CP Road Map E-News June 2011

The ***CP Road Map E-News*** is the newsletter of the Long-Term Plan for Concrete Pavement Research and Technology (CP Road Map), a national research plan developed and jointly implemented by the concrete pavement stakeholder community. To find out more about the CP Road Map, or to get involved, contact Dale Harrington, dharrington@snyder-associates.com, 515-964-2020.

New Moving Advancements into Practice (MAP) Brief

Moving Advancements into Practice (MAP) Briefs describe promising research and technologies that can be used now to enhance concrete paving practices.

MAP Brief 1-4: Potential Materials Incompatibilities in Concrete Pavements has recently been published under CP Road Map Track 1: Performance-Based Concrete Pavement Mix Design System.

Download MAP Brief 1-4 (248 kb pdf).

News from the Road

News from the Road highlights research around the country that is helping the concrete pavement community meet the research objectives outlined in the CP Road Map.

Michigan State study aims to fully quantify thermal expansion of concrete paving mixtures

Michigan State University researchers recently conducted a laboratory investigation to determine the coefficient of thermal expansion (CTE) of a typical concrete paving mixture made with coarse aggregate from eight different sources. The researchers found that a variety of factors have a significant influence on the measured CTE. First, the measured CTE varied with aggregate geology, and measured values compared favorably with published values. In addition, the age of the test specimens had a significant impact on the magnitude of the CTE, although the impact of age on transverse cracking was not significant. The number of heating-cooling cycles also affected the magnitude of the CTE; calculated values were higher after the first cycle than subsequent cycles. In addition, the Mechanistic-Empirical Pavement Design Guide (M-E PDG) software and statistical analysis was used to investigate the effect of the CTE value, and other design factors such as joint spacing and slab thickness, on the long-term performance of jointed concrete pavements. The analysis results determined that the combined effect of CTE and joint spacing on cracking is more significant than the effect of CTE and slab thickness.

Click here to download the report.

This project is meeting research objectives outlined in CP Road Map Track 1: Performance-Based Concrete Pavement Mix Design System.

Colorado researchers evaluate various concrete pavement preservation treatments

A recent report from Colorado State University evaluates various concrete

pavement preservation treatments. These treatments include joint resealing, cross-stitching, and microgrinding. In order to quantify the economics of each treatment type, full-scale test sections were constructed and exposed to different environmental conditions. Three microgrinding evaluation sections were established in the eastbound driving lane of I-70 in Rifle, CO; two were ground and one was left as unground to serve as a control section. Over time, the test sections continued to show increases in transverse and longitudinal cracking. Cross-stitching sections were located on US 287 in Campo. Measurements of longitudinal crack width were taken, and deformed bars and fiberglass panels were inserted to prevent crack separation. After four years, no additional cracking surrounding the repairs has occurred, and crack widths have remained constant. Joint resealing operations were also carried out on US 287. However, approximately 30 percent of joints were separating from the sealant after three years (see photo to the right) and thus indicate that a review of the specifications should be considered.

For more information and to download the report, click here.

This research can be categorized under CP Road Map Track 8: Long-Life Concrete Pavements.

FHWA publishes tech brief on impact of curling and warping on jointed concrete pavement performance

A FHWA Concrete Pavement Technology Program Tech Brief, *Impact of Temperature Curling and Moisture Warping on Jointed Concrete Pavement Performance*, summarizes a study that was dedicated to understanding curling and warping in jointed concrete pavement (JCP), and how to find efficient ways to minimize its impact. This research effort included a significant data collection component; 38 JCP sites throughout the country were instrumented and profiled. Prior to curl/warp analysis, a robust procedure was developed to identify joint locations and isolate individual slab profiles. In addition, a curvature index was developed to better quantify slab curvature on a level that is more representative of the slab shape as a whole. This index proved to be very effective in characterizing slab curvature and accounting for diurnal changes. The effect of curling and warping on ride quality was another major consideration in this study. A comprehensive system and analysis tools were developed to cover all possible site conditions and behaviors that may impact pavement roughness. Lastly, an analysis framework and system were developed to examine profile data in order to characterize joint functionality and estimate joint faulting.

Click here to download the tech brief.

This research is helping to fill knowledge gaps outlined in CP Road Map Track 10: Concrete Pavement Performance.

IGGA develops extensive selection of fact sheets to assist concrete pavement practitioners

The International Grooving and Grinding Association (IGGA) has released a series of fact sheets to assist concrete pavement designers, contractors, and materials and equipment suppliers. These fact sheets cover a wide variety of concrete pavement procedures including pavement surface grooving, dowel bar retrofit (see photo to the right), partial depth repair, and the next generation construction surface (NGCS). Each sheet contains significant information about each procedure, including the background and proven benefits. Fact sheets are continually being added to their website.

To access the fact sheets, click here.

This work is contributing to research objectives outlined in CP Road Map Track 8: Long Life Concrete Pavements.

Friday, July 15, 2011 is the early registration deadline for NRMCA's International Concrete Sustainability Conference

This Friday, July 15, is the early registration deadline for the National Ready Mixed Concrete Association's International Concrete Sustainability Conference, which will be held August 9-11, 2011 in Boston. This year's conference features over 60 experts from around the world who will discuss the latest advances, technical knowledge, continuing research, tools, and solutions for sustainable concrete manufacturing and construction. The conference is being held in conjunction with the MIT Concrete Sustainability Hub Industry Day on August 11, which can also be registered for separately.

To see agenda information, register online and obtain hotel information, please visit www.concretesustainabilityconference.org or contact NRMCA's Jessica Walgenbach at 240-485-1152 or meetings@nrmca.org.

This conference is contributing to research objectives outlined in CP Road Map Track 13: Concrete Pavement Sustainability.

Updates from the States: New York State

The New York State Department of Transportation (NYSDOT) addresses concrete pavement research needs through its Office of Technical Services. Within this division, state engineers consistently develop ways to improve concrete pavement safety, cost effectiveness, and environmental performance. In order to achieve these goals, NYSDOT currently partners with various researchers including Cornell University, the Ohio Research Institute for Transportation and the Environment (ORITE), the University of Texas at El Paso and Arlington, and private consultants. In addition to sponsoring research of its own, NYSDOT is an active participant in various Transportation Pooled Fund (TPF) Studies including TFP-5(185), which provides operational support for the CP Road Map.

Read on for more information about concrete pavement research in the State of New York...

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The National Concrete Pavement Technology Center at Iowa State University provides operations support services to the CP Road Map program.

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