Flexible Slurry/Micro Surfacing

Roger C. Olson
Thomas J. Wood
MN/DOT Office of Materials
What are we trying to do?

• To develop a user friendly option to tight blading with HMA as pre-overlay treatment.
• Alternate to thin overlays as surface treatment.
Problems with current tight blading

- Has lower density than a normal overlay lift.
- Does not flow down into cracks and small potholes very well.
- Segregation
  - Temperature
  - Aggregate
- Leaves a rough surface to pave over.
Traditional Tight Blading.
Temperature Segregation!
Flexible Liquid Tight Blading

• What is it?
  – It is a high AC content Micro Surfacing mixture.
  – It has lower viscosity
    • Allow it flows into the cracks, dips and potholes.
  – Is self compacting.
  – Is self tacking.
  – Allows the material to be only placed where needed.
  – Environmentally friendly
    • Is made at ambient temperature
    • By-product is water
Flexible Liquid Tight Blading
Flowage mixture is only placed where needed.
No Segregation
What is the difference from traditional Micro Surfacing?

• Historically Micro Surfacing has been designed as a very tough mixture.
  – To be used as a rut filling
  – Surface treatment

• Because of the nature of the mixture almost all of the working cracks reflect though.

• The normal Micro Surfacing mixture has a very high viscosity that does not allow the mixture to flow into crack very well.
How is Micro Surfacing modified into Liquid Tight Blading.

• The total amount of emulsion is increased by 20%
  – Total residual AC is increased from 8.6% to 10.6%
  – AC to fines ratio of 1 to 1.

• The base AC used to make the emulsion is softer than normal Micro Surfacing AC.
  – PG 48 – 34
    • Residual grade a 57 – 34
  – PG 64 – 22 AC for regular Micro Surfacing emulsions.
    • Residual grade a 70 – 22

• Why?
  – Crack treatment.
  – More flexible
  – Improve flow-ability
Traditional Micro Surfacing
Flexible Micro Surfacing
Other possible uses of Flexible Liquid Tight Blade

- Preventing bumps in overlays caused by thick over bands.
Leveling coarse for other surface treatments
As Surface Treatment!
Shoulder Edge Drop Offs.
Construction Joint Failures.
Questions?
Thank You!