



# INTERNATIONAL SOCIETY FOR CONCRETE PAVEMENTS

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ISCP e-NEWSLETTER  
VOLUME 8, NUMBER 9

### ORGANIZATIONAL MEMBERS & MAJOR EVENT SPONSORS:



## WHAT'S NEW AT ISCP

### Renew Your ISCP Membership Today!

ISCP would like to thank all those who became new ISCP members or those who renewed their ISCP membership during the 2011 calendar year.

Individual ISCP membership renewal notices will soon be sent to 2010 and 2011 members. Dues can be paid by mail or online by a personal check or by using a credit card. For a membership renewal form, please go to: <https://sh00sh.globat.com/httpsecure/Membership/regrenewal.htm>.

As a reminder, continuing members have the option to prepay their membership dues for up to 3 additional years at current rates (to provide protection against possible future increases in dues).

Added incentive for membership renewal: All 2011 members who renew their ISCP membership for 2012 by January 31 will qualify for a \$150 reduction in registration fees for the upcoming 10<sup>th</sup> International Conference on Concrete Pavements. Individuals who allowed their membership to lapse during the 2011 calendar year can qualify for the reduced registration fee by paying back-dues for 2011 and then renewing their membership for the 2012 calendar year.

For ISCP Membership Forms, please go to: [https://sh00sh.globat.com/httpsecure/Membership/new\\_registration.htm](https://sh00sh.globat.com/httpsecure/Membership/new_registration.htm)

### YOUR SPONSORSHIP OPPORTUNITY: for the 10<sup>th</sup> International Conference on Concrete Pavements, Québec, Canada, 2012



ISCP invites you to be a sponsor for the 10<sup>th</sup> International Conference on Concrete Pavements (10<sup>th</sup> ICCP), to be held July 8-12, 2012 in Québec City, Québec, Canada.



### 34-Year Tradition

The 10<sup>th</sup> ICCP will carry on the tradition of a series of international conferences begun in 1977 by Purdue University, now being organized by the ISCP. As with the previous international conferences, held every four years, the focus of the Québec 2012 conference will be to present information on new technologies related to the design, construction and rehabilitation of various types of concrete pavements. The theme for the 10<sup>th</sup> ICCP is: *"Sustainable Solutions to Global Transportation Needs"*

### Why Sponsor?

Up to 400 delegates from around the globe will come together in Québec City for this important conference for pavement professionals. These professionals include federal, state, and municipal engineers; consulting engineers; contractors; researchers; materials suppliers; producers; academia and many others who value high-performance pavements for roads, streets, airports and industrial uses.

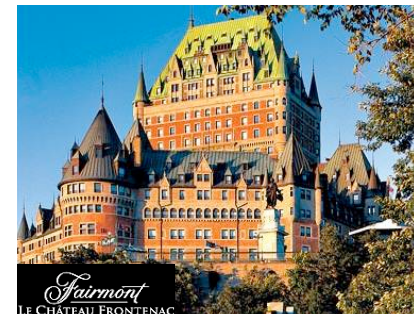
This is a unique opportunity to build brand awareness and differentiate your products and services to key decision-makers on an international stage. Previous conferences have attracted participants from more than 30 different countries. Early responses to this Québec 2012 conference suggest that very strong interest continues from almost every continent.

### Sponsor Levels

You are invited to participate and are offered four (4) levels of sponsorship: Platinum, Gold, Silver and Bronze. For Sponsorship details, please go to: <http://www.concretepavements.org/10thiccp/sponsors.htm>

the 10<sup>th</sup> ICCP will carry on the tradition of a series of international conferences on Concrete Pavements, held every 4 years...

The Conference hotel, Fairmont Le Château Frontenac, is a regal castle-like hotel that overlooks the majestic St. Lawrence River from inside the 400-year-old walled Québec City.





For a printable two-page flyer on the conference, please go to:  
[http://www.concretepavements.org/10thiccp/10th\\_iccp\\_flier\\_oct11.pdf](http://www.concretepavements.org/10thiccp/10th_iccp_flier_oct11.pdf)

For all information pertaining to the 10<sup>th</sup> ICCP Conference, please go to:  
<http://www.concretepavements.org/10thiccp/index.htm>.

**Thank you to our sponsors thus far, collaborators and host!**

**Committed Sponsors:**

**Platinum** Holcim, Canada

**Gold** American Concrete Pavement Association  
Cement Association of Canada  
GENIVAR  
Ministry of Transportation of Ontario  
U.S. Federal Aviation Administration (FAA)

**Bronze** Canadian Airfield Pavement Technical Group  
Manitoba Infrastructure and Transportation

**Collaborators:**

CP Tech Center  
EUPAVE  
Federal Highway Administration  
Office du Tourisme de Québec  
Transportation Research Board

**Conference Host:**

Transports Québec



# CONFERENCE NEWS & UPDATES

## Student Poster Presentation for the 10<sup>th</sup> ICCP Conference

ISCP is pleased to announce the Student Poster Board Competition for the 10th International Conference on Concrete Pavements which will be held July 8-12, 2012 in Québec City, Québec, Canada. The best student poster presentation at this conference session will be awarded the *B.F. McCullough Award for Outstanding Student Poster Board Presentation*.

Graduate and undergraduate college students are strongly encouraged to submit a poster describing their research progress in any area related to concrete pavement systems. Each student poster will undergo a two-step review process, including an initial review and acceptance of the entry (performed prior to the conference), followed by a final evaluation of the poster board and presentation at the conference. For important poster presentation dates and details, please go to:  
[http://www.concretepavements.org/10thiccp/student\\_posters.htm](http://www.concretepavements.org/10thiccp/student_posters.htm).

The American Concrete Paving Association (ACPA) encourages students intending to participate in this competition to contact their local ACPA Chapter to apply for funds to offset the conference registration fee or travel expenses. To locate your local ACPA Chapter, please go to "My Locator" at:  
[www.pavement.com](http://www.pavement.com).

For questions, please contact:  
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## Australian Conference Features One-of-a-Kind Machine!



Your Pavement Preservation Resource®

John Roberts, the Executive Director of the International Grooving & Grinding Association (IGGA), made a visit to Australia in September as part of an invitation by the Roads and Traffic Authority (RTA) of NSW to be keynote speaker at their biennial conference in Sydney. John introduced the Aussie pavement engineers to the next generation concrete surfacing consisting a combined grind and groove surface treatment.

While in Australia, John inspected several recent grinding projects and assisted the RTA with making improvements to blade spacing and the new RTA diamond grinding specification R93. One nighttime inspection included the viewing of a new prototype of a special outrigger to the grinding machine to allow grinding close to the curb on an existing jointed concrete pavement constructed back in the 1940s. Roberts noted that the extension grinding device on a conventional DG machine was the first he had ever seen in the world!

RTA project managers are eager to assess the performance of the next generation of concrete surface, and very optimistic about future reports of new surface trials on the Hume and Pacific Highways.

**New diamond grinding drum attachment allows Aussie contractor to grind near the edge of the curb with conventional machine.**

**Roberts noted that the extension grinding device on a conventional DG machine was the first he had ever seen in the world!**

**B.Frank McCullough Award for Outstanding Student Poster Board Presentation**



# INDUSTRY RESOURCES

## Surface Resistivity Measurements for Quality Assurance

The Louisiana Transportation Research Center (LTRC) has recently completed a comparative study on permeability between the surface resistivity meter, designed by Proceq, and the conventional method of rapid chloride ion penetration, ASTM C1202. The tested factorial consisted of control mixtures typically found in structures local to Louisiana, but also included many mixtures from an ongoing ternary project with up to 90% supplemental cementitious materials.

The surface resistivity results exhibited a strong correlation with rapid chloride permeability results across a wide range of permeability values and testing ages. Correlations of 28-day and 14-day surface resistivity values to 56-day rapid chloride permeability suggest that the surface resistivity meter was able to predict 56-day results at a much earlier age. Compared to the current ASTM C1202 test procedure and preparation, the surface resistivity meter has proven to be a quicker, cheaper, non-destructive and user-friendly method for estimating concrete permeability.

Based on the findings of the research, the authors recommend surface resistivity testing for permeability at 28 days of age. The short testing time and non-destructive nature of the surface resistivity device allows samples already collected for quality control to be tested for permeability immediately before compression testing. The Louisiana Department of Transportation and Development (LADOTD) started implementation of special provisions to begin use of the surface resistivity meters on current projects requiring permeability.

A preliminary cost-benefit analysis shows that LADOTD will save about \$101,000 in personnel costs and an estimated \$1.5 million in quality control costs, which will indirectly benefit the current operations of the Department. The savings will be much greater for LADOTD, suppliers and contractors when permeability requirements are applied statewide.

*Tyson D. Rupnow, P.E., Ph.D., Louisiana Transportation Research Center  
Patrick J. Icenogle, E.I., Louisiana Transportation Research Center*

...the surface resistivity meter has proven to be a quicker, cheaper, non-destructive and user-friendly method for the permeability.



Surface Resistivity Test Being Conducted on a 4" x 8" Cylinder



**PHOTOCATALYSIS:** A natural phenomenon in which a substance, the photocatalytic principle, utilizes light to alter the speed of a chemical reaction. Photocatalysis is an accelerator of an oxidation process that already exists in nature through the energy of light. It promotes faster decomposition of pollutants and prevents them from accumulating. ©Essroc Italcementi Group

## Research Team Investigating Photocatalytic Cement in Highway Application



New research is aimed at determining the environmental aspects of photocatalytic cement in concrete used in a U.S. highway pavement application. To complete the research, the Missouri DOT is collaborating with FHWA, CP Tech Center, Essroc Italcementi Group and Lehigh Hanson, Inc. The project is being constructed by Fred Weber, Inc., St. Louis, Missouri, USA. The special cement, marketed under the trade name "TX Active," is said to help reduce environmental pollutants from vehicle exhausts. [Photocatalysis is a natural phenomenon in which a substance, the photocatalyzer, utilizes light to alter the speed of a chemical reaction. Photocatalysis is an accelerator of an oxidation process that already exists in nature through the energy of light. It promotes faster decomposition of pollutants and prevents them from accumulating. ©Essroc Italcementi Group].

The research is part of a two-lift paving demonstration project on Highway 141 in the St. Louis area. The photocatalytic cement is being used in the concrete for shoulders and the mainline pavement. In the mainline pavement, the specially blended cement will be in the wearing course, the thinner of the two layers. Researchers will monitor air and water impacts for a full year. The research monitoring will be done by researchers at Iowa State University (ISU) and the University of Missouri at Kansas City (UMKC). Lead researchers are ISU's James Alleman, Ph.D., and UMKC's John Kevern, Ph.D.

For more information on Photocatalytic Cement, you may download a pdf from Essroc Italcementi Group: <http://www.essroc.com/assets/essroc/Products/TXACTIVEPRODUCTDATASHEET2008.pdf>

## CP Road MAP Latest E-News



The most recent edition of the CP Road Map - Moving Advancements into Practice (MAP) Briefs - E-News includes articles which describe promising research and technologies that can be used now to enhance concrete paving practices. The [September-October 2011 MAP Brief: Introducing--The CP Road Map, 2nd Edition](#) has recently been published. This MAP brief describes the changes and updates made to the CP Road Map, 2nd edition: [www.cproadmap.org/publications/e-news.cfm#](http://www.cproadmap.org/publications/e-news.cfm#)

### News from the Road

■ A recent Pennsylvania report evaluates statewide design inputs for the Mechanistic-Empirical

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- Pavement Design Guide. [www.cproadmap.org/publications/e-news.cfm#NR1](http://www.cproadmap.org/publications/e-news.cfm#NR1)
- A recent tech brief published by the Seal/No Seal Group provides information on backer rod absorption. [www.cproadmap.org/publications/e-news.cfm#NR2](http://www.cproadmap.org/publications/e-news.cfm#NR2)
- A Virginia DOT study aims to develop an end-result specification for hydraulic cement. [www.cproadmap.org/publications/e-news.cfm#NR3](http://www.cproadmap.org/publications/e-news.cfm#NR3)
- The National CP Tech Center has published a tech summary on the design of concrete overlays. [www.cproadmap.org/publications/e-news.cfm#NR4](http://www.cproadmap.org/publications/e-news.cfm#NR4)

**Updates from the States: Kansas** Ongoing and completed research in Kansas is addressing research needs outlined by the CP Road Map. [www.cproadmap.org/publications/e-news.cfm#DOT](http://www.cproadmap.org/publications/e-news.cfm#DOT)

For the NEW E-News from CP Road MAP, click on: [e-news homepage](#).  
To download a PDF, please go to: [www.cproadmap.org/publications/MAPbriefSept-Oct2011.pdf](http://www.cproadmap.org/publications/MAPbriefSept-Oct2011.pdf)  
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](mailto: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.**

# THESIS ABSTRACT

## Workability and Air Content Related Problems in Plain and Fly ash Cementitious Systems

Chaitanya Paleti S.S.K. M.S.C.E., Purdue University, December, 2011 Major Professor: Jan Olek

*This thesis summarizes the results of the investigation of the parameters that may lead to workability problems, early age hydration irregularities and difficulties in achieving quality air void system in both plain and fly ash cementitious mixtures. The present research work was performed in three major phases and the statistical modeling was used to aid in data interpretation.*

Phase I involved evaluation of more than 100 different paste and mortar mixtures with respect to potential slump loss and hydration irregularities. The results showed that cements with high C<sub>3</sub>A and low SO<sub>3</sub> content were more prone to incompatibility problems. It was also observed that mixes with lignin based water reducer had higher tendency for rapid stiffening than mixes with poly-carboxylate type super-plasticizer (PCSP). Increased replacement of cement by class C ashes resulted in the development of abnormal secondary peaks in semi-adiabatic calorimetry curves and accelerated the setting behavior.

The focus of phase II was on identifying material combinations that can result in problems related to air void generation and stability. The experiments were conducted on 18 different systems and included determination of foam drainage and foam index parameters. The results show that the amount of air entrainers required to obtain target air percentage, increased with the increase in the fly ash content in the mixture. Lignin based WR had, in general, a higher air entraining effect than the super-plasticizer when used in combination with air entrainers. Also, five out of the six mixtures with most unstable air void system, identified using the foam drainage experiments, contained the PCSP.

The third (and final) phase of the study involved production of 10 concrete mixtures to verify the incompatibility findings from the paste and mortar experiments performed in phases I and II. The observations from the concrete testing were in agreement with the findings from the paste and mortar testing.

Statistical modeling (performed using the material properties and results from phase I) identified the total C<sub>3</sub>A, SO<sub>3</sub> and Na<sub>2</sub>O<sub>equ</sub> contents of the binder system along with presence of PCSP (if present in the mixture) as statistically significant in predicting the initial set time and area of spread measured at different time using the mini-slump test.

Key words: Materials incompatibility, early age stiffening, set time and hydration irregularities, admixtures, mini-slump, foam drainage, semi-adiabatic calorimetry, statistical modeling.

# CALL FOR PAPERS

## Call for Abstracts & Papers DEADLINES Digest:

**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.

**Currently: CALL FOR PAPERS** - specifically targeting (but not limited to) durability and sustainability issues related to cement concrete pavements - for the 2nd International Conference on Sustainable Construction Materials (SUSCOM), to be held in Wuhan China, October 18-21, 2012.



# UPCOMING EVENTS CALENDAR

NOVEMBER  
2011



## 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](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/](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>

DECEMBER  
2011

## 2nd International Conference Future Concrete

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

JANUARY  
2012



## 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

JULY  
2012



## 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 Quebec City, Canada  
<http://www.concretepavements.org/10thiccp>

For events taking place in 2012 and 2013, please go to: <http://www.concretepavements.org/calendar.htm>

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ISCP thanks  
**Tyson D. Rupnow, Patrick J. Icenogle, Elin Jensen, Sherry Sullivan and Chaitanya Paleti**  
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.

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Please visit the **ISCP Website** at [www.concretepavements.org](http://www.concretepavements.org) for more information about ISCP.

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