

NTERNATIONAL SOCIETY FOR CONCRETE PAVEMENTS

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President's Message:

ISCP Board Members Met In Washington, DC

ISCP held its annual combined membership and board meeting on Saturday, January 22nd at the Omni Shoreham Hotel in Washington, DC. More than 40 members and guests attended and participated.

Highlights of the meeting included:

- Review of financial statements showed that expenditures were slightly
 higher than income in 2010 (as is typical in off-conference years), but that
 the operating deficit was not nearly as high as originally budgeted.
- 10th Conference activities were discussed including the hire of an event coordinator (Agora Communications of Québec City, Canada), the development of preliminary sponsorship programs, registration fee structures and overall conference budget.
- Approximately 50 people have completed early registration for the Xi'an (CHINA) International Conference on Concrete Pavements in April 2011, including about 10 people from outside of China. Potential delegates are encouraged to register at http://pavement.chd.edu.cn/iccpdcr/Home.html.
- As Board Member participation and trials are underway, an ISCP group is being established for members to blog their questions and technical discussions on LinkedIN. The group will be open to general membership by mid to late March, 2011.
- An international web of reporters is being established to ensure more international content for more frequent (monthly) ISCP newsletters.
- The Sustainability Committee is completing a review of the GREENROADS pavement sustainability rating system and will provide feedback to the program developers.

An ISCP group is being established for members to blog their questions and technical discussions on LinkdlN.

For the complete draft of the meeting minutes, please visit the website at http://www.concretepavements.org/Meetings/COMBINED%20GENERAL BOARD%20MEETING JANUARY 22 2011 TRB WASHDC.pdf.

Sincerely, Mark B. Snyder ISCP President







Association Canadienne









National Concrete Pavement Technology Center



Transports
Québec





e-NEWS



CONFERENCE NEWS



...the focus: fundamental land-based infrastructure such as airports, highways & railways & harbors...

ANTIAGO









After the successful 2007 International Workshop in Recife, Brazil, with 250 participants, the *Second International Conference on Best Practices for Concrete Pavements* seeks to focus on fundamental land-based infrastructure, such as airports, highways, railways and harbors; which are very important facilities for South American development. International experiences and contributions will be welcomed for presentations and technology exchange.

The Conference will be held on November 2–4, 2011 in Florianópolis, Brazil. This conference will focus on innovative construction and maintenance technologies with special regards to environmental issues. The main topics for this conference will be:

- Jointless concrete pavements
- Precast concrete pavement
- Concrete pavement recycling techniques
- Innovative technologies for concrete paving and maintenance

Particular interest will be given to South American development, while the conference will offer simultaneous translation into Spanish and English to accomplish the goal of attracting a large Latin-American contingent. Special keynote speakers invited from Europe and the USA will convey their expertise dur-

ing the conference. This is a wonderful opportunity for the exchange of experiences between people from several countries, including Asia and Africa. Participants are expected to include representatives from public and private road agencies, industry, academia, professional consulting and construction engineers, students and many others concerned with concrete pavements.

the needs to achieve the best design and construction results, as well as specify ideal concrete properties and issues for pavement maintenance. It must be understood in fact as an up-to-date and modern practice for the success of concrete pavement construction. Innovative research experiences will be accepted when their efficiency is demonstrated through actual field application. The conference proceedings will be published along with the 53rd Brazilian Concrete Conference proceedings in electronic media, and submitted for possible inclusion in the Engineering Index.

Submission of full papers for review will be available online from February 1st to March 31, 2011. Conference registration will open in June, 2011. All registered participants will be allowed to attend the 53rd Brazilian Concrete Conference along with its international programs.

For further information, please go to: http://www.ibracon.org.br/news/2nd 2011/2nd2010 jan10.htm

One-Day Workshop on Trends & Techniques in Concrete Pavements for 21st Century





A one-day workshop, organized by the Association of Consulting Civil Engineers (India) Chennai Centre and the Indian Concrete Institute Tamilnadu Chennai Centre, will be held on Saturday, February 12, 2011, at the ICSR Auditorium at IIT Madras, Chennai, India.



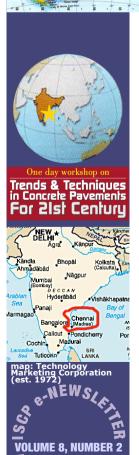
Pavements constructed with concrete offer significant advantages when compared to bituminous pavements. Concrete roads are the most durable, safe and cost efficient. They require minimum to nil maintenance for 25-30 years, often outlive their design lives and can last up to 50 years. Urban roads - including rural highways built with concrete - offer 10-15 % less vehicle running costs when compared to bituminous roads.

The objective of the workshop is to:

- Čreate an awareness about environmentally and economically sustainable concrete pavements and concrete overlays (white topping)
- Create awareness of the need for more kilometers of concrete pavements in India
- Highlight the advantages of concrete pavements /overlays over bituminous pavement
- Enrich knowledge of materials, equipment and construction methodology required for making good concrete pavements, etc.
- Teach how to overcome the limitations in concrete pavements construction and maintenance.

Formulation and Necessity, Design Aspects, Laying Technology, Mechanization, Quality Control, Riding Quality & Serviceability, Maintenance-Repairs and Rehabilitation, White Topping, Special Concretes, Recycling & Sustainability, Contract Conditions and Legal Aspects.

For further information on the speakers and to register, please download the following form http://img.masterbuilder.co.in/edata/Newsletter/V1N49/Pavement-Workshop.pdf



PUARY

Article provided by ISCP honorary member Dr. D. Thirunakkarasu

Email: dthirunakkarasu@vsnl.com



7th International Conference on Road



You are cordially invited to attend the 7th International Conference on Road and Airfield Pavement Technology sponsored by ICPT. It will be held August 3-5, 2011 at Queen Sirikit National Convention Center, Bangkok, Thailand. The objective of the conference is to promote pavement technological advancement worldwide, with special emphasis in pavement technological development in developing countries.

Please visit the website at http://www.ICPT2011.org



Organized by:



International Committee on Road and Airfield Pavement Technology

ECHNOLOGY TRANSFER POSTINGS



ACPA Expands Web Apps Library

The American Concrete Pavement Association, USA, formally announced its web-based applications library in December, 2010, and since then, has almost doubled the number of "web apps" and links to desktop software programs. The response to the web applications has been exceptionally positive, during its debut at the 47th Annual Meeting of the ACPA, as well as during World of Concrete and the Transporta-

tion Research Board's 89th Annual Meeting recently.

There is no charge for accessing or using the web apps, which can be accessed by visiting the ACPA website at http://www.acpa.org (either the Adobe Flash® or standard version) A direct link to the web apps library: http://apps.acpa.org View all of the applications: http://1734298.sites.myregisteredsite.com/apps/allapps.html. "Go to apps home" and a direct link to ACPA-affiliated Chapter/State paving associations:

http://1734298.sites.mvregisteredsite.com/apps/contact.html. ACPA encourages companies and organizations to include the web apps link on their websites. For purposes of natural linking or backlinking, ACPA suggests: http://apps.acpa.org.

For additional information about the ACPA web apps and links to software programs, contact Robert

Rodden, P.E., Director - Technical Service & Product Development, American Concrete Pavement Association, rrodden@acpa.org.

ACPA App Computer Screen Image



The web apps include the following:

- o Bonded Concrete Overlay on Asphalt (BCOA) Calculator
- o Evaporation Rate Calculator
- o k-Value Calculator
- o Subgrade Resilient Modulus Calculator
- o Area and Volume Calculator (also calculates tons of cement required)
- o Radius of Relative Stiffness Calculator
- o Highway Specs for Airfields Lookup
- o Friberg Single Dowel Analyzer
- o Friberg Group Dowel Analyzer



UARY

New Concrete Sustainability Award...seeking submissions by Feb 28th



The American Concrete Institute (ACI) announced a new ACI American Concrete Institute* Concrete Sustainability Award and is currently seeking submissions for this first award to be granted in 2012.

The ACI Concrete Sustainability Award will recognize individuals or teams who have made contributions in highlighting concrete's role related to sustainability. Notable contributions may be: demonstration or improvement in concrete's sustainable attributes through research, design, education, or construction; and/or the use of concrete in innovative ways to contribute to a more sustainably-built environment. The deadline for submissions is February 28, 2011. The first award will be given during the ACI Fall 2012 Convention in Toronto, Canada in October 21-25, 2012.

> For more information, submission instructions, and downloadable entry forms, visit http://www.concrete.org/members/mem_info_awards.htm#sustainability

Sign up for the New CISI Sustainability bi-monthly e-Newsletter!

Concrete Joint Sustainability Initiative The Concrete Joint Sustainability Initiative (CJSI), a unified group of 27 concrete associations, is launching an e-newsletter that provides recipients with timely information on concrete industry events and news. The "SUSTAIN - Concrete Joint Sustainability Initiative e-News and Views," will come to you 6 months a year if you sign up online at http://sustainableconcrete.org/?g=node/19

TECHNOLOGY DEVELOPMENTS

Uruguay will have its first 21km of Concrete Bonded Overlay

A pavement project consisting of 21 km (13 miles) of bonded concrete overlay was recently proposed, bid on October 2010, and approved for construction in western Uruguay, near Fray Bentos City. The project construction will start in May 2011. The concrete overlay will be built on a route subjected to heavy loads, generated mainly by trucks that carry wood for a large pulp cellulose factory (1 million metric tons of pulp per year). The overall traffic is expected to be intense, reaching approximately 14 million equivalent single axle loads.

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One interesting aspect of the project is that the 15 cm (5.9 inch) thickness concrete overlay was chosen over an asphalt alternative for a life equal to 15 years, despite the lack of successful past experiences using concrete in that area. The pavement overlay was designed to be built over a 14 cm (5.5 inch) existing asphalt pavement; the slabs will be 1.8 by 1.8 meters (9 x 9 feet). In order to reduce the risk of reflective crack propagation and improve the overall pavement crack resistance, a fiber-reinforced concrete mix was specified, with a modulus of rupture equal to 5 MPa (725 psi) and residual strength ratio Re,150 equal to 20%.

ISCP's
Dr. Jamshid
Armaghani &
Dr. Jeffery
Roesler held
concrete
pavement
seminars in
Uruguayincreasing
the interest in
concrete
pavements...

A key role in this success was the early promotion of white topping started by Cementos Artigas in 2009. In addition, ISCP Board members Dr. Jamshid Armaghani and Dr. Jeffery Roesler came to Uruguay and held seminars on concrete pavements, which increased the in-



terest in concrete pavements and the involvement by local civil engineers.
The local perception about concrete pavements has dramatically improved over the last 2 years in Uruguay, where asphalt was previously

considered the only material to be used on pavements.

this success...
early promotion
of whitetopping
by Cementos
Artigas



Sustainable Concrete Pavements News Highlights

'Green Concrete" Provides a Cool Surface

What's light green, sprayed on top of asphalt, and lowers the temperature of parking lots by 17°C (30°F)? If you went to Robert L. Duffy Charter School in Phoenix, Arizona, USA, you'd know the answer.

Late December, 2010, the charter school became the testing ground for "green asphalt," a concrete-based reflective covering designed to make asphalt surfaces cooler and more durable. "Phoenix-based Emerald Cities™ installed the coating at the school to demonstrate the viability of the technology to city leaders and contractors," company CEO Sheri Roese said. As part of its efforts to be carbon neutral, the school had its parking lot resurfaced to lower the energy needed for cooling adjacent buildings and make the parking lot more comfortable for students during lunch and recess. "On very hot days, tem-

peratures of parking lots can get so hot - sometimes topping 93°Celsius (200° Fahrenheit) - that the asphalt will begin to soften and offgas," Roese said. The lighter "cool pavement" can reduce temperatures by 17°C to 22°C (30°F to 40°F), according to Emerald Cities™.

The idea of using reflective materials to lower temperatures locally and as a tool against global warming is gaining ground.

"The U.S. Department of Energy (DOE) installed a "cool roof" on one of its buildings, a white-colored coating that replaced a roof in need of replacing. A cooler roof can mean a 10% to 15% reduction in the cooling load," DOE under secretary Cathy Zoi said in a blog. "Researchers at the Lawrence Berkeley National Laboratory estimated that if just over three quarters of commercial buildings were covered with cool roofs, the reduction in air conditioning load would be the equivalent of taking a millions cars off the road, or 6 million metric tons of carbon dioxide per year," Zoi said. In aggregate, cool roofs can make a significant difference

Parking lot green coating can reduce hot temperatures by 17°C to 22°C (30°F to 40°F) & a white 'cool roof' can mean a 10-15% reduction in air conditioning use





on energy use and act as a way to reflect heat back into space. Lawrence Berkeley is now working with the Oak Ridge National Laboratory and the California Energy Commission on the Cool Colors Project to research and develop cool-colored roofing materials.

"To make the coating, reflective pigments are dissolved in a special type of concrete engineered to be much stronger than traditional concrete. This concrete is nano engineered to create a dense silica structure of tiny crystals that makes concrete stronger. Because it's stronger than regular concrete, a thin layer, just a fraction of an inch thick, can be applied to surfaces and last for five to eight years," Roese said. The cost is one dollar per square foot, plus labor. The coating can be sprayed on, rolled on with painting rollers, or



pressed on with a squeegee-like applicator, depending of the thickness. The installation at the school was done with sprayers similar to those used by swimming pool professionals and house painters.

"For municipalities, cool pavements can be part of sustainability efforts and address the urban heat island effect, where built-up areas are hotter than rural areas. Colors can be chosen for decorative purposes and put on pavement such as crosswalks or bike paths and even walls," said Roese.

~ Written by Martin LaMonica, Senior Writer for CNET's Green Tech blog

(Article from cnet.com Jan 18, 2011) Read more: http://news.cnet.com/8301-11128_3-20028819-54.html#ixzz1BWSLGmV8





RECENT THESIS ABSTRACTS

CONCRETE MIXTURE PROPERTIES AFFECTING THE AGGREGATE INTERLOCK MECHANISM OF JOINTS AND CRACKS FOR RIGID PAVEMENT SYSTEMS

Luis Carlos Ramírez, M.S. Thesis University of Pittsburgh Thesis Advisor: Julie Vandenbossche November, 2010

A high-load transfer efficiency (LTE) across the joints and cracks is critical for the long-term performance of a concrete pavement system. One of the most important factors affecting the LTE of non-doweled joints and cracks is the natural but complex mechanism of aggregate interlock which is characterized by an aggregate interlock factor or joint stiffness (AGG). This mechanism has been found to be extensively controlled by the crack width and the surface texture of the cracked face. This surface texture is significantly influenced by critical concrete mixture properties such as water-to-cementitious material ratio, and the type, top size, and hardness of the coarse aggregate.

The determination of the aggregate interlock factor, AGG, can be an intricate procedure. Obtaining this factor is commonly performed through iteration in a finite element model, through back-calculation using field data, through constitutive models, or through the use of empirical models that have been established based on laboratory test results. In a similar manner, the determination of the LTE at the joints and cracks exhibits some level of complexity. LTE can only be determined for in-service pavements or large-scale slabs through the use of specialized equipment such as a falling weight deflectometer (FWD). Consequently, it is imperative to develop relationships that allow an estimation of these important parameters, LTE and AGG, as a function of critical concrete properties and known pavement characteristics.

The main focus of this study is to develop a relationship between key concrete mixture properties and the parameters LTE and AGG for different geometric and structural pavement conditions. In order to achieve this goal, first, different concrete mixtures were evaluated in the laboratory on their strength, fracture properties and surface texture characteristics. These results were then supplemented with laboratory and field data from previous studies, and a regression analysis for the complete data set was performed. As a result, an empirical model relating the critical concrete properties and the aforementioned surface texture of the transverse joints/cracks was created. Lastly, this model was incorporated into existing equations to establish a relationship between key concrete properties and the aggregate interlock parameters LTE and AGG.



GUIDELINES FOR PAVING ADJACENT JOINTED PLAIN CONCRETE PAVEMENT LANES SEPARATELY

Kerri Gatti, M.S. Thesis University of Pittsburgh Thesis Advisor: Julie Vandenbossche November, 2010

Often times, concrete pavements are constructed by first paving the mainline followed by the shoulder some time later. It is important to factor differences in structure, material properties, and climatic conditions between the mainline and shoulder into the design; otherwise, premature cracking can develop. Cracking can occur in the newly paved lane, the existing lane, or both. The primary objective of this research was to develop guidelines to protect against premature cracking from paving adjacent lanes separately.

A review of several case studies revealed that longitudinal shear cracking and transverse cracking in the shoulder are the main distresses associated with delayed shoulder construction. Longitudinal shear cracking occurs due to dissimilar transverse joint openings in the mainline and shoulder. In warm weather, shoulder joints close first causing shear stresses to develop in the mainline. Transverse cracking in the shoulder is caused by thermal incompatibility between the mainline and the shoulder and small shoulder widths (less than 5 ft).

The following study uses finite element analysis to analyze the causes of longitudinal shear cracking and transverse cracking in the shoulder. A parametric study was developed for each distress so that guidelines could be established and future occurrences of the distresses can be prevented.

CALL FOR PAPERS DUE:

If you, as an ISCP member, would like to BE A REVIEWER (for abstracts and papers for various conferences; and for technical publications), please contact Bryan Perrie at: bryan@cnci.org.za or fill out the review panel form online:

https://spreadsheets.google.com/viewform?formkey=dFQ0am55MGVIYmstRklkV0k0b2o4ZGc6MQ Any questions can be directed to editorial@concretepavements.org

Call for Papers DEADLINES:

FEBRUARY 8, 2011: EXTENSION for PAPERS SUBMISSION for the 7th International Conference on Road and Airfield Pavement Technology sponsored by ICPT. Held at the Queen Sirikit National Convention Center, Bangkok, Thailand August 3-5, 2011

MARCH 31, 2011: SUBMIT PAPERS for the 2nd International Conference on Best Practices for Concrete Pavements held in Florianópolis, Brazil, November 2nd – 4th, 2011

MARCH, 2011: ABSTRACT SUBMISSIONS for the 7th RILEM Conference on Cracking in Pavements, in Delft, the Netherlands, June 20-22, 2012.

APRIL 30, 2011: CALL FOR ABSTRACTS for the 10th International Conference on Concrete Pavements, Quebec, Canada, July 8-12, 2012.

UPCOMING EVENTS CALENDAR

FEBRUARY 2011 One-Day Workshop on Trends & Techniques in Concrete Pavements for the 21st Century February 12, 2011, at the ICSR Auditorium at IIT Madras, Chennai, India http://img.masterbuilder.co.in/edata/Newsletter/V1N49/Pavement-Workshop.pdf

10th International Conference on Sustainable Construction Materials & Pavement Engineering February 16-17, 2011 in Liverpool, England, UK http://www.ljmu.ac.uk/BLT/BEST/LCMT/index.htm

MARCH 2011 1st ASCE T&DI Congress: Integrated Transportation & Development for a Better Tomorrow March 13-16, 2011 in Chicago, Illinois www.tdi-congress.org

APRIL 2011 International Conference on Concrete Pavement Design, Construction & Rehabilitation April 18-20, 2011 in Xi'an, Shaanxi Province, P.R. China http://www.concretepavements.org/China_2011_cfp.pdf
http://pavement.chd.edu.cn/iccpdcr

JULY 2011 **10th International Conference on Low-Volume Roads** July 24-27, 2011 in Lake Buena Vista, Florida, USA http://www.trb.org/conferences/2011/10LVR

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7th International Conference on Road & Airfield Pavement Technology August 3-5, 2011 in Bangkok, Thailand http://www.icpt2011.org/

SEPTEMBER

NOVEMBER 2011

2011 International Concrete Sustainability Conference

August 9-11, 2011, in Boston, Massachusetts, USA. Co-hosted by the Massachusetts Institute of Technology. http://www.sustainabilityconf.org/ or contact Lionel Lemay, LLemay@nrmca.org, 847-918-7101.

24th World Road Congress September 26-30, 2011 in Mexico City, Mexico http://www.aipcrmexico2011.org

ISCP

2nd 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

8th International Conference on Managing Pavement Assets November 15-19, 2011 in Santiago, Chile http://www.icmpa2011.cl/

JUNE 2012 International Congress on Durability of Concrete June 18-21, 2012 in Trondheim, Norway http://www.icdc2012.com

7th RILEM Conference on Cracking in Pavements
June 20-22, 2012 in Delft, the Netherlands
http://www.rilem2012.org

SEPTEMBE

10th International Conference on Concrete Pavements

Organized by ISCP

July 8-12, 2012 in Quebec City, Canada http://www.concretepavements.org/10thiccp

4th International Conference on Accelerated Pavement Testing (APT 2012) September 2012 in Davis, California, USA http://ucprc.ucdavis.edu/APT2012

10th International Conference on Superplasticizers & Other Chemical Admixtures in Concrete October 2012 in Prague, Czech Republic http://www.intconference.org/

12th International Conference on Recent Advances in Concrete Technology & Sustainability Issues October 2012 in Prague, Czech Republic http://www.intconference.org/

Please visit the ISCP calendar at: http://www.concretepavements.org/calendar.htm



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The ISCP Newsletter is produced by Editor-in-Chief Amanda Bordelon newsletter@concretepavements.org Associate Editor Amy M. Dean aimdean@nc.rr.com Technical Editors: Corey Zollinger, Nancy Whiting, Cristian Gaedicke and Robert Rodden under the guidance of the ISCP Communications Committee Neeraj Buch, Chair secretary@concretepavements.org

ISCP thanks José Balbo, Bill Davenport , Estebam Vázquez, Dr. D. Thirunakkarasu for contributions to this issue and 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.