2012 NCAT Pavement Test Track

• Research Overview
Content

- Significant Track findings
- Virginia’s 2012 test sections
- Thinner pavement designs
- Thinlays for preventive maintenance
- UltraFuse versus NovaBond
- 2015 NCAT Pavement Test Track
Significant Track Findings

- Mix designs
- Aggregate characteristics
- Binder characteristics
- Structural design (E & M-E)
- Tire-pavement interaction
- Predictive testing
Virginia’s Track Research

- W10, S1, S12, N3, and N4
- “Minimizing Road Noise Using Pavement Type Selection and GTR in Sections W10, S1, and S12”
- “Overlay Thickness of Conventional Asphalt Mixes on 100 Percent Foamed Recycle Mix in Sections N3 and N4”
- “Full Depth Reclamation versus Conventional Base and Subgrade Construction in Sections S12 and N3”
Virginia Noise Research

![Graph showing noise intensity across different frequencies for various categories: SBS, GTR, SMA, DGA, PFC, W10, S1, S12, N3, N4, and N5.]
Virginia Structural Research
Thinner Pavements

• Stiff subgrade & dense crushed granite base
  – 9 inch perpetual versus 24 inch ‘93 AASHTO design

• Soft subgrade with shallow lime modification
  – 10 inch failure versus 14 inch proven perpetual

• High polymer modified mix (HiPM)
  – 5¾ inch perpetual (?) via high fatigue tolerance
  – 10 inch on soft subgrade mill/inlay perpetual (???)

• Pre-ME AASHTO layer coefficient 0.44 ⇒ 0.54
  – ≥ 0.15 for Open Graded Surface Courses
Thinlay Mix Design
L18 – Thin HMA Overlay on FiberMat (HMA Cape)
L19 – Thin HMA Overlay
L20 – Thin HMA Overlay on 100% RAP Mix Base
L21 – Polymer Thin HMA Overlay
L22 – Bonded Thin HMA Overlay
L23 – 50% RAP
Thin HMA Overlay
L24 – 5% RAS
Thin HMA Overlay
L25 – HiMA
Thin HMA Overlay
Enhanced Pavement Interlayers
Enhanced Pavement Interlayers

N1A eTac 0.10/0.06

N1B UltraFuse 0.15/0.15

N2 Trackless 0.05/0.03
Enhanced Pavement Interlayers

Average of BOND_STRENGTH  Sum of % INTERFACE

Values
- Blue: Average of BOND_STRENGTH
- Red: Sum of % INTERFACE

2009 Test Track
- N1
- N2
- E1A
- E1B

2012 Test Track
- N1A
- N1B
- N2

eTac
UltraFuse

Bonded
Trackless
Trackless
Enhanced Pavement Interlayers

N1A - eTac

Crack Map (Trucking Percent Complete via Height of Gray Map Date Box)

N1B - UltraFuse

N2 - Trackless
Performance data for each section will soon be available for viewing by positioning your mouse over the section in question and left-clicking. Based on feedback from our research sponsors, the performance reports have been revised to include crack maps. The 2012 performance reports will be a fully integrated and active part of the web presentation.

Click here for a recent rutting bar graph with ESAL update!

Click the layout below for information specific to each section

N1, N11, S5, S6, and S8 – S13 are structural sections
All other sections have deep perpetual foundations
Research cycle of surface placement shown by color:
Off-Track test sections on Lee Road 159 shown below

175,756 ESALs on the Track as of 2300 hours on March 9, 2013 (17% of the 10,000,000 ESAL goal). Rut depths recently averaged 4 mm, while roughness...
Enhanced Pavement Interlayers

N1 - N11, S5 - S6, and S8-S13 are thinner structural sections; All other sections have deep perpetual foundations; Research cycle shown by color (red=2006, yellow=2009, green=2012); Blue outline for WMA and hatching for high recycled contents
2015 Research Cycle

- Traffic continuation
- Mill/Inlay
- Structural
- Pavement preservation
- True innovation
- Product/process evaluations
- Cracking test study
Track Research Sponsors

Private Sector Sponsors
- Cargill Deicing Technology (DOT & DEM)
- FP2
- Kraton Polymers
- Modified Asphalt Solutions
- Oldcastle Materials
- Polycon Manufacturing
- Shell Sulfur Solutions
- Trinidad Lake Asphalt

2012, Pre-2012

FHWA

Questions?

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