Recycled Tire Rubber

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Recycled Tire Rubber

- Why is rubber used in pavements?
- History of use in PA
- Gap-Graded and Dense-Graded
Dense-Graded Rubber Mix

- Continuously Graded
- Wet Process
- Lower Viscosity, Rubber Content, and Rubber Size Than Gap-Graded
- Limited Use Nationwide
- CRMAB
Dense-Graded Rubber Mix

**Advantages**

- Reduced Permeability
- Improved Resistance to Cracking
- Pavement Layers
- Long-Term Durability
Dense-Graded Pilot Projects

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

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<th>ECMS</th>
<th>District</th>
<th>SR</th>
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<th>CRMAB Pavement Layers</th>
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- 1 Additional Pilot Project in 2016
CRMAB Special Provision

- Clearance Transmittal for CRMAB dense-graded SSP revisions for Solubility and Separation was sent out on 02/09/16.
- Comments were due 03/09/16.
- Currently addressing comments.
Asphalt Rubber Gap-Graded

- What is “Asphalt Rubber”?
- Gap-Graded
Asphalt Rubber Gap-Graded Pilot Projects

- I-78 in Berks County  (ECMS: 87631)
- US 15 in Snyder County  (ECMS: 87769)
- US 15 in Adams County  (ECMS: 90201)
- I-376 Lawrence County  (ECMS: 81954)
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”
I-78 Gap-Graded Pilot Project

- Rubber Hopper
- Mixing Chamber
- Computerized Controls
- 2 Compartment Reaction Tank
- Heat Exchanger
- Super Sacks of CR
- Computer Interlock

2009/06/16
I-78 Gap-Graded Pilot Project
I-78 Gap-Graded Pilot Project
Challenges

- Slightly Sticky Texture; material had a tendency to adhere to paving equipment
- Downy Fabric Softener acted as lubricating agent *(prevented sticking)* when applied to rollers and spray bar system
- Compaction on leveling course
- Tight/condensed schedule
- High AC contributed to reduced-sized batches; reduced max load capacity in trucks
I-78 Gap-Graded Pilot Project

Successes

- IRI: 52.64
- Two Bonuses Received on Project:
  - Ride Quality Incentive
  - Joint Density
- No Raveling of Exposed Wedge Joint
- Completed by deadline despite a new material and tough spec
- Worked jointly with several PennDOT Districts to complete project
- Performing exceptionally well to this day
**Project Selection Guidelines**

- Description of Rubberized Asphalt Binders and Asphaltic Concrete Mixtures

- Rubberized Asphalt Mixture Types
  - Gap-Graded
  - Dense-Graded
  - Open-Graded

- Recommendations for Implementation
Questions?