PERFORMANCE EVIDENCE BRIEF

Roadway Safety Strip™

Sustained High-Friction Performance Under Accelerated NCAT Traffic Loading

Installation	October 2, 2023	**Monitoring through**	July 20, 2026
Test facility	NCAT Test Track	**Cumulative loading**	Approximately 10.2 million ESALs

Installation was monitored from October 2023 through July 2026 using locked-wheel friction testing with a standard ribbed tire (ASTM E501 / ribbed LWFT) while the test section accumulated approximately 10.2 million ESALs.

Executive Summary

The Roadway Safety Strip installation retained a locked-wheel friction number above 53 after approximately 10.2 million ESALs at the NCAT Test Track.

Using a deliberately conservative secondary-road comparison, this cumulative loading is equivalent to approximately 21 years of design-lane traffic on a heavily trucked secondary roadway carrying about 15,000 vehicles per day, with 12% heavy trucks and an assumed average loading of 1.5 ESALs per truck.

Roadway Safety Strip is more likely to be deployed on lower-volume curves, intersection approaches, ramps, bridge approaches, and roadway-departure locations. At those locations, the same 10.2 million ESAL exposure would generally represent substantially more than 21 years of traffic loading.

RECOMMENDED INTERPRETATION

The NCAT installation retained substantial friction after a level of accelerated traffic loading far greater than it would ordinarily encounter during its anticipated service life on most secondary roadways.

This comparison is a traffic-loading equivalency, not a prediction of a 21-year product service life. ESALs quantify cumulative axle loading.

Measured Friction Performance

The Version 3 - Run 2 production installation was monitored from October 2023 through July 2026 using locked-wheel friction testing while the test section accumulated approximately 10.2 million ESALs. Twenty-eight measurements document both initial performance and friction retention under accelerated loading.

Performance measure	NCAT result
Initial friction number	**55.7**
Maximum recorded friction number	**65.7**
Average across all 28 measurements	**58.9**
Final friction number after ~10.2 million ESALs	**53.0**
Lowest recorded friction number	**53.0**

Performance measure	NCAT result
Final change from initial reading	**-4.8%**

What the Results Demonstrate

Reliability. Every measurement remained within a consistently elevated range of 53.0 to 65.7. The 58.9 average across 28 observations demonstrates repeatable performance rather than dependence on one favorable test.

Traffic-load durability. The surface retained a friction number above 53 after approximately 10.2 million ESALs, indicating continued tire-pavement interaction despite extensive concentrated loading.

Friction retention. The final measurement was only approximately 4.8% below the initial installation reading. The data show no abrupt performance collapse or evidence that traffic-induced polishing had exhausted the functional friction benefit.

Full-scale evidence. The product was evaluated under repeated truck loading on an operating pavement test facility, providing evidence beyond short-duration laboratory polishing alone.

Conservative Secondary-Road Loading Equivalency

FHWA describes annual ESAL estimation as the sum of daily truck volumes by vehicle class multiplied by a representative truck factor, then annualized. For a two-lane roadway, directional distribution is also applied when evaluating loading in a particular lane.

CONSERVATIVE MARKETING BENCHMARK

Approximately 10.2 million ESALs equals about 21 years of traffic loading in one direction on a heavily trucked secondary roadway under the assumptions below.

Assumption	Conservative benchmark
Two-way AADT	**15,000 vehicles/day**
Heavy-truck share	**12%**
Directional distribution	**50%**
Average loading	**1.5 ESALs/heavy truck**
Estimated annual design-lane loading	**492,750 ESALs/year**
10.2 million ESAL equivalency	**Approximately 20.7 years**

Calculation: 15,000 × 12% × 50% × 1.5 × 365 = 492,750 ESALs/year; 10.2 million ÷ 492,750 = approximately 20.7 years.

Comparison with Conventional HFST

Conventional high-friction surface treatment generally consists of calcined bauxite bonded to the pavement with a thermosetting polymer-resin binder. Roadway Safety Strip uses a different engineered binder and prefabricated construction, so it should not be represented as chemically identical to conventional epoxy-based HFST. Both systems, however, rely on the exceptional polish resistance of calcined bauxite to provide durable pavement friction.

FHWA guidance describes properly installed conventional HFST as having an expected service life of at least 7 to 10 years, depending on traffic, pavement condition, environment, and installation quality. FHWA has also reported that

new conventional HFST installations commonly produce locked-wheel friction numbers above 70, with some initial readings in the 80s or 90s.

Direct numerical comparisons require caution because friction results depend on test tire, speed, equipment, surface condition, and procedure. The relevant Roadway Safety Strip finding is therefore its sustained retention of an elevated friction level—not whether its initial reading duplicates the highest new-installation reading reported for resin-bound HFST.

FHWA reports that conventional HFST can substantially reduce crashes at appropriate high-friction-demand locations, including estimated reductions of 83% in wet-weather crashes and 57% in total crashes. Those figures belong to the broader conventional-HFST evidence base and are not Roadway Safety Strip-specific crash-reduction results. They demonstrate why dependable friction retention is important to roadway agencies.

Performance Conclusion

The NCAT results establish a credible, measurable performance record for Roadway Safety Strip. After approximately 10.2 million ESALs, the surface continued to produce a friction number above 53, the final value remained within approximately 5% of the initial reading, and no abrupt or premature loss of friction was observed.

Using a conservative heavy-secondary-road model, the accumulated NCAT loading represents approximately 21 years of design-lane traffic exposure. This does not establish a 21-year service-life claim. It demonstrates that Roadway Safety Strip maintained substantial friction after traffic loading far beyond what it would ordinarily encounter during its anticipated service period on most secondary roadways.

For DOTs evaluating treatments for curves, intersection approaches, ramps, bridge approaches, roadway-departure locations, and other areas with elevated friction demand, these results support consideration of Roadway Safety Strip for field demonstration, experimental-use approval, and continued agency evaluation.

Technical Qualifications

- ESAL equivalency evaluates cumulative axle loading; it is not a warranty or direct prediction of calendar service life.
- Site-specific equivalency should use the agency's AADT, vehicle-class distribution, directional split, growth rate, and locally accepted truck factors.
- Friction-number comparisons should confirm comparable test tire, speed, equipment, surface condition, and procedure.
- Continued field monitoring remains appropriate to document environmental durability and complete calendar-age performance.

Sources

NCAT performance data: Tracking for Version 3(1).xlsx, Summary and Friction Simple worksheets.
FHWA HFST Site Selection and Installation Guide: https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/HFST_Guide_HPA.pdf
FHWA High Friction Surface Treatments FAQ: https://www.fhwa.dot.gov/innovation/everydaycounts/edc-2/pdfs/hfst_faqs.pdf
FHWA High Friction Surface Treatments: https://highways.dot.gov/safety/rwd/keep-vehicles-road/pavement-friction/hfst
FHWA traffic-load methodology: https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/ltpp/03094/05.cfm