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WISCONSIN ASPHALT NEWS

ASPHALT. Wisconsin rides on us.

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Calendar of Events

- Oct 17 Middleton Wisconsin Transportation Builders Association (WTBA) 2013 Fall Meeting
- Flkhart Lake Nov 13-15 American Public Works Association (APWA) Wisconsin Chapter 2013 Fall Conference
- Crowne Plaza Hotel. Dec. 3-4 Madison 2013 Annual WAPA Conference
- Feb. 2-5, 2014 Boca Raton, Fla. National Asphalt Pavement Association (NAPA) 2014 Annual Meeting
- Feb. 5 Minneapolis Transportation Engineering and Road Research Alliance (TERRA) 18th Annual Pavement Conference
- Feb. 18-20 New Orleans Association of Modified Asphalt Producers (AMAP) **15th Annual Conference**
- Mar. 16-19 Atlanta Association of Asphalt Paving Technologists (AAPT) 89th Annual Meeting

You Asked ... We Delivered! **2013 Conference to Feature Professional Development Hours**



The 2013 conference is back in Madison, affording easy access to dining and entertainment options. (Image courtesy of Greater Madison Convention & Visitors Bureau)

Te're excited to have the annual WAPA conference back in the capital city this year. The event is scheduled for December 3 and 4 at the Crowne Plaza Hotel in Madison.

While the venue may occasionally change, some things about our conference never will: It remains the yearly event for members of Wisconsin's asphalt community to reconnect, network and learn about what's new in asphalt. This year is no different-we have an exciting program lined up with experts on technology, policy and funding at the state and national levels (see agenda highlights at right) as well as exhibitors eager to share the latest industry technologies.

CONFERENCE AGENDA HIGHLIGHTS

(Details subject to change)

- * WisDOT Deputy Secretary Mike Berg will provide **Opening Comments** on the agency's vision, funding and staffing issues, and partnering with WAPA.
- * WisDOT's technical services staff will present a WisDOT Update, addressing the agency's "Green Team" and asphalt pavement technical team, ongoing implementation of the Mechanistic-Empirical

Our program kicks off with a welcome address from WisDOT Deputy Secretary Mike Berg. (Image courtesy of WisDOT)

Pavement Design Guide, WisDOT's Quality Management Program, and the Wisconsin Highway Research Program.

* Audrey Copeland of NAPA will discuss Asphalt Recycling, providing a brief history, a perspective on national research and working groups, examples from leading states, contractor best practices, and agency specifications.

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2013 Conference to Feature Professional Development Hours

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CONFERENCE AGENDA HIGHLIGHTS from page 1

- * An **FHWA Update** from Wisconsin Division staff will cover several national efforts: Every Day Counts, the second Strategic Highway Research Program (SHRP 2), and FHWA's asphalt pavement resources and initiatives.
- * Imad Al-Qadi of the Illinois Center for Transportation will present on **Pavement Sustainability**: its benefits, national working groups and research, future trends, and initiatives at ICT.
- * Craig Thompson of the Transportation Development Association of Wisconsin will provide an update on **Wisconsin Transportation Funding** and legislative issues.
- * WAPA's presentation "**ASPHALT. Wisconsin rides on us**" will give a look at the Wisconsin asphalt industry's recent innovations, trends and future initiatives. We've talked with customers and formulated ideas on paving the future in Wisconsin.

We have also listened carefully to your feedback and looked for ways to make the event even better. Based on the success of technical breakout sessions at last year's conference, we are pleased to announce that in 2013 we are offering a new lineup of technical sessions complete with certificates for professional development hours.

We have brought together national experts from academia, government and industry to address a range of topics (see brief descriptions at right), and you'll have the choice to attend one longer session (for 3¹/₂ PDH) or up to three one-hour sessions. In addition, we'll be offering all of the shorter courses in multiple time slots. That means you'll be certain to get to attend your first and second choices.

Best of all, the technical breakout sessions and PDH certificates are offered to all attendees for no additional fee.

Registration for the 2013 conference is now open, so don't delay. Head to the **2013 Conference page** on the WAPA website and register now. (We can only guarantee delivery of a paper PDH certificate at the time of the conference if you indicate in advance which technical breakout sessions you plan to attend—be sure to make your choices now.)

We look forward to seeing you in Madison. As always, please contact WAPA if you have any questions.

TECHNICAL BREAKOUT SESSIONS

(Details subject to change)

- * Longitudinal Joint Construction Best Practices (3.5 professional development hours). Advanced techniques for longitudinal joint construction can have a significant impact on performance and pavement life. This extended session will include a comprehensive review of longitudinal joint performance and best construction practices.
- * Emerging Construction Technologies: Intelligent Compaction and Infrared Thermal Imaging (1 PDH). This session will outline the engineering concepts behind two advanced construction technologies—intelligent compaction and IR thermal imaging—and explore how to apply these technologies for maximum benefit.
- * Asphalt Binder Rheology (1 PDH). This session on asphalt binder testing and grading will include a review of the performance graded (PG) system developed through the Strategic Highway Research Program and a discussion of the engineering basis for binder testing. It will also explore new methods for testing the latest binders, such as those used in modified asphalt.
- * Mix Design and QC Data Interpretation (1 PDH). This session will provide an overview of asphalt mix design and the "what, when and why" of quality control testing. Central topics include how production affects mix quality and interpreting QC data.
- * MEPDG Input Parameters (1 PDH). This session will address Mechanistic-Empirical Pavement Design Guide input parameters (weather, traffic and materials) and output data (performance modeling). Included is a review of local calibration needs and the research and testing needed to establish material properties.
- * Asphalt Pavement Performance Testing (1 PDH). This session will provide a review of testing for pavement performance, including methods to assess fatigue, rutting and durability. The session will address the theory, practice and application of the various available test methods.
- * Nondestructive Pavement Testing: FWD and GPR (1 PDH). Two nondestructive asphalt pavement testing methods to be addressed in this session are the Falling Weight Deflectometer (FWD) and Ground Penetrating Radar (GPR). The discussion will include the engineering basis for these techniques and methods for their application.

Gearing Up for High-RAP Asphalt

The clear value in using reclaimed asphalt pavement is something that road authorities and the asphalt industry can agree on. Use of RAP gives a second life to pavements that have reached the end of their service. It reduces use of virgin aggregate and asphalt binder. With in-place recycling operations, it also means reducing the need to move materials to a job site, saving money and energy.

What's more, in Wisconsin there's room to increase RAP percentages in pavements and enjoy these benefits even further.

The national perspective

The National Asphalt Pavement Association provides an excellent overview of using high-percentage RAP mixes (defined as more than 25 percent RAP by weight) in its 2012 presentation, **Recycled Asphalt Pavement: Breaking Down Barriers** [PDF]. NAPA notes that the greatest potential for cost savings in asphalt

potential for cost savings in asphalt production is in materials, and that increasing percentages of RAP can significantly drive down pavement life cycle costs.

States across the nation are doing just that. There's a nationwide trend toward increasing RAP mix percentages, from an average of 16 percent RAP in 2009 to 18 percent RAP in 2012. There's still room to go higher in the specifications of most states, including Wisconsin. The technology and the processes are available today. The barriers—typically agencies' concerns about meeting Superpave mix design requirements and ensuring pavement performance—are more perception than reality.

A solid performer for decades

We spoke with Ray Bonaquist, Chief Operating Officer for Advanced Asphalt Technologies and principal investigator for several Wisconsin Highway Research Program projects, and he explained the facts of the matter.

"A good place to start is a recent FHWA report on asphalt performance," Bonaquist says. "That study examined pavements in FHWA's Long-Term Pavement Performance program and compared those made with virgin mixes and those made with high-RAP mixes." (Read the **Tech Brief** [PDF].) "An important finding is that there is no statistical difference in long-term performance between these two kinds of pavements," he says.

"What's even more remarkable, though," Bonaquist continues, "is that the pavements evaluated in that study predate Superpave mix design and all of the careful engineering that goes into incorporating RAP into mixes today. So if we could get that kind of performance when we just 'dropped in' high levels of RAP 20 years ago without much engineering, it follows that today's advanced specifications and processing methods should result

in mixes superior to those described in the study." Modern techniques include blending charts developed by the North Central Superpave Center that give clear direction on how to add RAP to achieve desired final mix properties.



FHWA found that older high-RAP pavement, which predates modern mix design and construction techniques, performed just as well as virgin asphalt pavements. (Image courtesy of FHWA)

Putting it to work

Turning back to our state, Bonaquist described approaches to boost RAP levels. "If you add RAP to a binder and don't want to change its grade—and this has been a common practice in Wisconsin—there's only so much RAP you can include," he says. "That's because RAP tends to reduce the low-temperature resilience of asphalt." (This is in contrast to hightemperature performance, which is actually improved by adding RAP.)

"Fortunately, low-temperature performance is an issue that can be addressed by adjusting the starting binder," Bonaquist says. "The way Wisconsin's specifications are written, it is permissible to start with a binder rated for colder temperatures and add higher levels of RAP." This approach would allow mixes beyond 30 percent RAP to be used in Wisconsin.

"This does require more engineering and demonstrating performance

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Reclaimed asphalt is an abundant building material—and modern techniques make high RAP levels feasible. (Image courtesy of FHWA)

Gearing Up for High-RAP Asphalt

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properties of the final product," Bonaquist cautions. That's where performance testing comes in. Increased levels of RAP require more attention to mixing, and the asphalt mixture performance tester, or AMPT, can play an important role in ensuring that the right mixing is being achieved. (See the article on page 5 for details on the benefits of pavement performance testing.)

Bonaquist also talked about concerns related to fatigue cracking. "The truth is, we don't have an ideal performance test for load-related cracking for asphalt pavements of any type: virgin, high-RAP, or warm mix," he says. That's a challenge that Bonaquist and other experts are working on now, and it's certainly not a reason to shy away from using RAP.

Evidence abounds across the country. NAPA cites several examples:

• **Texas.** Well-designed pavements made with high-RAP mixes (35 percent RAP) can perform well during their life span.

• **California.** In all three of the state's environmental zones, long-term performance of RAP is likely to be comparable to other treatments.

• Louisiana and Georgia. There was no significant difference in performance of virgin and recycled pavement sections.

Leading the way

Closer to home, the Illinois Tollway has been actively involved in elevating the levels of RAP and other reused materials like shingles in its roads, and Janesville-based WAPA member Rock Road Companies served as a paving contractor on the tollway's high-RAP projects. The road authority's activities over the past several years have been well documented in articles in *Roads & Bridges* [PDF] and *Asphalt Pavement* magazines.

WAPA's Director of Engineering Scot Schwandt affirmed the benefits of high-RAP asphalt. "Yes, high-RAP paving can be done," Schwandt says. "WAPA members like Rock Road are showing how to do it." Schwandt notes that high-RAP asphalt allows agencies to pave more lane-miles on a given budget. "It's highly costeffective," he says. "We think it should be used as much as possible."

He offers a word of advice, though: "Delivering high-RAP asphalt does require contractors to make some initial capital equipment investments, but this is where our industry is heading. The investment today is well worth it."

Asphalt Maintenance Requires Proper Planning and Execution

When it comes to asphalt maintenance, there is such a thing as a recipe for success. WAPA member **Fahrner Asphalt Sealers**, which has been in the business for nearly 35 years, knows all about it.

WAPA spoke with past president and founder Jerry Fahrner and president Kent Kutnink, who shared their thoughts on asphalt maintenance.

"Asphalt maintenance comes down to setting a budget," Fahrner says, "and then following the principles spelled out in the PASER manual." (The Pavement Surface Evaluation and Rating manual—or **PASER manual** [PDF]—is discussed at length in an **article** in the Summer 2011 issue of *Wisconsin Asphalt News*.) The manual uses a 10-point rating system for asphalt surfaces based on visible distress and offers appropriate treatment measures based on different conditions.

Applying the PASER manual's principles requires an understanding of the proper approach to asphalt maintenance. "You need a plan to maintain the right road with the right treatment at the right time," Fahrner says. "That does *not* mean

dealing with the worst pavement first. If you do that, you'll always be playing catch-up. It's not the basis for a sound pavement management system."

The PASER

how different

maintenance

treatments can

make a difference

—and when they

are appropriate.

UW-Madison)

(Image courtesy of

Manual explains

Instead, Fahrner Asphalt Sealers subscribes to a system that involves

a comprehensive assessment of all the roads in an agency's network, a review of available funds for maintenance, and then finding the right plan to do the most good. Fahrner Asphalt Sealers works as a consulting firm with road agencies of all sizes—counties, cities and towns—to provide the assessment and planning the agencies need to implement a comprehensive asphalt maintenance program.

With a plan in place, next comes the heavy lifting, and Fahrner Asphalt Sealers can provide full-service maintenance as well. Kutnink says, "Once a road is paved, we can perform any surface treatment it might need. It's our job to help protect roads at their existing condition and keep them that way longer." For road agencies faced with tight budgets, good maintenance is key to making the most of the assets they have.

"The three primary treatments for roads are crack sealing, chip sealing and microsurfacing," Kutnink says.

Asphalt Maintenance Requires Proper Planning and Execution

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Crack sealing is a critical maintenance step; it helps the roadway combat water intrusion. (Image courtesy of Fahrner Asphalt Sealers)

The crack seal always comes first, before a chip seal or microsurfacing treatment, and it protects against water intrusion and associated frost heaving. What comes next depends on the budget and needs based on the road agency's maintenance plan."

Application of a chip seal is an economical way to provide a new surface with improved texture and excellent skid resistance. Microsurfacing, a mix of asphalt emulsion, aggregate and other components, can provide a smooth new surface up to three-quarters of an inch thick. It corrects minor crack and wheel ruts while improving safety and ride quality.

The company's full suite of maintenance options appears on its **Services Web page**. This page details a number of maintenance processes suitable for specific types and degrees of pavement distress. So whatever maintenance work or support a road authority might need, Fahrner Asphalt Sealers stands ready as the region's premier provider to keep asphalt pavements lasting longer and looking better.

Fahrner Asphalt Sealers is headquartered in Plover with field offices in Wisconsin and Michigan that have fully equipped shops and equipment yards. Approximately 270 employees serve customers in eight states across the Midwest on a daily basis.

Performance Testing Helps Advance Pavement Innovations

When it comes to new pavement technologies and construction techniques, the number one concern for road agencies is long-term performance. Today's specifications are largely based on empirical performance criteria (such as aggregate properties, binder grades, mix air voids and mix density), but these factors do not have a direct relationship to the distress mechanisms at work with asphalt pavements. This makes predicting long-term performance challenging.

Much more informative are the lab-based performance tests designed to measure mix parameters and assess the root causes of pavement distress. Nationally recognized tests produce easy-to-interpret and repeatable results, and they can be used to rank different mix options according to expected performance—a critical step in developing a pavement specification.

The table below outlines four main types of long-term pavement distress and the associated performance tests for asphalt mixes.

The impact of these tests extends well beyond the lab. Correlations between lab and field can be developed to predict long-term pavement performance, much the way the Mechanistic-Empirical Pavement Design Guide models were developed to predict pavement performance. Research is ongoing to create new tests and improve current ones (the APA Jr., noted in the table, is one example—see our discussion of this testing tool in our Featured Member story on page 6). Investigations by academic, government and industry researchers continue to refine the correlations between lab and field and improve long-term predictions.



One option for the Hamburg Wheel-Track Test Method is the PMW Single WheelTracker offered by WAPA member Troxler.

Specifications based on performance testing are clearly the way of the future, and today is a good day to get started. Agencies that apply these tests can combine handson experience with sound engineering judgment to get a head start on establishing performance criteria specifications and reaping the benefits of this approach.

DISTRESS TYPE	PERFORMANCE TEST OPTIONS
Permanent deformation— generally rutting	 Asphalt Pavement Analyzer (APA) Asphalt Pavement Analyzer Jr. (APA Jr.) Hamburg Wheel-Track Test Method Flow Number (using the Asphalt Mixture Performance Tester [AMPT])
Moisture sensitivity and associated loss of durability	 Tensile Strength Ratio (TSR) APA Jr. Hamburg Wheel-Track Test Method, wet
Structural fatigue, such as alligator cracking and longitudinal wheel path cracking	 Beam Fatigue Test Simplified Viscoelastic Continuum Damage (S-VECD) Fatigue Model Overlay Tester APA Jr. (in development for this application)
Thermal cracking (not transverse reflective cracking)	Creep Compliance and Strength (using the Indirect Tensile Test [IDT])

Featured Member PAVEMENT TECHNOLOGY,

QUICK FACTS...

- Headquartered in Covington, Georgia (near Atlanta)
- Founded in 1996
- WAPA member since 2013. (Welcome!)
- Online at pavementtechnology.com
- For information, contact: Wade Collins, Vice President 770-388-0909 wadec@pavementtechnology.com

Company overview

Pavement Technology, Inc., develops and delivers innovative sampling and testing equipment for the asphalt and aggregate industries. The company's equipment line includes analyzers, compactors, mixers, gradation units, sampling devices and other lab equipment.

A nationwide customer base

PTI products are in use among state DOTs, research universities and major hot mix asphalt contractors in 40 states, as well as nationally by FHWA and FAA. State DOTs near Wisconsin that use PTI equipment include Michigan, Minnesota, Nebraska and Ohio.

Hot product: Asphalt Pavement Analyzer Jr.

Asphalt labs are putting PTI's Asphalt Pavement Analyzer Jr. to work. "APA Jr. allows a user to predict rutting, fatigue and moisture susceptibility," explains Wade Collins, PTI's Vice President, "and analyze the characteristics of an asphalt mix before making the investment of placing a pavement."

The APA Jr. allows for testing of different kinds of lab specimens (vibratory beam, gyratory and Marshall) and field cores. The multifunctional tester has a solid wheel for stripping and moisture testing (AASHTO T 324, Hamburg Wheel-Track Test Method) and a concave wheel and



The APA Jr.'s compact and multifunctional design makes it a must-have for any size asphalt lab. (Image courtesy of Columbia University)

pressurized hoses—which better simulate tire loading—to test for rutting susceptibility (AASHTO T 340). The APA Jr.'s loaded solid wheel can also assess fatigue cracking on compacted beam specimens.

A tool for all stakeholders

By providing both rutting and fatigue data, the APA Jr. can make a big difference to highway agencies that have an eye on durability and serviceability of asphalt pavement. "The APA Jr. is used in DOT labs for mix acceptance," Collins says. "Contractors use it too. It's good business to make sure your mix meets DOT criteria before submitting it—the time that can be lost to resubmitting failed mixes can never be made up." The APA Jr. is also commonly used in research labs working on improving mix properties and design.

Testing foamed asphalt in the lab

Another exciting product in PTI's line is its Warm Mix Asphalt Laboratory Foaming System ("The Foamer"), which lets users create and test foamed asphalt mixes in their laboratories. The Foamer allows for a wide range of input parameters, including temperature, flow rates for water and asphalt, and air pressure. "This is an excellent tool for creating foamed warm mix samples with different expansion ratios and testing them in the lab," Collins says.

Did you know ...?

PTI co-founder Ronald Collins helped develop the original Georgia Loaded Wheel Tester when he was State Materials and Research Engineer with Georgia DOT. He and co-founder Dr. Don Brock, CEO of Astec Industries, would go on to develop the company's original Asphalt Pavement Analyzer.



The versatile APA Jr. can be set up to conduct standard AASHTO tests with solid wheels (left, AASHTO T 324) and concave wheels with rubber hoses (right, AASHTO T 340).

WAPA Members: Call to Action! Roll Out the Welcome Mat for Lawmakers

This summer and fall, WAPA has been making the rounds in the state Capitol building, across the state, and in Washington, D.C., sitting down with state and federal lawmakers to discuss the importance of a strong asphalt industry in Wisconsin.

This one-on-one time is critical to maintaining a strong relationship with the individuals who help shape policy and funding laws, but that's just part of the equation. To drive the message home that asphalt is good for Wisconsin's travelers and good for our economy, nothing compares to having legislators visit WAPA members' facilities, including asphalt plants and quarries, and pavement construction sites.

"The most effective way to help legislators make informed decisions is to give them hands-on experience," explains WAPA Executive Director Brandon Strand. "They'll remember what they see and hear during a site visit more than they could from an office visit or PowerPoint presentation." Strand says these visits are a unique opportunity to get the undivided attention of top decision-makers and share important issues facing our industry.

The visits work, too. In our Fall 2012 issue, NAPA's Executive Vice President Jay Hansen discussed the plant tour that WAPA member Northeast Asphalt hosted for Congressman Reid Ribble. "The up-close-and-personal approach really helped illustrate all the benefits of the operation," Hansen said, "from the good jobs that asphalt supports all the way to the sustainable aspects of asphalt pavement." He described how the tour led Ribble to coordinate with his Congressional colleagues to urge the Speaker of the House to take up



Congressman Reid Ribble's tour of a Northeast Asphalt plant had an impact on funding in Congress last year. (Image courtesy of Northeast Asphalt)

highway reauthorization. That kind of success can be duplicated at both the state and federal level.

The site tours and legislative office visits together represent an ongoing effort by WAPA to keep delivering a consistent message on the importance of the asphalt industry to Wisconsin. "Relationships are the essence of politics," Strand says, "and that's true at all levels of government. We're continuing to work hard to maintain good working relationships with decision-makers among federal and state legislators, county executives, and members of local chambers of commerce.

"In the end, we hope that when a new policy or funding decision is under consideration, people in government will consider the asphalt plants in their jurisdictions that are supporting the economy and supplying good local jobs," he says.

All Wisconsin highway and government agencies are welcome to request a plant or site tour. Those interested should contact WAPA, and we will help make arrangements for a tour with a local WAPA member. Also, as always, we offer **Black Bag Lunch & Learn** sessions to provide education on a wide variety of asphalt technologies. Please let us know how we can help.



Mission

Promote quality hot mix asphalt pavements which are safe, efficient and in the best interest of the customer.

Vision

Professionals dedicated to making HMA the customer's preferred choice in pavement solutions through innovation, education and exceptional service.

Values

- * STEWARDSHIP
- * EXCELLENCE
- * INNOVATION
- * **PROFESSIONALISM**
- * ACCOUNTABILITY

Contact Us!

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Welcome New Member!

Pavement Technology, Inc. of Covington, Georgia, produces innovative sampling and testing equipment for the asphalt and aggregate industries. Notable products are the Asphalt Pavement Analyzer Jr. and the Warm Mix Asphalt Laboratory Foaming System.

WAPA Producer Members

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