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Our FibreDec® patented process uses a stress absorbing, fiber-reinforced membrane designed to delay reflective and seal alligator cracks. An in-place spray applied process produces a membrane that not only waterproofs the surface, but also controls the stresses generated in the pavement structure.

The result? FiberMat’s special combination of polymer-modified asphalt emulsion and glass fibers dramatically improves overall surface performance, proven in field and laboratory testing. FiberMat prolongs the life of the pavement, which translates to a lower life cycle cost.

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Tire Rubber Modified Slurry Seal (TRMSS) is a new type of cationic rubberized slurry seal that provides the durability of conventional slurry seal along with the uniform black appearance and environmental benefits of a tire rubber modified emulsion. In addition, because TRMSS uses a cationic emulsion, it can be formulated to work as well in December as in July and still maintain its rich, black color.

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TRMSS begins with a terminal blend of asphalt and tire rubber. This process combines the asphalt and tire rubber under high temperatures and pressures allowing the asphalt to digest the tire rubber completely, acquiring all of the benefits of the rubber before it is emulsified.

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Over 40 million waste tires are generated in California alone each year. Using TRMSS will divert approximately 80 tires per lane mile from the landfill. Your pavement preservation program can now also be your recycling program.

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TRMSS has an application rate of 60% - 80% more aggregate per square yard than other rubberized slurry seals. TRMSS emulsion contains 50% more asphalt than other rubberized slurry seals.

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TRMSS is set apart from other rubberized slurry seals by being based upon a cationic quick set emulsion. Cationic (positively charged) emulsions cure chemically, not through evaporation like anionic (negatively charged) emulsions. This allows cationic emulsions to be used in cooler temperatures and still cure successfully. By their nature, cationic emulsions set quickly and create a natural bond to most aggregates.
Modified Slurry Seal

For more information, pictures, and videos go to www.rubberslurry.com

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**On the Cover:** All-in-one pothole patching truck helps Town of Irondequoit, N.Y., eliminate potholes on a cost effective basis. PHOTO CREDIT: Bergkamp, Inc.
Right Treatment
Right Road
Right Time

- Pavement Milling
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- Soil Stabilization
- Coal Tar Sealing
- Striping
- Asphalt Emulsions

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www.slurrypavers.com
Welcome to the New FP²

As of this January, FP² has new goals, a new mission, and a new legal structure in which to pursue them.

With this year’s transition of the former Foundation for Pavement Preservation, a charitable organization, to FP², Inc., with a mission of promotion of pavement preservation, we are embarking on a fresh start. As the original foundation’s final president, Bill O’Leary, mentioned in these pages last year, every organization must stop and look not only into its rear view mirror, but at the dynamics of the present, as well as into the crystal ball of the future. In May 2009 our board determined that the foundation status as a public charity would not permit us to promote pavement preservation with the U.S. Congress in the ongoing surface transportation reauthorization debate “Inside the Beltway.”

The result was the formation of a new entity, FP² Inc., a non-profit trade organization that allows advocacy. FP² Inc. will now have the ability to deliver far more to its supporters, without the restrictions of being a charity. Our mission now is to advocate national policies, promotional activities and research programs that advance pavement preservation.

A YEAR OF ADVOCACY

And what a year we have in which to promote pavement preservation! This year’s federal surface transportation reauthorization gives the pavement preservation community an ideal time to step up to the table and make our presence known.

First and foremost, our Washington, D.C.-based firm, Williams & Jenson, PLLC, will be coordinating our pavement preservation message and delivering it to lawmakers on Capitol Hill. Our goal is to educate elected officials and to support legislative efforts that increase the awareness of the benefits of pavement preservation, and to enhance the FHWA’s and U.S. DOT’s ability to fund such programs at both the national and state levels.

The U.S. House of Representatives’ reauthorization bill released in June 2009 already contains strong support for pavement preservation. Read about it in the article elsewhere in this issue, Let Pavement Preservation Be Part of Surface Transportation Reauthorization in 2010, by Williams & Jensen’s Joyce A. Rogers.

And while at writing virtually no information has been made available about what the U.S. Senate or the Obama administration specifically have planned for program reauthorization, right at deadline in early January we learned that keeping our transportation infrastructure in good repair will be one of a handful of key priorities for the new U.S. DOT. To us that means pavement preservation.

STRONG PROMOTIONAL EFFORTS

In addition to political advocacy, we will boost our promotional efforts. We’ll define a beneficial pavement preservation policy and advocate its adoption at all levels of government. We’ll prepare and distribute new promotional information, and create national, unified messages, all to support our new advocacy role in pavement preservation.

We will continue to be very visible at all national and regional trade shows and conferences, and are committed to continuation of our financial support of the National Center for Pavement Preservation (NCPP).

You will be able to learn more about all of these efforts by following us through our flagship quarterly publication, Pavement Preservation Journal, or by visiting our revised web site, fp2.org, which has just undergone an “extreme makeover.”

Our new slate of officers will work to make all this happen. They include Mike Buckingham, Strawser Construction, Columbus, vice president; Bob Koleas, Western Emulsions, Dana Point, Calif., secretary; Bill O’Leary, Martin Asphalt, Houston, treasurer; Jim Moulthrop, Fugro, Inc., Austin, executive director; and me. And to make sure all this happens, I will be contacting you individually for financial help in this regard.

A close friend of mine likes to say, “If you are not making dust, you will be eating it.” Well, the time is here for us to make dust, that is, to make great, new beginnings in the industry of pavement preservation. Thank you in advance for your interest and your help in making these efforts to enhance pavement preservation succeed.

Burns is executive vice president, Ergon Asphalt & Emulsions, Jackson, Miss., and 2010 president of FP².
Your existing roadway is worth more today than what it cost originally—don’t you wish all of your assets behaved this way? Give us a call at Gallagher and we’ll explain how Hot-in-Place Recycling can extend your resurfacing budget by completely rejuvenating your old roadway surfaces to good-as-new condition.

We’ll show you how to dramatically reduce both maintenance and reconstruction costs, and do your part to help protect the environment. Hot-in-Place Recycling technology consumes approximately 30% to 35% less energy than conventional methodology and with less trucking and milling involved, it’s a very green process.

Of course, the other green is very important, too. The good news: budgets can be stretched upwards of 35% and total project time reduced by as much as 50%. Think about that—you’ll enjoy fewer user delays, reduce manpower and fuel consumption.

Your existing aggregates sat in a quarry for thousands and thousands of years…there’s plenty more life in them. Call Gallagher and we’ll show you how to make the most of what you already own.

Gallagher Asphalt Corporation is one of the oldest and largest asphalt producers in the State of Illinois. We’ve been building roads for over 80 years and recycling them for 25. We have what it takes to help you.
Conference Will Bring World of Pavement Preservation to Single Location

There still is time to register and attend the First International Conference on Pavement Preservation (ICPP) at Newport Beach, Calif., April 13-19. To register now, or for more information, visit the conference web page at www.pavementpreservation.org/icpp.

The ICPP will bring together researchers and experts working in the field of pavement preservation to exchange ideas, share best practices, and discuss critical issues and concerns impacting the implementation and success of pavement preservation theory and practice.

Over 40 peer-reviewed papers will be presented by international experts at this not-to-be-missed event. Highlights will include case studies of pavement preservation from United States transportation agencies, industry, and international organizations. An exhibit hall featuring pavement preservation products and technologies will open during the first two days of the conference; see the lineup of exhibitors in these pages.

Consulting engineers, pavement producers and contractors, material suppliers, state and federal Department of Transportation (DOT) engineers, local agency public works engineers and officials, researchers, and academics are invited to attend. The conference is sponsored and co-organized by Caltrans, the Federal Highway Administration (FHWA) and FP², Inc. Other agencies participating in the planning of the conference include the California Pavement Preservation (CP²) Center, the National Center for Pavement Preservation (NCPP) and the University of California, Berkeley. Other associated conference sponsors include the Transportation Research Board (TRB), the American Public Works Association (APWA), National Association of County Engineers (NACE) and the International Road Federation (IRF).

Organizers are inviting bids for a location for the second international conference to be held in 2014. Proposals for this event were due by Feb. 1, 2010, and the successful bidder will be announced at the conference in April.

The main theme of that conference will be pavement preservation and sustainability. The conference will address an array of issues relevant to the pavement preservation community.
Program Schedule

TUESDAY, APRIL 13

Keynote presentations on opening day, the afternoon of Tuesday, April 13, include:
- Randall Iwasaki, director, Caltrans;
- Peter Grass, president, The Asphalt Institute;
- Mike Acott, president, National Asphalt Pavement Association;
- Christopher Newman, FHWA;
- John Roberts, International Grooving and Grinding Association; and
- Gerald Voigt, president, American Concrete Paving Association.

That afternoon, a program on Pavement Preservation for Sustainability will include:
- ‘Stitch in Time’ Pavement Strategy over 15 Years, by Ian Cossens, VicRoad, Australia;
- Energy and Emissions Impacts of Road Construction by Francois Chaignon, Colas (invited);
- Preservation Activities for PCC Pavements by John Roberts, IGGA (invited); and
- Ontario’s Solutions for Sustainability, by Tim Kazmeirowski (invited).

An opening reception will take place that evening.

WEDNESDAY, APRIL 14

The program for Wednesday morning, April 14, will feature parallel sessions in the morning and afternoon. Morning parallel sessions are titled Decisions, Decisions, Decisions, and Flexible Pavement Preservation Toolbox. Decisions will explore funding solutions for decision makers, performance-based decisions, variable condition decision making, surface treatment selection, pay-now or pay-later treatment selection, and performance-specified maintenance contracting.

Presentations will include:
- The Performance-Based Approach to Local Street and Road Funding Allocation, by Rommel and Tan, Metropolitan Transportation Commission;
- Offering Top Level Decision Maker Budget Funding Solutions in Order to Maintain Pavement Preservation Programs, by Christensen, Tensar International, and Skinner, Stantec Consulting, Inc.;
- Utilization of Bituminous Surface Treatments for Maintaining Hot Mix Asphalt Pavement Due to Restricted Budgetary Constraints, by Pierce, Applied Pavement Technology, and Mahoney, Muench and Uhlmeyer, University of Washington; and Li, Willoughby, and Luhr, Washington State DOT;
- Pavement Preservation: Pay Now or Pay Big Later, by Wang and Tsai, Georgia Institute of Technology, and Pitts, Georgia DOT;
- Performance-Specified Maintenance Contracting: The New Zealand Approach to Pavement Preservation, by Gransberg, University of Oklahoma, Sheepbouwer, University of Canterbury, New Zealand, and Tighe, University of Waterloo, Ontario; and

The morning Flexible Pavement Preservation Toolbox session will discuss bonded surfaces, slurry seals, chip seals over fabrics, rejuvenator basics, crack sealing and thin overlays.

Featured will be:
- Cost Effectiveness of Ultrathin Bonded Bituminous Surface and Modified Slurry Seal, by Liu, Manepallie, Gedafa, and Hossain, Kansas State University;
- Chip Sealing over Paving Fabric in Various Climatic Conditions, by Davis, FHWA Pavement Preservation Expert Task Group, and Miner, Tencate;
- The Role of Asphalt Rejuvenators in Pavement Preservation, by Brownridge, Tricor Refining;
- Field Performance of Asphalt Treatments on Airfields, by Rushing and Falls, US ERDC;
- Service Life of Crack Sealants, by Yildirim, Texas Pavement Preservation Center; and

Following a luncheon, the afternoon parallel sessions will cover Pavement Management for Pavement Preservation, considering remaining life analyses, web based management systems, examples of agency programs for pavement management for pavement preservation, whole life analyses, life cycle cost assessments (economic and environmental), and estimating treatment life; and Rigid Pavement Preservation Toolbox, covering the benefits of rigid pavement preservation techniques, sustainable pavement techniques for cold weather pervious concrete, and processes for assessing rigid pavement preservation treatments.

The pavement management sequence will include:
- Integrating Pavement Preservation into A Web-based Chuning Highway Pavement Management System (Integrating Pavement), by Tsai and Wu, Georgia Institute of Technology, and Guo, Chinese Ministry of Communication;
**Texas Maintenance Management and Pavement Performance System**, by Simns, Texas DOT, and Zhang, University of Texas at Austin;

**Whole-of-Life Analyses of Different Pavement: The Real Picture**, by Collings, Loudon International, South Africa, and Jenkins, University of Stellenbosch, South Africa;

**How Long Will Asphalt Pavement Last?**, by Tsai, Purcell and Li, Georgia Institute of Technology, and Rabun, Georgia DOT;

**Determining Time to Uncontrolled Trafficking after Chip Seal Construction**, by Shuler and Lord, Colorado State University; and

**Innovations and Successes of Hot Applied Mastic Patching Materials for Asphalt and Portland Cement Concrete Pavements**, by Parkinson and Chehovits, Crafco, Inc.

The **Rigid Pavement Preservation Toolbox** session will include:

**Rapid Strength Concrete for Rehabilitation and Improvement of Pavements**, by Stein, Kramer, Kumar, Pyle and Shatnawi, Caltrans;

**Developing Sustainable Design, Construction and Maintenance Techniques for Cold Climate Pervious Concrete Pavements**, by Henderson and Tighe, University of Waterloo, Ontario;

**Comparative Field Testing of Asphalt and Concrete Pavement Preservation Treatments in Oklahoma**, by Riemer, Oklahoma DOT, and Gransberg and Zaman, University of Oklahoma;

**Safe, Smooth and Quiet Concrete Pavement (Pavement Preservation Treatments for Rigid Pavements Design, Materials)**, by Scofield, American Concrete Pavement Association;

**Construction and Performance of Recycled Roller Compacted Concrete Pavement (RCCP) In Malaysia**, by Zulakmal, Public Work Department Head Quarters, Malaysia; and


A grand banquet will be held that night.

### THURSDAY, APRIL 16

Thursday morning also will feature parallel sessions: **Selecting Materials for Extending Pavement Life**, which will look at field performance of new materials, environmentally-based selection of emulsions, influence of crack sealants, thin surface treatments and overlays on pavement life; and **Case Studies and International Preservation Programs**.

The **Selecting Materials** track will feature:

**Extending Pavement Life by Forestalling Crack Reflection**, by Brown, Asphalt Consulting Services;

**Development of High Performance Binder for Prevention Reflective Cracking**, by Shimazaki, Konno and Takahshi, Institute of Research and Development, Taisei Rotec Corp., Japan;

**Field Validation of Performance-Based Polymer-Modified Emulsion Residue Tests**, by G. King and H. King, GHK, Inc., Lewandowski, PRI Asphalt Technologies, Lubbers, Kraton Polymers LLC, Galehouse, National Center for Pavement Preservation, Morris, Paragon Technical Services, Inc., and Voth, Federal Lands Highway Division, FHWA;

**Pavement Maintenance Technical Advisory Guide**, by Rouen, Caltrans, and Hicks, California Pavement Preservation Center;

**Going Green with Textile Interlayers: How to Apply with Pavement Preservation**, by Davis, FHWA Pavement Preservation Expert Task Group, and Miner, Tencate; and

**Life of Chip Seal on Kansas Highways**, by Liu, Hossain and Miller, Kansas State University.

Thursday morning’s other track, **Case Studies and International Preservation Programs**, will feature:

**Case Studies on Failure of Bituminous Pavements**, by Kumar and Gupta, Indian Institute of Technology;

**Case Study on Perpetual Flexible Pavement in Connecticut**, by Yut, Nener-Plante and Zofka, University of Connecticut;


**Developing an Asphalt Pavement Preventative Maintenance Program for the Yangjiang-Moaming Expressway**, by Duanyi and Chaozu, South China University of Technology, and Galehouse, NCPP; and


Following a luncheon, Thursday afternoon will feature a single session, **Promoting Benefits and Implementation of Pavement Preservation**.

Presentations will include:

**What We Don’t Know about Pavement Preservation**, by Luhr, Kinne and Uhlmeyer, Washington State DOT, and Mahoney, University of Washington-Seattle;

**Bitumen Emulsion: Beyond Pavement Preservation**, by Bouteiller, Colas;

**Kansas’ Experience with Implementing Pavement Preservation for Portland Cement Concrete Pavements** by Rissky, Kansas DOT (invited); and

**Promoting the Benefits of Pavement Preservation** by Peshkin, Applied Pavement Technology (invited).

The conference will finish with concluding remarks.
Exhibitor Showcase

A selection of exhibitors showcasing pavement products and technology will be a major part of the ICPP. Following is a listing of exhibitors as of Jan. 7, including descriptive material sent to Pavement Preservation Journal by press time.

ANTON PAAR
Anton Paar produces high-quality measuring and analysis instruments for industrial and research applications. Its product portfolio also includes density meters, viscometers, rheometers, polarimeters and refractometers; and instruments for X-ray structure analysis, microwave synthesis and microwave decomposition.

Anton Paar is the leading supplier of DSRs to the asphalt market. Its SmartPave DSR takes asphalt rheology to previously unattained levels of accuracy, comfort, and ease of use. For more information, visit www.antonpaar.com.

CALIFORNIA PAVEMENT PRESERVATION (CP²) CENTER

The California Department of Transportation (Caltrans) established the California Pavement Preservation Center at California State University, Chico on July 1, 2006. The purpose of the center is to provide pavement preservation services to public agencies and industry.

Unique services include identification of benefits of pavement preservation, developing educational and staff development opportunities, providing needed technical assistance to public agencies and industry, and managing/conducting research and outreach assistance. Visit www.cp2info.org.

CHRISP COMPANY

Chrisp Company is a leader in pavement marking and traffic safety device installation and maintenance, with performance around the clock, day or night. Chrisp provides traffic striping and removal, signs, reflectors, solar products and pigmented skid-resistant surfacing. Chrisp has California offices in Fremont, Rialto, Stockton and Woodland. For more information, visit www.chrispc.com.

COLAS SOLUTIONS

Colas Solutions™ is pleased to announce it will begin operations in 2010 to promote and support the many technologies the Colas Group of U.S. companies provide for supporting infrastructure construction and preventive maintenance needs. Its products and services provide not only cost-effective solutions to industry and agency needs, but many offer energy savings and responsible environmental alternatives and benefits, in addition to their outstanding performance.

Colas Solutions has many years of industry experience among its members, but also the reputation and proven track record of the broad range of innovative solutions available from the Colas Group. Solutions such as FiberMat®, FastTack®, and EcoPatch™ are just a few of the innovations that the group and the U.S. companies will be offering to meet industry needs. Learn more at www.ColasInc.com.

CRAFCO, INC.

Since 1976 Crafo, Inc. has supplied the pavement preservation community with quality products, including crack sealants, joint sealant, pavement patching products, geocomposites, and related application equipment.

For all pavement preservation needs, Crafo is the source, with facilities strategically located around the United States and distributed worldwide.

For more information visit www.crafco.com or call 800-528-8242.

CTS CEMENT MFG. CORP.

Rapid Set® fast-setting cement products are used in concrete applications requiring the highest durability and fastest strength gain, achieving structural or drive-on strength in one hour. Advantages of Rapid Set Cement products include greater strength, 3000 psi in one hour, non-shrink, high-sulfate resistant, chloride resistant, and permanent repairs.

Rapid Set is a proven green solution for today’s repair and new construction projects. Rapid Set has a 32-36 percent smaller carbon footprint than Portland cement on a pound by pound basis because its manufacture requires less limestone and fossil fuels.

Rapid Set Cement may be mixed with a wide variety of aggregates to produce customized one-hour strength concrete or mortar mixtures. The high-strength, low-shrinkage, and superior durability properties of Rapid Set Cement lead to unparalleled concrete performance on diverse projects including repair of highways and bridges, airport pavements, parking structures, concrete pavements, industrial floors, new slabs, formed concrete, and grouting.

For more information visit www.ctscement.com.

DEERY AMERICAN CORPORATION

Deery American Corp. is a manufacturer of asphalt and concrete pavement preservation products for transportation and commercial users worldwide.

Deery American manufactures and distributes a broad range
of superior quality ASTM, AASHTO, FAA, federal and specialty products for new construction and preventive maintenance of asphalt and concrete applications, including crack sealing, pavement repair, crack filling, bridge joint repair, pothole repair, and waterproofing. For more information visit www.deeryamerican.com.

**ERGON ASPHALT & EMULSIONS**

With the ability to develop specialty polymer-modified asphalts, asphalt emulsions, asphalt sealants and equipment, as well as storing these paving asphalt products, Ergon is able to consistently supply customers with quality asphalt products when needed.

Ergon’s asphalt and emulsions companies add additional value by marketing a variety of asphalt products into their geographically diverse customer bases, by excelling at pavement preservation services and making every effort to protect the environment along the way. Visit www.ergon.com for more information.

**FP2, INC.**

FP2, Inc., established in 1992, provides resources to advance knowledge for managing and preserving pavements. FP2 supports research to educate government and industry professionals in the economical, safety and performance advantages of pavement preservation. We strive to continuously improve the quality and understanding of new technologies through our advocacy of education and public-private partnering.

In addition to its other activities, FP2 publishes this magazine, *Pavement Preservation Journal*. For more information, visit www.fp2.org.

**ITS BERKELEY -TECH TRANSFER**

The ITS Berkeley-Technology Transfer Program provides training, workshops, conferences, technical assistance and information resources in the transportation-related areas of pavement design and maintenance, planning and policy, traffic engineering, project development, geometric design, safety, environmental issues, railroad and aviation.

The Technology Transfer Program is a division of the Institute of Transportation Studies at the University of California, Berkeley. Our training programs and services are affordable – often free – and are offered statewide. Most of our classes are subsidized for California-based public employees, but our service area is national and international. To learn more about our program, please visit www.techtransfer.berkeley.edu.

Our exhibit will feature information about our training courses, copies of our quarterly newsletter, and details on our free resources for California public agencies. Be sure to drop by!

**NATIONAL CENTER FOR PAVEMENT PRESERVATION**

The National Center for Pavement Preservation (NCPP) was established by Michigan State University and the Foundation for Pavement Preservation to lead collaborative efforts among government, industry, and academia in the advancement of pavement preservation.

Founded July 11, 2003, the NCPP is the realization of a collective national vision of pavement practitioners, policy-makers and industry. Its purpose is to advance and improve pavement preservation practices through education, research and outreach.

There are nearly 395 million miles of public roads in the United States, valued at more than $1.75 trillion. The NCPP will provide a valuable resource to help educate others about the benefits of pavement preservation. It can enhance pavement preservation knowledge through research and assist owner agencies to establish effective programs. These programs extend pavement life and improve motorist safety and satisfaction while saving public tax dollars. Visit www.pavementpreservation.org to learn more.

**PACIFIC EMULSIONS, INC.**

Pacific Emulsions, Inc. is a leader in the development and manufacturing of asphalt emulsions. We have the right emulsion for your pavement preservation needs.

**Tire Rubber Modified Slurry Seal** from Pacific Emulsions is the next advancement in rubberized slurry seal. Based upon a Terminal Blend of rubber and asphalt, TRMSS provides the durability of conventional slurry seal along with the uniform black appearance and environmental benefits of a tire rubber modified emulsion. For more information visit www.rubberslurry.com.

**PACIFIC ENZYMES**

Pacific Enzymes, Inc. has been in the business of soil stabilization since 1969 and has worked with enzymes since the first experiments in the stabilization of soil. Now, the result of years of work in this field is the resounding success of Permazyme 11X.

Permazyme 11X produces all-weather roads, increases compaction up to 15 percent with no extra effort during construction, is environmentally safe in all applications, is simple to use, and is economically practical. When used in subgrade lifts under asphalt, concrete, or chip seal it can eliminate 80 percent of repair costs over 10 years. It is a permanent bonding of the soil and is irreversible.

Pacific Enzymes incorporated in 1992 and its sales office is located in Sacramento, Calif.
PARAMOUNT ASPHALT

Paramount Petroleum Corporation is the leading manufacturer and marketer of asphalt and asphalt specialty emulsions in the western United States.

The company — with four refineries and nine terminals located in six states — supplies all PG grades of asphalt including polymer modified and terminal-blend ground tire rubber materials. All types of emulsion are supplied to agencies, contractors and end users throughout the western United States. Visit www.ppcla.com for more information.

PAVEMENT TECHNOLOGY, INC.

Pavement Technology, Inc. was founded in 1972 to offer to the public works professional pavement manager new technology in the area of pavement preservation.

The company serves as both contractor in the application of pavement preservation products for both asphalt and portland cement concrete pavements, and manufacturer of these products, through D&D Emulsions in Mansfield, Ohio.

The primary products the company offers are Reclamite® Asphalt Rejuvenator, JOINTBOND®, Longitudinal Joint Stabilizer, Coherex®/ DUST BOND® dust suppressants, Cyclogen® asphalt recycling emulsions, SINAK® concrete sealer and SurfCrete® polymer bonded resurfacer. Visit them at www.pavetechnicinc.com.

PETROCHEM MANUFACTURING, INC.

Petrochem Manufacturing, Inc. manufactures Flex Seal, the revolutionary new rubberized asphalt emulsion that is designed to protect roadways and airport runways. Its unique formula combines recycled tire rubber with asphalt, polymers and other additives to produce superior pavement protection, increased safety benefits and exceptional durability.

Flex Seal provides long-lasting protection by sealing pavement against water absorption, oxidation and ultra-violet rays, thereby extending pavement life by five to seven years when applied properly. For more information visit www.pmitechnology.com.

ROAD SCIENCE, LLC

Road Science, LLC, is the leading technology company for the road paving industry. It focuses on developing long-term business relationships with contractors, manufacturers and agencies.

Road Science specializes in four major product categories: Recycling, Maintenance, Binder Technologies and Production Services. These innovative solutions are designed for improved performance, lower life cycle costs, lower user delays during construction and longer lasting roads.

More than just products, the solutions include materials, mix design, construction equipment, performance-related specifications, and construction site service. Road Science supplies the technology and can assist customers in procuring the specified asphalt products and locating licensed contractors for construction. The first step is working with customers to determine their needs. To learn more, visit www.roadsciencellc.com.

ROKLIN SYSTEMS

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RUBBER PAVEMENTS ASSOCIATION

The Rubber Pavements Association (RPA) is dedicated to the promotion of cost-effective asphalt paving materials that beneficially reuse end of life tires. The RPA provides workshops, seminars, education and training to agency personnel that would like to learn more about using scrap tire to enhance the safety, noise reduction and durability of asphalt paving systems. For more information visit www.rubberpavements.org.

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WPMA will be exhibiting a variety of digital and printed pictures and material samples that demonstrate the effectiveness of ARAM as a maintenance free alternative to conventional treatments, as well an alternative to conventional reconstruction. Newsletters and additional handouts will also be available at our booth. For more information, visit www.westernpma.org.
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* TRICOR is a joint venture of San Joaquin Refining Co. and Ergon Inc.
Let Pavement Preservation Be Part of Surface Transportation Reauthorization in 2010

by Joyce A. Rogers

The nation’s roads and highways are the backbone of the U.S. transportation system, allowing Americans to travel approximately three trillion miles annually to work and play, and allowing businesses to deliver goods and provide services.

However, our surface transportation system is in crisis. Our system of roads and highways — valued at over $1.75 trillion — has been steadily deteriorating. The American Society of Engineers (ASCE) 2009 Report Card for America’s Infrastructure assigns a grade of D- for the nation’s roads.

The Federal Highway Administration’s (FHWA) 2006 Conditions and Performance Report, which is based on 2004 data, includes information on pavement condition. Based on this data, only 63 percent of pavement on the National Highway System (NHS) is in good condition. According to ASCE’s Report Card, the total cost of repairs and needed upgrades is from $130 billion to $240 billion for the 15-year period of 2005-2020.

That’s why a pavement preservation program should be part of the effort to improve and upgrade the nation’s highways. Federal legislation that addresses programs and funding for the federal surface transportation system would be the vehicle for this new program. Currently, Congress has under consideration legislation to reauthorize the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which expired Sept. 30, 2009.

EXISTING LAW EXTENDED

At the end of 2009, Congress approved and President Obama signed into law the fourth short-term extension of the 2005 SAFETEA-LU law. The extension will allow the federal government and state departments of transportation to continue to use federal funds for highway, transit, and other projects until Feb. 28, 2010.

For the last year, Congress and the Obama administration have been unable to reach agreement on a multi-year authorization bill. While the U.S. House has supported a six-year authorization bill, with no extensions of SAFETEA-LU, the Senate and administration have supported an extension of the current funding levels and policy priorities into 2011.

As 2009 was ending, the Senate and House considered a number of proposals to move the reauthorization process forward. The Senate prepared legislation that would extend the current law for six months. House Committee on Transportation and Infrastructure Chairman James Oberstar (D-Minn.) indicated that he would agree to a six-month extension if the Senate would commit to complete a multi-year authorization during that time period.

In addition, Oberstar put forth a proposal to pay for six-year, $450 billion bill with general revenue funds for two years, in order to provide time for the highway trust fund to recover from its recent depletion, and to provide Congress with more time to develop financing options for the four remaining years of the reauthorization bill. However, the Senate rejected the House’s plan to use general revenue to pay for the first two years of the bill.

In order to create some certainty for state departments of transportation, the House approved a job-creation bill (H.R. 2847) that contains a provision extending the surface transportation programs through Sept. 30, 2010. The bill restores the highway program’s baseline funding level for FY 2010 from $30 billion to $41.5 billion. The legislation included an additional $19.5 billion for the Highway Trust Fund.
A pavement preservation program should be part of the effort to improve and upgrade the nation’s highways. Pavement preservation, if done right by applying the right treatment to the right pavement at the right time, has many demonstrated economic, environmental, and transportation benefits.

Fund. The Senate did not act on the legislation before it adjourned on Dec. 24. At press time, the Senate was in recess until Jan. 19.

PAVEMENT PRESERVATION IN BILL

Priorities for the reauthorization bill are proposals and policies that encourage the federal government and states to preserve, maintain, and bring existing highways and bridges to a state of good repair, as well as expand our infrastructure capacity to meet the growing transportation needs.

A national pavement preservation program is one of the proposals being discussed for legislation. Pavement preservation is a program employing a network level, long-term strategy that enhances pavement performance by using integrated, cost-effective set of practices that extend pavement life, improve safety, and meet motorist expectations.

According to the Federal Highway Administration, an effective program involves treating pavements in good condition before the onset of serious damage. Examples of pavement treatments include asphalt crack sealing, chip sealing, slurry or micro-surfacing, thin and ultra-thin hot-mix asphalt overlay, concrete joint sealing, diamond grinding, dowel-bar retrofit, and full depth concrete repairs.

Last year, House Chairman Oberstar introduced the Surface Transportation Reauthorization Act, which is a six-year $450 billion surface transportation bill. Within the House’s Surface Transportation Reauthorization Act of 2009: A Blueprint for Investment and Reform, preservation issues for highways and bridges are addressed in the Critical Asset Investment (CAI) program. The objective of the CAI program is to bring the federal-aid highway system up to a state of good repair, and preserve that state of good repair by requiring states to meet performance targets, and holding states accountable for meeting those targets.

In the House bill, states are provided with funding for preservation, rehabilitation, protection, or replacement of an eligible facility necessary to meet the objectives and requirements of the CAI program. Each state would be required to develop a CAI investment plan that describes the state’s strategy for using funding to meet its performance targets, and to submit an updated version of this plan to the DOT every two years. Funding for the CAI program is apportioned to the states pursuant to a formula that reflects the extent, usage, and condition of each state’s core highway system.

The Critical Asset Investment program is an excellent start; it ensures that preservation projects will be a priority for states, and provides the potential for significant funding increases. In addition, the program improves on existing efforts by requiring states to meet performance standards for preservation projects.

However, the CAI program would be more effective and produce results that are more tangible if states were required to make sure that their pavement preservation projects are the result of a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety, and meet motorist expectations.

In the proposed House bill, preservation projects are defined as any cost-effective activity to prevent, delay, or reduce deterioration on an eligible highway facility, including both preventive and corrective actions. The projects cannot include any structural or operational improvement beyond the originally designed strength or traffic capacity of an existing facility, except to the extent the improvement occurs as an incidental result of the preservation activity.

Pavement preservation, if done right by applying the right treatment to the right pavement at the right time, has many demonstrated economic, environmental, and transportation benefits. Preservation practices extend the life of pavements and defer the need for costly rehabilitation and reconstruction. Research shows that every $1 spent on preservation will save approximately $6 to $10 or more in major rehabilitation and reconstruction costs.

Congress needs to set a clear policy to encourage states and localities to undertake proactive measures to preserve the investment in our transportation network and extend the reach and benefit of federal highway funding. Surface transportation reauthorization provides Congress with an opportunity to shift to a cost-effective pavement preservation program from the current practices that can encourage costly and inefficient road maintenance.

Rogers is principal at Williams & Jensen, which represents the interests of the FP2, Inc. in Washington, D.C.
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You may recall the television commercials from a few years ago for Reese’s Peanut Butter Cups, where chocolate and peanut butter were constantly colliding to create “Two great tastes that taste great together.”

That’s the analogy Janice Williams from the Louisiana Department of Transportation and Development uses to describe the innovative approach taken by her agency to combine two pavement preservation tools: Pavement surface abrading by Skidabrader, and rejuvenation using Reclamite by Pavement Technology, a licensed distributor for the Tricor Refineries LLC product.

This novel combination was used to restore surface friction and extend pavement life on two Louisiana trial projects, U.S. 80 in Arcadia and U.S. 51 in Hammond. Based upon Louisiana’s initial success, the Mississippi DOT decided to follow suit, constructing a similar project on SR 25 northeast of Jackson for evaluation.

We’ve often heard stories of how great ideas are conceived on the back of a restaurant napkin, in the morning shower, or in a passing conversation. Such is the case with combining Skidabrader and Reclamite technologies together as a unique pavement preservation solution.

When Colin Durante from Pavement Technology, Inc. and Gary Billiard from Skidabrader, both industry members of the AASHTO TSP2 Southeast Pavement Preservation Partnership (SEPPP), were discussing applications for each other’s products in the exhibitor area of the New Orleans, Hotel Monteleone (site of the 2009 SEPPP annual meeting), the light bulb suddenly came on.

Asphalt rejuvenators such as Reclamite have been successfully used for many years to restore pavement ductility and durability (common problems brought about as a result of oxidation), with the added benefit of creating an in-depth seal in the process. This cationic maltene emulsion, spray-applied to a pavement surface, is subsequently absorbed into the matrix of the structure.

Once absorbed, the Reclamite components combine with the in-place asphalt binder to adjust its viscosity. Rejuvenation products such as Reclamite have generally been limited, however, to low-speed local streets or municipal roadways due to an initial drop in pavement skid resistance which occurs while the material is being absorbed into the pavement.

With more than 30 years of experience in the business of applying Reclamite, Durante has long maintained that this short-term obstacle could be overcome if the pavement surface had sufficient macro-texture (i.e. a measure of aggregate particle arrangement in the surface which facilitates the movement of water
under a tire during wet weather, helping to mitigate the risk of hydroplaning). Like Pavement Technology, Skidabrader’s surface retexturing technology has been applied for more than 30 years to both concrete and asphalt highway and airport runway pavements, as well as highway bridge decks, to restore pavement microtexture and macrotexture. Although most pavement practitioners are unaware of its potential use as a preservation treatment for asphalt pavements, it is now a viable addition to the to the preservation tool box.

ABRADING PAVEMENT SURFACE

Skidabrader abrades the pavement surface by directing steel media at high velocity, exposing new points of aggregates, stabilizing the tire footprint and providing increased micro and macrotexture. The result is a restored surface frictional coefficient that exceeds that of the existing surface by a factor of two or more in many cases, without any increase of tire noise or wear.

This process is unique and very efficient, achieving production rates that are compatible with the Reclamite application. The retexturing process for asphalt pavement removes a very thin layer of oxidized surface while microtexturing the exposed aggregate. The result is an opening of the surface matrix that may, in some cases depending on age and construction, allow moisture to more easily penetrate the pavement structure.

Although sealing the surface following Skidabrading has never been a requirement on the millions of yards of asphalt pavement textured to date, application of a penetrating sealer-rejuvenator after Skidabrading would certainly enhance the benefits of the texturing process.

But application of asphalt-based or coal tar sealers would potentially mitigate the benefits of the retextured pavement by filling the surface. Reclamite asphalt rejuvenator by its nature was designed to be absorbed into the surface of an asphalt pavement without leaving any surface filling. After absorption, the product combines with the asphalt binder increasing its volume, reducing matrix voids. Thus the Reclamite performance characteristics present an enhanced and beneficial solution to moisture absorption issues that might arise from the surface abrading process.

In a complementary fashion, the short-term friction loss attributed to a rejuvenator application could therefore be overcome by the significant increase in texture imparted by the Skidabrader process.

PERFORM PROCESS IN TANDEM

As Durante and Billiard conferred further, they also determined that both processes could be performed in tandem, requiring only one lane closure. Retexturing and the application of rejuvenator can also be performed at night, and with production rates of one lane mile or more per hour, the process lends itself to the use of a rolling work zone.

The Louisiana Department of Transportation and Development liked the Skidabrader-Reclamite concept and decided to initiate trial projects on two four-lane divided sections of roadway in Hammond and Arcadia.

Over the past three years, AASHTO’s TSP-2 regional pavement preservation partnerships have provided an excellent forum for technical exchange between agency and industry participants.

The Louisiana Department of Transportation and Development liked the Skidabrader-Reclamite concept and decided to initiate trial projects on two four-lane divided sections of roadway in Hammond and Arcadia.
The rapid progression from concept development in early May 2009 to actual implementation the following month is a noteworthy accomplishment and shows the commitment of both the LA DOTD and their industry partners to advancing pavement preservation strategies.

The first of the two projects was constructed on the eastbound side of US 80, one mile west of Arcadia, Louisiana. The last treatment applied to this section of pavement had been an HMA overlay, constructed in 1998.

The Skidabrader equipment operated at a forward speed of approximately one and one half lane miles per hour, leaving the pavement surface clean to enhance absorption of the Reclamite application. Surface friction testing followed, employing equipment that conformed to ASTM E-524 Bald Tire @ 40 MPH, the results of which indicated an improvement in friction number from 25.64 to 64.37.

The Reclamite rejuvenator application followed immediately, using a 2,000-gal. BearCat distributor truck, at a rate that varied from four hundredths to five hundredths of a gallon per square yard. Absorption into the abraded surface was complete in approximately 10 minutes.

Surface friction tests, conducted in various locations at 10- and 35-minute intervals, produced results of 42.31, verifying that the surface friction following rejuvenator application surpassed that of the original pavement condition by 85.9 percent. Subsequent friction tests beginning seven days later and depicted in Chart 1, verified that all treated pavement sections maintained average friction numbers of nearly twice those recorded prior to construction.

Within two weeks of completing the U.S. 80 project, the LA DOTD extracted 6-in. cores from Reclamite-treated and untreated pavement sections. The cores were sent to APART, an independent testing lab, for analysis of the asphalt binder. Tests were performed following AASHTO T316, using the Dynamic Shear Rheometer to determine viscosity, phase angle, complex, elastic and viscous moduli.

Test results indicated a significant improvement in binder rheology. The complex modulus was reduced by an average of 26 percent, with a parallel reduction in viscosity. The viscosity level of the asphalt binder directly relates to the projected remaining service life of an asphalt pavement. Therefore, any intervention during the service life of an asphalt pavement that reduces binder viscosity has a positive effect on the pavement’s useful service life.

Upon completion of the U.S. 80 section, LA DOTD began work on the U.S. 51 project in Hammond, following the same construction and testing sequence. This pavement section had received an HMA overlay in 2000, which was produced with bank run gravel.

To date, both of the Louisiana trial projects have exhibited positive performance results. According to David North, LA DOTD Project Engineer for District 4, he is “pleased with the results” and believes there are other roadway sections where this treatment might prove effective. North added that “the process itself was very clean and therefore could be done in any area deemed appropriate. There was very little disruption during this quick operation.”

**MISSISSIPPI TRIAL PROJECT**

Springboarding off the successful trial projects in Louisiana, Skidabrader’s
Gary Billiard approached Randy Battey, assistant chief engineer, operations, for the Mississippi DOT, who became interested in constructing a trial project on U.S. 25, northeast of Jackson in Rankin County. This section is a seven-year-old HMA pavement which contains bank-run gravel aggregate.

The project included 1,500-ft. sections of both the north- and southbound outside lanes of this four-lane, divided, 65 mph highway and was constructed in mid-November, with morning temperatures averaging in the 40s °F. The Reclamite rejuvenator was applied to the first and last 500-ft. sections of both lanes. The Skidabrader’s forward operating speed was adjusted, based on the perceived aggregate hardness. Two machines were employed to cover an entire lane width of eleven feet, yielding a production rate of almost two lane miles per hour.

The U.S. 25 project in Mississippi utilized two Skidabrader units, which were staggered to cover the entire lane width and boost production. Reclamite asphalt rejuvenator was specified at an initial application rate of 0.05 gallons per square yard and was applied directly behind the Skidabrader. A 2,000-gal. BearCat asphalt distributor truck with computerized flow control applied the rejuvenator at an application rate specified to be increased on subsequent pavement sections to provide variation for lab analysis of the asphalt binder properties. The selected rates of 0.05, 0.06, and 0.07 all were absorbed into the pavement matrix within a 15 - 20 minute time frame.

Prior to the start of the surface abrading work, the pavement surface friction was measured by the contractor using equipment conforming to ASTM E-524 Bald Tire @ 40 mph. This method was the same as used on the Louisiana projects. Friction tests were again performed following the surface abrading process and again twenty minutes after the rejuvenator was applied. Surface friction numbers prior to abrasion were found to be 31. After completion of the Skidabrader texturing process, friction numbers improved to 56, an increase of 81 percent. Within 20 minutes of rejuvenator application the surface friction remained 40 percent greater than that recorded prior to construction.

“Mississippi DOT has identified pavements that would benefit from rejuvenating fog seal treatments such as Reclamite to combat the oxidation and aging of asphalt pavements,” Battey said. Like most state DOTs, Mississippi DOT had been reluctant in the past to use these products as a preservation treatment due to the short-term friction issues. By combining the Skidabrader and Reclamite processes, he adds that they “are optimistic that by using the two treatments in tandem, we will be able to add additional years to the life of our asphalt pavements and still provide a safe surface for the traveling public.” Ongoing monitoring and evaluation of the Mississippi trial project are being conducted by Mississippi State University.

**TRANSFERRING TECHNOLOGY**

Over the past three years, AASHTO’s TSP2 regional pavement preservation partnerships have provided an excellent forum for technical exchange between agency and industry participants. A principal objective of these partnerships is to advance preservation strategies that can cost-effectively extend pavement life and enhance performance, which includes contributing to motorist safety and convenience.

The Skidabrader and Reclamite technologies are each viable preservation tools in their own right. Combining the two processes, however, as successfully demonstrated by LA DOTD and Mississippi DOT, may significantly expand potential applications. The SEPPP meeting last spring provided an excellent environment for this collaboration to occur. Subsequently, LA DOTD’s Janice Williams was afforded the opportunity to share her state’s experience using this innovative pavement preservation approach with members of the Midwestern Pavement Preservation Partnership last October in Chicago, sparking considerable interest among the group.

Varnedoe is associate director, National Center for Pavement Preservation.
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The Town of Irondequoit, N.Y. is aggressively fighting potholes using a self-propelled electric-heated pothole patcher that has improved road conditions while optimizing safety and cutting costs.

To quell its potholes, Irondequoit’s Department of Public Works purchased an FP5 Flameless Pothole Patcher from Bergkamp, Inc., Salina, Kan.

“It’s very important that the taxpayers of this town are pleased with the services we provide for them,” said Jeff Graves, labor foreman for Irondequoit. “We are a diverse and established town, and nobody likes to drive over or around potholes. The flameless pothole patcher has proven to help us keep up with the volume of potholes and has significantly increased our patching quality.”

Established in 1839, and located just north of Rochester, Irondequoit has a mixture of high- to low-volume roads that see anywhere from a few to thousands of vehicles per day. The high-volume roads are occupied by many buses, tractor trailers and passenger vehicles, while the low-volume roads are generally only occupied by passenger vehicles. This creates a tricky and unpredictable pattern of when and where potholes will appear across the town’s 15.2 square miles of land.

Graves and his crews focus first on safety issues, and then on citizen requests and overall road conditions to prioritize which potholes need repair. They also regularly check all roads, basing frequency on the volume of traffic that passes over each.

“Our primary consideration is the safety of our residents,” said Graves. “In the winter months, you can literally see roads explode overnight. So we make sure our crews are always alert to both public requests and regular pavement maintenance. We stay proactive on as many roads as we can to eliminate significant issues.”

Town Controls Potholes, Costs with All-in-One Patch Truck

In the winter months, when hot-mix asphalt wasn’t available, Irondequoit previously used a cold-patch material and what is commonly referred to as the “throw and roll” method. When hot asphalt was available, the town would carry just enough material to fill the open excavations and major patching areas. The hot asphalt would cool quickly and at times the crews were not able to use all of the purchased asphalt. The town looked for a more efficient method to preserve the hot asphalt, enabling the use of all the purchased material and achieving a better quality product throughout the day.

The town had used a propane-operated unit, but when it was time to replace the unit, Graves looked elsewhere because he wanted something that could keep the asphalt material warm for a longer period of time. After taking a look at the flameless pothole patcher,
he was confident that its electric-heat system could do just that. The town purchased the new pothole patcher from Cyncon Equipment, the municipal equipment dealer for upstate and western New York, and Graves and his crews began using it to preserve the town’s roads.

“The basics of the unit were somewhat similar to what we had before,” said Graves. “Bergkamp provided the necessary training, and our operators picked it up very quickly. It is a new way of maintaining a quality product, but it is a user-friendly unit and was easy for the operators to get comfortable with.”

**COST SAVINGS, CONVENIENCE**

The biggest advantage of the new unit is the electric-heated hopper that keeps the asphalt material warm while the unit is in motion or stopped. It uses an onboard hydraulic-powered AC generator to heat its insulated 5.1 cubic-yard hopper, and keeps the material at a consistent temperature throughout the day.

In addition, Graves and his crew use the tools on the unit to follow a process for most potholes. The damaged pothole area is squared off using the hydraulically driven pavement breaker. The old material is then removed and placed into one of the spoils bins, located on the side and rear of the truck so workers can safely stay out of traffic’s way.

The combination compressed air and tack coat wand blows the remaining debris out of the pothole. The same self-cleaning wand then applies the warm tack coating, which helps bind the new asphalt to...
the existing pavement. The ability to dispense warm tack coat in any weather condition has been a huge factor in prolonging the life of Irondequoit’s repairs.

The auger dispenses material onto the swivel material chute which delivers the fresh, hot asphalt to the prepared area. The material chute moves to the left or right, allowing for multiple pothole and shoulder repairs from one location. Finally, the single-drum roller vibrates and compacts the material evenly with the existing pavement.

“With the tools and features on this truck, we are able to make a longer-lasting patch,” said Graves. “With previous methods, we would often revisit previously patched areas. With the flameless pothole patcher, we can patch roads with high traffic volumes without worrying about them for a long time. Last year, we filled a cut out that was 1-inch deep, and three feet wide by four feet long on a bus route with cold patch. The patch was as good as any hot asphalt patch.”

Graves estimates he is saving up to 10 man hours some weeks producing new patches instead of performing repetitive repairs. The town has also lowered material costs. With the propane-operated pothole patcher, the town was unable to productively use approximately 10 percent of the hot asphalt material purchased per week. At an average of $67 per ton last year, the town saved approximately $200 per week.

In addition, by making fewer trips to the asphalt plant, the town saves on diesel fuel costs, wear and tear on the equipment and has increased on-the-job productivity. And Graves doesn’t have to worry about purchasing costly heating oil or propane anymore. He just turns the unit on and the onboard hydraulic-powered AC generator provides power to the full length electric-heating elements. The elements produce a consistent heat from the front to the back of the patcher, eliminating hot spots and the need for heating oil.

“The flameless pothole patcher definitely provides a good return on our investment,” said Graves. “We use nearly 100 percent of the material purchased and buy less because we get more use out of it. We’re even using this unit for other road repairs, such as manhole and catch-basin repairs and larger patching work, including driveway apron adjustments from paving and sidewalk repairs and temporarily patching dangerous sidewalk slabs that could create tripping hazards to the citizens. The material chute easily moves from left to right, providing us with flexibility. When we repair a trench, we just move the chute over to the side, gradually move the truck forward and place material along it. We can also lock in the chute at various angles, keeping it flat if desired, and then take material off the chute with a shovel. It provides a lot of convenience and is operator friendly.”

The first woman president of the International Grooving and Grinding Association (IGGA) — a non-profit organization dedicated to serving as the leading promotional and technical resource for acceptance and proper use of diamond grinding and grooving as well as pavement preservation/restoration markets — is no stranger to grooving and grinding, having grown up in the industry.

Jenne Imholte-Decker, Simplex Construction Supplies, Inc., Minneapolis, was named IGGA president in late 2009. Her uncle was a co-founder of Progressive Contractors Inc. and her dad was their first foreman, hired in 1971. She worked for Progressive Contractors Inc. herself as a laborer for seven years. She has been with Simplex Construction Supplies, Inc. for 12 years.

Imholte-Decker said her goal for the IGGA in 2010 is to help members become more politically active.

“The reauthorization of the six-year surface transportation reauthorization is very important to our highway infrastructure, and I want to encourage and help ensure IGGA members earn their share of the work,” Imholte-Decker said. “We need to reach out to more state and county engineers and educate them about the long-term benefits of concrete pavement rehabilitation. With increased participation through our membership, this can be achieved.”

Other new officers for 2010 are Pete Lewis, Highway Services, a division of Penhall, Rogers, Minn., vice president; Alex Ugalde of Diamond B, Santa Fe Springs, Calif., secretary; Scott L. Eilken, Quality Saw & Seal, Bridgeview, Ill., treasurer; Terry Kraemer, Diamond Surface, Inc., Maple Grove, Minn., immediate past president; Jerry Voigt, P.E., president, American Concrete Pavement Association, Skokie, Ill., director, and Charley Grady, Crafc, Inc., Chandler, Ariz., international director.

IGGA OPERATOR OF THE YEAR

IGGA also selected Gregg Lyle of the Penhall Company as the winner of its annual Operator of the Year award. The purpose of this award is to recognize the men and women who work in the field for their leadership with special emphasis on dedication to quality.

The award is significant in that it represents the commitment of the men and women in the field who toil in very dangerous conditions, often away from home for weeks at a time.

“Greg has spent the better part of his adult life serving this industry — working his way from the bottom up,” said John Roberts, IGGA executive director. “Whether it be overseeing construction operations across the U.S. or training the next generation of diamond grinding machine operators, he has answered the call. Without men and women like this, our industry would cease to exist. He exemplifies the characteristics necessary to be considered for this honor.”

Lyle joined Penhall in 1997 as a grinder and slot saw operator, having come to Penhall with more than 15 years’ experience in the construction field. He worked his way up to working foreman on the dowel bar retrofit crew, and shortly thereafter became a superintendent. He has supervised all aspects of Penhall’s concrete restoration division including the grinding, patching and dowel bar retrofit.

CPR PROMOTER OF THE YEAR

IGGA also announced its concrete pavement restoration (CPR) Promoter of the Year Award. The award recipients were the Northwest Chapter of the American Concrete Pavement Association and the Wisconsin Concrete Pavement Association (WCPA).

According to Jim Powell, executive director, Northwest Chapter of the ACPA, the chapter extensively promotes the use of CPR by showing customers that concrete pavements are easy to repair and last a long time. The chapter has been working with the Washington State DOT for years, and as a result, they have many miles of 50+ year-old concrete that has lasted two to four times its designated life.

Founded in 1952, the WCPA is the oldest concrete paving association in the nation. It promotes CPR by sharing information regarding cost savings, improved safety, prolonged life of the concrete and facts that support CPR as a green initiative. WCPA president Kevin McMullen, P.E. said its promotional efforts have resulted in several Wisconsin DOT CPR projects. In fact, in the last decade, 6 million sq. yd. of pavement have been diamond-ground in Wisconsin.

Additionally, in the last 10 years, WDOT has bid 50,614 cubic yards of pavement patching and 558,925 linear feet of partial-depth repairs.

“When we do a good job and help a state or city project become a success, it is really fun to watch them develop a second project,” McMullen said. “We are saving Wisconsin DOT and its cities significant amounts of money when we do CPR.”
Texas Lassos PG, Rubber, Warm Mix Asphalts

By Dr. Yetkin Yildirim, P.E.

The Texas Department of Transportation’s experience with PG specifications, recycled asphalt technologies, and warm mix asphalt may provide useful information to other state agencies investigating new asphalt technologies.

The Pavement Preservation Center at Austin recently interviewed Gerald Peterson, Asphalt and Chemical Branch manager of TxDOT’s Construction Division, about some of the recent asphalt technologies that have been implemented in Texas.

PG SPECIFICATIONS

Peterson said PG specifications have been instrumental in addressing rutting in Texas roads. First developed in 1997, PG specifications include more information about the properties of the binder than older specifications, allowing engineers to use much stiffer binders than could be typically used under the AC system.

These specifications were initially designed according to local climate conditions, while subsequent experience has found that a 64-22 binder could be used with 95 percent confidence rating for 80 percent of the state.

All the other grades are essentially bumped up from the 64-22 specification, according to the needs of the local climate conditions. Now, engineers typically select binder grades based on their own experience and familiarity with the PG specifications. The stiffening of the binders facilitated by the PG specifications has significantly reduced rutting problems in Texas, but this kind of “grade-bumping” does not significantly affect the cracking resistance of the asphalt.

The TxDOT central lab monitors the quality of the asphalt from all of the major binder sources in Texas, receiving samples of every grade twice a month from each producer. There is no requirement for regular field testing; it is up to the project engineer to decide how frequently field tests should be conducted. But it is recommended that engineers conduct sample testing in the field in order to corroborate the lab results and generate enough field data to be able to sufficiently analyze problematic regions. The spec book does not mention any steps to be taken in case of the failure of a binder. In such cases, districts generally negotiate with their contractors for a pay reduction, but still there is some uncertainty among engineers as to what the appropriate action is in this scenario.

RUBBER MODIFIED ASPHALT

Rubber modified asphalt is another new pavement preservation strategy that has been used successfully by TxDOT for a number of years now.

There are two basic types of rubber modified asphalts: asphalt rubber and tire rubber. Asphalt rubber, which is generally blended on site, consists of a minimum of 15 percent tire rubber, and is cured at a low temperature for a short period of time. On the other hand, tire rubber is blended by the supplier, is highly cured, and can be used like any other modifier. Peterson observed that tire rubber has performed particularly well in seal coats and hot mixes.

In 2005, more scrap tires were used in Texas than were produced. Around 6 percent of all waste tires recycled in Texas were used in CRM rubber projects, amounting to approximately 10,000 tons of tires per year. In Texas, the wet process is the preferred method for the production of rubberized asphalt concrete. Rubberized asphalt concrete can be manufactured by either a wet or dry process. The wet process is used in Texas, and involves the blending of crumb rubber (CRM) with asphalt cement (18-25 percent) before the addition of aggregates.

WARM MIX ASPHALT

Warm mix asphalt has also been gaining popularity in Texas in the past few years. As the name suggests, this method reduces the temperature at which asphalt mixes are produced and placed. Warm mix methods are now allowed for in the specifications: as long as mixture requirements are met, it is not a concern with TxDOT whether the mix is produced via hot or warm mix processes.

Foamed asphalt and Evotherm warm mix additive from MeadWestvaco are the two most popular warm mix methods for lowering the viscosity of the asphalt mix without severely increasing the temperature. Even though there are questions about the long term performance of warm mix asphalt, this process has been generally well accepted because of its potential economic and environmental benefits.

Yildirim is director, Texas Pavement Preservation Center
The Centre for Pavement and Transportation Technology (CPATT) at the University of Waterloo and the Ministry of Transportation of Ontario (MTO) have been studying during the last four years the suitability of applying digital technologies in the province, and are currently reviewing MTO existing pavement distress practices. The results are described in a paper, *Development and Validation of Distress Guidelines and Condition Rating to Improve Network Management in the Province of Ontario*, by Alondra Chamorro, M.Sc., Ing. Civil., doctoral candidate, University of Waterloo, Susan L. Tighe, Ph.D., P.Eng., Research Chair in Pavement and Infrastructure Management, Department of Civil Engineering, University of Waterloo, Li Ningyuan Ph.D, P.Eng., senior pavement management engineer, and Tom Kazmierowski, P.Eng. senior manager, Materials Engineering and Research Office, Ministry of Transportation of Ontario.

A first study (Phase 1) finalized in 2006 evaluated the performance of pavement survey methods available at the time, and the feasibility of replacing and supplementing manual data collection by automated/semi-automated digital collection techniques for network level use. The study recommended that MTO should define guidelines and particularly use of quality assurance for surveying pavement distresses at network level using automated/semi-automated technologies.

A second study (Phase 2) was developed in 2007, given the recommendations from the first study. The main objective of the project involved the development of pavement distress guidelines and a Distress Manifestation Index at Network Level (DMINL) for the use of automated collection technologies and semi-automated distress analysis.

After reviewing the state-of-the-practice and state-of-the-art, network level distress guidelines were developed for the evaluation of distress type, density and severity using automated collection technologies and semi-automated distress analysis. The Distress Manifestation Index at Network Level (DMINL) was defined considering the outcomes of the network level guidelines and the previous study. Both, guidelines and DMINL were validated considering data collected in the first study. Finally recommendations were made for the application of distress guidelines and DMINL. Quality Control and Quality Assurance (QC/QA) recommendations were considered for the automated/semi-automated evaluation of road networks.

**VALIDATION IN THE FIELD**

A third study (Phase 3) has been recently developed to validate and implement in the field MTO Network Level Distress Guidelines and Distress Manifestation Index for Network Level evaluations (DMINL) considering the use of automated technologies. The study considered the methodology presented in Figure 1. For the calibration and validation of DMINL equations, an experimental factorial was defined considering all distress types and severity levels included by the network level distress guidelines defined in Phase 2. Test sections fulfilling this factorial were selected in the...
field. Distress data were collected considering automated/semi-automated technologies, and manual surveys. A complete statistical analysis was performed comparing manual and automated evaluations.

From this, the DMINL equation for portland cement concrete (PCC) pavements obtained in Phase 2 was validated successfully. Differences were obtained from the observed DMI and calculated DMI for flexible pavement. Given this, the equation had to be calibrated with the field data prior validation. Finally, distress guidelines for network level evaluations were adjusted accordingly.

The DMINL equations obtained in Phase 2 for flexible pavements and PCC pavements were calibrated and validated considering the field data collected under manual surveys and with automated data collection technologies. Equation 1 presents the general expression to estimate DMINL values, while Table 1 presents the parameters obtained from the validation process.

Distress percentage per distress type (Distress%) is estimated as the product of a severity factor and the distress extent observed per severity level (j), as presented in Equation 2. The severity factors are 0.5 for low severity, 1 for moderate severity and 2 for high severity. With this, the total percentage of damaged surface for each distress type would be the sum of the weighed extent per severity level.

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Papers discussing best practices for pavement preservation treatments, including asphalt overlays, scrub and fog seals, crack sealing, chip seal, hot in-place recycling, micro surfacing, and slurry seals, would be welcome as well.

Authors must prepare their manuscripts in accordance with the guidelines outlined by the Pavement Preservation Journal. All articles should be submitted as an e-mail attachment to Dr. Yetkin Yildirim, P.E., at yetkin@mail.utexas.edu.

For more information, including style guidelines, please visit the Pavement Preservation Journal’s home page at www.fp2.org.
Synergy Between Northeast Partnership, Pavement Managers

By Eric Thibodeau

In Iselin, N.J., in November, the Northeast Pavement Preservation Partnership (NEPPP) held its third official annual meeting, at the Renaissance Woodbridge Hotel.

As in 2008, the Northeast Pavement Managers (NEPM) annual meeting was held in conjunction with the NEPPP meeting. The NEPM group was again pleased with the results of the joint meeting, and this practice will continue in coming years.

Many of the attendees are involved in both pavement preservation and pavement management, and holding the meetings together makes travel arrangements easier and allows more people to attend these important meetings. The synergy developed between the two groups enhances both meetings.

BUSINESS SESSION

At the business session of the NEPPP meeting, the established succession planning for NEPPP officers and directors was finalized as Eric Thibodeau, from the New Hampshire Department of Transportation, assumed the Chair position.

After a brief leave of absence from pavement management, Ed Naras from the Massachusetts Department of Transportation was reelected as a director and elected as agency vice chair. The former chair, Ed Block from the Connecticut Department of Transportation, was elected to serve as secretary/treasurer. Rod Birdsall from All States Materials Group will continue to serve as industry vice chair.

The membership unanimously approved revising the by-laws to allow the vacant local agency director position to be filled with an agency member. As a result, Geoff Hall from the Maryland Department of Transportation was nominated and unanimously approved to serve as the new agency director. Also, Tom Bennett from Rutgers University was nominated and unanimously approved to serve as the academia director.

TECHNICAL PRESENTATIONS

Technical presentation included Micro-Surfacing Pool Funded Study Update, Preservation of Portland Cement Concrete Pavements, Crack Sealant Consortium Phase I Results, Use and Types of Crack Sealants for the Northeast, Thin Mix Overlays and Warm Mix Asphalt, and Volatile Organic Compounds. Representatives from each of the NEPPP member states reported on the use of American Recovery and Reinvestment Act (ARRA) within their agency and how the ARRA impacted their pavement preservation program. It was interesting to learn how each of the agencies used funding from the ARRA program.

Representatives from FHWA, the National Center for Pavement Preservation (NCPP), and FP², Inc. provided updates on national pavement preservation initiatives, National Highway Institute preservation training courses, and regional profiler calibration activities.

For the NEPM portion of the meeting, Connecticut DOT’s Ed Block presented Integrating Pavement Preservation and Pavement Management using data and examples from their Pavement Management System (PMS). Alan Kercher from Kercher Engineering, Inc. presented Using a PMS to Optimize Your Pavement Preservation Program, using real data from a recently completed project for the County of Montgomery, Md.

Readers will enjoy copies of the presentations, which are available on the NCPP web site at www.pavementpreservation.org/northeast along with the meeting minutes. The minutes include the complete list of directors, an attendance list with contact information, the NEPPP’s By-Laws, and information on joining the NEPPP.

The next combined NEPPP/NEPM meeting is scheduled for Nov. 17-19, 2010 in New Hampshire.

For the next meeting, the NEPP, in conjunction with the New England Transportation Technician Certification Program, will attempt to develop a construction inspector training/certification course for a preservation treatment and, with help from the NCPP, will be developing a database showcasing preservation projects that have been completed in the Northeast.

The database will be made available at the NCPP web site and will be a valuable tool for states and industry for showing the cost effectiveness of pavement preservation. Please contact any of the officers or directors of the NEPPP to get involved. Additionally, for more information on the NEPM, contact Joe Huerta of FHWA’s Resource Center in Baltimore at joseph.huerta@dot.gov.

Thibodeau is chair of the NEPPP, and is pavement management chief at the New Hampshire DOT.
Experts Confront Dispute on Concrete Joint Sealing

In September 2009, a group of pavement industry professionals joined forces to form a Seal/No Seal (SNS) Industry Research Committee.

According to committee co-chair Scott L. Eilken, owner of Quality Saw & Seal of Bridgeview, Ill., the SNS Research Committee was formed to respond to the age-old industry controversy about the efficacy of sealing concrete pavement joints. The committee is working in cooperation with a large number of leading contractors and manufacturers responsible for the sealing and maintenance of pavement joints and cracks across the nation.

A number of academic and transportation specialists with extensive experience in the design and construction of joint sealant systems comprise the committee. Committee members are co-chair Eilken, owner, Scott L. Eilken, Quality Saw & Seal; co-chair Charley Grady, director, International Group, Crafco, Inc.; Dr. Dan Zollinger, P.E., professor of civil engineering, Texas A&M University; Robert Rodden, E.I.T., director, Technical Service and Product Development, American Concrete Pavement Association; Dr. Michael Darter, P.E., director, Pavement Research Institute, and principal, Applied Research Associates, Inc.; Larry Scofield, P.E., director, Pavement Innovation, ACPA; Dr. Kathleen Hall, P.E., consultant; Dr. Mark Snyder, P.E., vice president, ACPA Pennsylvania Chapter; Larry Lynch, P.E., division chief, U.S. Army Corp of Engineers; and Wouter Gulden, P.E., director, engineering and training, ACPA Southeast Chapter.

SNS KEY PRIORITIES

The key priorities of the SNS Committee are to raise the necessary funds to conduct testing, as well as secure partnerships with other agencies in order to pursue the necessary research. Key objectives include:

• Develop a framework of test sections that can be evaluated for long-term performance to address the seal/no seal question for both dowelled and undowelled pavements in all environmental zones. This effort will consist of two major aspects. The first is developing new test sections, as necessary, and the second, to continue evaluation of the test sections evaluated in the FHWA study on sealant cost-effectiveness.

• Obtain state and local transportation authority partners in conducting evaluations of existing sites. This approach leverages needed researchers and provides additional expert knowledge and ownership in evaluating test sections.

• Conduct a literature search and document abutment movement and slab growth issues related to unsealed joints, and

• Document findings and educate the marketplace.

FIELD TEST SECTIONS

As part of the effort to construct new test sections, the first project is underway on the Illinois 59 project near Joliet, Ill. The project consists of constructing a four-lane facility through an urban area with curb and gutter. Intersections are prevalent within the project limits.

The research project design consists of sealing the longitudinal and transverse joints with hot pour and silicone sealants. The transverse joint sealants will be installed in two joint geometries, a single saw cut and reservoir cut. The longitudinal joints will only use a narrow-joint geometry. Construction of the test sections began in August 2009 was to conclude soon after.

Those interested in learning more about the SNS Committee and its findings are welcome to contact co-chairs Eilken at 708-728-1895, or Charley Grady at 602-363-5519.
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When I-70 was completed through Denver in 1964, its bridges were designed to last 30 years. The original construction of the Interstate highway system was paid with federal dollars, and the states were expected to take over responsibility for upkeep after completion.

More durable, longer-lasting designs were discouraged, as their higher initial expenses were seen as deflecting future maintenance costs to the federal program, the emphasis of which was not to build long-lasting structures, but to complete as much of the system, in as little time, as possible.

As a result, the highways were designed to meet only the minimum standard necessary for the projected traffic load, to avoid having the federal government indirectly subsidize maintenance.

But reality intruded. Not only was the actual volume of traffic far greater than anticipated, funding to replace worn out portions of the highways was not always available when needed and many sections, like an I-70 viaduct in Denver, are being used past their planned design lives.

This bridge, between Colo. 265 (Brighton Blvd.) and Colo. 2 (Colorado Blvd.), is one of 46 bridges in the metro Denver area said to be in imminent need of repair by the Colorado DOT. Its 60 expansion joints have been corroded by water and salt, resulting in deterioration of the reinforcing steel and the concrete surrounding that steel.

The 1.2-mile-long viaduct has a current sufficiency rating of only 44 out of 100, six points lower than the I-35W Bridge that collapsed in Minneapolis in 2007. The viaduct is considered by Colorado DOT to be structurally defective, functionally obsolete and in need of replacement. But replacement of the bridge, which is still used for an average of 130,000 to 150,000 vehicle trips per day, would cost $800 million that the state does not have.

EXTENDING BRIDGE LIFE

To extend the life of the bridge until funding for either replacing it or rerouting the highway is obtained, Colorado DOT hired the Denver office of American Civil Constructors (ACC) to repair the failed expansion joints.

The goal of the repair project is to extend the life of the bridge for 10 to 15 years. ACC began its upgrade of the bridge’s substructure in September 2008. This structural repair work was part of a larger repair project for the bridge, which also includes replacing bridge railings, reconstructing the median, repairing the substructure of the bridge and improving drainage.

The cost of the whole project is $21.6 million.

ACC workers began by inspecting the bridge’s substructure to determine where concrete is damaged and needs to be replaced. They then jackhammered out the pieces of deteriorated concrete and cutting rebar, continuing until they reach sound concrete. Concrete removal is the most time-consuming part of the job. The exposed, undamaged concrete is then sandblasted to create a rough surface for good adhesion of the repair material.

The depth of removed concrete cannot be greater than 6 inches, but these sections can be as wide as 8 feet.

“We replace the reinforcing steel and put in galvanized wire mesh to add structural reinforcement to the concrete, wet the surface, and then we start applying the repair material,” said ACC assistant project manager Jimmy Jones.

Colorado DOT requires that the rebar be encased in concrete within seven days after it is replaced. Two crews of 12 to 15 men were working to make the repairs using seven manlifts, four all-terrain scissor lifts, 20 to 25 jackhammers, and other hand tools.

NIGHT WORK TO MINIMIZE DELAYS

Due to the larger portion of the project involving temporary lane closures of I-70, with accompanying traffic delays, all work was done at night, and only a small section could be worked on at one time.

One I-70 lane would be closed in each direction at 8 p.m., with a second lane closing at 10 p.m. In addition, either westbound or eastbound 46th Ave., a city of Denver street under the bridge, was to be closed at all times.

At 5:30 a.m., the workers had to be finished, so traffic can resume in all
To complete the work in the short overnight time frame, a fast-setting concrete repair material was needed.

interstate lanes or ACC is charged heavy lane rental fees.

To complete the work in the short overnight time frame, a fast-setting concrete repair material was needed. The first product selected could be applied no more than 3 in. deep, which meant two applications were required to repair each damaged area. This product cracked and was found to be unacceptable.

“The setup time of the first material we used for patching just wasn’t fast enough, and when it did set up, it had spider web cracks throughout the job,” said Chad Smith of White Cap, a product distributor located in Denver. “The workers had to keep coming back to it once it was set up and do another skim coat to make sure there weren’t any cracks.”

In the search for a more suitable repair material, Smith introduced ACC to Rapid Set Mortar Mix, from CTS Cement Manufacturing Corp., a product included on Colorado DOT’s approval list. A demonstration showed Jones and other ACC staff that this product could be applied 6 in. deep in a single application, and that it reached initial set up in 15 minutes. With final setup in 35 minutes, a 2,500-psi compressive strength was achieved one hour later, allowing crews to move to the next repair section. No cracking was seen so this product was chosen to complete the job.

“The speed of it, the workability, and the ease of use all impressed us,” Jones said. “It was easy to mix, easy to put on, and it set up really fast.”

Rapid Set Mortar Mix was being used for repairing all horizontal and vertical overhead areas covering 5,500 square feet of the substructure of the entire I-70 bridge. Completing the job would take about 6,000 55-lb. bags of product, which were being used at the rate of roughly 50 bags per night.

Using drills with mixers on the ends, the mortar mix was mixed with water to a good consistency in 5-gal. plastic buckets on the ground. Because the bridge is 50 to 60 ft. high in some areas, a pulley system — as well as manlifts — was used to lift the buckets up to the damaged columns, girders and pier caps where the material was needed. Working from left to right, it was poured in, hand-shaped and then wet cured by spraying water on it.

Jones also used Rapid Set’s additive called Flow Control. This additive helps keep the repair material flowable while still retaining the same strength, a property that would be reduced if additional water were added to increase flowability.

“It makes our job a lot less difficult,” said Jones. “We don’t have to form and hand shape the concrete. It makes it more visually pleasing.”
CONSTRUCTION CHALLENGES, SCHEDULE

Because all work was to be done at night, lights were needed. In addition, if workers discovered they were missing some equipment or ran out of materials, they could not just run down to a store, so the problem could delay them until the next night, Smith pointed out.

"Afternoon showers here in Colorado play a big part," Smith said, "as the location is prone to flooding, which also delays the schedule." However, because of the size of the job, when workers were delayed on concrete pours, there was always something else that needed to be done.

By eliminating the second application of repair material, Jones estimated ACC is saving 25 percent on completion time and labor costs. No special tools, curing or burlap covers were needed to use Rapid Set. Jones estimates they will now finish the expansion joint repairs on time in December 2010.

"We may add additional crews to make sure it is finished during the warmer weather months," Jones said. State inspectors are happy with how it looks and how the finished repairs came out, Jones said. "It’s more visually appealing than how it would have looked with other traditional repair products," he said. "If we have the chance to use Rapid Set again on another job, we’ll use it."

Edited from material contributed by CTS Cement Manufacturing Corp., where Robinett is a technical support representative.
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April 12-16  First International Conference on Pavement Preservation, Newport Beach, Calif.
April 18-21  National Association of County Engineers, Fort Worth
July 11-15  5th International Conference on Bridge Maintenance, Safety, and Management, Philadelphia
Aug. 1-6    11th Intl. Conference on Asphalt Pavements, Nagoya, Japan
Aug. 15-18  American Public Works Association Congress & Expo, Boston
Sept. 15-17 International Conference on Sustainable Concrete Pavements, Sacramento
Oct. 11-14  5th World Congress on Emulsions, Lyon, France
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**RENTAL EQUIPMENT**

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