

# Bituminous Roadways, Inc.

Paving the way for over 60 years



Presentation at the  
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Technical Conference  
By Dusty Ordorff

# Bituminous Roadways, Inc

- Asphalt paving contractor
- Founded in 1946
- Three permanent asphalt plants
- Serve the Minneapolis/St. Paul metro area



# Mn/DOT Shingle Spec.

- Shingles used must be scrap from shingle manufacturers only → No tear-offs (yet).
- Sources must be certified
- Gradation of ground shingle scrap:
  - 100% passing the ¾” sieve, and
  - At least 95% passing the #4 sieve
- Maximum of 5% by weight allowed



# Eleven Years of Shingle Recycling Experience

- 1,600,000 tons of hot-mix asphalt produced with shingles added
- = 80,000 tons of shingles



# Objective #1

- Incorporate shingles in HMA, while maintaining quality standards that meet or exceed our customers expectations

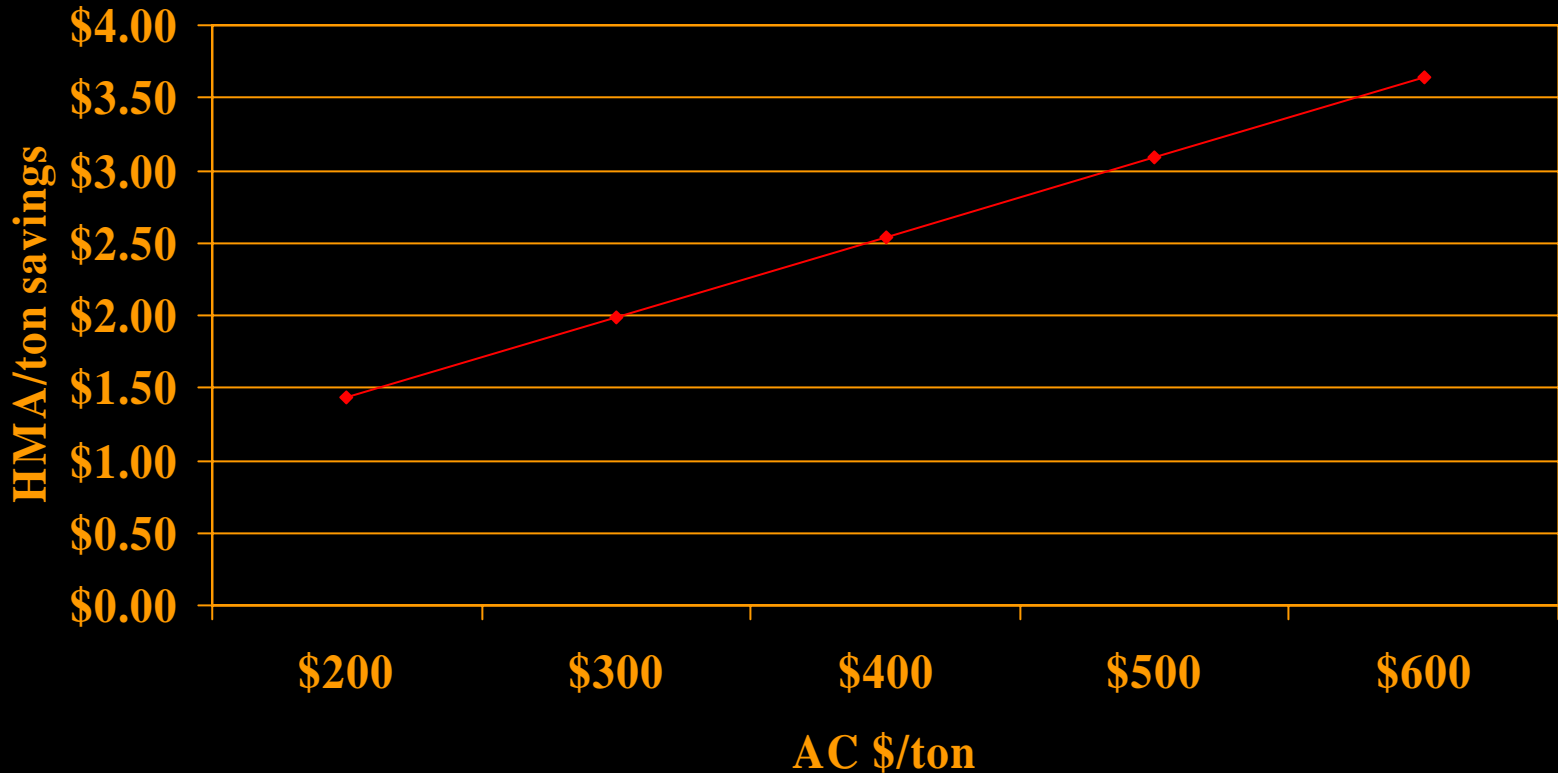


# Objective #2

- Utilize all shingle scrap received from supplier in HMA- avoid hauling to landfill



# Adding 5% Shingles to HMA



# Experience With Use of Ground Shingles

- Final PG of AC in mixture typically increases (1) temperature grade on the high end – low end remains unchanged
- Achieve specified density on roadway- majority of time, bonus pay





# Experience

- Processed shingles are uniform/consistent – less variability compared to RAP
- Shingle supplier QC critical





# Processing and Handling

- Grinding has very high wear on equipment
- Low production at about 20 tons per hour
- Extended storage of ground shingles results in re-agglomeration (chunking)
- Grind during the paving season (just-in-time for HMA production)



# Processing and Handling cont.

- Shingle scrap must be free from other debris to protect grinder
- We grind to  $\frac{3}{4}$ " , using  $\frac{5}{16}$  inch screens for final product
- Water is necessary to aid with cooling and controlling dust
- Feed ground shingles into our asphalt plants through standard recycle bins







# The Future

- Consider blending ground shingles with sand or RAP to avoid agglomeration
- Fiberglass contribution value?
  - Fibers are used as anti-draindown additives for SMA & Porous pavements
- Tear-offs
  - Successful completion of (2) projects in MN



# Recycled Asphalt Pavement (RAP)

- Minnesota has been using RAP in HMA for 30 years
- 30% RAP allowed in all wearing courses & non-wearing courses > 1 million ESAL's
- 40% RAP allowed in non-wearing courses < 1 million ESAL's



# RAP use in Minnesota

- Millings & processed rubble asphalt are allowed
- Millings typically have 5-6 % AC content
- Processed rubble typically has 4-5% AC content



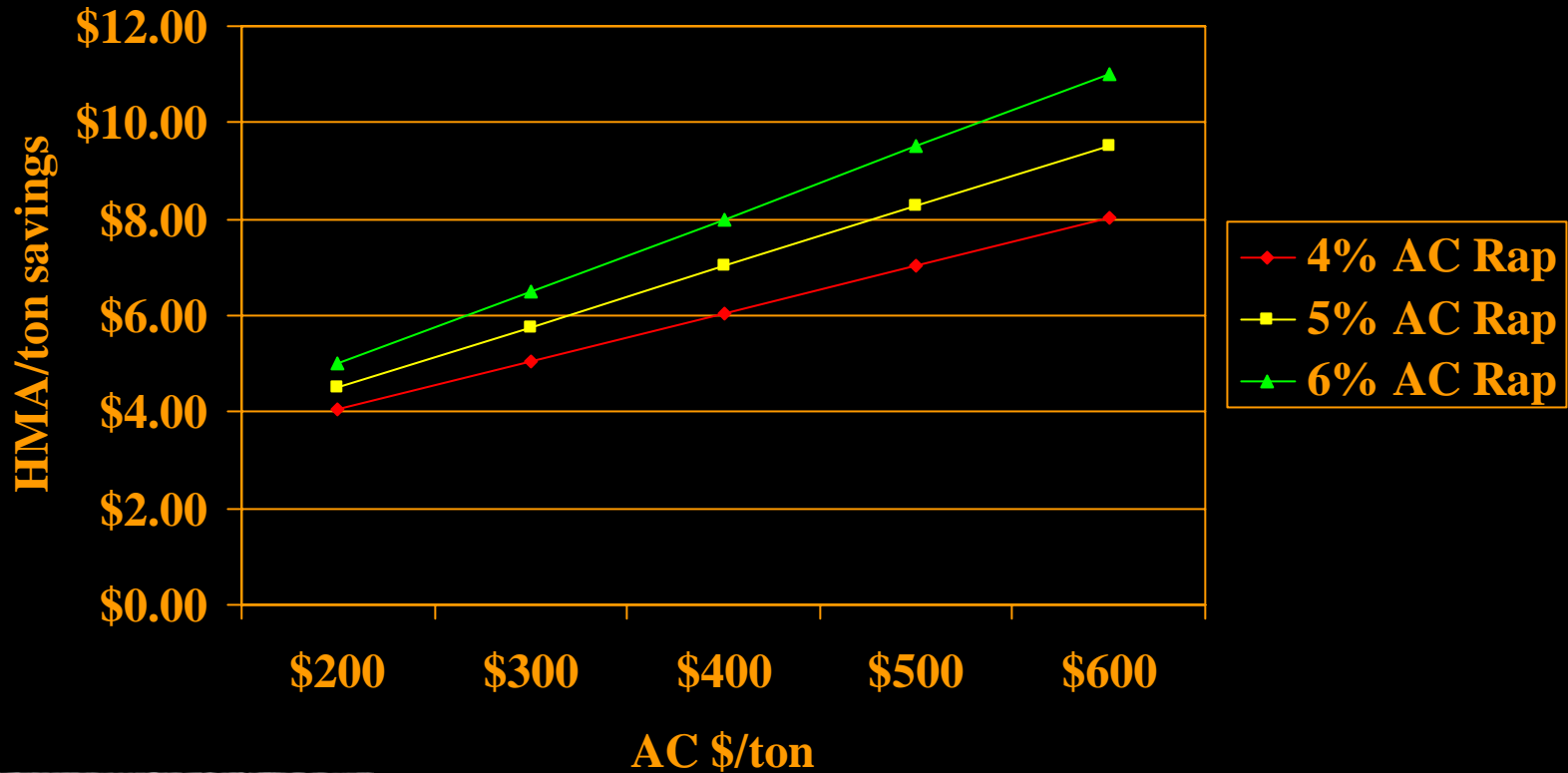


# RAP use in MN cont.

- Majority of producers use a minimum of 20% RAP in HMA production
- Per MnDOT's PG binder guidelines, when XX-34 asphalt cements are specified for new construction, the producer cannot exceed 20% RAP in mixture



# Adding 25% RAP to HMA



# RAP trends in MN

- Less available
- Reclaiming & on-site crushing (for aggregate base) is becoming more popular
- As AC & aggregate prices increase, the value increases



# Education

- Variable perception by specifying agencies
  - Make an effort to educate them on the benefits of recycling
  - Set-up a site visit and show them the process



# Future of RAP

- Incoming rubble asphalt needs to be monitored
- Demand will continue to increase
- Less available due to advances in HMA technology



# 25<sup>th</sup> Annual Bituminous Conference in Minnesota November 30th, 1978

- Why's & When's of Recycling  
Economics: *“We are past the point of recycling for recycling's sake”.*





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