2015 PAPA
Regional Technical Meetings

Recycled Tire Rubber Projects

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Recycled Tire Rubber

- Why is rubber used in pavements?
- History of use in PA
- Gap-Graded and Dense-Graded
• Minimum 15% rubber by weight of asphalt binder

• On-site blending or at a facility

• Wet Process
Asphalt Rubber Gap-Graded Mix

Advantages of Gap-Graded

• Higher AC

• Reduced Drain-Down

• Increased Flexibility

• Improved Resistance to Cracking

• Long-Term Durability
**Dense-Graded Rubber Mix**

- Continuously Graded
- Wet Process
- Lower Viscosity, Rubber Content, and Rubber Size Than Gap-Graded
- Limited Use Nationwide
• AASHTO M320-14

• PennDOT’s Predominant Mix Type
Dense-Graded Rubber Mix

Advantages of Dense-Graded

- Reduced Permeability
- Improved Resistance to Cracking
- Pavement Layers
- Long-Term Durability
Asphalt Rubber Gap-Graded Pilot Projects

- I-78 in Berks County
- US 15 in Snyder County
- US 15 in Adams County
- I-376 in Lawrence County
I-78 Gap-Graded Pilot Project

- Asphalt Rubber 12.5mm WMA Wearing Course
- Control section used a polymer modified PG 76-22, 9.5mm mix
- Utilized the ASTM D 6114, Type II, "Wet Process"
  - Rubber blended with liquid binder in reaction tank
  - Binder receives good properties of tire rubber (i.e. anti aging, UV protection)
  - Higher film thickness achieved on aggregate particles
  - Produces a grade bump (PG 64-22 becomes ≈78-24)
Dense-Graded Pilot Projects

- District Memo
- Pilot Projects
## Dense-Graded Pilot Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>CRMAB Paving (Miles)</th>
<th>Pavement Layers to use CRMAB</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>Wearing</td>
</tr>
<tr>
<td>2</td>
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</tr>
<tr>
<td>3</td>
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</tr>
<tr>
<td>4</td>
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<tr>
<td>5</td>
<td>4.00</td>
<td>Wearing</td>
</tr>
<tr>
<td>6</td>
<td>1.18</td>
<td>Wearing &amp; Binder</td>
</tr>
<tr>
<td>7</td>
<td>0.48</td>
<td>Wearing</td>
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</tbody>
</table>

Total Length of CRMAB Paving = 14.83 Miles
Accelerated Innovation Deployment (AID) Grant

• FHWA AID Grant
  – Innovative Technologies
  – Improve Standards for Construction Quality
  – Constructing Longer Lasting Highways

• Up To $1 Million Grant
  – 80% Grant and 20% State Match

• Monitor and Evaluate Projects