International Society ISCP for Concrete Pavements

INTERNATIONAL SOCIETY FOR CONCRETE PAVEMENTS

ISCP e-NEWSLETTER

VOLUME 10, NUMBER 4

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IN THIS ISSUE

ISCP MEMBER NEWS

Tom Kazmierowski Joins Golder Associates, Ltd.

ISCP Member and former Director, Tom Kazmierowski has joined Golder Associates, Ltd. as a Senior Consultant in Pavements and Materials Engineering, and will be based in the Mississauga, Ontario office. Tom brings over 30 years of experience in the areas of pavement/materials investigation, evaluation, design, construction and rehabilitation, and is an internationally recognized contributor in the field of both rigid and flexible pavement design and management. Before joining Golder, Tom managed the Ontario Ministry of Transportation (MTO) Materials and Engineering Research Office, where he directed a team of highly specialized engineers and technicians, providing technical and laboratory services in all aspects of pavement/foundation design.

"I'm excited to join Golder and to provide technical leadership and knowledge transfer to the pavement and materials engineering team. I believe passionately in Sustainable Pavement Systems, an area that will become increasingly prominent in the future of transportation technology," said Tom. ISCP congratulates Tom on his new position!

INDUSTRY RESOURCES/RESEARCH REPORTS

Reminder: ISCP Member Forum on LinkedIn

International Society for Concrete Pavements

ISCP would like to remind its members that ISCP hosts a free online "members-only" international forum on LinkedIn. This blog, which can be found at http://www.linkedin.com/groups?mostPopular=&gid=3760764, is dedicated to the exchange of technical information concerning concrete pavements. Technical questions, responses and comments on this site can be related to any aspect of concrete pavement materials, analysis, design, construction, performance, rehabilitation and management. Recent discussion topics have included the design and construction of concrete race tracks, internally heated airport aprons, freeze-thaw durability of roller-compacted concrete, and "what to look for when purchasing a concrete paving machine".

For questions and access to the ISCP Member Forum, please contact the ISCP LinkedIn forum moderator, Jeff Roesler, at: jroesler@illinois.edu.

Questions, Answers, Solutions for Pavements Across America

IBUILDROADS.COM is an American online forum helping road builders connect across cities and states, enabling them to ask questions, find answers and share ideas with other road construction professionals. The site's pages include: Home, Industry Solutions, Resource Directory, Events and Ask a Question. The Q&A Forum Categories include: Concrete, Asphalt, Pavement Preservation, Milling & Recycling, Erosion Control, Subgrade Mechanical Stabilization, Subgrade Soil Stabilization and Engineering Services. For registration, please go to: http://www.ibuildroads.com/login/?action=register. For the Homepage, please go to: http://www.ibuildroads.com/questions/. For the concrete questions/solutions page, please go to: http://www.ibuildroads.com/questions/categories/concrete/.

IBUILDROADS.COM QUESTIONS. ANSWERS. SOLUTIONS.

Self-Healing Concrete Extended Through Polymer Capsules

Self-healing concrete is not a new idea. As ISCP reported in the November 2012 Newsletter (http://www.concretepavements.org/Membership/Newsletter/NOVEMBER2012Newsletter.pdf), a team at the Delft University of Technology in the Netherlands showed that it is possible to mix special bacteria, which release crack-sealing chemicals, into concrete before it is poured. These bacteria indeed keep the concrete healthy — but only while they are alive.

By contrast, Dr. Chan-Moon Chung, *Professor of Polymer Chemistry, Yonsei University, South Korea*, uses a chemical approach to create self-healing concrete. Dr. Chung's group learned from laboratory tests that when the two substances "methacryloxypropyl-terminated polydimethylsiloxane" and "benzoin isobutyl ether" were mixed in the presence of sunlight, they were transformed into a protective waterproof polymer that readily adheres to concrete. The "healing balm" was

Dr. Chan-Moon Chung
Professor of Polymer Chemistry Yonsei University, South Korea

placed inside tiny capsules made of urea and formaldehyde, keeping the chemicals safely stowed away from sunlight, until needed. When the concrete near the capsules cracked, the polymer capsules ruptured and released their contents, filling the cracks, solidifying in the sunlight, thus healing the concrete.

Dr. Chung further experimented with his capsules by mixing them into a liquid polymer, sprayed the mixture on to some concrete blocks, (each weighing two-thirds (2/3) of a kilo), and allowed the resulting film to solidify. He then cracked each block, and put the blocks in the sun for four (4) hours. As he had hoped, the cracks in the concrete propagated into the polymer film containing the capsules, and cracked some of them open too, releasing their contents. With exposure to the sun, these then set into a waterproof layer — a fact he proved by immersing the blocks in water. After 24 hours of immersion, he weighed the blocks to see how much water they had soaked up. On average,

- Untreated concrete accumulated 11.3 grams of water
- Concrete coated with capsule-free polymer took in 3.9 grams, but
- Concrete covered with a polymer layer containing the capsules absorbed just 0.4 grams.

The cracks had, just as Dr. Chung hoped they would, healed themselves. Biologically healed cracks remain sealed for about a year, but Dr. Chung hopes to extend the life of the chemically-healed cracks beyond a year.

…concrete covered with a polymer layer containing the chemical-filled capsules, absorbed virtually no water…the cracks had healed themselves.

To read the full article in "The Economist", March 5, 2013, please go to: http://www.economist.com/blogs/babbage/2013/03/civil-engineering.
For the 2009 Delft University article, please go to: http://www.economist.com/node/13570058.


REPORT S2-R06E-RR-1

Real-Time Smoothness Measurements on Portland Cement Concrete Pavements During Construction

SHRP2 RENEWAL RESEARCH

SHRP 2

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

Real-Time Smoothness Measurements on Portland Cement Concrete Pavements During Construction

TRB TRANSPORTATION RESEARCH BOARD OF THE NATIONAL ACADEMIES

TRB's second Strategic Highway Research Program (SHRP 2) Report S2-R06E-RR-1: *Real-Time Smoothness Measurements on Portland Cement Concrete Pavements During Construction* presents the findings of a research study conducted to evaluate and demonstrate real-time smoothness-measuring technologies on Portland Cement Concrete (PCC) pavements during construction. Real-time smoothness refers to measuring and evaluating the concrete pavement surface profile during construction, somewhere along the paving train while the concrete surface is still wet (plastic). These measurements are then used to check for objectionable profile characteristics. With this information, paving operations can be adjusted on the fly. The work under this study was executed in three (3) distinct, but connected, phases:

I. Identifying all potential technologies
II. A thorough field evaluation
III. A series of additional field demonstrations throughout the nation

Each phase served to evaluate promising and emerging technologies with the potential to measure real-time smoothness. Draft model specifications and guidelines were developed to facilitate evaluation and implementation of these technologies by state highway agencies.

The initial investigation gathered information on the measurement concepts and the sensor configuration of seven (7) real-time smoothness technologies. After a detailed assessment of the seven technologies, two (2) technologies were chosen for inclusion in the field testing. The report and model specifications developed under this project are a result of testing real-time smoothness-measuring devices in the field on actual paving projects in the states of Arkansas, Texas, Michigan, Georgia and New York, USA. The lessons learned from the field demonstrations were used to improve guidance on the use of real-time smoothness-measuring technologies. It is intended to improve process control and allow for equipment and operations adjustments to correct surface irregularities while the PCC is in a plastic state. The access to real-time information on surface irregularities will aid paving contractors in meeting the smoothness specification requirements of transportation agencies. This is not intended to be a replacement for a transportation agency's quality assurance (acceptance) testing.

Transportation agencies recognize the importance of smooth-riding pavements to the traveling public. Smooth concrete pavements have been shown to be more durable, have lower vehicle operating costs, and lower maintenance and rehabilitation costs. Most states have implemented smoothness specifications for concrete pavements that require measurement of surface profile on the finished pavement for acceptance testing. In these cases there is no indication of smoothness prior to testing on the finished concrete pavement and problems are not corrected in real time, sometimes resulting in significant expenditures to correct surface irregularities.

The lessons learned from the field demonstrations were used to improve guidance on the use of real-time smoothness technologies.

There are several real-time smoothness measurement technologies that are at various stages of development. Also, adjustments to equipment and operations have corrected surface irregularities while the concrete is still in plastic, resulting in higher quality, lower cost and faster construction that will minimize the impact on the traveling public.

To review the report, please go to: http://www.trb.org/main/blurbs/167282.aspx
To download the PDF, please go to:
http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_S2-R06E-RR-1.pdf

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VOLUME 10, NUMBER 4
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Media Kit Now Available for the 2013 International Concrete Sustainability Conference

The Media Kit for the upcoming 2013 International Concrete Sustainability Conference, to be held May 6-8 in San Francisco, California, USA is now available. To obtain the Media Kit, please go to:
http://www.concretesustainabilityconference.org/sanfrancisco/style/ICSCMediaKit2013.pdf.
Additional information about the conference may be found by going to:
http://www.concretesustainabilityconference.org/sanfrancisco/index.html.

ASCE | CONTINUING EDUCATION

WEBINARS

Live ASCE Webinar - Two Part Series to be Held on Two Dates

Each Webinar attendee will earn 3.0 Professional Development Hours (PDH)

What happens when that pavement needs replacing?

What is the process?

What tests are run to determine its structural capacity?

ASCE Continuing Education and ASCE's Transportation & Development Institute (T&DI) are presenting a two-part live Webinar series on *Continuous Pavement Deflection Measurements for Pavement Management Applications*. The Webinars will each be held from 11:30 a.m. - 1:00 p.m. ET on the following dates:

WEDNESDAY, MAY 22, 2013 and **TUESDAY, JUNE 11, 2013**

PART ONE of the Webinar will discuss pavement deflection measurement and its impact on maintenance. Part one also includes current technologies descriptions and the general capabilities of each technology.

PART TWO of the Webinar will discuss a more detailed analysis of the devices used for deflection measurement, various pavement management applications, and results from testing performed in the United States and the United Kingdom. Part two also addresses updated technologies and additional recommended research pertaining to each device.

- Registration ends on May 17, 2013.
- Pay a single site registration fee and an unlimited number of people in your organization can attend at that site.
- Special Offer on Webinars: Individuals and Small Organizations (Less than Five Engineers) save $100 on the Registration Fee (Member $598.00 | Non-Member $698.00) Just Use Promo Code "LESS10" when registering.
- Late Registration: Registrations must be received three business days prior to the Webinar date.

The Webinar instructor will be:
Gerardo W. Flintsch, Ph.D., P.E., M.ASCE, *Director of the Center for Sustainable Transportation Infrastructure at VTTI and Professor of Civil* and *Environmental Engineering at Virginia Tech.*

To register online, please go to:http://mylearning.asce.org/diweb/catalog/item/id/92648/q/c=79&q=7256?utm_campaign=CE-20130425-7256&utm_medium=email&utm_source=Eloqua.

To learn more about the Webinars and the benefits of participation, please go to:
http://app.message.asce.org/es.asp?s=1360&e=45562&elq=62d4d534b9e94931a4448b7a5ed31f9f.

For questions, please call:1-800-548-2723.

ACPA Chapter/State Mid-Year Meetings & Industrial Pavement Workshop to be Held June 10th-13th

The American Concrete Pavement Association (ACPA) will hold its Chapter/State Mid-Year Meeting in conjunction with an Industrial Pavement Workshop June 10-13, 2013, at the Eaglewood Resort and Spa in Itasca, Illinois, USA.

Monday Morning, June 10th: The Chapter/State Mid-Year Meeting will begin with an **optional golf outing**, followed by a reception with International Grooving and Grinding Association (IGGA) in the evening. If you would like to play golf at the Eaglewood Championship Course, select this optional activity during the registration process. The rate of $110/player will include a golf cart and boxed lunch. Club rentals will be available for purchase on-site and do not require advance reservations.

Tuesday, June 11th: **Executives and Staff of the ACPA Chapter/State Associations Meeting** (along with invited guests). The agenda will be posted to the registration site when complete. The Chapter/State portion of the agenda will conclude Tuesday evening, with an off-site dinner.

Wednesday Morning, June 12th: **ACPA National-Industrial Pavement Workshop**.
The Workshop will feature presentations by subject matter experts on the following topics:

- Industrial concrete paving market and opportunities
- An owner's perspective (Aldi Foods)
- Design methodologies and details
- Mixture proportioning

The Workshop will conclude with an open discussion featuring a panel of experts. All registered guests are welcome to participate in this pivotal session, which is aimed at educating members and connecting them with the resources they need to be ahead of the competition in the industrial concrete paving market. For the schedule, please go to: http://www.pavement.com/Events_and_Programs/Events/Mid-Year_Meetings/2013/Industrial%20Pavement%20Workshop%20-%20DRAFT%20Agenda.pdf.

Wednesday Afternoon, June 12th and Thursday, June 13th: **ACPA National Task Force & Committee Meetings**. Members and industry partners will meet to work on emerging technical and market issues and to guide the Association in its future direction.

ACPA has a group rate for rooms at the Eaglewood Resort and Spa that will be available until sold out or the deadline date of Friday, May 31, 2013. To reserve a room at the discounted rate, please call Eaglewood Resort reservations toll free at: (877) 285-6150 - mention group "American Concrete Pavement Association" or to reserve your room online, please go to: https://reservations.ihotelier.com/crs/g_reservation.cfm?groupID=892827&hotelID=15450

To register for the ACPA Chapter/State Mid-year Meeting and Complete National Program, please go to: https://netforum.avectra.com/eweb/DynamicPage.aspx?Site=ACPA_ORG&WebCode=EventDetail&evt_key=da181120-0605-4cc0-94b3-a525ef107dbb.

To register for the Chapter/State Mid-year Meeting June 10th & 11th only, please go to: https://netforum.avectra.com/eweb/DynamicPage.aspx?Site=ACPA_ORG&WebCode=EventDetail&evt_key=2236e9a6-b5e1-4334-a475-c937a80f6efc.

IMPORTANT DATES:

May 15, 2013: Abstracts submission deadline

August 31, 2013: Abstract Committee acceptance/rejection decision by the ITPC

January 31, 2014: Final date for submission of papers

April 30, 2014: Registration fee payment deadline for inclusion of the paper in the Program and in the Proceedings

12th International Symposium on Concrete Roads "Innovative Solutions Benefitting Society" to be Held in Prague, September 23-26, 2014

2014 12TH ISCR PRAGUE CZECH REPUBLIC

EUPAVE and the Czech Research Institute of Binding Materials in Prague, Czech Republic, in collaboration with the World Road Association (PIARC), are pleased to host the 12th International Symposium on Concrete Roads which will be held in Prague, Czech Republic on September 23-26, 2014 at the international four-star Clarion Congress Hotel Prague. The Symposium's motto is "Innovative Solutions – Benefitting Society".

The innovations in the Symposium title not only refer to new developments of materials and concrete mixes, but also to the shift from traditional motorways and trunk roads to infrastructure for other transport modes, including rail, tram, bus, bicycles and pedestrians. The use of concrete in public spaces is becoming more and more popular, both in traditional and contemporary styles.

Modern long-life pavements are characterized by low environmental impact, low life-cycle cost and durable high-quality surfaces. Light-colored surfaces and rigid structures contribute to tackling of global warming through the positive aspects of albedo and reduced fuel consumption. These turn concrete roads into invaluable assets in terms of sustainability and as a benefit for society. With your support and contribution, this four-yearly Symposium will result again in a successful top event, gathering experts from industry and government, engineers, infrastructure managers, researchers and other interested participants.

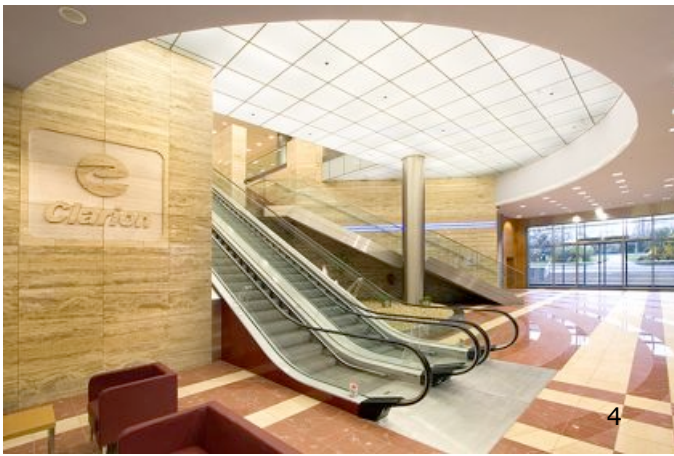
The Symposium will offer a mixed program of academic sessions, site visits and social activities, all in the historic surroundings of magical Prague, one of the most beautiful cities in the world. Visiting Prague, you will be impressed by this city of monuments and a wide range of architectural styles across generations.

A Workshop, hosted by Delft University precedes the 12th International Symposium and will be held September 20-21, 2014 in Prague. (please see the "Call for Abstracts" article below). The hosts are looking forward to meeting you in Prague, a city full of life and a romantic delight by night, as well as an UNESCO World Heritage Site since 1992!

The "Call For Abstracts" was announced in the ISCP September 2012 Newsletter (http://www.concretepavements.org/Membership/Newsletter/SEPTEMBER2012Newsletter.pdf). Abstracts are due May 15, 2013.

For more information, please go to the Symposium website: www.concreteroads2014.org.

For the Clarion Congress Hotel Prague information, please go to: http://www.cchp.cz/.



CALL FOR ABSTRACTS

Call for Abstracts for 8th International DUT-Workshop to be Held in Prague, Czech Republic September 20-21, 2014

TU Delft
Delft University of Technology

Announcing the Call for Abstracts for the 8th International DUT-Workshop on Research and Innovations for Design of Sustainable and Durable Concrete Pavements to be held September 20–21, 2014 scenic Prague, Czech Republic. The Workshop is organized by Delft University of Technology (DUT) in cooperation with FEBELCEM, European Concrete Paving Association and International Society for Concrete Pavements. This Workshop is complementary to, and will be held preceding, the 12th International Symposium on Concrete Roads, September 23–26, 2014 in Prague. This series of prestigious Workshops began in 1986 and has been held in: Epen, the Netherlands; Sigüenza, Spain; Krumbach, Austria; Buçaco, Portugal; Istanbul, Turkey; Old-Turnhout, Belgium; and Carmona, Spain. The Workshop is of special interest to experts and researchers in the field of design and performance of sustainable and durable concrete pavements for roads, bridges, airports, industrial yards and railways.

If you intend to participate in the Workshop, please submit a short abstract (maximum 200 words) pertaining to one of the themes of the Workshop. Include the title and the affiliation of the author(s). Deadline for submission of the abstract is **February 1, 2014**. Authors whose abstracts are chosen will be invited to write and present a concise presentation of their paper. The program of the Workshop consists of four main themes, each dealing with several topics. Topics are more or less indicative and should stimulate the participants to write on similar or related issues:

- Materials
  - Early-age behavior of concrete (curing, saw cutting window, opening for heavy traffic)
  - Mechanical characterization of concrete (fatigue strength, thermal behavior)
  - Innovative concrete mixes, such as fibre-reinforced and high-strength concrete
- Advanced analysis,design and evaluation of concrete pavements
  - Effects of thermal gradients, moisture gradients and dynamic loadings on internal stresses and strains
  - Optimization of slab dimensions
  - Probabilistic design or risk analysis
  - Innovative monitoring and evaluation techniques
- Continuously reinforced concrete pavements
  - Design theories for concrete slab and reinforcement
  - Early age cracking behavior
  - Long term performance and evaluation (modeling, crack pattern)
- Innovative concrete pavement structures and surfaces
  - Roller compacted concrete pavements
  - Thin concrete inlays or overlays, ultra-thin white topping
  - Two-lift concrete pavements
  - Concrete pavements for heavy loads, public transport and bridges
  - Precast (modular) concrete pavements (design, performance)
  - Silent concrete pavements (porous concrete, exposed aggregate surface)

The number of participants will be limited to 40 to ensure a maximum amount of time for discussion. There will be plenty of opportunities for in-depth discussions, open exchange of theoretical ideas and informal contacts. The Workshop's language is English.

Copies of the selected papers will be made available to the participants prior to the Workshop. All papers (together with the statements, discussions, conclusions and recommendations) will be published on CD-ROM after the Workshop. A summary of the Workshop will be presented at the 12th International Symposium on Concrete Roads to be held September 23-26, 2014 in Prague.

To submit an abstract by February 1, 2014, please send abstract to:
Lambert Houben, *Chairman, Delf University of Technology (The Netherlands)* | E-mail: l.j.m.houben@tudelft.nl

For more information, please contact: Mrs. J. Barnhoorn, *Secretary, Delft University of Technology, Faculty Civil Engineering and Geosciences*, P.O. Box 5048, 2600 GA Delft, the Netherlands
tel: + 31 15 2785066 | fax:+ 31 15 2783443 | E-mail: a.p.m.barnhoorn@tudelft.nl

For Delft University Website, please go to:
http://www.tudelft.nl/en/.

FEBELCEM
EUPAVE EUROPEAN CONCRETE PAVING ASSOCIATION
International Society ISCP for Concrete Pavements

TIME SCHEDULE:

February 1, 2014: deadline for submission of abstracts

February 15, 2014: invitation to write paper based on accepted abstract

April 1, 2014: deadline for submission of draft paper

May 1, 2014: reviewers' comments to author

June 1, 2014: deadline for submission of final paper

September 20-21, 2014: 8th International Workshop in Prague

September 23-26, 2014: 12th International Symposium in Prague

Call for Papers & Abstracts Digest

May 15, 2013 Due date for papers for the 12th International Symposium on Concrete Roads - *"Innovative Solutions - Benefitting Society"* to be held in Prague, Czech Republic, September 24-26, 2014. For the Symposium website, please go to: www.concreteroads2014.org.

February 1, 2014 Due date for abstracts for the 8th International DUT-Workshop on Research and Innovations for Design of Sustainable and Durable Concrete Pavements to be held September 20–21, 2014 in Prague, Czech Republic. To submit an abstract by February 1, 2014, please send abstract to: Lambert Houben, *Chairman, Delf University of Technology (The Netherlands),* E-mail: l.j.m.houben@tudelft.nl.

UPCOMING EVENTS

MAY 2013

International Concrete Sustainability Conference
May 6-8, 2013 in San Francisco, California, USA,
http://www.concretesustainabilityconference.org/sanfrancisco/index.html.

Fifth North American Conference on the Design and Use of Self-Consolidating Concrete (SCC 2013)
May 12-15, 2013 in Chicago, Illinois, USA, http://www.intrans.iastate.edu/events/scc2013/.

International Conference on Concrete Sustainability (ICCS13)
May 27-29, 2013 in Tokyo, Japan, http://www.jci-iccs13.jp/.

JUNE 2013

International RILEM Conference on Multi-Scale Modeling and Characterization of Infrastructure Materials
June 10-12, 2013 in Stockholm, Sweden, http://www.rilem2013.org.

The 14th Euroseminar on Microscopy Applied to Building Materials (EMABM 2013)
June 10-14, 2013 near Copenhagen, Denmark, http://www.emabm2013.com/.

Ninth International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2013)
June 25-27, 2013 in Trondheim, Norway, http://www.bcrra.org.

JULY 2013

ASCE T&DI 2013 Airfield and Highway Pavements Conference: Sustainable and Efficient Pavements
July 9-12, 2013 in Los Angeles, California, USA, http://content.asce.org/conferences/pavements2013/.

8th International Conference on Road and Airfield Pavement Technology (ICPT 2013)
July 14–18, 2013 in Taipei, Taiwan, http://www.icpt2013.org.

SEPTEMBER 2013

7th International Conference on Concrete under Severe Conditions - Environment and Loading (CONSEC'13)
September 23-25, 2013 in Nanjing, China, http://www.consec13.com.

OCTOBER 2013

Innovative World of Concrete ICI-IWC 2013 and World of Concrete India 2013
October 23-26, 2013 in Hyderabad, Andhra Pradesh, India
http://www.ici-iwc2013.com/.

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

The ISCP Newsletter is produced monthly by:
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ISCP would like to thank **Amanda Bray**, *Golder Associates Ltd.* and **Jennifer LeFerve**, *RMC* for contributions to this newsletter.

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 for more information about ISCP.