

VIRGINIA PAVEMENT RESEARCH AND INNOVATION SYMPOSIUM

INNOVATION: SCIENTIFIC SOLUTIONS

**GERMANNA COMMUNITY COLLEGE
DANIEL TECHNOLOGY CENTER
CULPEPER, VA
JUNE 26-27, 2018**



INNOVATION: SCIENTIFIC SOLUTIONS

Everyday new stars are discovered; new medicines developed; and new asphalt innovations released. Over the last decade, asphalt industry innovations have become common place. While the most notable has been warm mix asphalt technologies, it is not the only one. Consider highly polymer modified binders, intelligent compaction and thermal scanning just to name a few. What is the next big innovation to hit the industry? What is the research that will lead to or validate these innovations? The overarching goal is to make asphalt even better, last longer, and be more economical. The Virginia Pavement Research and Innovation Symposium will feature research in Virginia and innovations from around the world.

WHO SHOULD ATTEND?

This symposium was designed to link the innovators and researchers with customers and decision-makers. Attendees should include VDOT resident engineers, district materials and maintenance engineers, central office materials and maintenance program managers, researchers from VTRC, city and county department of public works managers, and contractor and consultant senior management.

WHAT TO EXPECT?

VPRIS will be a fast paced event with a mix of research presentations and innovation pitches. Each pitch will be 20 minutes long and be tied to projects that support the science behind the product. To keep the symposium moving, no questions will be answered during the presentations. Each presenter will have a booth to allow interested attendees to ask more in-depth questions.

EXHIBITORS

There will be five booths available to vendors that will not be presenting. This is a great opportunity to showcase your product and network with a crowd that is primed to discuss innovative products! Each booth is \$500.00. If you are interested, all the details are on the attached booth registration form.



AGENDA AT A GLANCE

DAY 1

- 11:30 am **Registration and Exhibits Open**
- 1:00 pm **Welcome and Purpose of Symposium**
Dr. Janet Gullickson
Trenton Clark, P.E.
- 1:20 pm **Innovations in Safety**
Jason Threewitts
- 1:40 pm **Advances in Asphalt Plants to Increase RAP**
Mike Varner
- 2:00 pm **VTRC: Performance Mix Design**
Stacey Diefenderfer, Ph.D., P.E.
- 2:30 pm **Break**
- 3:00 pm **Balanced Performance-Based Mix Design for Rejuvenated High-Recycled HMA**
Hassan A. Tabatabaee, Ph.D.
- 3:20 pm **Evotherm and Evoflex – Additives to Impact Mix Performance**
Dominic Barilla, Jr.
- 3:40 pm **VTRC: Implementing Pavement Recycling Research**
Brian Diefenderfer Ph.D., P.E.,
- 4:10 pm **Advanced Mix Design Services**
Scott Quire
- 4:30 pm **Revolutionary Nanotechnology for Building Moisture Resistant, Long Lasting & Maintenance Free Roads Through Innovative Adaptation of OrganoSilane Chemistry**
Bryan Adkins
- 4:50 pm **Closing Comments on Day 1**
Mike Dudley
- 5:00 pm **Reception**

DAY 2

- 7:00 am **Registration and Symposium Breakfast**
- 8:00 am **Welcome to Day 2**
Kevin McGhee, P.E.
- 8:10 am **Repairing Asphalt in Wet & Cold Conditions**
Mike Wertheim
- 8:30 am **SP-100e Stealth Paver Grows Margins from Both Ends**
Eric Baker
- 8:50 am **VTRC: Status of Ultra-Fine & Thin Dense-Graded Mixtures**
Harikrishnan Nair, Ph.D., P.E.
- 9:20 am **Performance Evaluation of a Bridge Deck Waterproof Surface Course Mix**
Ron Corun
- 9:40 am **Fiber Reinforced Asphalt Concrete with ACE Fiber™**
Matt Stauch
- 10:00 am **Break**
- 10:30 am **VTRC: Reflective Cracking Mitigation: Current & Future Research**
Ben Bowers Ph.D., P.E.
- 11:00 am **Improving Life Cycle Performance with Pavement Interlayers**
Tripp Bishop
- 11:20 am **Enhanced Pavement Performance with FIBERMAT®**
Jack Kowalski
- 11:40 am **Making Asphalt Pavement Stronger and Longer Lasting with Fiber**
Mike Jenkins
- 12:00 pm **Asphalt Pavement Sealing Onyx/Axys**
David Stowell
- 12:20 pm **Advances in Paving Technology**
Tim Kowalski
- 12:40 pm **Closing Symposium Comments**
Cathy McGhee, P.E.

DAY 1 PROGRAM

TIME	TOPIC
11:30	Registration and Exhibits Open
1:00 pm	Welcome and Purpose of Symposium <i>Dr. Janet Gullickson, President, Germanna Community College</i> <i>Trenton Clark, P.E., Executive Vice President, Virginia Asphalt Association</i>
1:20 pm	Innovations in Safety <i>Jason Threewitts, Technology & Digital Solutions Sales Manager, Carter Machinery Co., Inc.</i> Now more than ever, safety on the job is critical. The cost of on the job accidents is rising. There is technology available to help prevent fatigue-related accidents and bring awareness to management. From paving jobs late at night to tight working conditions on a gravel yard, there is a safety situation everyone can relate to. Applying these safety services will more than benefit your organization. <ul style="list-style-type: none">• DSS System: Driver Safety System, Technology that monitors Driver behavior behind the wheel.• CAT Detect for Personnel: Wearable Vests and Hard Hats for workers that are operating around equipment in tight areas.• CAT Fatigue Monitoring Bands
1:40 pm	Advances in Asphalt Plants to Increase RAP <i>Mike Varner, Astec</i> There are two heating methods for producing mixes containing high levels of recycled asphalt pavement – the direct heating method and the indirect heating method. Though the direct method is used in many areas of the world, there is increased potential for emissions and oxidation of recycle binder. The indirect method enjoys ubiquitous usage and acceptance, but has mix design limitations. This presentation clarifies the differences and limitations of the two methods, discusses a simple parameter for assessing the “runability” of a mix design using the indirect method, and introduces technologies that increase the recycle processing capability of the indirect method.
2:00 pm	VTRC: Performance Mix Design <i>Stacey Diefenderfer, Ph.D., P.E., Senior Research Scientist, VTRC</i> Across the US, states are noting that Superpave asphalt mixture design methods are not particularly conducive to the use of a number of modern materials and innovative design practices. Virginia is investigating performance mix design as a means to address evolving needs for better performing mixtures and to allow the use of innovative designs utilizing materials that do not fit neatly into prior mix design methods. This discussion will address the current state of research on performance mix design, where Virginia is headed, and how this change may provide opportunities for innovation.
2:30 pm	Break
3:00 pm	Balanced Performance-based Mix Design for Rejuvenated High-Recycled HMA <i>Hassan A. Tabatabaee, Ph.D., Cargill Industrial Specialties</i> Adaptation of rejuvenators in practice requires a working knowledge of the definition “rejuvenation”, relevant evaluation criteria available to the practitioner, and perhaps most important, how can “Balanced Performance-based Mix Design” be utilized for the design of rejuvenated high-performance HMA? This presentation will focus on answering these questions using examples from a range of durability performance tests including the DCT, IFIT, Beam fatigue, overlay tester, IDT fatigue, and TSRST, balanced against rutting performance data from the Hamburg, APA, flow number, etc., and supported by field and test track case studies from across the US and the globe. The results are used to demonstrate how a balanced performance-based design process can be used for optimizing a rejuvenated high-recycled asphalt mixture design.
3:20 pm	Evotherm and Evoflex – Additives to Impact Mix Performance <i>Dominic Barilla, Jr., Technical Marketing Manager, Ingevity</i> Evotherm is a water-free warm mix asphalt technology that offers new advantages to asphalt contractors and road building engineers looking for innovative warm mix solutions. Evotherm promotes adhesion at lower temperatures by acting as both a liquid antistrip and a warm mix additive. The improved workability of Evotherm mixes helps make high-recycled content mixes possible. Some contractors are using 40% recycled asphalt pavement (RAP) and/or adding up to 5% recycled asphalt shingles (RAS).

	Evoflex allows you to solubilize RAP to increase recycle binder contribution, facilitate blending of both virgin and oxidized asphalts, Improve low-temperature mix performance and reduces the need to alter binder grades when utilizing recycled materials while maintaining the intermediate temperature of the original binder grade.
3:40 pm	VTRC: Implementing Pavement Recycling Research <i>Brian Diefenderfer Ph.D., P.E., Senior Research Scientist, VTRC</i> Pavement recycling techniques are an effective means to reduce costs and greenhouse gas emissions for pavement rehabilitation and new construction. Pavement recycling techniques include full-depth reclamation (FDR), cold in-place recycling (CIR), and cold central plant recycling (CCPR). Two reasons why these techniques have not been more widely implemented include lingering questions regarding the long-term performance of pavement recycling (especially for high truck traffic applications) and also a lack of familiarity with the processes. VTRC has conducted leading research to study the application of pavement recycling for the rehabilitation and construction of new projects in high truck traffic locations.
4:10 pm	Advanced Mix Design Services <i>Scott Quire, Technical Director, Bluegrass Testing Labs</i> Bluegrass Testing Laboratory is a multi-discipline accredited commercial testing laboratory located in Louisville, KY. Bluegrass Testing Laboratory had its beginnings as a vision by the owners of Louisville Paving Company as a testing laboratory that would serve the testing needs of their own asphalt plants, asphalt terminal and asphalt construction operations and provide this same service to contractors across the United States. Bluegrass Testing Laboratory provides testing services for asphalt mix designs (Superpave, Marshall, SMA, OGFC), asphalt binders, aggregate, binder recoveries and forensic investigations of pavements. An intense focus of Bluegrass Testing Laboratory is the cost-effective, safe and competent design, production, placement and long-term performance of asphalt mixtures utilizing increasingly higher percentages of recycle mixtures.
4:30 pm	Revolutionary Nanotechnology for Building Moisture Resistant, Long Lasting & Maintenance Free Roads Through Innovative Adaptation of OrganoSilane Chemistry <i>Bryan Adkins, Hi-Tech Asphalt Solutions, Inc.</i> Since 1997, Zydex has worked to provide sustainable, eco-friendly chemical technologies for the construction industry. ZycoTherm Nano Technology provides customers with a product which offers true chemical bonding, complete coating, and consistent compaction without sacrificing the characteristics of the asphalt binder. This revolutionary technology can provide multiple benefits across a wide variety of applications in the road construction industry. Such applications include stripping resistance and compaction, PMA modification aid, emulsions, crack sealants, adhesives, and subgrade waterproofing. ZycoTherm has yielded improved performance to those contractors who are currently using it as an anti-strip, warm-mix additive and compaction aid in various pavement designs such as SMA and HiMA.
4:50 pm	Closing Comments on Day 1 <i>Mike Dudley, Director of Technical Services, Virginia Asphalt Association</i>
5:00 pm	Reception



DAY 2 PROGRAM

TIME	TOPIC
7:00 am	Registration and Symposium Breakfast
8:00 am	Welcome to Day 2 <i>Kevin McGhee, P.E., Associate Research Director, VTRC</i>
8:10 am	Repairing Asphalt in Wet & Cold Conditions <i>Mike Wertheim, National Director of Sales, Aquaphalt</i> Water-activated asphalt cold patch is a new and emerging technology that is permanent. Correct, you do not have to replace it with hot mix asphalt. It can be installed year-round but offers particular value in winter months when hot mix asphalt is not available. Water-activated cold patches are already on contract with VDOT, MDOT/SHA, NCDOT, SCDOT, and WVDOH. How this technology was used on the Monitor Merrimac Bridge Tunnel, VDOT Route 60 and Maine DOT Toll booth application will be discussed as well as the features, benefits, and cost savings these types of products can provide.
8:30 am	SP-100e Stealth Paver Grows Margins from Both Ends <i>Eric Baker, Director of Marketing, Roadtec</i> The Roadtec Stealth Paver is a unique gravity-fed paver that eliminates the need for drag conveyors found in conventional pavers. This feature eliminates the weight, wear parts and fuel consumption associated with those conveyors as well as the segregation that they can sometimes produce. All of this results in lower acquisition cost, lower operating costs and increased opportunity for performance bonuses.
8:50 am	VTRC: Status of Ultra-Fine & Thin Dense-Graded Mixtures <i>Harikrishnan Nair, Ph.D., P.E., Senior Research Scientist, VTRC</i> Developing durable mixes and procedures to help preserve and maintain secondary and subdivision roads will provide significant savings to Virginia Department of Transportation (VDOT). Among the tools, that VDOT deployed to achieve this objective is the use of dense-graded asphalt surface mixture designated SM-4.75 and SM 9.0. The SM-4.75 incorporates a 4.75 mm nominal maximum aggregate size (NMAS) along with a corresponding fine gradation that accommodates higher liquid asphalt content, which promotes durability. In the past, subdivision asphalt mixes (mainly SM 9.0 mm mix) made with natural sand (min 20%) and more liquid asphalt binder had good performance with few distresses compared to asphalt mixes produced today. Virginia Transportation Research Council (VTRC) worked with VDOT Richmond District, Central Office Materials and Asphalt Industry on several field trial installations that were completed in 2017 construction season with SM 9.0 mixtures using natural sand and with the addition of fibers. This presentation will cover the initial field and laboratory performance of Virginia's SM 4.75 and SM 9.0 mixtures.
9:20 am	Performance Evaluation of a Bridge Deck Waterproof Surface Course Mix <i>Ron Corun, Specialty Products Manager, Associated Asphalt</i> Bridge deck pavements place severe demands on asphalt mixtures. The mix must be impermeable to prevent water damage to the underlying steel and/or concrete deck structure. The mix must be flexible enough to withstand substantial vertical movements of the bridge deck, yet be stiff enough to resist rutting under heavy traffic. This presentation describes the development and performance of a Bridge Deck Waterproof Surface Course (BDWSC) Mix developed at Rutgers University for the New Jersey Department of Transportation. The mix gradation is a fine dense graded 3/8" nominal size and the mix is designed at 1% air voids to create an impermeable pavement. The asphalt binder is a highly polymer modified product that allows the mix to resist rutting while maintaining enough flexibility to withstand the vertical movement of the bridge deck without cracking. Instead of specifying a specific binder grade, the specification calls for an asphalt that will allow the mix to meet very stringent mix performance tests. This mix has been installed successfully on many bridges in the New Jersey and New York region. Workability of the BDWSC mix has been excellent, despite the high level of polymer modification.
9:40 am	Fiber Reinforced Asphalt Concrete with ACE Fiber™ <i>Matt Stauch, Division Manager, ACF Landsaver Environmental</i> ACE Fiber™ extends pavement service life by dramatically improving the dynamic modulus of the asphalt layer and increasing the asphalt's resistance to cracking and rutting (distresses that may cause premature failure). To create ACE Fiber™, high-strength man-made "aromatic polyamide" or Aramid Fibers are bundled and coated with Sasobit® wax to create an asphalt concrete additive that is simple to mix with any WMA or HMA in drum and batch asphalt operations. The 3-dimensional reinforcement throughout the asphalt layer increases the asphalt's resistance to cracking, rutting, and fatigue while providing improved ESAL capacity.

TIME	TOPIC
10:00 am	Break
10:30 am	VTRC: Reflective Cracking Mitigation: Current & Future Research <i>Ben Bowers Ph.D., P.E., Research Scientist, VTRC</i> Overlaying jointed concrete pavement with asphalt mixtures is a common treatment throughout the Commonwealth and nationally. Unfortunately, the joints within the concrete tend to reflect through the asphalt mixtures creating maintenance, aesthetic, and other issues for the owner agency and traveling public. This presentation will outline current and future research at VTRC that is working to mitigate reflective cracking in asphalt overlays. Research experience with technology such as highly modified asphalt, rubber modified asphalt, fiber modified asphalt, and other reflective crack mitigation treatments will be discussed. Additionally, an update will be provided on the ongoing reflective cracking study at VDOT's Heavy Vehicle Simulator, an accelerated pavement testing facility located at the Virginia Tech Transportation Institute.
11:00 am	Improving Life Cycle Performance with Pavement Interlayers <i>Tripp Bishop, Regional Director of Sales, American Paving Fabrics, Inc.</i> In today's environment of limited and decreasing budgets in both public and private sector, it has become increasingly important that pavement infrastructure investments are maximized to their fullest potential. Geosynthetic Pavement Interlayers can be incorporated into asphalt overlay applications to assist in mitigating reflective cracking, limit water intrusion into base structures which in turn protects the integrity and load-bearing capacities of the aggregate stone base, and reinforce asphalt overlays thereby promoting long-term pavement delay performance. These pavement interlayers are used to add tensile strength to the flexible pavements to delays reflective cracking, and adequately distribute dynamic loading. These interlayers are commonly applied directly on existing distressed pavements prior to overlay to create an economical, longer-lasting system. They also are applied to milled surfaces.
11:20 am	Enhanced Pavement Performance with FiberMat® <i>Jack Kowalski, Specialty Products & Quality Assurance, Branscome, Inc.</i> FiberMat® is a specially formulated, polymer modified, crack resistant membrane that produces superior strength and flexibility. It forms a high tensile matrix upon application with a highly modified asphalt emulsion residue that is reinforced with engineered fiberglass strands. The FiberMat® system is installed by a specially developed machine that uniformly applies the fiberglass strands in a continuous application. The strands are sandwiched between two layers of modified emulsion prior to the application of an aggregate cover. The final product is then rolled to seat the aggregate into the surface. This combination of highly modified asphalt residue and a fiberglass reinforcement matrix creates a powerful resistant membrane interlayer that absorbs stresses in the pavement structure and delays the onset of cracking. Unlike conventional geotextile reinforced interlayers, FiberMat® is easily recycled without any issues, is easily constructed, and saves time and labor on the application for the user without the usual wrinkles, rips and tears associated with fabrics.
11:40 am	Making Asphalt Pavement Stronger and Longer Lasting with Fiber <i>Mike Jenkins, Regional Sales Manager, Forta Corporation</i> FORTA-FI is a high tensile strength synthetic fiber blend formulated to reinforce asphalt mixes. FORTA-FI helps to control and reduce thermal cracking, reflective cracking, rutting, and raveling. In new construction or full depth rehab projects, FORTA-FI can provide initial cost savings through reduced pavement layer thickness providing the same durability as convention mixes or a life cycle cost reduction if placed at conventional asphalt thickness, extending the life of the pavement. FORTA-FI is added at the asphalt plant during production of the mix, creating a 3-dimensional reinforcement through the entire mix. So wherever you place the mix, you have the reinforcement. No extra construction steps or equipment are needed to place the material with fiber just pave as normal.
12:00 pm	Asphalt Pavement Sealing Onyx/Axys <i>David Stowell, Business Development (Reclaiming and Soil Stabilization), Slurry Pavers, Inc.</i> This seal is designed for roadways. It's a mixture of asphalt emulsion, increased levels of aggregates, recycled materials, polymers and catalysts created to maximize frictional characteristics by improving micro texture on the pavement surface. Onyx is a cleaner asphalt technology that does not contain coal tar. Axys, is designed for parking lots, is a mixture of asphalt emulsion, fine aggregate, polymers, and catalysts. It utilizes several formulas. These products will help sustain a longer asphalt life while maintaining a dark appearance.
12:20 pm	Advances in Paving Technology <i>Tim Kowalski, James River Equipment (Wirtgen America)</i>
12:40 pm	Closing Symposium Comments <i>Cathy McGhee, P.E., Research Director, VTRC</i>

CONFERENCE REGISTRATION

- Attendee Registration \$100
 - Expo Booth Only \$500
- Location Address: Germanna Community College
Daniel Technology Center
18121 Technology Dr, Culpeper, VA 22701

Payment can be made online by credit card or by check through the mail
Online registration can be found at <http://www.vaasphalt.org/vaa-conferences/>
For attendee refund, cancellation must be received 7 business days prior to conference.
For 50% Exhibitor refund, cancellation must be received by May 15, 2018.
Return registration to VAA, 6900 Patterson Ave., Richmond, VA 23226
Faxed and emailed forms are accepted 804-288-4551 cfahed@vasphalt.com
All questions cfahed@vaasphalt.com

HOTEL RESERVATIONS

Local Hotels, Culpeper Area (no room blocks available)

Holiday Inn Express • 540-825-7444 • 787 Madison Road, Culpeper, VA 22701

Quality Inn • 540-825-4900 • 890 Willis Road, Culpeper, VA 22701

Best Western • 540-825-1253 • 791 Madison Road, Culpeper, VA 22701

Microtel Inn & Suites by Wyndham • 540-829-0330 • 885 Willis Lane, Culpeper, VA 22701

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