ISCP NEWS



ORGANIZATIONAL

MEMBERS & MAJOR EVENT SPONSORS:































Call for Honorary Member Nominations

The Society is seeking nominations for Honorary Membership for consideration by the Board of Directors at the upcoming mid-year meeting June 26-27, 2014. Nominees must be

- Individuals who have maintained ISCP membership for at least 5 years and who have provided exemplary service to the Society and/or at least 25 years of dedication to the improvement of concrete pavement technology; or
- Nonmembers who have dedicated at least 35 years of service to the improvement of concrete pavement technology.

The deadline for Nominations for this election cycle is **June 15, 2014**.

Nominations for honorary membership may be submitted, by current ISCP members in good standing, to the current ISCP Nominating Committee Chair, Mark Snyder, ISCP Past President: mbsnvder@pavement.com. Please click here to download, the Word format standard nomination form.

Newly elected honorary members will be inducted in September, 2014 at the 12th International Conference on Concrete Roads in Prague, Czech Republic or in January, 2015 at the next ISCP Annual Membership Meeting in Washington, DC. For more details concerning Honorary Member nomination and election procedures, as well as the link to the nomination form, please go to: http://www.concretepavements.org/Membership/honorary.htm.

INDUSTRY NEWS, RESOURCES & PUBLICATIONS

EUPAVE Launches the Debate on Smart Pavements in the EU

Pablo Arias Echeverría, Member of the European Parliament (MEP), and The European Concrete Paving Association (EUPAVE) held a successful debate on the contribution of innovative concrete pavements for the benefits of citizens, urban areas and transportation. Participants agreed that smart, green, low-maintenance and climate-resilient road infrastructure



can help to transform the European transport system into a sustainable and competitive one.

Opening the event was Arias Echeverría, MEP, who welcomed a group of fifty (50) representatives from the European Union (EU), Institutions (European Parliament, European Commission), and European associations and companies. He highlighted the need to go forward with green technology in transport infrastructure. Keir Fitch, DG MOVE and European Commission, reminded attendees about EU transport funding opportunities such as "Horizon 2020" and "Connecting Europe Facility" to help laboratory research projects to be demonstrated on a larger scale.

To read more about the debate event, please visit EU Affairs webpage at: http://www.eupave.eu/documents/eu-affairs.xml?lang=en.

5th International Award on Road Innovation Deadline for Original Works: May 19, 2014



The Fifth International Award Contest on Road Innovation "Juan Antonio Fernández del Campo" is open to persons and legal entities from any country, authors of projects, researches, investigation, or erudition works, PhDs, etc. The contest, organized by the Spanish Road Association Foundation (FAEC), began in 2005 with the aim of contributing to the development of road technology worldwide through investigations that improve innovation in the road sector. Many important universities, companies and public administrations around the world focused on road progress have been awarded by FAEC in the last four editions.

The deadline for sending original works is May 19, 2014. The original work must be written in Spanish; must not have more than 50 pages; must be innovative; and must not have been published in other contests. Authors must send two copies of the work, include documentation of the title, a resume of the work, personal facts of the authors, and a signed statement accepting the contest rules.

For details and summarized rules of this contest, please go to the website of 5th International Award on Road Innovation "Juan Antonio Fernández del Campo": www.premioinnovacioncarreterasjafc.org. For the English version of the website, please go to: <u>http://www.google.com/translate?hl=en&ie=</u> UTF8&sl=auto&tl=en&u=http%3A%2F%2Fwww.premioinnovacioncarreterasjafc.org.





These 2 projects are contributing to research objectives identified in CP Road Map Track 8: "Concrete Pavement Construction, Reconstruction, and Overlays". To read this Road MAP, please go to: http://www.cproadmap.org/ research/Track8.cfm

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These three projects are contributing to research objectives identified in CP Road MAP Track 1: Materials and Mixes for Concrete Pavements. To read this research report, please go to: http://www.cproadmap. org/research/Track1.cfm.





New MAP Brief

CP Road Map E-News

News from the Road highlights research around the United States that is helping the concrete pavement community meet the research objectives outlined in the CP Road Map. The March 2014 CP Road MAP E-News highlights several studies, projects and news from the United States. Below are the headlines with a brief overview. To continue reading each of the articles below, please click on the links provided in each subheading or go to: http://www.cproadmap.org/publications/e-news_March2014.cfm. Slab size identified as key in thin overlay failures

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A report completed under the Federal Highway Administration (FHWA) Pooled Fund Study TPF-5(165) looked at the failure mechanisms of in-service whitetopping overlays across the country. The results of the study determined that actual failure modes are a function of slab size, not overlay thickness as previously assumed. To download the PDF titled "Redefining the Failure Mode for Thin and Ultra-thin Whitetopping with a 1.8- x 1.8-m (6- x 6-ft) Joint Spacing", please go to: http://docs.trb.org/prp/13-4668.pdf. Minnesota develops improved design process for unbonded concrete overlavs

Current unbonded concrete overlay (UBCO) design procedures are based on empirical equations or highly simplified mechanistic models. To overcome these limitations, Minnesota utilized a finite element methodology to determine how reflective cracking occurs. The information gathered was utilized to develop a new design procedure. To read the project report, "Mechanistic Modeling of Unbonded Concrete Overlay Pavements," please go to: http://conservancy.umn.edu/bitstream/11299/148549/1/MnDOT2012-02.pdf.

FHWA investigates accelerated test method for ASR

The "concrete prism test" (ASTM C1293) is considered the most reliable test for determining Alkali-Silica Reaction (ASR) susceptibility of concrete material combinations; however, the test is time consuming, and takes one to two years to complete. Faster test methods, such as the accelerated mortar-bar method (ASTM C1260), can significantly reduce testing time but are not always representative of actual field performance. A new technique, nonlinear impact resonance acoustic spectroscopy (NIRAS), aims to improve the results of the accelerated test methods. To read the PDF of the research report entitled "Accelerated Determination of ASR Susceptibility During Concrete Prism Testing Through Nonlinear Impact Resonance Ultrasonic Spectroscopy", please go to: http://ntl.bts.gov/lib/50000/50800/50867/13085.pdf.

U.S. DOT studies the potential for high-volume fly ash concrete



Fly ash has been utilized as a partial replacement for Portland cement for many years to improve the material's strength and durability. Replacing cement with fly ash also reduces concrete's carbon footprint and makes beneficial use of an industrial by-product (currently 60% of fly ash is disposed of in landfills). This project developed, tested, and evaluated High-Volume Fly Ash (HVFA) mixtures with a 70% cement replacement rate. To read the PDF of the research report entitled "Development and Evaluation of High-Volume Fly Ash (HVFA) Concrete Mixes", please go to: http://library.modot.mo.gov/RDT/reports/TRyy1110/cmr13-008.pdf.

Texas investigates the use of manufactured sand for concrete pavements



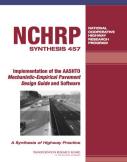
With the depletion of natural sand sources in some locations, the use of manufactured fine aggregate (MFA) in concrete mixes has increased. However, because MFAs have properties that differ from natural sand, the resulting concrete pavement will also exhibit different attributes. This

study identified which concrete properties are most significantly impacted and determined: if the MFA aggregates are properly evaluated and the right proportions used, a good quality concrete can be produced. To read the PDF on the report on this research, entitled "Use of Manufactured Sands for Concrete Pavement," please go to: http://library.ctr. utexas.edu/ctr-publications/0-6255-1.pdf.



ROAD MAP

shaping the future of concrete navement





/OLUME 11 • NUM<u>BER 4</u>



New Publication: NCHRP Synthesis 457: Implementation of the AASHTO Mechanistic-Empirical Pavement Design Guide & Software

Highway administrators, engineers and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated and as a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem. There is available information on nearly every subject of concern to highway administrators and engineers. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work.

To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire highway community, the AASHTO, through the NCHRP, authorized the TRB to undertake a continuing study. The National Cooperative Highway Research Program (NCHRP) Synthesis 457: "Implementation of the American Association of State Highway and Transportation Officials (AASHTO) Mechanistic-Empirical Pavement Design Guide (MEPDG) and Software" is a composite of the highway practice by the Transportation Research Board (TRB). This study searches out

... study searches out & synthesizes current knowledge from all sources & prepares concise. documented reports on specific topics, without the detailed directions usually found in handbooks or design manuals 2

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and synthesizes current knowledge from all available sources and prepares concise, documented reports on specific topics, without the detailed directions usually found in handbooks or design manuals.

The NCHRP Synthesis 457 documents the strategies and lessons learned from highway agencies in the implementation of the MEPDG, accompanying AASHTOWare Pavement ME Design[™] (formerly DARWin-ME) software, plans and practices of highway agencies that have successfully implemented this pavement design procedure, as well as reasons why some agencies may not have proceeded with implementation. Reports from this endeavor constitute an NCHRP report series, "Synthesis of Highway Practice". Each report in the series provides a compendium of the best knowledge available on measures found to be the most successful in resolving specific problems.

To read the entire publication in PDF form, please go to: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_457.pdf.

THESIS ABSTRACT

Modeling the Effect of Curing on Early-Age Distress Potential of Concrete Pavement

A Dissertation by M. Ehsanul Bobby Bari Chair of Committee: Dan Zollinger Office of Graduate and Professional Studies of Texas A&M University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Understanding the early age behavior of concrete is an important issue in construction of concrete structures since different factors during construction, such as design consideration, material usage, and

The primary **interest of this** research was to model the behavior of concrete under environmental excitations. such as the variation of temperature and relative humidity. during the early age after concrete placement environmental influence, can alter the original configuration of the structure intended by the engineers, and hence the structure may experience and exhibit undesired consequences. The primary interest of this research was to model the behavior of concrete under environmental excitations, such as the variation of temperature and relative humidity, during the early age after concrete placement, Experimental test results were obtained and mathematical models were developed for this research.

Modeling the effect of curing process in response to the relative humidity variation was one of the main objectives of this research. A mathematical model for back-calculating the diffusion coefficient of cured concrete from experimental test was proposed. This back-calculated diffusion coefficient of concrete was indicative of the effectiveness of curing application provided during construction. Corner deflection model for predicting lift-off displacement and climatic stress model for predicting crack formations were formulated in order to predict the distress behavior of concrete for a given design and construction scenario. Probabilistic models for lift-off displacement and cracking were formulated to predict the probabilities of such distresses. Material properties, such as strength, elastic modulus, creep, drying shrinkage, were obtained from experimental program and were used as input in these distress prediction models.

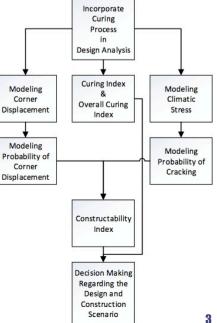
In order to assess the effectiveness of different curing compounds, two indices - such as curing index and overall curing index - were proposed. These indices were able to distinguish the difference in performance among different curing compounds. For validating the proposed corner lift-off displacement model and climatic stress model, numerical simulations were performed and the obtained results were compared with the field observations. The probabilistic models for predicting lift-off displacement and cracking behavior were validated by comparing the numerical simulation results with the field observations at Houston Intercontinental Airport, TX. The predictions from these models were found to be in close agreement with the experimental observations. Furthermore, in order to assess the impact of a given design and

construction, analytical study was performed with these models. In the sensitivity analysis, parameters of interest were the geometry of the structure, the effect of curing application, and the influence of time as well as the season of construction on the distress potentials. Numerical simulations indicated that the curing application was able to lower the early age distress potentials. The thicker slabs/overlays versus the thinner ones exhibited differences in performance in terms of distress potentials. The analytical study also revealed that it was possible to vary the distress potentials by varying the time as well as the season of construction. Finally, a constructibility index

was proposed in order to assist in decision making with regard to different designs and construction scenarios with a view to minimize the distress potentials in concrete structure. The results indicated that the constructability index was able to capture and demonstrate the effect of different parameters mentioned above on the constructability of rigid pavement/overlay projects.

> Figures: Entire Curing Monitoring System (Sun2013) Research Implementation Framework







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CONCretecr

Senter innovation

CONFERENCES, WEBINARS & WORKSHOPS Concrete Innovation Conference (CIC 2014) & Contest to be Held June 11-13, 2014 in Oslo, Norway



The "Concrete Innovation Conference" (CIC 2014) will be held June 11-13, 2014 at the Hotel Royal Christiania, in Oslo, Norway. CIC 2014 will be for all professionals dedicated to concrete and innovation, working with the future of the concrete industry. Basic knowledge of challenges for the industry is useful to bring the concrete industry forward.

To underline the importance of innovation, a Concrete Innovation Contest will be organized to highlight the best innovation. Teams are invited to present their work on concrete innovations, and to take part in this Contest linked to the conference. The conference themes will be based on the future needs expressed by the industry and the society innovation drivers such as energy sayings; reduced CO_2 -emission and resource uses; and efficient construction and higher performance which lower costs.

Innovation is more than knowledge about specific subjects. The unique program, Concrete Innovation Centre, "COIN", stresses innovation as a way of thinking, a way of collaborating, and a way of putting knowledge and competence in new contexts. Ultimately, to arrive at new products and new services, for the benefit of the industry and the society. Within COIN, the concrete industry, research institutions, and the Norwegian government have focused their efforts on achieving innovation through joint research. CIC 2014's goal is to clearly demonstrate the results for everyone - to inform, inspire and achieve further development. For the COIN website, please go to: http://www.coinweb.no/.

For the CIC 2014 website, please go to: <u>http://www.tekna.no/event?p_kp_id=29806</u>. For a PDF of the conference invitation, please go to: https://www.tekna.no/ikbViewer/Content/874581/CIC2014-invitation%20-hcb_31%20mai%2013.pdf.



Paper Acceptance Notice: May 23, 2014 **Early Bird** Registration: July 25, 2014 Late Registration: September 26, 2014

ICCMATS 2014 to be Held November 24-26, 2014 hannesburg. South Africa



The International Conference on Construction Materials and Structures (ICCMATS 2014) will be held in Johannesburg, South Africa November24-26, 2014. The conference is organized by the University of Johannesburg (UJ) and Harbin the first of its kind on the African continent! The Conference will be held at the University Bunting Road Campus, School of Tourism and Hospitality, Auckland Park.

The conference aims to provide a platform for articulation of knowledge frontiers, developments and advancements in the domain of construction materials, structures and allied disciplines. "Materials are the bridge between an engineering design to functional performance of a structure and eventually its service life or durability. Materials underlie the capabilities of any design and indeed define its limitations too."

The conference is focussed on research, structural, industrial and engineering applications involving modern construction materials namely: • Cement • Concrete • Bitumen • Masonry • Steel • Timber • Polymers • Special Building Materials

The ICCMATS 2014 is the first of its kind on the African continent!

Engineers, scientists, researchers, academicians, practitioners and professionals from materials, structures, mining, construction, transportation, and related fields will come together for three days of engagement in cross-cutting presentations, discussions, and socialization.

Papers presented will be based on experimental work, research and development, practice or industry application, case studies, innovations or other relevant work related to the eight topics listed above.

Exhibits Companies and organizations are invited to showcase their products and services in the conference exhibition, and are also invited to provide sponsorships, offered with special privileges. Sponsorships may include conference events and materials (such as dinner, bags etc) or a Prize Award for the best paper by a student. To download the exhibition/sponsorship form, please go to: http://www.iccmats-uj.co.za/Budget%20BrkDwn%20Iccmats%20fnl2.pdf. For information on the variety of choices, please contact the Conference Secretariat: E-mail: confer@iccmats-ui.co.za.

Conference Publications Conference articles will be published in a CD-ROM of full papers and a printed book as the Proceedings of the International Conference on Construction Materials and Structures. IOS Press BV (an internationally reputable publisher), Netherlands has been selected to produce high quality proceedings. Each delegate will receive a full copy of the proceedings at the commencement of the conference.

For more information, please go to: http://www.iccmats-wits.co.za/Home_Pg.html. For a PDF of the conference brochure, please go to: http://www.iccmats-wits.co.za/Call%20for%20PapersEXTD.pdf.





PRIL 20

Reminder: TRB Webinar: Internal Curing – A Technology to Improve the Performance of Concrete

Wednesday, May 1, 2014

1:00 pm to 3:00 pm (CST)

11:00 am to 1:00 pm (PST)

Please see ISCP March Newsletter announcement:

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2:00 pm - 4:00 pm (EST)

http://www.concretepavements.org/Membership/Newsletter/MARCH2014Newsletter.pdf. For registration information and the webinar learning objectives, please go to: http://www.trb.org/ElectronicSessions/Blurbs/170393.aspx.

ACPA Roadway Concrete Pavement Thickness Design Workshop to be Held May 14-15, 2014 in Rosemont, Illinois, USA



AMERICAN CONCRETE PAVEMENT ASSOCIATION The American Concrete Pavement Association (ACPA) will hold a hands-on, two-day "Roadway Concrete Pavement Design Workshop" May 14-15, 2014 at the ACPA Headquarters Office in Rosemont, Illinois, USA, The focus of this

at the ACPA Headquarters Office in Rosemont, Illinois, USA. The focus of this workshop will be "Concrete Pavement Design Methods and Details", but a key theme will be "Construction means and methods - and the interdependence between these means and methods - and design". This Workshop will cover:

- General background details on the variables considered in concrete pavement design
- Which design method is appropriate for a given set of conditions
- New construction and overlay design methodologies commonly showcased in the U.S
- Detailed digital resources and web-based tools that aid in the design process

Upon completing this workshop, attendees will have gained an understanding of which design software and tools to turn to for a given project; the ability to design better performing and more cost-efficient concrete pavements; and knowledge and appreciation for the construction side of the industry. **Who Should Attend?**

This course is ideal for pavement design professionals, engineers, consultants, contractors, professors, instructors, and other industry professionals who may have an interest in pavement design and/or the benefits and effects of proper pavement design on other aspects of pavement construction. Much of the discussion will be advanced and assume prior knowledge on common

concrete pavement engineering factors and considerations.

Professional Development Hours

ACPA will award up to thirteen (13) professional development hours (PDHs) to those who participate and document attendance for both days of the Roadway Concrete Pavement Thickness Design Workshop. PDHs are intended for states/ provinces that allow self-reporting, but in all cases, participants interested in the award of PDH's should check with local licensing organizations for specific requirements prior to registering and participating in this workshop.

For registration, rates, course outline, and driving directions, please go to: https://netforum.avectra.com/eweb/DynamicPage.aspx?Site=ACPA_ORG &WebCode=EventDetail&&evt_key=0792af0d-f769-4d01-8394-e54aa0b82fe8.



Participants of the workshop will receive **complimentary** copies of ACPA's **StreetPave 12** and **WinPAS 12** software (up to a \$600 value).



'URDUE

100th Annual Purdue Road School: 160 Sessions, 3-Hour Workshop & Record Attendance



The 100th Annual Purdue Road School was held March 11-13, 2014, at Purdue University in West Lafayette, Indiana, USA. Purdue Road School was co-sponsored by the Joint Transportation Research Program (JTRP) and the Indiana Local Technical Assistance Program (LTAP), and was attended by over 2,000 Indiana local and state officials, consultants, and suppliers. Important updates on pertinent transportation issues,

as well as sessions on topics of general interest, were provided in the two-day conference. This year's conference included 160 sessions attended by approximately 2,330 transportation professionals - and resulted in record registration for Purdue Road School. With a strong emphasis on practical solutions and case studies, the sessions covered all aspects of transportation.

Several sessions related to topics of potential interest to the concrete pavements community, such as:

- preservation
- CRCP
- deicers
- internal curing
- roller compacted concrete
- chemical modification of subgrade
 joint deterioration
- cers
- limestone cements

The Road School also included a 3-hour Workshop on "Basics of a Good Road – Concrete Pavements".

For the program, please go to: <u>https://engineering.purdue.edu/JTRP/</u> files/2014_02_18_1337hrs_Final_Reduced.pdf.



For the presentations and posters, please go to: <u>http://docs.lib.purdue.edu/roadschool/2014/</u>. For more information, please go to: <u>https://engineering.purdue.edu/JTRP/road-school</u>.



Call for Papers & Abstracts Digest

	May 2, 2014 Deadline for abstracts for the 1 st IRF Asia Regional Congress and October 27-29, 2014 in Bali, Indonesia. To submit an abstract, please go to: <u>http://web.pusjatan.pu.go.id/seminar/index.php/event/home/19?utm_source=Asia</u> <u>RC+Call+for+Abstracts+v140225&utm_campaign=Asia+RC+CfA+v140226&utm_</u>	<u>a+</u>
	UPCOMING EVENTS	
JUNE 2014	ASCE T&DI 2nd Congress June 8-11, 2014 in Orlando, Florida, USA http://content.asce.org/conferences/tdicongress2014/index.html RILEM International Workshop on Performance-Based Specification and Control of Concrete Durability June 11-13, 2014 in Zagreb, Croatia http://www.grad.unizg.hr/rilem_psc Concrete Innovation Conference	Find us on: facebook. https://www.facebook.com/pag es/International-Society-for-Con crete-Pavements/12711445063 4305?ref=ts&fref=ts. Linkedin.com/home
JULY 2014	June 11-13, 2014 in Oslo, Norway http://www.tekna.no/event?p_kp_id=29806 14th COTA International Conference of Transportation Professionals (CICTP2014) July 4-7, 2014, in Changsha, China http://cictp.csu.edu.cn/	Questions? Please contact moderator Jeff Roesler jroesler@illinois.edu
AUGUST 2014	2014 FAA Worldwide Airport Technology Transfer Conference August 5-7, 2014 in Galloway (Oceanville), New Jersey, USA http://www.airporttech.tc.faa.gov/conference/2014TC/	
	2014 World Congress on Advances in Civil, Environmental, and Materials Research (ACEM14) August 24-28, 2014 in Busan, South Korea http://acem.cti3.com/acem14.htm	
SEPTEMBER 2014	8 th International DUT-Workshop on Research and Innovations for Design of Sustainable and Durable Concrete Pavements September 20-21, 2014 in Prague, Czech Republic http://www.citg.tudelft.nl//road%20and%20railway%20engineering 12 th International Symposium on Concrete Roads "Innovative Solutions – Benefiting Society" Organized by EUPAVE September 23-26, 2014 in Prague, Czech Republic http://www.concreteroads2014.org	
NOVEMBER 2014	2014 International Conference on Construction Materials and Structures November 24-26, 2014, in Johannesburg, South Africa http://www.iccmats-wits.co.za/Intro.html	
ational Society	For events in 2015 and beyond, please go to: <u>http://www.concretepavements</u>	
SUD)	The ISCP Newsletter is produced monthly by Editor-in-Chief & Art Director: Amy M. Dean <u>newsletter@concretepavements.or</u>	
Tor Concrete Pavements	ISCP would like to thank Peter Taylor , <i>Technical Writer</i> , <i>CF</i> Sabrina Shields-Cooke , <i>Editor</i> , <i>CP Road MAP</i> , Robert Rodden , <i>ACPA Director of Technical Services & Produc</i> Nancy Whiting , <i>Research Scientist-Applied Concrete Research Initiat</i> Dan Zollinger , <i>Professor of Engineering</i> , <i>Texas A&M U</i> and M. Ehsanul Bobby Bari , <i>Graduate Student</i> , <i>Department of Civil Engin</i> for contributions to this issue.	P Road MAP, , , t Development, tive - Purdue University niversity
e-NEWSLA	ISCP invites ISCP members and friends to submit articles and calendar items to the Editor-in-Chief for future issues.	
ME 11 • NUMBER 4	ISCP President: Neeraj Buch, Ph.D. president@concretepavments.org Vice-President: Jeff Roesler, Ph.D. <u>vice-president@concretepavements.org</u> Secretary/Treasurer: Jake Hiller, Ph.D. <u>secretary-treasurer@concretepavements.org</u>	
	Please visit the ISCP Website at <u>www.concretepavements.org</u> for more	
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