BondTekk®

Bonded Pavement Technologies To Mitigate Rutting, Cracking and Fatigue

Transportation agencies are faced with several pavement performance issues and challenges:
- Rutting, cracking, fatigue, slipping, longitudinal cracking and delamination to name a few.
- The problems may be associated with poor pavement layer bonding

Why?
Pavement layer de-bonding results from:
- The wrong quantity or low quality tack coat
- Non uniform tack application
- Construction practices that necessitate driving on the tack coat to place the mix
- No adjustment in application rate for surface type, mix or conditions

At Road Science™, Division of ArrMaz we have improved pavement layer bonding.

How?
- Utilizing polymer modified asphalt emulsions
- Adjusting the application rate to create a voidless height in the mix (asphalt rich layer at the interface) based on existing surface and mix type
- Keeping construction equipment off the tack by replacing the distributor with an emulsion tank, spray system and paving machine in one unit

Through years of field trials and applied jobs, Road Science has developed the following application guide to help agencies and contractors to get superior results over various surface types:

<table>
<thead>
<tr>
<th>Existing Surface Type</th>
<th>Recommended Tack Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bond (gal/yd² @65% AC)</td>
</tr>
<tr>
<td>Asphalt Concrete</td>
<td>0.12</td>
</tr>
<tr>
<td>Aged Asphalt Concrete</td>
<td>0.12</td>
</tr>
<tr>
<td>Milled Asphalt Concrete</td>
<td>0.18</td>
</tr>
<tr>
<td>Chip Seal</td>
<td>0.18</td>
</tr>
<tr>
<td>PCC</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Additionally, Road Science provides expertise and helpful support for your project through:
- On-site field support
- Crew training
- Performance testing to ensure bond strength

www.roadscience.net
Field Performance—How Agencies and Contractors See the Benefits

BondTekk from Road Science provides an engineered solution that will meet or exceed a minimum bond strength and provide a cost effective system.

- Lower Life Cycle costs versus the alternatives
- Proven results through years of field trials
- Better Performance versus the alternatives
- Engineered for the type of surface (HMA, PCC, Milled, Chipseals, etc.)

Compare BondTekk to the Alternatives:

Ultimately the true test is how the pavement performs. Road Science not only understands that, they are experts at determining the right calibration of variables which confront contractors in meeting performance specifications. The accompanying chart to the right shows the relative bond energy of BondTekk vs. traditional methods. The chart below shows the bond energy as developed from the load vs. displacement curve from the direct tensile bond test:

The BondTekk polymer modified emulsion provides superior bond strength and energy compared to hard tack coats like trackless tack which may lose bond from repeated applied loads (brittle failure).

2009 NCAT test track data comparing tack materials found:

- Trackless tack under PFC had surface cracks after 2.2m ESAL (cracking and pumping at 6.5 m).
- PMAE spray paver placed under the same PFC had surface cracks after 4.1m EASL (very good at 6.5m)

Road Science has used both lab and field resources to test tensile bond energy with varying tack coat materials and application shot rates over varying surfaces. Based on this experience, Road Science is able to provide a more efficient and higher performing solution.

For more information and to learn how BondTekk can solve your pavement problems, contact your local Road Science representative or call 877 354 1851.