of Vienna in 1968 and began working as a research intern at the Research Institute of the Cement Industry in Düsseldorf. Within a year, he rose to head of the concrete technology department at the Research Institute of the Austrian Cement Manufacturers Association in Vienna. By 1975, he earned his doctorate with a dissertation on "The microscopic determination of air void parameters in hardened concrete road." In 1978, Dr. Sommer was appointed Director of the Austrian Cement Research Institute in Vienna. While there, he earned the titles "Architect" (1990) and "Professor" (1995). He carried his position at VÖZ with enthusiasm and passion from 1978 until his retirement in 2000.

He was instrumental in the decision to renew the autobahns in concrete, rather than previously-planned asphalt

His professional life was accompanied by numerous high-profile awards including The Golden Medal of Honour for Services to the Republic of Austria (1984), and the Lapel Pin of the Research Society for the Transport and Road Research (1985). He has more than 200 publications on the topics of soil stabilization, stability of aggregates and concrete, road concrete, curing, coating, recycling and rolling noise concrete surfaces. He was an active participant of the Austrian Standards Institute and the Research Society for the Transport and Road Research (FSV, Vienna and Cologne). He was also a long-standing member of the PIARC Technical Committee on Concrete Roads (Permanent International Association of Road Congresses); RILEM ("Réunion Internationale des Laboratoires et Experts des Matériaux, systèmes de construction et ouvrages": International Union of Laboratories and Experts in Construction Materials, Systems and Structures); and was the director of the Austrian Society of Materials Engineering.

As a revered, professional role model, going beyond the borders of an expert, Professor Sommer gained an excellent reputation as a passionate, dedicated researcher and developer of cement and concrete. Felix Friembichler, Director of VÖZ, stated, "His heart beats for concrete. His approach and implementations were a matter of the heart. He understood it, never losing contact with the practice, while always remaining grounded in reality, always humble." At construction sites, contractors and clients quickly learned that he was personally committed, was willing to help and advise during the application of new construction methods, and always guaranteed his work. These were the essential bases for trust and success. In two decades, he laid the solid foundations for a promising future in the concrete and cement industry and created the basis for current and future concrete roads. ISCP is pleased and honored to have Dr. Sommer as Honorary Member!

THESIS ABSTRACTS

Detecting Damage in Concrete Using Electrical Methods and Assessing Moisture Movement in Cracked Concrete

By Mohammad Pour-Ghaz, Ph.D., Purdue University, August 2011

Major Professor: Jason Weiss

The service life of concrete structures is directly related to their ability to impede fluid ingress. The service life of concrete infrastructure is drastically affected by presence of cracks. Cracks provide preferential paths for fluid ingress, resulting in acceleration of degradation processes. Therefore, information about the location and the extent of damage is necessary for accurate service life prediction of infrastructure.

In this thesis, electrically-based methods are developed and used to detect the time of cracking and location of cracks in concrete elements. These methods include the use of electrically-conductive thin films at the surface of concrete elements and use of electrically-conductive concrete materials. These methods are utilized to detect and quantify damage in both small-scale laboratory specimens and large-scale struc-



Dr. Hermann Sommer



Association of the
Austrian Cement
Industry

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tures. In addition, acoustic emission is used to detect and quantify damage in concrete materials. Acoustic emission has been used in this work to quantify damage that occurs at material level and also detect and quantify damage in large structures.

In addition to detecting and quantifying damage in cement-based materials and elements, this thesis studies moisture transport in concrete materials. In this thesis, physical measurements and numerical simulations have been used to study unsaturated flow in saw-cut geometries and drying of concrete materials.

This study begins by developing an electrically-based method to detect the time of cracking and the location of the cracks. This method uses an electrically conductive thin film that is applied to the surface of the cementitious materials. The electrical resistance of this film is monitored as the substrate cracks. A sudden increase in the electrical resistance of the thin film corresponds with the time of cracking. To facilitate rapid and simultaneously interrogation of the response of multiple conductive thin film elements, a frequency selective circuit (FSC) has been developed. The accuracy of the thin film method is examined by using acoustic emission measurements, image analysis, and strain measurements using strain gages on restrained concrete elements.

In the second phase of this study, the developed electrical sensing methods are used to detect and quantify damage in buried pipelines. In addition to conductive thin films, electrically conductive concrete is developed and used. These electrically-based methods are used along with acoustic emission and magnetic sensors to obtain information about progression of damage in buried segmented concrete pipelines in the vicinity of permanent ground displacement. Using these methods it was observed that the majority of the damage to the pipe segments was localized at the joints, especially the bell sections while the damage to the spigots was minimal. The damage extended away from the joints in the pipe segments in the immediate vicinity of the fault line. Telescoping (i.e., crushing of the bell-and-spigot) was a primary mode of failure.

In the third phase of this work, acoustic emission is used to detect and quantify damage in cement-based composites due to volume change of aggregates and due to aggregate expansion caused by alkali silica reaction (ASR). Use of acoustic emission to detect and quantify damage due to ASR is especially attractive since the assessment of potential for alkali reactivity in concrete materials can be difficult and time consuming using traditional length change measurements. In this phase continuous and simultaneous length change measurements on potentially reactive aggregates were performed. Length change measurements were performed along with acoustic emission measurements to compare the results and provide insight to the mechanism of ASR. The results indicate that use of acoustic emission is a potential method for rapid assessment of damage due to ASR.

Finally, in the fourth phase of the present study, using numerical and experimental methods, moisture movement in cement-based materials in the form of unsaturated fluid transport and drying is studied. The effect of fluid properties on unsaturated fluid transport and drying of cement-based materials is investigated. In dealing with unsaturated flow, a great emphasis is placed on saw-cut geometries. The saw-cut geometry has well-defined boundary conditions, and can be used to provide insight to flow in crack-like geometries. In addition to unsaturated flow and drying of cement-based materials, in this section pressure plate apparatus is used to characterize porous light weight aggregates that are used for internal curing of concrete. The use of pressure plate enables characterizing light weight aggregates at very high relative humidities where application of gravimetric methods becomes very difficult.

FLOWABLE FIBROUS CONCRETE FOR THIN PAVEMENT INLAYS

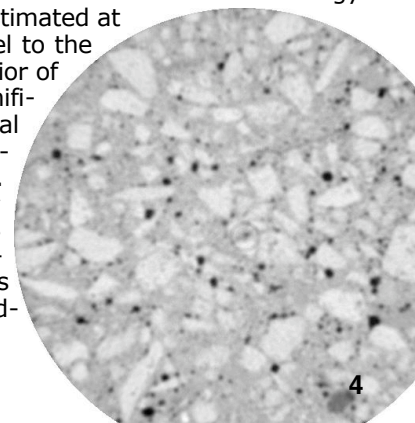
by Amanda Bordelon, Ph.D., University of Illinois

Major Professor: Jeff Roesler



Synthetic fibers within a flowable fibrous concrete (FFC) mixture were characterized by relating their spatial distribution and orientations, determined from x-ray computed tomography (CT), with the measured toughness or fracture energy response of a FFC specimen. This new type of concrete, FFC, was developed to provide a workable, flowable mixture that could be utilized to rapidly construct thin concrete pavement inlays. A full-scale demonstration project verified the feasibility of constructing the FFC as a 5 cm thick inlay bonded to an existing asphalt pavement. In order to quantify this new FFC material, flexural beam properties were measured to determine the material's toughness and fracture properties. Unnotched beams of the FFC material verified that the measured nominal strength and measured toughness increased as the specimen size was reduced. A high-energy x-ray CT and image processing technique were utilized to identify the synthetic fibers in the hardened FFC through contrast and shape-based filtering from the 3D images. The filtered images showed the number of fibers across any given vertical plane in a FFC specimen was directly correlated with the measured total fracture energy.

Fibers located near a surface (cast or mold) within a boundary zone size estimated at $\frac{1}{4}$ to $\frac{1}{2}$ of the fiber length, were found to have a higher alignment parallel to the surface with a lower number of fibers in this boundary zone, than the interior of the specimen. Fiber alignment in the FFC fracture beams had a less significant contribution, relative to the number of fibers, on the measured total fracture energy. For the FFC mixture, volumetric segregation of fibers occurred within a 15 cm cast beam, based on the analysis of the CT images. A finite element analysis using a tri-linear softening model successfully simulated the behavior of FFC for larger (15 cm) notched beam specimens and for some smaller (5 cm) beam specimens. However, a deflection hardening response occurred in some of these other 5 cm beam FFC specimens due to the higher local fiber content, for which the tri-linear softening modeling approach could not accurately simulate this post-cracking response.



CALL FOR PAPERS



Deadline for 10th ICCP Papers Extended to September 30

The Editorial Committee will still consider submitted papers for the 10th International Québec Conference, to be held July 8-12, 2012. The PAPER deadline is September 30, 2011. For submission of papers please go to: <https://www.softconf.com/c/10thiccp/>.

For more information on the 10th ICCP Québec Conference, please go to: <http://www.concretepavements.org/10thiccp/>.



Transports Québec

Call for Abstracts & Papers DEADLINES Digest:

SEPTEMBER 30, 2011: EXTENDED PAPER SUBMITTALS DEADLINE for the 10th ICCP Québec Conference, to be held in Québec, Canada July 8-12, 2012

OCTOBER 11, 2011: ABSTRACTS DUE for the International Conference on Long-Life Concrete Pavements, to be held in Seattle, Washington, USA, September 19-21, 2012.

NOVEMBER 30, 2011: CALL FOR PAPERS for the 7th Symposium on Pavement Surface Characteristics, SURF 2012, to be held September 19-22, 2012 in Norfolk, Virginia, USA.

Currently through MARCH 9, 2012: CALL FOR PAPERS for the MAIREPAV 7 Conference (the Maintenance and Rehabilitation of Pavements and Technological Control), to be held in Auckland, New Zealand, August 28-30, 2012.

UPCOMING EVENTS CALENDAR

SEPTEMBER
2011

OCTOBER
2011

NOVEMBER
2011

DECEMBER
2011

JANUARY
2012

24th World Road Congress

September 26-30, 2011 in Mexico City, Mexico
<http://www.aipcrmexico2011.org>

MnROAD Research Conference

October 4, 2011 in Minneapolis, Minnesota, USA
http://www.terreroadalliance.org/events/innovation_series/2011/index.html

Dutch Concrete Roads Day

October 11, 2011 in 's-Hertogenbosch, The Netherlands
For details, go to: [DutchConcreteRoadsDay](http://www.betonwegendag.nl/Betonwegendag/Home.html).
<http://www.betonwegendag.nl/Betonwegendag/Home.html>

Fehrl Road Research Meeting, Brussels

October 18-19, 2011 in Brussels, Belgium
<http://www.fehrl.org/index.php?m=306>

German Concrete Roads Days

October 20-21, 2011, Cologne (Köln), Germany
<http://www.fgsv.de>



2nd International Conference on Best Practices for Concrete Pavements

November 2-4, 2011 in Florianopolis, Santa Catarina State, Brazil
http://www.ibracon.org.br/eventos/2nd_pavement/informacoes.asp

The Use of Industrial Byproducts in Highway and Road Construction

November 1-2, 2011 in Austin, Texas, USA
http://rma.org/scrap_tires/conferences_and_events/industrial_byproducts_conference/

8th International Conference on Managing Pavement Assets

November 15-19, 2011 in Santiago, Chile, <http://www.icmpa2011.cl/>

ACPA's 48th Annual Meeting

November 29 - December 2, 2011 in Indian Wells, California, USA
<http://www.pavement.com>

2nd International Conference Future Concrete

December 12-14, 2011 in Dubai, UAE
<http://www.futureconcrete.com/>



ISCP Annual Membership Meeting

January 21, 2012 in Washington, DC, USA

91st Annual Meeting of the Transportation Research Board

January 22-26, 2012 in Washington, DC, USA



3rd Advanced Workshop on Concrete Pavements

July 4-6, 2012 near Québec City, Québec, Canada
<http://www.concretepavements.org/3rdworkshop/>



10th International Conference on Concrete Pavements

Organized by ISCP, July 8-12, 2012 in Québec City, Canada
<http://www.concretepavements.org/10thiccp>



The ISCP Newsletter is produced by:

Editor-in-Chief & Art Director:
Amy M. Dean
aimdean@nc.rr.com

Technical Editors:
Corey Zollinger
Nancy Whiting
Cristian Gaedicke
and **Robert Rodden**
along with

Chief Correspondent:
Neeraj Buch, Ph.D
secretary@concretepavements.org

ISCP thanks
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Wallace N. Turner
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and
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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:
Mark B. Snyder, Ph.D., P.E.
president@concretepavements.org

Vice-President:
José T. Balbo, Ph.D
vice-president@concretepavements.org

Secretary/Treasurer:
Neeraj Buch, Ph.D.
secretary-treasurer@concretepavements.org

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

Maps, globes: National Geographic Family Reference Atlas of the World ©2002 National Geographic Society, Washington, D.C. & Concise Earth Book World Atlas ©1987 Graphic Learning International Publishing Corporation, Boulder, Colorado, Essette Map Service AB Stockholm. Sources for other maps noted on perspective pages.

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