TACK, SEAL, OR BOND
You Make The Call

2014 Transportation Short Course
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Introduction & History

- Importance of Bond Between Layers
- Tack or Seal
- Issues with Tack Coats
- Spray Paver
- Non-Tracking Tack
- Alternates
Typical Application Rates

- **Tack**
  - Conventional and Non-Tracking Tacks

- **Bond**
  - Spray-Paver and Hot Applied Non-Tracking Materials

- **Seal**
  - Item 316 & 318 Surface Treatments

**Application Rates (Residual) gal/SY**

0.0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7
Treatment Characteristics

- Treatment Thickness (inches)
Treatment Characteristics

0.0 0.05 0.1 0.15 0.2 0.25 0.3 0.35 0.4 0.45 0.5 0.55 0.6 0.65 0.7

Shot Rate (gal/SY)

0 0.1 0.2 0.3 0.4 0.5 0.6

Thickness (in)

Waterproofing  Treatment Thickness (inches)
Treatment Characteristics

- Waterproofing
- Treatment Thickness (inches)
- Bond Strength

Shot Rate (gal/SY)

Thickness (in)
**Typical Application Rates**

- **Tack**
  - Existing Structure in Good Shape
  - Use Non-Tracking Materials Where Tracking is an Issue

- **Bond**
  - Thin Lift Mixes – Bond is Critical
  - Urban Areas where Tracking and Loose Aggregate is an Issue

- **Seal**
  - Existing Structure Needs to be Sealed
  - Mat Thickness Enough not to Cause Flushing

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- 0.7
Types of Applications - Tack

- **Hot- Applied Tack Coat**
  - Ultrafuse: the first one on the market
  - Seems to be a premium bond.
  - Tracking performance is excellent!
    - FAST setting
  - Expensive?
  - Problems?
    - It’s hot applied

- Maybe other players coming into the game.
Types of Applications - Tack

- Emulsified Tack Coat
  - Trackless Tack, E-Tac, etc.
  - Bond testing is good.
  - Tracking performance varies.
  - Competitive prices.
  - Problems?
    - Lots of materials – properties all over.
<table>
<thead>
<tr>
<th>Property</th>
<th>Trackless Tack</th>
<th>Ultrafuse</th>
<th>MOS-50</th>
<th>FastSet</th>
<th>NanoTac</th>
<th>E-Tac</th>
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<tr>
<td>Saybolt Viscosity</td>
<td>15 min</td>
<td>n/a</td>
<td>21-250</td>
<td>30</td>
<td>30</td>
<td>15-100</td>
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<td>Storage stability, 1-day settlement</td>
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<td>1%</td>
<td>1%</td>
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<tr>
<td>Settlement, 5-day</td>
<td>2%-5%</td>
<td>n/a</td>
<td>1%</td>
<td>1%</td>
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<tr>
<td>Sieve test</td>
<td>0.3%</td>
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<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
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<td><strong>Track free time</strong></td>
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<td><strong>2</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
<td><strong>15</strong></td>
<td><strong>30</strong></td>
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<tr>
<td>Residue</td>
<td>50</td>
<td>100</td>
<td>50-60</td>
<td>65</td>
<td>61.5</td>
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<td>Dilute?</td>
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<td>No</td>
<td>??</td>
<td>40%</td>
<td>50%</td>
<td>No</td>
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<td>Test on residue:</td>
<td>Residue Pen</td>
<td>20 max</td>
<td>25 max</td>
<td>12 max</td>
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<td>40-90</td>
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<td>Min Solubility</td>
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<td>97.5</td>
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<td>Min Soft point</td>
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<td>170</td>
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<td>Min DSR, 82°C</td>
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<td>Min 275°F Viscosity</td>
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<td><strong>APPLICATION RATE</strong></td>
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<td><strong>0.12</strong></td>
<td><strong>0.20</strong></td>
<td><strong>0.1</strong></td>
<td><strong>0.11</strong></td>
<td><strong>0.065</strong></td>
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</table>
Don’t “spray and pray” –

- Know which product you have!
- Communicate with the vendor
  - Handling/dilution
  - Application rates are critical!
- Shoot a test strip
  - Even application
  - Check for tracking
Types of Applications – Spray Paver

- Tack and paver all in one.
- Makes a good bond.
- Tracking is a non-issue.
Things to Watch For

- Look for an even distribution of emulsion and a consistent texture and color behind the spray bar
- Make sure emulsion breaks properly
- Be careful of fat spots
  - Paver sitting without tray recirculating
  - Problem with nozzle
  - High spot in the pavement surface
- Clean lane out in front
- Continuous operation
Types of Application – Underseal

- It’s just a seal coat.
  - Everybody can do it.
  - Best practices are familiar.

- Lots of choices for materials:
  - AC/Emulsion/Asphalt Rubber
  - Aggregate type/size (SAC-C?)

- Can be a driving surface for extended time periods.
- Thick application of asphalt/good seal.
- Can help with reflective cracking. (SAMI)
Summary

- Tack, Seal or Bond?

  - Things to consider:
    - What’s going on top?
    - What’s underneath?
    - How long will it see traffic?
    - Contractor skill/comfort level/equipment.
    - Manufacturer’s recommendations.

- You make the call!
Thank You