

TUFFTREK 4002

Nebraska DOT

Asphalt Rejuvenator Test

Project Overview

50% RAP Asphalt Pavement

TUFFTREK 4002 proved to be an effective rejuvenator in a 50% RAP (Recycled Asphalt Pavement) pavement placed in Nebraska. In September 2019, a 2200 ton test section was paved 15 miles north of Lexington, NE on Hwy 21. The mix design contained a 60% binder replacement rate. The control section used a PG 58V-34 binder, and the 2200 ton test section used a PG 58V-34 with 4% TUFFTREK 4002 (pre-blended at a terminal), a 1.6% addition by weight of total binder in the mix.

Evaluation and Results

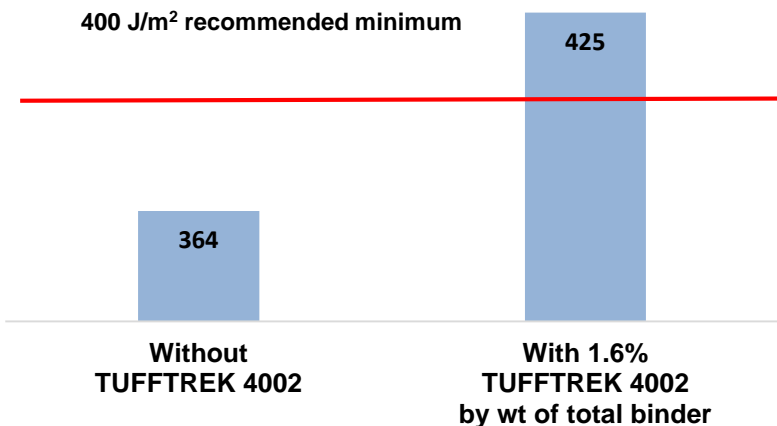
A suite of performance tests were conducted on the production mixes. These tests included:

- Hamburg Loaded Wheel for rutting and stripping,
- DCT Fracture Energy for low temperature cracking
- IDEAL-CT for intermediate temperature cracking.

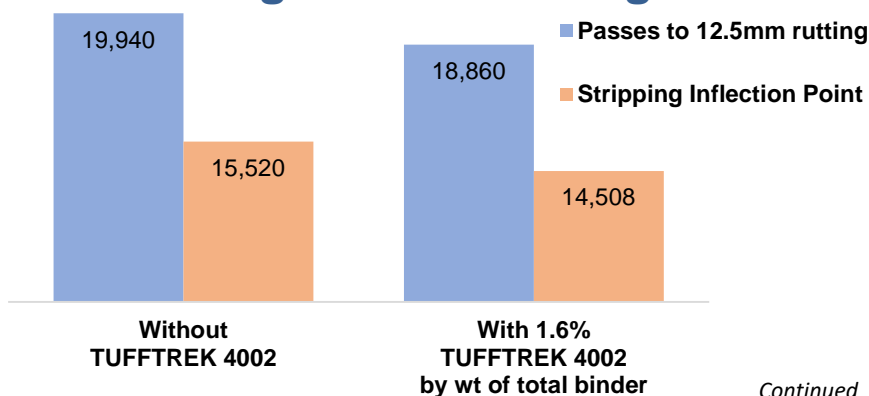
The TUFFTREK test pavement demonstrated a higher resistance to cracking with minimal impact on rutting resistance and moisture damage. Additionally, Delta Tc results comparing the virgin binder with and without the TUFFTREK 4002 also predicted its ability to reduce the impacts of age-related binder hardening.

DCT Fracture Energy -18°C

400 J/m² recommended minimum



Hamburg Wheel Tracking 45°C

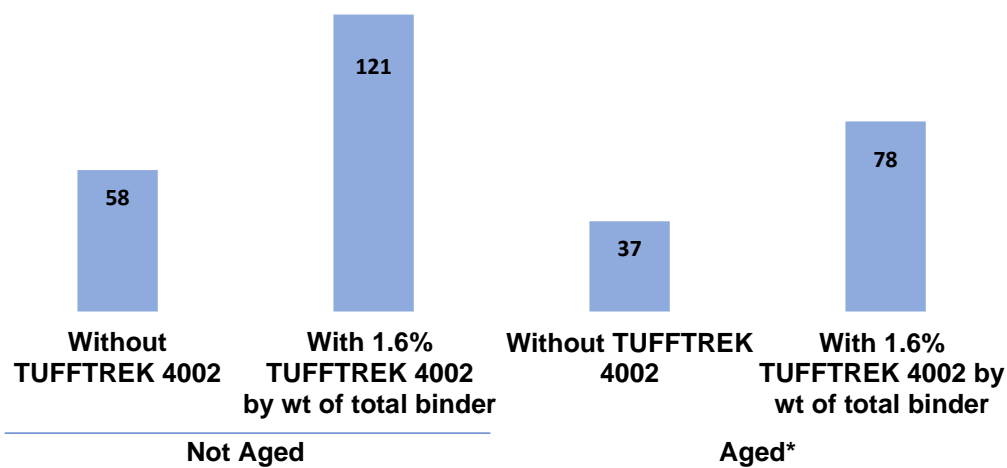


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IDEAL-CT (25°C)



**Aged test samples were prepared from field mix reheated in a 135°C oven for 2 hrs. and then conditioned in a loose mix state for 6 hrs.*

Virgin Binder Test

	High PG	Low PG	40hr PAV ΔT_c
PG 58V-34	67.7	-36.9	-3.4
PG 58V-34 w/ 4% TUFFTREK 4002*	58.7	-40.4	0.0

**Binder was shipped from the same supplier but a different terminal.*