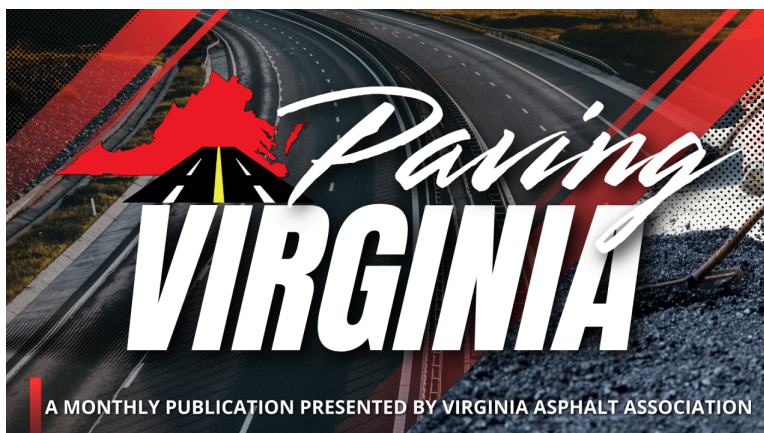




From Research to Runways: A Look at the Airport Asphalt Pavement Technology Program



Virginia Asphalt Association
1,318 followers



March 23, 2026

Trenton Clark, P.E., VAA President

Every day, most Virginians and Americans are impacted by asphalt. They either drive on an asphalt road to go to work, make a trip to the store, or take kids to school. Maybe they have packages delivered by Amazon, UPS, or FedEx. But have you considered how goods on the West Coast get to the East Coast overnight, arriving on your porch by 2 pm? Those goods did not arrive by tractor-trailer! Those goods were flown across the country to a local airport.

In the United States, over 94% of roadways have asphalt surfaces. In Virginia, over 98% of VDOT-maintained pavements have an asphalt or asphalt-based surface. VDOT, FHWA, and other transportation agencies spend millions of dollars on pavement and materials research each year. How about pavements and asphalt used at airports? Is research being performed to enhance and extend their performance? The answer is “yes.” In this edition of Paving Virginia, we will provide an overview of exciting work underway that will reach airports in Virginia and around the world.

The [Airport Asphalt Pavement Technology Program](#) (AAPTP) is driving innovation in asphalt pavement design, materials, and construction to help build safer, more reliable, and efficient airfield surfaces. The program brings together the Federal Aviation Administration (FAA), the National Asphalt Pavement Association (NAPA), industry leaders, and research institutions to reduce premature pavement distress, improve construction consistency and quality, and modernize specifications.

AAPTP operates as a cooperative agreement effort between NAPA and the FAA. The program leverages NAPA’s technology implementation

capabilities, with assistance from the FAA and industry, to advance the deployment and adoption of innovative asphalt material technologies.

By focusing on real-world needs and field-tested practices, AAPTP equips airfield pavement designers and engineers with durable, cost-effective asphalt technologies that extend runway life, reduce maintenance requirements, and support safe airfield operations.

2025 AAPTP Projects

Since the inception of AAPTP, various projects have been completed. The following AAPTP projects were completed in late 2024 and throughout 2025. Technical reports, fact sheets, and other implementation-ready resources are available for download from the AAPTP [Resources & Reports](#) webpage.

Simplifying Asphalt Binder Choices for Airfields

This project transformed complex FAA and U.S. Department of Defense binder requirements into a standardized selection process and online tool that can simplify decisions, reduce design errors, streamline design reviews, and improve specification consistency across regions.



Figure 1. Pouring binder - Credit: NAPA

Updating and Expanding the Asphalt Paving Handbook

The 2025 edition of the [Asphalt Paving Handbook](#) unifies best practices across the FAA, the U.S. Army Corps of Engineers, the Federal Highway Administration, and industry experts into a modern reference. The handbook helps inspectors, designers, and contractors enhance asphalt quality, consistency, and durability on both airfield and roadway projects. This edition expands guidance for airfield-specific challenges and introduces new video training resources.

The [Asphalt Airfield Video Series](#) showcases content from the handbook to help practitioners design, produce, and construct airfields for the FAA. Filmed at active U.S. airfield projects, this set of 30, 3- to 5-minute videos is also available in Spanish. Topics include prime and tack coat, echelon paving, sampling procedures, yield calculations, and factors affecting compaction.



Figure 2. Nighttime paving operation on airport runway

Improving Longitudinal Joint Performance

Researchers created the first manual for longitudinal joint maintenance, clarifying FAA requirements and offering practical guidance. The manual supports more consistent planning and introduces innovative materials, such as void-reducing asphalt membranes and rapid-penetrating emulsions, reinforced by long-term test sections to help refine treatments and inform future FAA adoption.

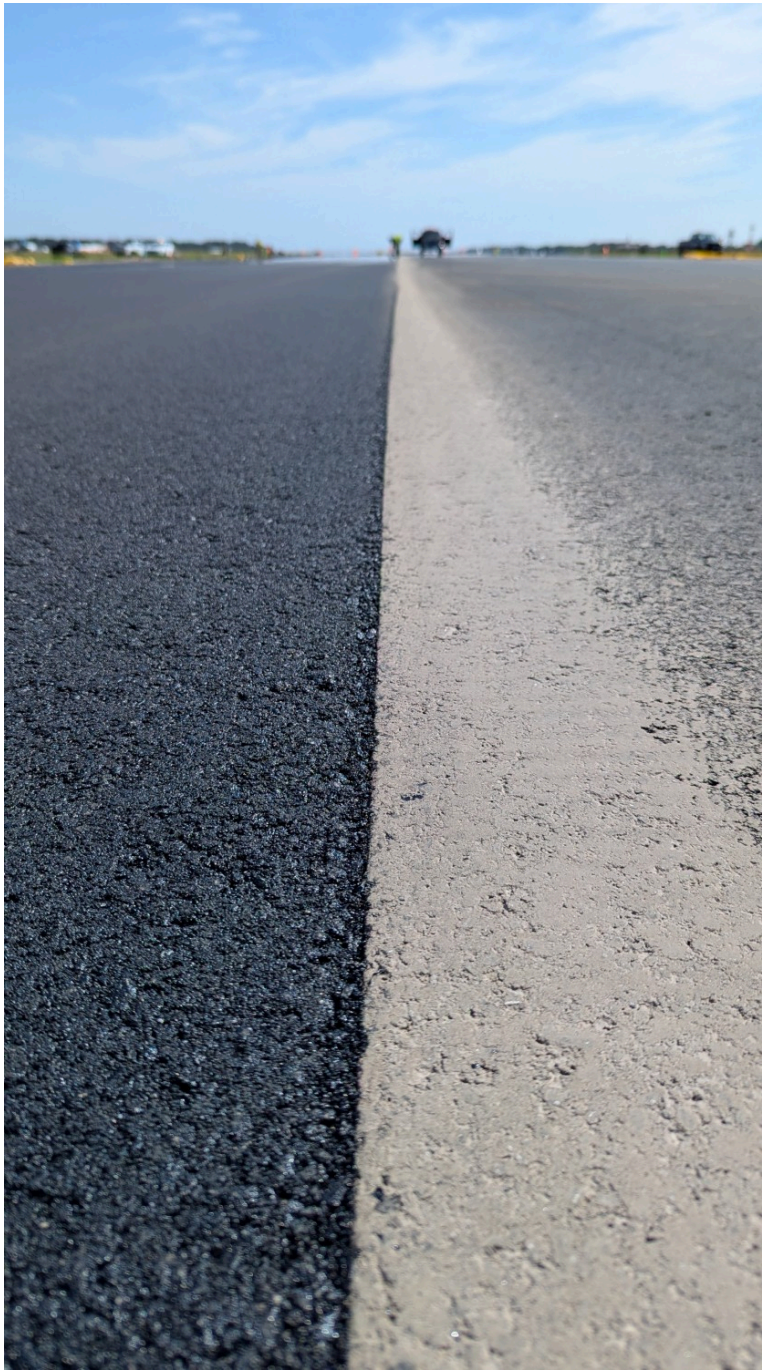


Figure 3. Longitudinal joint of taxiway

Enhancing Balanced Mix Design with Laboratory Rutting Tests

This study identified reliable rutting performance tests that more accurately predict mixture behavior under heavy aircraft loading and high temperatures. A four-test framework, centered on Hamburg Wheel-Tracking and Asphalt Pavement Analyzer testing, supports design verification and acceptance. The results will inform updates to FAA P-401 and P-403 specifications and advance performance-focused asphalt design approaches to reduce early deformation and improve long-term reliability.

Validating Gyration for Superpave Gyrotory Compactor

Study findings confirmed that the FAA's current Superpave Gyrotory Compactor (SGC) levels are equivalent to Marshall hammer compaction.

This validation builds confidence in modernized laboratory practices and supports broader adoption of SGC, which offers lower variability between facilities and aligns with performance-based design approaches.

Mitigating Plastic Flow and Delamination at High-Speed Exits

Researchers determined that interface delamination is the primary cause of slippage failures at high-speed exit taxiways. They established performance thresholds to help airfield pavement designers select materials and layer configurations that resist shear flow and delamination. The study provides guidance on overlay thickness and considers aircraft braking, turning, and temperature conditions to enhance safety and extend pavement life.

For the completed projects, VAA staff and VAA-Member companies were part of the program committee or the project-review panel.

Current Research: 2026–2027

As the first set of projects was being completed, a new set of research projects began. Each of these projects was established to answer one or more questions. These projects address economic and or environmental impacts while validating or proving the technical aspects being researched. The following AATP projects are currently underway:

- **Feasibility of Cold Central Plant Recycling (CCPR):** Evaluates whether CCPR can meet airfield performance needs while reducing energy use and emissions.
- **P-401 Mixtures: Aggregate Gradation Bands:** Develops improved gradation limits that enhance mixture constructability and performance.
- **Use of RAP in P-401 Mixtures:** Assesses how reclaimed asphalt pavement (RAP) affects performance and environmental impacts in airfield mixes.
- **Balanced Mix Design: Cracking Tests:** Identifies laboratory cracking tests that reliably predict field performance.
- **Airfield Asphalt Pavement Resilience:** Creates a resilience framework to help pavements better withstand climate and operational stresses.
- **Advanced Technologies for Airfield Pavement Projects:** Synthesizes global research to recommend artificial intelligence- and data-driven improvements to pavement materials, modeling, and construction.
- **PFAS in Airfield Pavements:** Studies how pavement recycling interacts with PFAS and the implications for airfield environments.
- **Porous Asphalt Pavements Feasibility Study:** Evaluates potential airfield applications for porous asphalt to support stormwater management.

The CCPR project is building on the success of CCPRM use in Virginia and the NCAT Test Track. VAA member Allan Myers constructed the test sections at the FAA Testing Facility in New Jersey.

Moving Research into Practice

AATP is an example of government and industry partnering to improve the nation's infrastructure and people's lives. While most of the research is highly technical, the outcomes are more cost-effective pavements and

asphalt materials that are more sustainable and more resilient, helping protect the environment. The research results will be incorporated into new designs, construction processes, and materials used at Virginia's airports and around the world!

For more information on the program and to access available resources, visit the [AAPTP website](#).



VAA MEMBER SPOTLIGHT



Based in Sterling, Virginia, Lagan Construction is part of the global Lagan Specialist Contracting Group, bringing international expertise and resources to projects throughout the Mid-Atlantic. With a strong presence in the U.S., Lagan has built a reputation for excellence in heavy civil construction, site development, and infrastructure improvement, serving both public agencies and private-sector clients.

Lagan Construction offers a diverse range of services, including roadway construction, asphalt paving, utilities, earthwork, and transportation infrastructure projects. Their team is known for taking on complex, large-scale projects and delivering them with precision, efficiency, and a commitment to quality. Lagan combines innovative construction methods with experienced project management to consistently meet the evolving needs of the communities they serve.

Safety and sustainability are at the core of Lagan's operations. The company prioritizes a strong safety culture across all job sites while also implementing environmentally responsible practices that support long-term infrastructure performance and community impact.

What sets Lagan apart is its ability to blend global experience with local execution — leveraging the strength of an international organization while maintaining a hands-on, relationship-driven approach in Virginia and the surrounding region.

To learn more about Lagan, visit <https://www.laganus.com/>



NEW VAA MEMBER SPOTLIGHT



Based in Northern Virginia, Donovan Paving has built a strong reputation as a trusted provider of asphalt paving, milling, and pavement maintenance services for commercial, municipal, and residential clients. With decades of experience, their team delivers high-quality workmanship and dependable service at every stage of a project.

Donovan Paving offers a full range of services, including asphalt paving, resurfacing, sealcoating, striping, and repairs, helping clients extend the life of their pavement while maintaining safe and attractive surfaces. Whether working on parking lots, roadways, or community spaces, they bring a detail-oriented approach and a commitment to getting the job done right.

What sets Donovan Paving apart is its focus on customer service and long-term relationships. They work closely with clients to understand project needs, communicate clearly, and deliver results that meet both performance and budget expectations.

As a new member of VAA, Donovan Paving brings valuable experience and a strong commitment to quality that aligns with the mission of advancing the asphalt industry across the Commonwealth.

To learn more about Donovan Paving,
visit: <https://www.donovanpaving.com/>



Interested in your company being the next VAA Member or New Member Spotlight?

This is a fantastic opportunity to showcase your company, highlight recent achievements, and share your story with Virginia's broader paving and transportation community and beyond.

Submit a 150 to 400-word article with a single picture or graphic about your company to us, and you will be featured in an upcoming monthly Paving Virginia newsletter. Articles may cover your company history, innovative projects, team highlights, or anything that sets your business apart. This is on a first-come, first-served basis; as articles are received, they will go into the queue for the newsletter.

Email Tigre Fortune - tfortune@vaasphalt.com to submit your articles.

Comments

16 · 1 comment



Like



Comment



Share

Add a comment...



Most recent ▾



Jennifer Kittrell, PMP • 2nd

(edited) 3w ...

"Translating research into stories stakeholders understand." Marketi...

Thank you, VAA, for highlighting the important work happening within the Airport Asphalt Pavement Technology Program. Collaborating with you, and with members like Lagan, makes tech transfer fun and effective.

Like · 2 | Reply



Virginia Asphalt Association



David works here

✓ Following

More articles for you



Macrotexture as indicator of low wet friction

Johan Granlund

 12

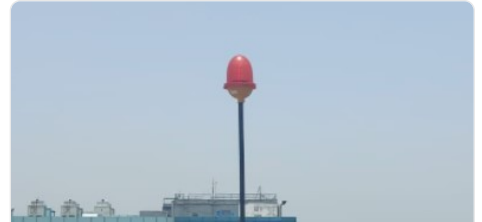


Published on LinkedIn

Highway Junctions - Types and Design Considerations

Muhammad Bhatti

 7 · 7 comments · 3 reposts



Requirement of Aviation Lights for High Rise Buildings

Puneet Singh Bhatia

 33 · 6 comments

