

MODOT Hot Topics



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2015 Joint Annual Bituminous Conference/North Central
Asphalt User Producer Group Technical Conference

Tack Coat

- Polymer Modified Emulsion (SS-1HP)
 - Extensive use last couple of years
- Non Tracking Tack
 - Being used in some projects
- Experimenting with Hot Asphalt Binder this year (PG64-22)



Biggest Problem is keeping Tack on the Roadway.

Tack Coat

Application Rates (Undiluted)

Surface Type	Min Application Rate (gal/sq yd)
New Asphalt Pavement	0.05
Existing Asphalt or Concrete	0.08

Residual of 0.03 and
0.045 (gal/ sq yd)



Sealing Treatment Prior to Overlay

- Intended for Moderated to Severe Block Cracked Roadways
- Sealing Options (gal/sq yd)
 - Scrub Seal (0.25), Emulsion Membrane with Spray Paver (0.25), Seal Coat (0.28)



Missouri System

- 34,000 Miles of Roadway
- 3 Types of Dense Graded Asphalt Mixtures

Low Type Mixes (< 600 Trucks)

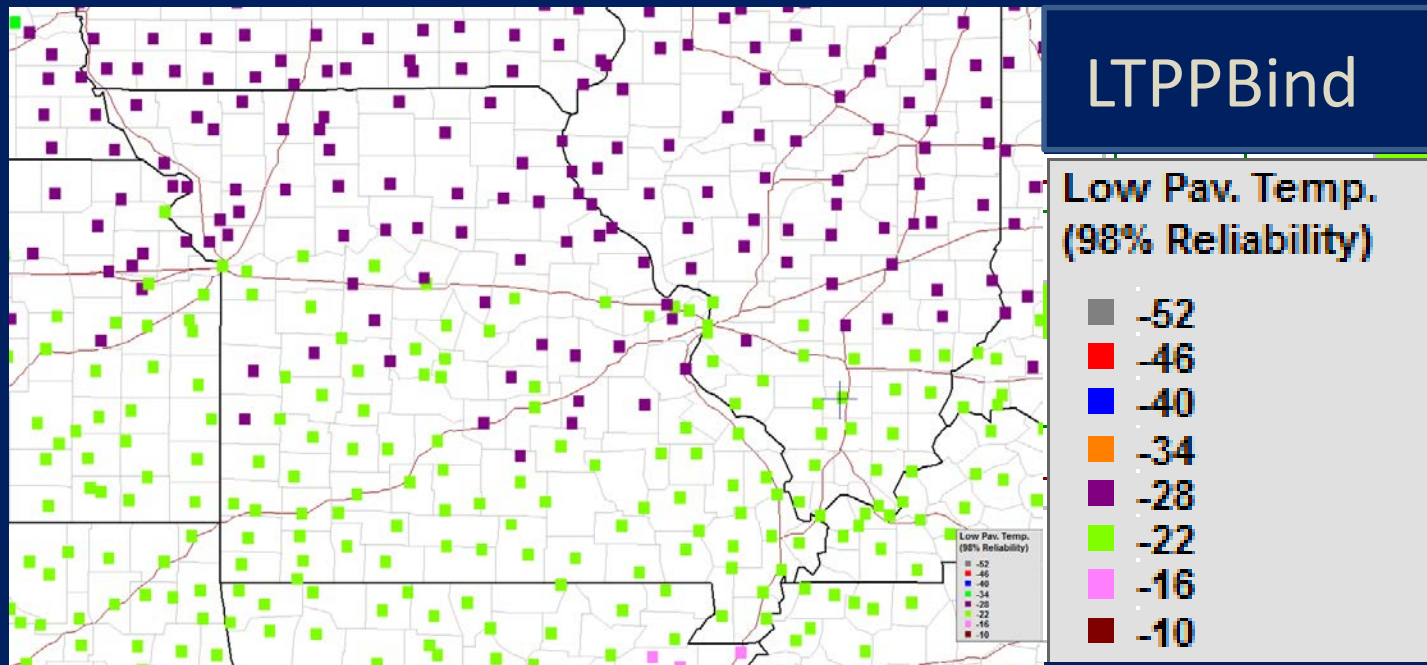
- 1) Surface Leveling (Farm to Market Roads)
 - 1 Inch Lift, 3 Passes with Roller
- 2) Bituminous Pavement and Base (BP & BB)
 - Greater Amount of Testing, Including Density

High Type Mixes (> 600 Trucks)

- 3) Superpave Mixes
 - Volumetric Production Testing, Including Density

Concern

- Cold Winter in 2014
- Experienced some Premature Cracking
 - Predominantly BP Mixes
- Finding High In-Place Binder Grades



Binder Adjustments

BP Mixes

Reduce Virgin Binder Low Temperature by One Grade

- 10% Binder Replacement from RAS
- 20% Binder Replacement from RAP

Verification of Final Binder Grade Required for Mix Approval

- > 20% Binder Replacement from RAS
- > 40% Binder Replacement from RAP



Concern

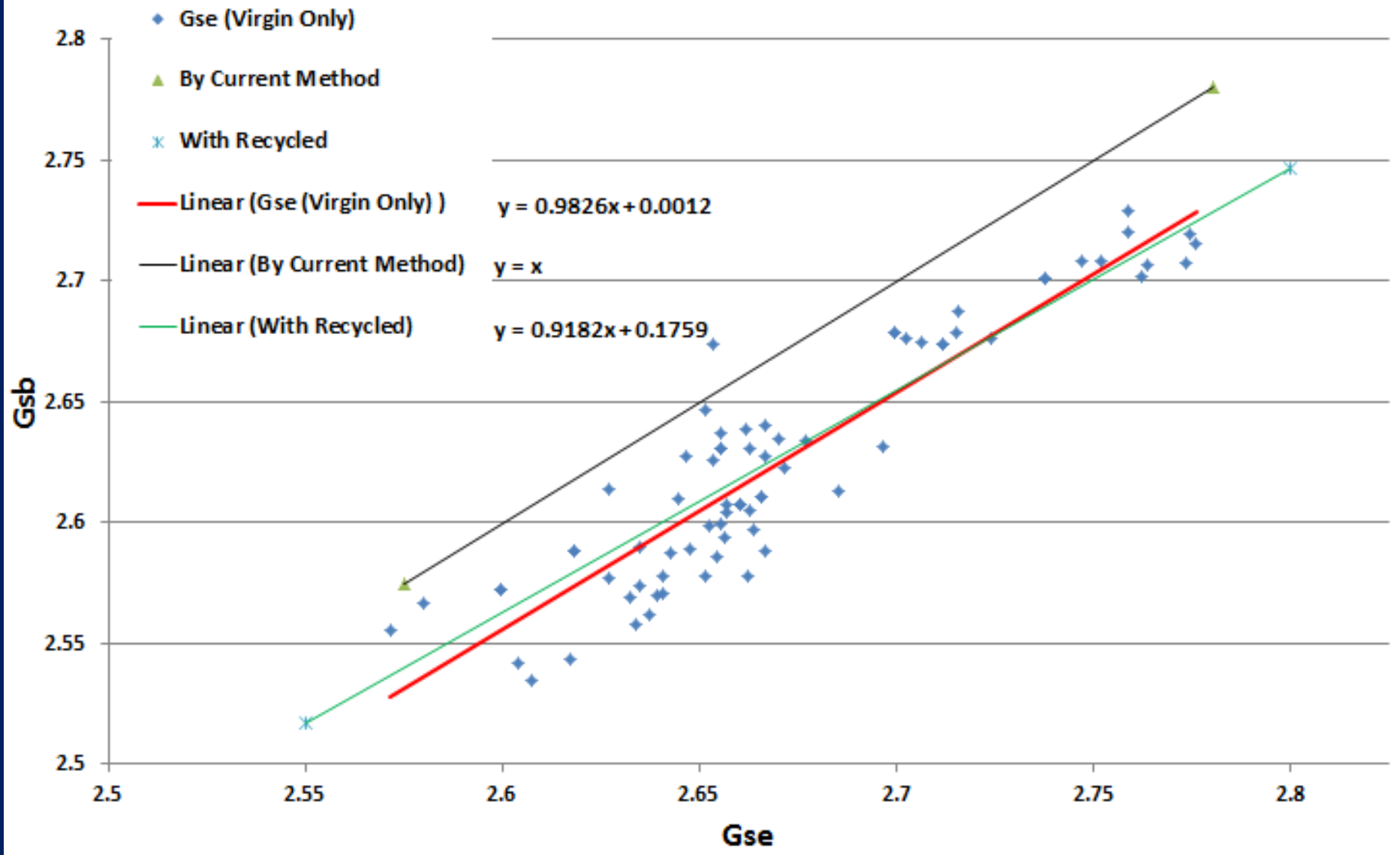
- Difficult to Obtain the True Gsb for RAP or RAS
- Using RAP Gse to Calculate Combined Gsb
 - Slightly Inflated VMA
 - Slightly Drier than Intended Mix

RAP Gse => RAP Gsb

$$Gse = \frac{100 - Pb}{Gmm} - \frac{Pb}{Gb}$$

$$VMA = 100 - \frac{Gmb \times Ps}{Gsb \text{ (Combined)}}$$

Gse Vs. Gsb - Virgin Mixes Only



Changes

Low Type Mixes

- Carry RAS Gravity Recommendation from 2013 Joint Surface Leveling Team to BP/BB Pavement mixes.

$$\text{RAS } G_{sb} = 2.600$$

- Use 0.98 Correction for RAP with All Low Type Mixes

$$\text{RAP } G_{sb} = \text{RAP } G_{se} \times 0.98$$

BP & BB Mixes

- Minimum VMA Increase of 0.5 at 40% Virgin Effective Binder Replacement for 401 Mixes

High Friction Surface Treatment



Calcined Bauxite Aggregate and a Polymeric Resin



High Friction Surface Treatment

- Polymeric resin binder system used to bind the ¼ inch high friction aggregate.
- Used for Spot Treatments
 - Geometry, Poor Drainage, Short Stopping Distances
- HFST is **NOT** a Preventative Maintenance Treatment.

Questions

