Case Study



Kansas Turnpike Authority – ACE XP

Project: Kansas Turnpike Authority (KTA)

Location: I-35 at milepost 78.4 near El Dorado

Duration: 2022 September

Contractor: Cornejo Construction

Customer: Kansas Turnpike Authority (KTA)

Surface Tech Product: ACE XP

Project Scope & Objectives

The Kansas Turnpike is a critical transportation artery, supporting significant freight and passenger vehicle traffic across the state. Heavily loaded trucks, extreme seasonal temperature swings, and constant daily use present ongoing challenges for pavement durability—particularly rutting, cracking, and surface degradation.

The Kansas Turnpike Authority (KTA) sought a solution to increase the lifespan of its asphalt pavements while reducing maintenance cycles and long-term repair costs. Surface Tech's ACE XP Polymer Fiber was selected as a key reinforcement strategy to deliver superior rut resistance, enhanced flexibility, and extended service life for one of the turnpike's high-traffic segments.

This project represented a significant advancement in KTA's pavement management strategy, showcasing how advanced aramid fiber reinforcement can meet the demanding needs of modern highway infrastructure.



Project Highlights

Surface Tech collaborated with the Kansas Turnpike Authority and its project partners to implement a fiberreinforced asphalt solution tailored to withstand heavy axle loads and environmental stressors.

Scope: Reinforcement of a multi-lane section of the Kansas Turnpike, prone to rutting and reflective cracking due to high truck volumes.

Asphalt Mix Design: A custom mix was developed using PG 64-22 binder, modified with a single dose of ACE XP Polymer Fiber (38mm aramid) to increase the pavement's tensile strength and rut resistance.

Fiber Dosing: Surface Tech utilized precision auto-dosing equipment to ensure consistent, accurate fiber integration with the ASTM standard of 2.1oz/ton at the asphalt plant. Daily production reports and digital QA tracking validated dosing rates with daily reports throughout the project.

Seamless Integration: The mix design and dosing system allowed producers and contractors to incorporate ACE XP into their existing workflows, with no modifications to equipment or paving practices.

This approach delivered a robust, crack- and rut-resistant pavement designed to outlast traditional overlays and reduce life-cycle maintenance.

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Challenges Overcome

Rutting Under Heavy Loads: The segment experienced significant rutting due to heavy truck traffic. Reinforcing the mix with ACE XP was critical to maintaining surface integrity over time.

Environmental Extremes: Kansas weather presents challenges with temperature fluctuations, making flexible yet durable asphalt essential to mitigate thermal cracking.

Cost-Effective Longevity: KTA required a solution that balanced upfront material costs with long-term life-cycle value, emphasizing performance without overspending on premium overlays.







Economic and Environmental Impact

Reduced Maintenance Costs: Enhanced rut resistance and crack mitigation are expected to significantly lower KTA's future repair and rehabilitation expenses.

Extended Pavement Life-cycle: ACE XP reinforcement helps reduce the frequency of mill-and-fill projects, maximizing the lifespan of the pavement asset.

Optimized Investment: The upfront cost of incorporating ACE XP is offset by long-term savings in maintenance and minimized traffic disruption from repairs.

Lower Resource Consumption: Extending pavement life reduces the demand for new materials and resources over the infrastructure's life-cycle.

Reduced Emissions: Fewer repairs and overlays mean less fuel consumption, reduced haul truck traffic, and lower emissions from paving equipment.

Sustainability Alignment: By investing in durable pavement solutions, KTA contributes to broader environmental stewardship goals while enhancing infrastructure resilience.

Client Feedback & Results

The Kansas Turnpike project demonstrated the tangible benefits of fiber-reinforced asphalt in high-load, highuse applications.

"With ACE XP, we've seen a significant improvement in rutting performance and overall pavement durability. This solution helps us deliver safer, longer-lasting roads while optimizing our maintenance budgets." — Kansas Turnpike Authority

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