

IDEAL-CT and HWT Data Summary - NHPP 5502 SMA Project

Source: CDOT Central Lab

Date: September 27, 2022

Mix Type: Stone Matrix Asphalt (SMA) | Binder

Grade: PG 64-28 | RAP: 0% | AC Content: 6.9% [Download Report](#)

Overview

This CDOT Central Lab report presents laboratory testing results for IDEAL-CT (Indirect Tensile Asphalt Cracking Test) and Hamburg Wheel-Track (HWT) performance on SMA mixtures produced during the NHPP 5502 project. The data compares standard SMA and ACE XP fiber-reinforced SMA mixes produced during a September 2022 production run.

Key Data Comparison

Property	SMA (Control Mix)	SMA + ACE XP (Fiber Reinforced)
IDEAL-CT Index (Avg.)	494.1	826.1
IDEAL-CT Range (Individual)	503–891.1	578–1052.4
HWT Rutting – Left Wheel (mm)	3.22	2.78
HWT Rutting – Right Wheel (mm)	2.94	2.99
HWT Rutting – Average (mm)	3.08	2.89

Key Takeaways

Cracking Resistance (IDEAL-CT): The ACE XP-reinforced SMA achieved an average CT Index of 826.1, a 67% improvement over the control mix (494.1). This demonstrates a significant increase in crack resistance and structural integrity. **Rutting Performance (HWT):** The reinforced mix also showed slightly lower rut depths, averaging 2.89 mm versus 3.08 mm, indicating improved resistance to permanent deformation.

These results confirm the combined performance benefits of ACE XP fibers in SMA, delivering both superior crack resistance and stable rutting performance.

Market Relevance

ACE XP-reinforced SMA meets the durability and performance expectations set by UK highways and local authorities, supporting both structural longevity and compliance with PAS 2080 sustainability goals.

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