

SEAUPG 2003 CONFERENCE

NCAT TEST TRACK UPDATE

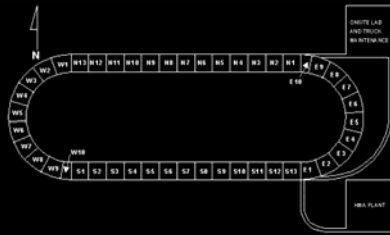
PROJECT OVERVIEW



- Materials and Methods (Not Thickness) were 2000 Study Variables
- Determine Which Mixes Perform Better Under Actual Traffic (APT)
- Identify Laboratory Tests That Best Indicate Field Performance



2000 RUTTING EXPERIMENT



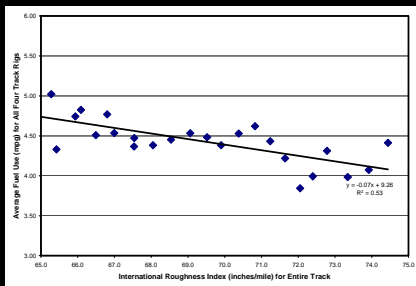
2000 TRUCKING OPERATIONS



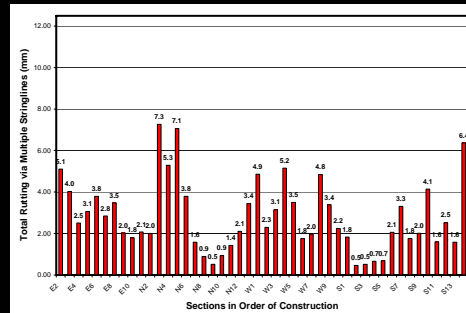
- Contracted Trucking Out to Low Bidder (Covenant)
- Project Supplied Building, Trailers, Tires and Fuel
- Ran One Truck in Sept '00, Two in Oct '00, All in Dec '00
- Completed Work in Dec '02 One Month Behind Schedule
- Ended Run with 3 Different Tire Wear Rate Studies



ROUGHNESS vs FUEL CONSUMPTION

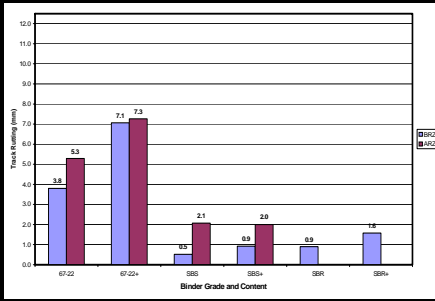


FINAL RUTTING ON 2000 TRACK

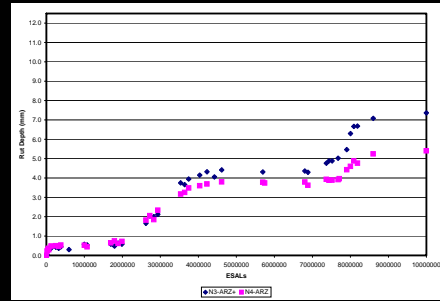


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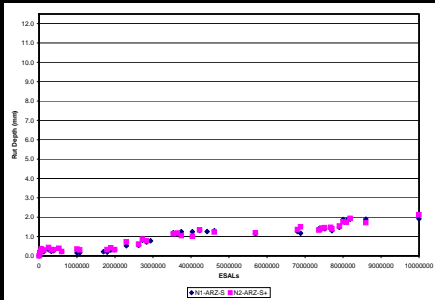
NORTH TANGENT STUDY



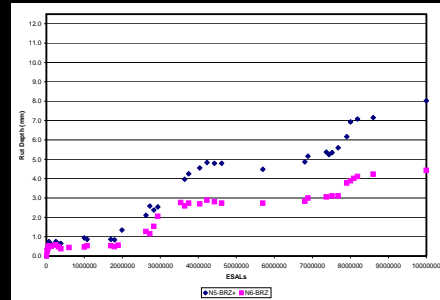
ARZ (OPT vs OPT+)



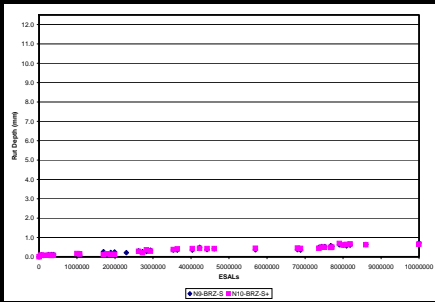
ARZ-SBS (OPT vs OPT+)



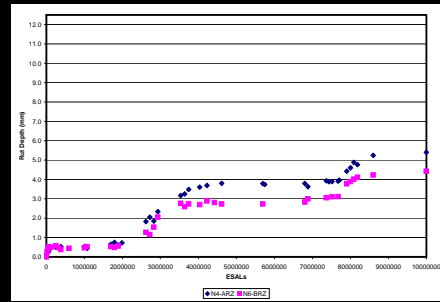
BRZ (OPT vs OPT+)



BRZ-SBS (OPT vs OPT+)

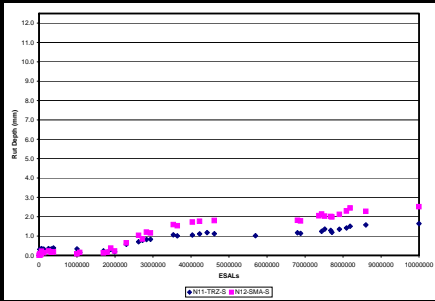


ARZ vs BRZ (OPT)

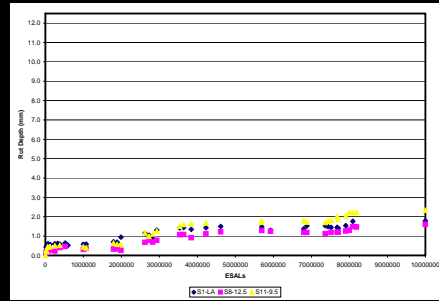


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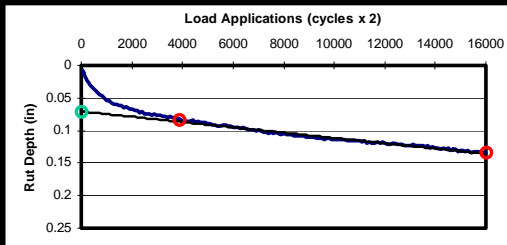
SUPERPAVE vs SMA



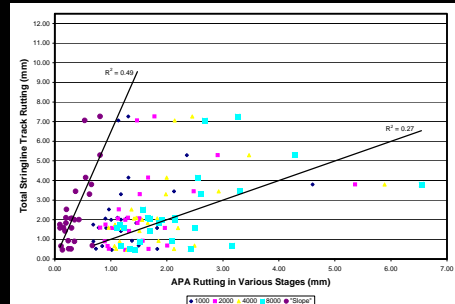
9.5 vs 12.5 vs 12.5 (SOFT)



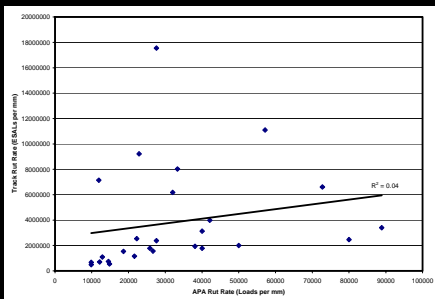
LABORATORY PERFORMANCE



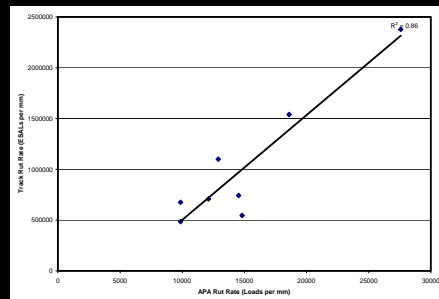
RUTTING CORRELATIONS



RATE CORRELATION (ALL)

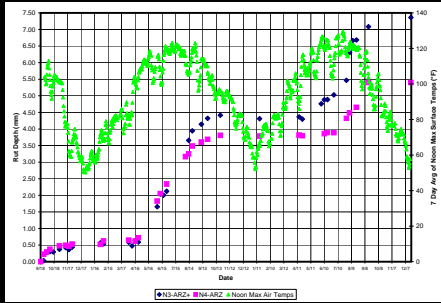


RATE CORRELATION (PG 67)



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EFFECT OF AGE & TEMPERATURE

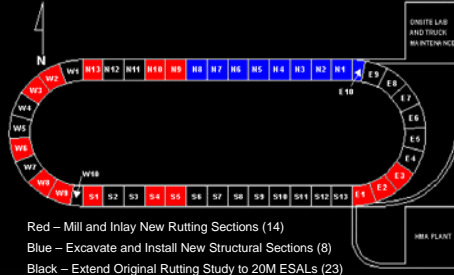


TRACK RUTTING MODEL

- Total Field Rutting = Cumulative Function of...
 - Separate **Primary and Secondary Consolidation** from Laboratory Testing
 - Difference Between **Binder Failure Grade** and Laboratory Test Temperature
 - **Difference in Density** Between Laboratory Samples and Initial Field Mat
 - **Incremental Age** of Mat Under Traffic Loading in Hours for Entire History
 - **ESAL's (or Spectra)** Applied for Each Hour of Load History for Field Mat
 - **Hourly Temperature** Difference Between Field Mat and Binder Failure Grade
- Regression Analysis of Track Database Used to Generate Equation
- Statistical Analysis of Predictions Using Multiple Cells per Section
- No Opportunity to Encompass Tertiary Flow in Track Data



2003 MIXED EXPERIMENT



2003 OBJECTIVES

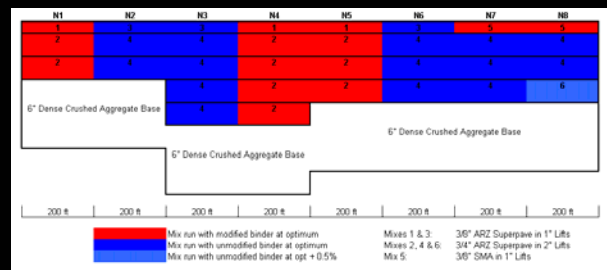
- Alabama/Indiana/FHWA – Structural Design (E and ME)
- Georgia, Oklahoma – Continue Traffic (Mix Design)
- Missouri – SMA with Varying Quality Aggregates (4")
- Florida – Validate Heavy Vehicle Simulator (4")
- South Carolina – High LA in Superpave & SMA (3.5")
- North Carolina – Thin Overlay vs NovaChip (1")
- Mississippi – Low Volume Superpave (3/4")
- Tennessee – SMA, OGFC & Reduced Gyration (4, 1, 4")



GEORGIA – TRAFFIC ONLY N11 N12



STRUCTURAL EXPERIMENT



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STRUCTURAL MILLING



RESPONSE INSTRUMENTATION



2003 RECONSTRUCTION



PRECISION PAVING



CONSTRUCTION SUMMARY

- Avg Track Density of 94.1 Percent of Theoretical Max
- Avg Lab Air Voids of 4.1 Percent (via Lab Max Gravity)
- Avg Thickness Error of $-0.09"$ @ Std Dev of $0.17"$
- Avg Roughness Before Reconstruction 74 inches/mile
- Avg Roughness Before Grinding 75 inches/mile
- Avg Roughness After Grinding 71 inches/mile



2003 TRUCKING OPERATIONS



- Began Traffic with One Truck on October 21, 2003
- Systematically Phase in All Trucks by December, 2003
- Target Operation Tuesday Through Saturday Only
- Plan for Rehabilitation of Structural Failures
- Target Completion by December 17, 2005



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MONDAY FIELD PERFORMANCE



- Weekly Transverse Profiles, NDT Densities and ARAN Testing
- Monthly Video Log, Skid, FWD and High Speed Response
- Quarterly Coring for Bulk and Layered Density Analysis



LABORATORY PERFORMANCE

- APA Lab Mixed Preconstruction (Design)
- APA Plant Run During Construction (QC)
- Confined Cyclic Load During Construction
- Dynamic Modulus During Construction
- Unconfined Creep During Construction
- APA Reheated Post Construction (QA)

