Segregation of Asphalt Mixtures

Causes, Identification, and Cures
End of Load Segregation

Detrimental Effects of Segregation in the Vat

1. Non-Uniform Appearance
2. Low Density and Density Failures
3. Negative Impact on Rideability
4. Raveling of the Pavement
Segregation

What do you do if your see it?

Communicate
Determine source
Stop / slow production

Raveling
Location of Segregation

- Key step is to determine where segregation is present and/or being caused
  - Plant
    - Stockpiles, plant, storage silos
  - Haul trucks
  - Paver
    - Mix dumping, improper paver operation
Placing HMA

- Segregation Trouble Spots
  - Trucking Operations
    - Improper Loading
    - Improper Unloading
  - Paving Operations
    - Improper hopper wing dumping
    - Running the paver hopper dry and moving forward before hopper is recharged
Mix Appearance - What can you tell by looking?

Three Drops

Correct

Incorrect
LARGER DUMPING ANGLE ASSURES MASS DISCHARGE

Sources of Segregation at the Paver
Causes of Segregation - Paver

1. Improper dumping into hopper
2. Mix level in hopper too low
3. Improper dumping of hopper wings
4. Improper feed to augers
5. Improper operation of augers
6. Stopping the paver between loads

SEGREGATION CHECKLIST

PAVER
- MINIMIZE FOLDING WINGS (TO PREVENT MIXTURE COOLING AT WING WALLS)
- NEVER LET HOPPER RUN LESS THAN 25%
- NEVER EXPOSE THE CONVEYING SYSTEM
- ADJUST FLOW GATES TO DELIVER A CONTINUOUS AND ADEQUATE AMOUNT OF MIX TO THE AUGERS
- AUGERS NEED TO BE PROPER LENGTH
Placing HMA

Flooding hopper with HMA
Proper Flipping of Wings
SEGREGATION CHECKLIST

PAVER

- AUGER LENGTH = 18" MIN. SPACE TO END
- OPERATE AUGERS AT LOW ENOUGH RPM SO AS NOT TO SLING MIX
- PERIODIC EDGE SEGREGATION CAN OCCUR IF THE AUGERS ARE RUN TOO SLOW OR STARVED
- WORN KICK BACK AUGERS WILL CAUSE CENTER SCREED MAT SEGREGATION
- MAINTAIN A UNIFORM PAVING OPERATION
SEGREGATION CHECKLIST

- **STOCKPILES**
  - CONSTRUCT IN LAYERS
  - USE HIGH WALL BULKHEADS
  - LOADER SHOULD DIG IN AND CURL BUCKET
- **COLD FEED BINS**
  - AVOID ADJACENT BIN SPILLAGE
  - AVOID CONING OF MATERIALS
  - MAINTAIN CONSTANT LEVELS
  - USE MULTIPLE BINS FOR COARSE AGGREGATE
Segregated Stockpiles

Re-Work Face of Stockpile

Bulkheads between Bins
Truck Box Segregation

Placing HMA
Placing HMA

TEMPERATURE DIFFERENTIAL - TRUCK BED

Placing HMA

TEMPERATURE DIFFERENTIAL - MAT w/PAVER
Placing HMA

MAT USING ROADTEC SHUTTLE BUGGY
Segregation

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