

SUPERPAVE Trial Mixes – Superior Paving's Experience

Dave Helmick

Executive Vice President



Concern with Mix Durability

- 15 years ago, most work was private
 - Asphalt mixes were designed using Marshall Mix Design
 - Mixes used RAP
 - Mixes had AC, mixes had “life”
 - Density was easier to achieve
- Last 15 years, increase in VDOT work
 - Mixes designed using SUPERPAVE
 - Mixes designed with higher RAP percentages
 - Mixes are coarser and have lower asphalt contents
 - Mixes were drier, looked 5 years old after placement
 - Vibratory rollers required to achieve density





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Actions Taken to Address Mix Durability

- Redesigns (add spec for no. 30 sieve)
- Addition of more liquid AC (50 gyrations)
- RAP adjustment for AC contribution
- Partnered with VDOT to improve mixes



2015 Pilot Study

- Superior Volunteered to design, produce and lay 3 mixes
 - SM-9.5 Bealeton Plant in Culpeper District
 - SM-9.5 Leesburg Plant in NOVA District
 - SM-12.5 Powell Lane Plant in Fredericksburg District



Fredericksburg Lab



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2015 Pilot Study

Leesburg Plant



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Fredericksburg Plant



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Bealeton Plant



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Mix Design and Production Considerations

- Aggregate changes for each new mix to meet proposed gradation bands
- Impacts of Design Changes on Mix
 - Increase AC content by 0.1%
- No production challenges



NOVA Site Potomac View Road



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Beauleton Site



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Mix Placement and Compaction Observations

- Surface appearance
- Crew said “it seems to come out from under the screed better”
- Less effort to get compaction
- One less roller pass

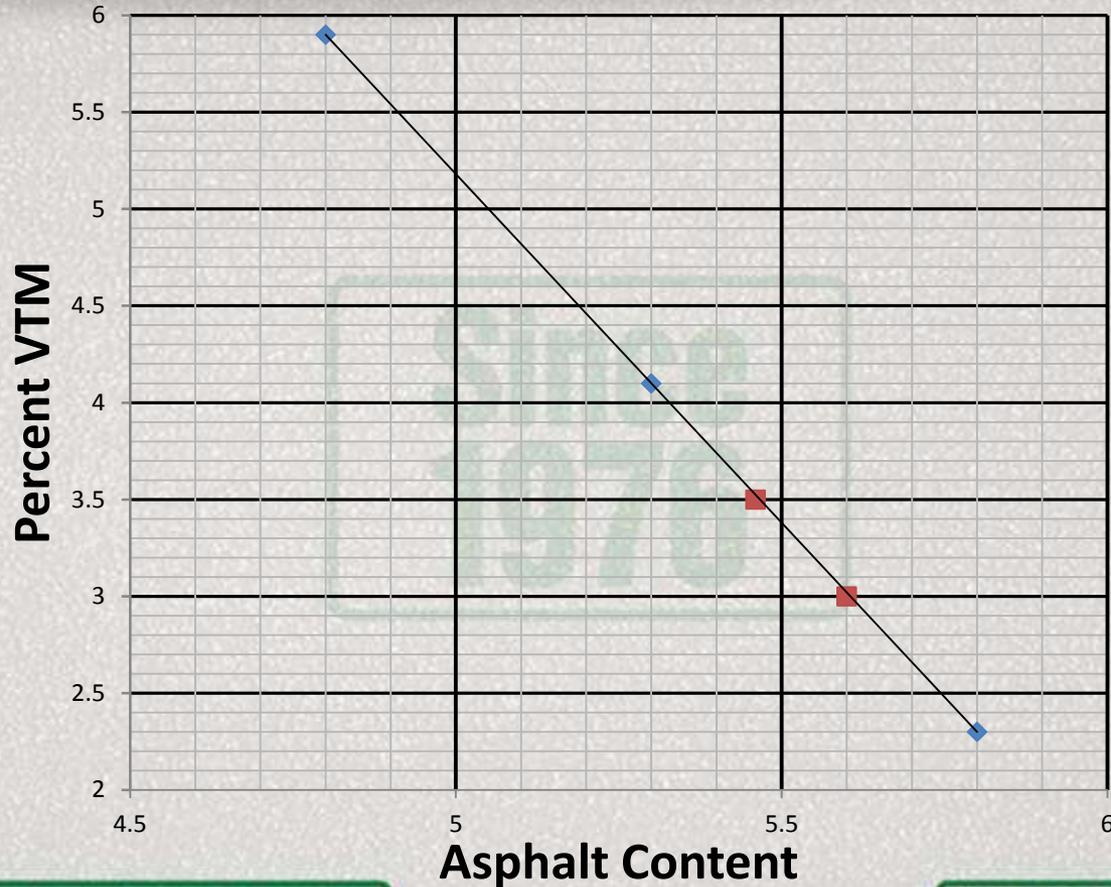


Dave Helmick's Next Steps...

- Good first step in revising gradations, look to moving gradations to fine side of maximum density line for surface mixes
- VTTI work and test results based on regressing air voids, look at designing with VTM = 4% and adding binder to achieve VTM = 3.5% or 3.0%. Place sections at Accelerated Pavement Testing site in Blacksburg



Percent VTM vs. Asphalt Content



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- Adjust SM-9.0 and IM-19.0 to increase AC content
- Adopt BM-25.0 HMHB as the only HMA base mix; higher AC content and lower in place air void
- Revise AC placement guidelines following NCAT recommendations in NCHRP Report 531 – right mix at the right thickness to maximize density

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_531.pdf



Quality is Top Priority

- Focus on high quality asphalt mixes
 - Proper mix design
 - Aggregate selection and gradations
 - Producing what is designed
- Focus on high quality laydown practices
 - Tack Coats
 - Shuttle Buggy
 - Maximum in place density
 - Smooth riding surfaces



Questions or Other Thoughts

**AND YOU THINK YOU'RE
HAVING A BAD DAY?**



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