NCAT TEST TRACK UPDATE
Red – Mill and Inlay New Mix Performance Sections (14)
Blue – Excavate and Install New Structural Sections (8)
Black – Extend Original Rutting Study to 20M ESALs (23)
2003 TRUCKING OPERATIONS
FUEL ECONOMY STUDIES

The image shows a graph with the following details:

- **Date of Operation**: 8/23/2005 to 12/7/2005
- **Treatment mpg / Control mpg (Filtered Average of 3 or More Trips)**
  - Treatment mpg values range from 0.97 to 1.03
  - Control mpg values range from 0.93 to 0.95

The graph plots the filtered mpg ratio (#4/#3) over time, with dates marked as follows:

- 8/23/2005
- 9/13/2005
- 10/4/2005
- 10/25/2005
- 11/15/2005
- 12/7/2005

The graph indicates a decrease in mpg over time, with the treatment group generally performing better than the control group.
RUTTING PERFORMANCE

1/9/2006

Average 6-Point Rut Depth via Profiles (mm)
# Structural Study

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6" Dense Crushed Aggregate Base

200 ft | 200 ft | 200 ft | 200 ft | 200 ft | 200 ft | 200 ft | 200 ft |

- **Mix run with modified binder at optimum**
- **Mixes 1 & 3:** 3/8" ARZ Superpave in 1" Lifts
- **Mix run with unmodified binder at optimum**
- **Mixes 2, 4 & 6:** 3/4" ARZ Superpave in 2" Lifts
- **Mix run with unmodified binder at cpr + 0.5%**
- **Mix 6:** 3/8" SMA in 1" Lifts
SURFACE DISTRESS MAPPING

![Graph showing surface distress mapping with various lines and annotations.]
MEASURED PAVEMENT RESPONSE

![Graph showing measured pavement response with time in seconds and longitudinal microstrain as the y-axis. The graph includes lines for different conditions: ALL, ALC, and ALR.]

- Time, sec
- Longitudinal Microstrain

![Image of a truck on a test track.]

NCAT Pavement Test Track
STRUCTURAL STUDY FINDINGS

• Pavement Response **Measured** at Known Temperatures
• Mechanistic Pavement Analysis Approach **Validated**
• Pavement Response **Predicted** at All Temperatures
• Damage (Strains) **Accumulated** with Each Axle Pass
• Mechanistic-Empirical Pavement Design **Calibrated**

• Both 5” Sections Failed (Slightly Later than Expected)
• Some Fatigue Cracking in 7” Sections (Much Later)
• No Cracking Observed in Either 9” Section
Superpave vs SMA

Mean Texture Depth (mm) vs ESALs Applied

- N11 (Superpave)
- N12 (SMA)
FRICTION LOSS EXPERIMENTS
MIX STUDY FINDINGS

- Fine Graded Mix Performance Comparable to Coarse
- Change to Modified Asphalt Cut Rutting in Half
- Experimental Mixes Field Proven (e.g., Gravel SMA)
- Aggregates Safely Evaluated (e.g., Polishing)
- Field Correlations Prove Laboratory Test Methods

- Findings Lead to Sponsor Specification Changes
WARM MIX SECTIONS (E9, N1 & N2)
QUIET PAVEMENTS (INSIDE LANE)
2006 TRACK SPONSORS

(+ FHWA)
2006 TRACK OBJECTIVES

- Continuation/Expansion of Structural Experiment
  - Top-Down Cracking
  - Perpetual Pavement Designs
  - Weak Subgrades
- Document Effectiveness of Intelligent Compaction
- Flat and Elongated Coarse Aggregate Effects in OGFC
- Twin Layer Placement of Dual Drainage Layers
- RAP Percentage and Binder Grade
- Gravel Open Graded Friction Coarse
- Effect of Varying Air Voids on Performance
- Pavement Preservation Techniques in Texas (+Infrared)
Binder layer
REPLACEMENT SECTIONS

Red – Mill and Inlay New Mix Performance Sections (11)
Blue – Excavate and Install New Structural Sections (5)
2006 STRUCTURAL EXPERIMENT

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(NCAT Pavement Test Track)
STRUCTURAL MILLING
2006 TRACK STATUS

- March 31\textsuperscript{st} then April 28\textsuperscript{th} Letting
- Estimate Bracket $1.45M to $1.8M
- One Contractor Bid Job @ $2.3M
- Waiting on ALDOT Award Decision
- Contingency Plan if Not Awarded
- Fleet Operations Begin September 5\textsuperscript{th}
NEW OFF-ROAD TEST TRACK