Paving Over Crack Filling & Everything You Need to Know About Tack Coats

Ohio Asphalt Paving Conference
Fawcett Center
February 6, 2008
Paving Over Crack Filling

Sealants Reflecting through Overlays

• Not a new phenomenon
• Widespread Awareness in the 70’s
  – Polymer Modified Mixes
  – Pavement Preservation Efforts
• Not all Overlays
  – Generally Rare
  – Several Compounding Issues
Paving Over Crack Filling

Pavement Preservation Efforts

Hot-Applied Rubberized Asphalt Sealant
- Most Commonly Used
- Cost-Effective
- When Life Cycle Cost Is Considered (Per SHRP H106)
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Sealer Reacts to HMA Overlay

- Softens/Expands
  - Softening Point 175 – 225°F
- Wick up into HMA
  - Trapped moisture
- Causing Bumps
- Weak spots
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Crack Filler “wicks up” into the HMA

Existing Pavement
Paving Over Crack Filling
Paving Over Crack Filling
Paving Over Crack Filling
Compounding Issues

- HMA Mix Type
- Roller Types
- Compaction Procedures
- Crack Sealant Type
- Application Procedures
- Age of Sealant
Compounding Issues

• HMA Mix Type
  • High Temperature Modified mixes
  • Thick Lifts vs. Thin Lifts
  • Harsh, hard to Compact
Compounding Issues

- Roller Types
  - Heavy Rollers
  - Static vs. Vibratory
  - Pneumatic Rollers vs. Steel Wheel
Compounding Issues

• Compaction Procedures
  • Excessive Number of passes
  • Static vs. Vibratory
Compounding Issues

- Sealant Type
  - Higher Softening Temperature
- Cost vs. Benefit
  - Wait more than One year
  - Less than One Year
Compounding Issues

• Age of Sealant
  • Age hardened
    • Older than One year
    • Less than One Year
  • Route or Mill to Remove.
Paving Over Crack Filling

Rotary Impact Router

Vertical Spindle Router

Random Crack Saw
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Milling to Remove Sealant
Compounding Issues

- Sealant Application Procedures
- Amount
- Configuration.
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Placement Configurations

Flush Fill

Capped

Material

Crack

Material

Crack
Paving Over Crack Filling

Placement Configurations

Simple Band-Aid

<table>
<thead>
<tr>
<th>Band-Aid</th>
<th>1&quot;</th>
</tr>
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<tbody>
<tr>
<td>Material</td>
<td>1/8&quot; Thick (typical)</td>
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Band-Aid with a Reservoir

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Paving Over Crack Filling

Recommended Placement Configurations

Deep Reservoir-and-Recess

<table>
<thead>
<tr>
<th>Material</th>
<th>Reservoir</th>
<th>Crack</th>
<th>Backer Rod</th>
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<tbody>
<tr>
<td></td>
<td>3/8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1/4&quot;</td>
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Standard Reservoir & Recess

<table>
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<tr>
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Evaluating the Potential

- Sources of Additional Information
  - Pavement Management System
  - Maintenance Records
  - Test Strips
Paving Over Crack Filling

New Technology

Warm-Mix Asphalt
Tack Coats
Tack Coats

Key component of a quality HMA paving
- Bonds to underlying layers
- Achieves maximum pavement strength
- It prevents delamination
- Ensures long-term performance
Tack Coats

Equipment
- Well Maintained
- Functioning Properly
- Capable of maintaining Temperature & Pressure
  - Slow setting asphalt emulsions SS-1h
  - Spraying temperature between 75° F and 130° F
Tack Coats
Tack Coats

NOZZLE ANGLE SETTING: 15 TO 30 DEGREES

SPRAY BAR AXIS

4 IN.

SINGLE COVERAGE

DOUBLE COVERAGE

TRIPLE COVERAGE
Tack Coats

Pressure Distributor
Tack Coats

Calibrate Distributor
Tack Coats

- Slow setting emulsion are more stable
- Can be diluted in the field
  - Carefully, by adding water to the emulsion
  - Adding the emulsion to water may cause the tack to break.
- The dilution rate should be 1:1
- Dilution Allows Distributor
  - To Shoot at a Higher Spread
  - Higher Pressure
  - With Better Control
  - 90% Uniform Coverage of the Surface
Heavy Tack Coat
# Tack Coats

## Typical Application Rates

<table>
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<tr>
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<th>Rate *</th>
<th>(gallons/sy)</th>
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<tbody>
<tr>
<td></td>
<td>Residual</td>
<td></td>
</tr>
<tr>
<td>Existing Pavt Condition</td>
<td>Undiluted</td>
<td>Diluted (1:1)</td>
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<tr>
<td>Existing Pavt Condition</td>
<td>.03</td>
<td>.05</td>
</tr>
<tr>
<td>New Asphalt</td>
<td>to</td>
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<tr>
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# Tack Coats

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Traffic should be kept off the tacked surface
  • Good practice
    • Tack just far enough ahead
    • Sufficient time for the tack coat material to set
    • If the road surface must be open to traffic
      • Use clean dry sand cover
        • Provides friction
        • Prevents pick-up
        • Typical rate is 4 to 8 lbs/sy.
    • If the Surface gets dirty – Re-Tack
    • When in doubt – Re-Tack.
Questions?

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&
Everything You Need to Know
About Tack Coats

FPO Technical Bulletins
www.flexiblepavements.org

Asphalt Institute MS-19
www.asphaltinstitute.org
Thank You!

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