

ALABAMA ASPHALT PAVEMENT ASSOCIATION



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Alabama Asphalt Pavement Association

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**RAS PRESENTATION
ASCE MEETING – MONTGOMERY
BRANCH
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By

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Alabama Asphalt Pavement Association

Reclaimed Asphalt Shingles (RAS)

- ▣ Reclaimed Asphalt Shingles (RAS) Can Be A By-Product Of The Manufacturing Process For Roofing Shingles Or Roofing Shingles From Consumer Waste.
- ▣ Reclaimed Asphalt Shingles (RAS) Are Generally Composed Of :
 - Approximately 20% To 30% Liquid Asphalt.
 - Approximately 30% To 45% Mineral Aggregate.
 - Approximately 18% To 35% Fiber.



Why Recycle Shingles

- Abundant Supply
- Save Landfill Space
- Save A Valuable Resource

Why Recycle Shingles



Abundant Supply

- Approximately 11 Million Tons Of Waste Asphalt Roofing Shingles Are Generated In The U.S. Per Year
- 10 Million Tons Are Generated From Tear-Offs
- 1 Million Tons Are Generated From Manufacturing Waste

Why Recycle Shingles

Save Landfill Space

- 11 Million Tons Of Shingles Generated Per Year Would:
 - Make A Pile As Tall As The Empire State Building
 - A Footprint The Size Of 4-Football Fields



Why Recycle Shingles



Save A Valuable Resource

- 11 Million Tons Of Waste Shingles
- Approximately 25% Liquid Asphalt
- 2 ³/₄ Million Tons Of Liquid Asphalt
- 110,000 Transport Loads Of Liquid Asphalt Per Year

Why Recycle Shingles



What We Know?

It's Good For The Environment!



ASPHALT

SMOOTH | DURABLE | SAFE | QUIET



Manufacturer's Waste

- Factory Rejects , Over runs, And Tabs
- Not Tear-Off's

Sources of Shingles





Roofing Contractors

- Residential Roofing Is Our Primary Source Of Tear-Off Shingles
- Tear-Off Or Post Consumer Shingles

Sources of Shingles



Roofing Contractors



Sources of Shingles

- Know Where Roofing Contractors Are And Where Your Shingles Are Coming From
- Consider Them A Material Supplier
- They Are Also On Your QC/QA Team
- You Will Get Your Cleanest Shingles From Roofing Contractors
- They Will Save A Great Deal Of Money Versus Hauling To A Land Fill





Grinding / Processing Shingles

- Contract Out Grinding
- Self Perform Grinding
- End Result – Consistent Product

Grinding / Processing Shingles



Contract Out Grinding

- Grinding Services Provided By Several Regional Companies
 - A Typical Grinder Is Capable Of Producing Over 200,000 Tons Of Ground Shingles Per Year
 - That is enough material to produce 2 to 5 million tons of asphalt

Grinding / Processing Shingles



Self Perform Grinding

- There Are Different Types Of Grinders To Choose



Grinding / Processing Shingles







End Result – Consistent Product

➤ Check Your Product

- Make Sure Your Grinder Makes A Consistent Product
- The Finer The Better – 1/2" Minus







What To Consider?

Storage

Limit Storage Time

- Processed Material Wants To Stick Back Together

To Prevent This Sticking
Pre-Blend With
RAP Or Sand

Keep Dry And/Or
Drainable



ASPHALT

SMOOTH | DURABLE | SAFE | QUIET

Incorporating Shingles Into The Asphalt Mix



- Using Shingles Can Be Simple
- Mix Design
- Blending RAP & RAS
- Quality Control Testing
- Finished Product

Using Shingles Can Be Simple



Using Shingles Can Be Simple

- ❑ You Don't Have To Add A Lot Of Extra Equipment
- ❑ Let's Say You Only Have A Single RAP Bin
- ❑ All You Really Need To Do Is Mix The Ground Shingles With RAP By Weighing A Loader Bucket Of RAP And The Same Loader Bucket With RAS
- ❑ You Can Installed A Dedicated RAS Bin

Using Shingles Can Be Simple





Mix Designs



AASHTO PP-53-09

Design Considerations When Using
Reclaimed Asphalt Shingles in New Hot
Mix Asphalt

Using Shingles Can Be Simple



Mix Designs

Using Shingles Can Be Simple





Blending RAP & RAS

- Say The RAP Has 5% AC And The RAS Has 25% AC You Would Simply Tell The Plant Computer That The AC Content Of The Blended RAP/RAS Is 10%



Using Shingles Can Be Simple



Blending RAP & RAS

- The Mix Design Will Dictate The Blend You Need
- This Computerized Blending Unit Measures The RAP And RAS For The Precise Blend



Using Shingles Can Be Simple



Blending RAP & RAS

- This Pile Is Moved Into The Plant Operating Pile Prior To Charging The RAP Cold Feed Bin With The Mixture



Using Shingles Can Be Simple



Quality Control Testing

- Creating And Maintaining Your Mix Designs
- Testing Your Mix



Using Shingles Can Be Simple



Finished Product

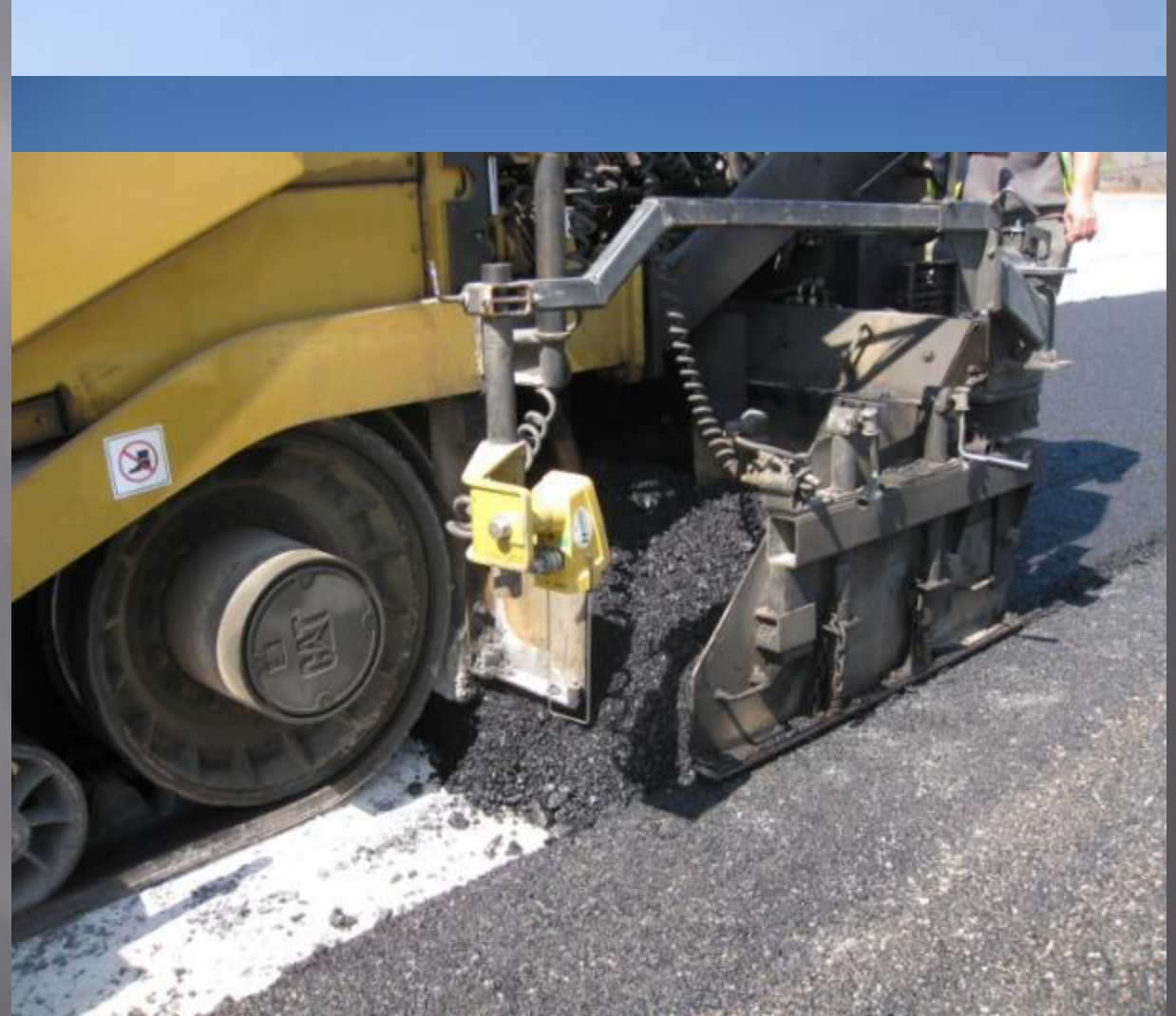
- Randomly Test This Blend Of RAP/RAS To Be Sure You Are Achieving The Proper AC Content And Gradations.
- QC Testing Insures That You Are Meeting All The Required Specifications Such As Air Voids, VMA, Gradation, And AC Content.



Using Shingles Can Be Simple



It Is All About The Finished Product



Using Shingles Can Be Simple

Economics Of RAS

- Value Of RAS
 - Assume AC Liq. Ton @ \$450.00 / Tn
 - Assume Virgin Agg. @ \$ 15.00 / Tn
 - RAS Of 20% AC And 33% Agg

- Per Ton Value Of RAS

$$.20 \times \$450.00 = \$90.00$$

$$.33 \times \$ 15.00 = \underline{\$ 5.00}$$

One Ton Of RAS = \$95.00*

*Does Not Include Costs To Haul, Process, And Store.

ALDOT RAS SPECIFICATIONS

- ▣ ALDOT Section 410
- ▣ ALDOT Section 423
- ▣ ALDOT Section 424

ALDOT RAS SPECIFICATIONS

- ▣ For Wearing Surface Layers (Superpave And SMA) , Up to 5% RAS May Be Used In Asphalt Mixes.
- ▣ For Binder And Base Layers (Superpave And SMA) , Up to 5% RAS May Be Used In Asphalt Mixes.
- ▣ For Permeable Asphalt Treated Base (PATB), No RAS May Be Used In Asphalt Mixes.
- ▣ For Open Graded Friction Course (OGFC), No RAS May Be Used In Asphalt Mixes.

ALDOT RAS SPECIFICATIONS

- ▣ RAS Gradation – 100% Passing 1/2" Sieve And Minimum 95% Passing 3/8" Sieve.
- ▣ All Mixes Containing RAS Are Designed At 3.5% Air Voids.
- ▣ If RAS Is Part Of JMF For SMA Mixes, No Fiber Stabilizer Is Required In Mix.

Questions ?????



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