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INDUSTRY RESOURCES/RESEARCH REPORTS

ACPA TODAY

23rd Annual "Excellence in Concrete Pavements" Award Recipients

The American Concrete Pavement Association Today announced the recipients of the 23rd annual ACPA Excellence in Concrete Pavement Awards. In all, there were 30 "gold" and "silver" award recipients this year in 14 different categories. Based on member and staff input, a number of changes were made to the judging parameters this year. Another improvement made to the process was the validation of the project's worthiness with owner agencies.

ACPA congratulates the 2012 Excellence in Concrete Pavement Awards recipients who along with owner/agencies and engineers, will be recognized formally on Friday, November 30, at the gala reception and awards banquet held during ACPA's 49th Annual Meeting in Marco Island, Florida (<http://events.acpa.org>).

To view the list of award recipients, please go to:
<http://www.acpa.org/acpa-today/2012/AT-09-14-12-complete.html>.

FHWA Releases Guide to Identifying Alkali-Silica Reactivity



The Federal Highway Administration has published a handbook aimed at helping agencies and contractors identify alkali-silica reactivity (ASR) in concrete pavements and other structures.

The handbook illustrates the sequence of how ASR occurs. Field symptoms of ASR are then described – cracking, expansion, localized crushing of concrete, extrusion of joint material, surface pop-outs, and surface discoloration and gel (alkali-silica gel or lime leaching from the cracked concrete). Photos provide a visual reference for identifying symptoms. The handbook also describes how ASR can occur simultaneously with other deterioration processes, as well as how it may make concrete more vulnerable to these processes after ASR damage has occurred.

The handbook highlights non-ASR-related distress and notes that all forms of deterioration should be considered when performing a condition survey. To view/download a PDF of the report "Alkali-Silica Reactivity Field Identification Handbook" (Pub. No. FHWA-HIF-12-022), please go to: <http://www.fhwa.dot.gov/pavement/concrete/asr/pubs/hif12022.pdf> (3MB).

More information on managing affected structures is available in the 2010 FHWA Report on the "Diagnosis, Prognosis, and Mitigation of Alkali-Silica Reaction in Transportation Structures" (Pub. No. FHWA-HIF-09-004). To view this earlier report, please go to: http://www.fhwa.dot.gov/pavement/pub_details.cfm?id=674

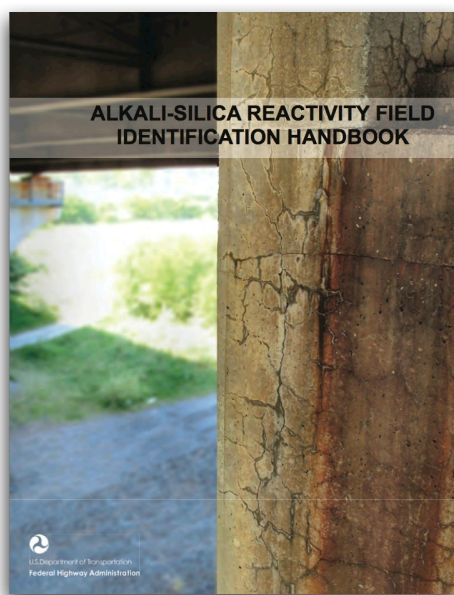
FHWA expects to release a new document, "Alkali-Silica Reactivity Surveying and Tracking Guidelines", later this year.

For current information in FHWA's online ASR Reference Center, please go to: <http://www.fhwa.dot.gov/pavement/concrete/asr/reference.cfm>.

For current and past updates on ASR, found in FHWA's free quarterly technical update, please go to: <http://www.fhwa.dot.gov/pavement/concrete/reactive/index.cfm>. To subscribe, please send an e-mail to: asrnewsletter@transtec.us.

For more information, please contact:
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StreetPave¹²

Structural Design Software
for Street and Road
Concrete Pavements



StreetPave

New JPCP Design Software Now Available

StreetPave 12 is the latest in jointed plain concrete pavement thickness design software.

Newly added with this version, is jointed plain concrete overlay designs for all six types:

- bonded on asphalt
- unbonded on asphalt
- bonded on concrete
- unbonded on concrete
- bonded on composite
- unbonded on composite

This software utilizes new engineering analyses to produce optimized designs for city, municipal, county, and state roadways. For existing concrete pavements and overlays, *StreetPave 12* may be used to estimate service life and/or failure criteria. *StreetPave 12* also offers an asphalt cross-section design process (based on the Asphalt Institute method) to create an "equivalent-to-asphalt" design for the load carrying capacity requirement.

A "Life Cycle Cost Analysis" module allows the user to perform a detailed cost/benefit analysis to aid in making informed decisions. Thus, this one-pavement design tool, allows users to design equivalent concrete and asphalt sections and evaluate the best possible solution(s) for their pavement needs.

To Download *StreetPave 12*, please click on: [Download StreetPave 12](#).

Installation Instructions: 1. Unzip the contents of the downloaded file (StreetPave 12.zip)
2. Run Setup.exe
3. Follow the installation wizard instructions

StreetPave 12 is available as a free download and may be used without a license for up-to 30 days. After the 30-day trial period, a license must be purchased to continue using the program. To purchase a license, please go to:

https://netforum.avectra.com/eweb/shopping/shopping.aspx?site=acpa_org&webcode=shopping&prd_key=0eb5ea86-4490-4f07-98fd-1fe2847a9836

Please contact your local ACPA Chapter/State Associations for information on standard local design practice, by going to: <http://acpa.org/Chapters/allchaps.asp>. Such information is invaluable for determining the correct input values to use with *StreetPave*. For more information about *StreetPave 12*, please go to: <http://acpa.org/stretpave/>.

CONFERENCE NEWS

International Conference on Long-Life Concrete Pavements, 2012



Concrete pavement practitioners from around the world convened in Seattle, Washington, USA September 19-21, 2012 to participate in the *International Conference on Long-Life Concrete Pavements*. This 2½-day conference was the sixth in a series of concrete pavement-related conferences sponsored by the Federal Highway Administration and the second in the series to focus on long-life concrete pavements. It attracted over 185 attendees from 10 countries and provided an international forum to address various aspects of design, construction and materials technologies that result in long-life concrete pavements.

The program featured a session of invited presentations on U.S. highway agency practices, a session on *SHRP2* products related to long-life concrete pavements, and a mini-symposium on paving concrete durability (among other items). A total of 42 technical presentations, 31 peer-reviewed papers, and 18 poster presentations were included in the conference program. To obtain these proceedings, please go to: [2012 - Seattle FHWA LLCPC Conference CD.zip](#)

The conference was organized by the Federal Highway Administration and the National Concrete Pavement Technology Center, in cooperation with the American Association of State Highway and Transportation Officials, the American Concrete Pavement Association, the Concrete Reinforcing Steel Institute, the International Society for Concrete Pavements, the National Ready-Mixed Concrete Association, the Portland Cement Association, the Transportation Research Board the University of Washington, and the Washington State Department of Transportation. For more information, please contact: Sam Tyson: Sam.Tyson@dot.gov, Shiraz Tayabji: stayabji@aol.com or Kurt Smith: ksmith@appliedpavement.com.



92nd Annual TRB Meeting to be Held in January

The Transportation Research Board (TRB) 92nd Annual Meeting will be held January 13-17, 2013 in Washington, D.C., USA at the Washington Marriott Wardman Park, Omni Shoreham, and Washington Hilton Hotels. The information-packed program will attract more than 11,000 transportation professionals from around the world to the U.S. Capitol.

A number of sessions and workshops will address the spotlight theme for 2013:

"*Deploying Transportation Research - Doing Things Smarter, Better, Faster.*" The TRB Annual Meeting program will cover all transportation modes, with more than 4,000 presentations expected in nearly 650 sessions and workshops, addressing topics of interest to all attendees: policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions. The complete Annual Meeting program will be available in early November. To review the initial program



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highlights, please go to: <http://www.trb.org/AnnualMeeting2013/AM2013Program.aspx>.

Register online by November 30, 2012 to take advantage of the lower fees, to obtain a hotel guest room, and to gain full access to the Interactive Program (available in November). For more information on the benefits of early registration and for registration information, please go to: <http://www.trb.org/AnnualMeeting2013/AM2013Registration.aspx>.

For exhibitor opportunities, please go to: <http://www.trb.org/AnnualMeeting2013/AM2013Exhibits.aspx>.
For an exhibitor list through the *Interactive Exhibits Search*, please go to: <http://s36.a2zinc.net/clients/TRB/AM2013/PUBLIC/ENTER.ASPX>.

For all other information on the 92nd Annual TRB Meeting, please go to: <http://www.trb.org/AnnualMeeting2013/AnnualMeeting2013.aspx>.

SCC²⁰¹³ Fifth North American Conference to be Held in May, 2013

Self consolidating Concrete (SCC) is a fast-growing and highly productive concrete technology that is increasingly being used to produce enhanced concrete products at a faster construction speed and reduced labor cost.

The Fifth North American Conference on the *Design and Use of Self-Consolidating Concrete (SCC2013)* will be held in May 12-15, 2013 in Chicago, USA, at The Westin Hotel at the Michigan Avenue, Chicago, on the Magnificent Mile across from the upscale shops of Water Tower Place. The City of Chicago is a cultural, entertainment, financial and political center of the United States.

Previous SCC conferences have been well-attended and have had strong involvement from many leaders in the cement and concrete field, including industry, academia, and government agencies in North American and many other regions of the world. The SCC2013 conference will be attractive to:

- All engineers who are working with concrete materials
- Structure designers, owners, and contractors
- Leaders and decision makers in construction companies and organizations
- Researchers, educators and students who are interested or working in concrete materials

The 2013 event will demonstrate the significant results and outcomes of recent research and practice of SCC, as well as their benefits to the concrete industry, society and the environment. The conference will promote broader dialogue and greater interactions between international SCC researchers and users in order to define "The New Normal" in the field of SCC through newfound "Innovation, Application, and Production".

Workshop: "Production, Testing and Evaluation of Self-Consolidating Concrete"

A one-day workshop on production, testing and placement of SCC will be offered on May 14, 2013, in conjunction with the conference activities. This workshop is intended to provide essential and practical tools for engineers to implement SCC technology in the field, and to build confidence in the production of cost-effective, safe, and consistently high-quality SCC. For Workshop details, please go to: <http://www.intrans.iastate.edu/events/scc2013/workshop/>.

Sponsor Opportunities: There are 5 sponsor levels: *Platinum, Gold, Silver, Bronze* and *Special* (any monetary amount). For information on Sponsoring, please go to: <http://www.intrans.iastate.edu/events/scc2013/sponsors/levels/>.
To view the current sponsors, please go to: <http://www.intrans.iastate.edu/events/scc2013/sponsors/>.

We are looking forward to seeing you at the SCC2013-Chicago!

For hotel information, please go to: <http://www.starwoodhotels.com/westin/property/overview/index.html?propertyID=1030>.

For more conference information, please go to: <http://www.intrans.iastate.edu/events/scc2013/about/>.

For More Information, please contact the Conference Chairs:
Kejin Wang, *Iowa State University*,
e-mail: kejinw@iastate.edu
Surendra P. Shah, *Northwestern University*,
e-mail: s-shah@northwestern.edu



Important Dates:

NOVEMBER 30, 2012
Full paper due

FEBRUARY 4, 2013
Early Registration

FEBRUARY 25, 2013
Early Workshop
Registration

FEBRUARY 25, 2013
Hotel Special Rates
Registration

APRIL 10, 2013
Latest Date for
Workshop
Registration

THESIS ABSTRACT

FIELD INVESTIGATION OF SUBGRADE NON-UNIFORMITY EFFECTS ON CONCRETE PAVEMENT

By *Helmant Laxman Chavan*

Graduate College of the University of Illinois at Urbana-Champaign, 2012, Urbana, Illinois

Adviser: Professor Jeffery R. Roesler

The traditional method of designing concrete pavements is through the assignment of a single modulus of subgrade reaction (k -value) to the soil for the section under consideration. It is well known that soil under pavement is not a homogenous, elastic, and isotropic half-space but varies spatially due to variations in the soil geological properties, environmental factors, and construction methods. Few studies have attempted to characterize this heterogeneous behavior as non-uniform subgrade support, theoretically analyze its effect on slab responses, or its effect on concrete pavement performance.

This research has collected geotechnical data from two roadway sections in Michigan, MI I-94 and MI I-96, to characterize the effects of the foundation layer spatial non-uniformity on tensile stress changes in a concrete slab. For both the MI I-94 and MI I-96 roadway section, k -values were correlated from field Dynamic Cone Penetrometer (DCP) tests that were either deterministically or randomly assigned to a predefined area size. These spatial plots were discretized into various uniform area sizes to compare tensile stresses from a non-uniform support under a concrete pavement to a uniform support condition. The individual area sizes varied from $0.7 \times 0.7 \text{ m}^2$ and $1.16 \times 1.16 \text{ m}^2$. A 2-D finite element program was used to analyze the critical slab tensile stresses for multiple uniform and non-uniform conditions subjected to three axle configurations, loading paths and temperature differentials.

The results for MI I-94 stress analysis showed that the deterministic assignment of k -value from the field did not result in any significant increase in critical tensile stresses compared to the uniform support assumptions even for varying individual area sizes. However, when the k -value of the foundation layer was randomly assigned to these individual areas, using a normal distribution, for a soft subgrade (k -value = 63 psi/in and standard deviation = 25.6 psi/in), the overall peak tensile stresses along the edge loading path increased by 31% and the average peak tensile stress increased by 37%. The greatest increase in tensile stresses relative to the uniform support condition occurred for individual support areas of $1.16 \times 1.16 \text{ m}^2$. When the k -value was randomly assigned with a beta (B) distribution for a lower limit of 20 psi/in, there was no increase in the overall peak tensile stress in the slab relative to the uniform support condition. Although the section with stiffer soil (mean k -value = 397 psi/in), MI I-96, had a large range in measured k -values, it only increased the overall peak tensile stresses in the slab relative to uniform support conditions by 11% when randomly assigned to 81 k -value areas and increased the tensile stress by 6% when the k -values were deterministically assigned.

The field data and theoretical analysis presented in this research has shown that non-uniform support conditions can lead to significantly higher slab stresses under certain geometric, loading, and slab support conditions. Non-uniform support along the edge of the slab especially very low support values near the location of maximum tensile stress substantially increased the slab tensile stresses. These tensile stresses are further increased under daytime temperature curling. Variability in the foundation stiffness had a larger impact on slabs supported by softer soils relative to stiff soils. For the inputs analyzed in this study, the size of the individual area of uniform support defined around 1 m^2 produced the greatest increase in tensile stress in the slab. Detection and treatment of areas of weak and variable support along the anticipated free edges of the slab are important to improving the performance of concrete pavements.

CALL FOR ABSTRACTS & PAPERS

Announcing Call for Papers for the 12th International Symposium on Concrete Roads 2014

EUPAVE and the Czech Research Institute of Binding Materials Prague, Czech Republic in collaboration with the World Road Association PIARC, are pleased to announce the Call for Abstracts for the the 12th International Symposium on Concrete Roads "Innovative Solutions - Benefitting Society" which will be held in Prague on September 24-26, 2014. Interested parties are invited to submit an abstract related to the themes listed below by **May 15, 2013**:

- Theme 1:** Sustainable Pavements
- Theme 2:** Solutions for urban areas
- Theme 3:** Design and construction
- Theme 4:** Maintenance and rehabilitation

For other important dates and practical information, please go to:

http://www.eupave.eu/documents/graphics/12thinternationalSYMPOSIUM2014-prague/iscr2014_1ozn_tisk2-bez-orez-znacek.pdf

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

We are looking forward to meeting you in Prague!



2014
12th ISCR
PRAGUE
CZECH REPUBLIC



Important Dates:

MAY 15, 2013
Final date for forwarding abstracts

AUGUST 2013
Approval of abstracts and notification

JANUARY 2014
Final date for forwarding papers

MARCH 2014
Approval of papers and designation of speakers



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Call for Papers & Abstracts Digest

November 30, 2012 Due date for Papers for the the SCC2013 to be held May 12-15, 2013 in Chicago, Illinois. (for the authors whose abstracts were selected for submission). The Theme is "The New Normal - Innovation, Application and Production", and bridge recent research advancement, innovation, and applications in the field of self-consolidating concrete (SCC). For information, please go to: <http://www.intrans.iastate.edu/events/scc2013/papers/>

December 31, 2012 Due Date for the Call for Abstracts for the 14th International Winter Road Congress to be held in Andorra-la-Vella, Pyrenees to be held February 4-7, 2014. The theme is: "Reconciling road safety and sustainable development in a context of climate change and economic constraints". For information, please go to: <http://www.aipcrandorra2014.org/?lang=en>.

May 15, 2013 Due date for the Call 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

UPCOMING EVENTS

OCTOBER
2012

10th International Symposium on Brittle Matrix Composites (BMC10)

October 15-17, 2012 in Warsaw, Poland
<http://bmc.ippt.gov.pl/>

Tenth International Conference on Superplasticizers and Other Chemical Admixtures in Concrete

October 28-31, 2012 in Prague, Czech Republic
<http://www.intconference.org/>

Twelfth International Conference on Recent Advances in Concrete Technology and Sustainability Issues

October 31, 2012 in Prague, Czech Republic
<http://www.intconference.org/>



2nd International Conference on Sustainable Construction Materials: Design, Performance and Application (SusCoM2012)

October 18 -22, 2012 in Wuhan, Hubei Province, China
<http://public.whut.edu.cn/zspj/suscom2012/>

5th International Congress on Sustainability of Road Infrastructures

October 29-31, 2012 in Rome, Italy
<http://www.sivroma.it>

2012 International Pavement Engineering Conference (IPEC)

November 1-3, 2012 in Busan, South Korea
<http://www.ipec2012.or.kr>

2nd International Conference on Civil Engineering and Building Material (CEBM 2012)

November 17-18, 2012 in Hong Kong
<http://www.iasht.org/cebm/>

ACPA's 49th Annual Meeting

November 26 - 30, 2012 in Marco Island, Florida, USA
http://www.pavement.com/Events_and_Programs/Events/index.asp



ISCP Annual Membership Board Meeting

January 12, 2013 in Washington, D.C., USA
<http://www.concretepavements.org/calendar.htm>

92nd Annual Meeting of Transportation Research Board (TRB)

January 13-17, 2013 in Washington, D.C., USA
<http://www.trb.org/AnnualMeeting/AnnualMeeting.aspx>

9th Concrete Conference & Exhibition: Concrete for Sustainable Construction

February 11-13, 2013 in Manama, Kingdom of Bahrain
<http://www.concrete9.org>

UKIERI Concrete Congress: Innovations in Concrete Construction

March 5-8, 2013 in Jalandhar, Punjab, India
<http://www.ukiericoncretecongress.com>

8th International Conference on Fracture Mechanics of Concrete and Concrete Structures (FramCoS-8)

March 24-28, 2013 in Ciudad Real, Spain
<http://www.framcos8.org/>

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



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

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National Geographic Family Reference Atlas of the World
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All additional sources noted on perspective pages.

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