

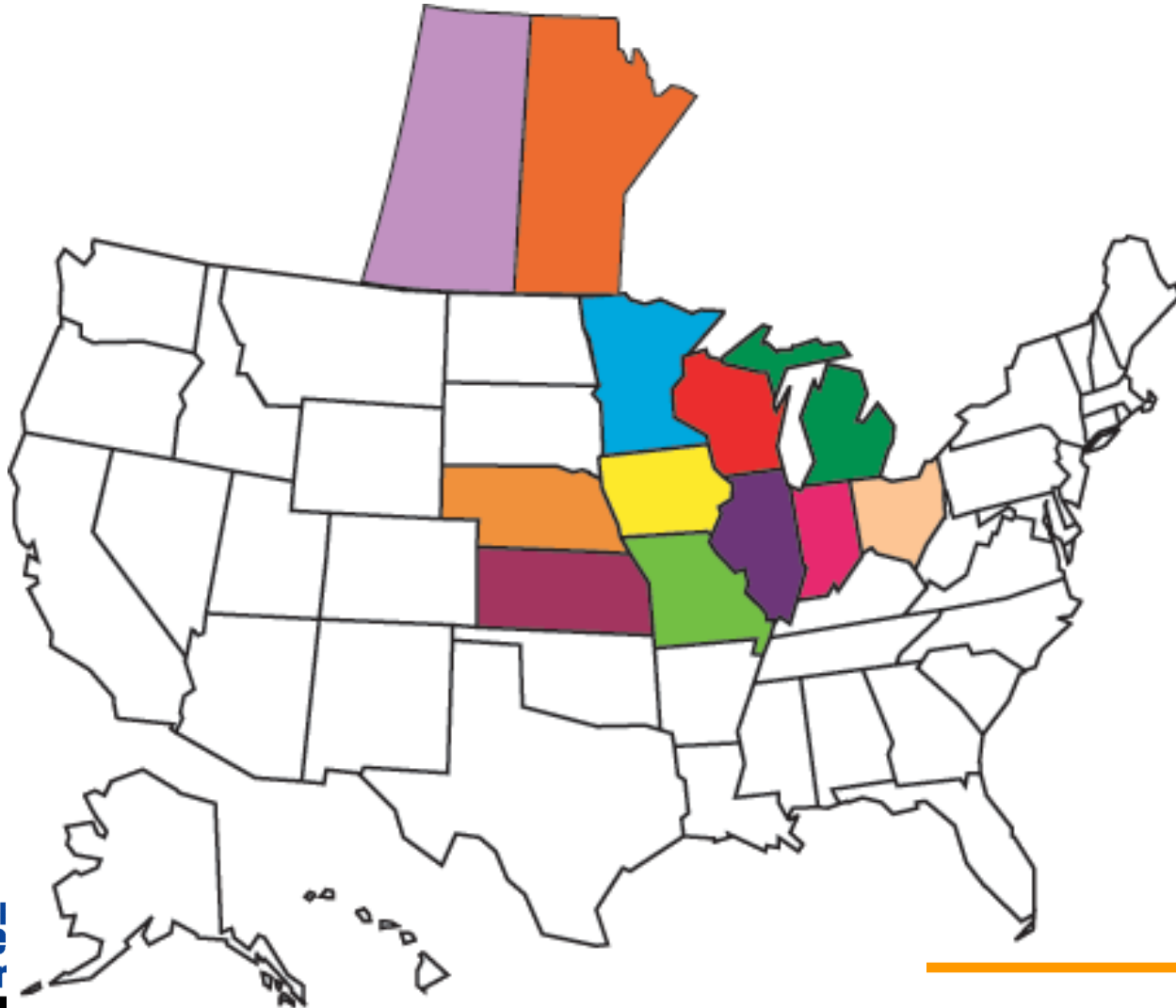
Midwestern States Perspective and Experience with Modified Asphalt

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NCSC Member States



Status Report

Information from state contacts,
specifications, industry.

Good news and bad news!

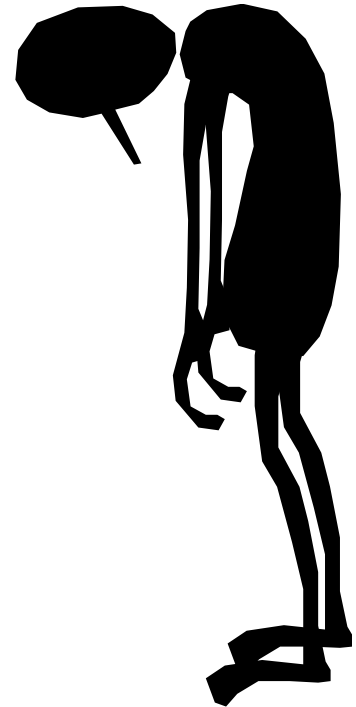


Similarities

- Similar climate
- Similar binder grades used
- Overlap in binder suppliers
- Wide use of modified binders (but varied)

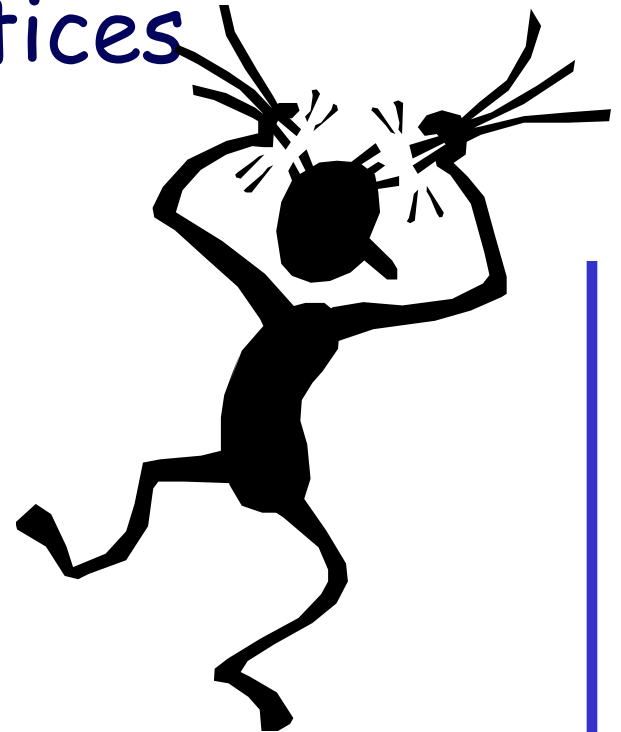
Differences

- Different approaches to specifications
- Different tests
- Different sampling locations



Overall Status of Binder Specs

- Somewhat fragmented
 - ◆ Variety of state practices
 - ◆ Lack of uniformity



Combined State Binder Group

- Iowa, Minnesota, Nebraska, North and South Dakota, Wisconsin
- Share a specification and acceptance method
- Share results, reduce inspection
 - ◆ Good for agencies and industry
- Could expand



But....

- CSBG still has PG+ specifications and a lack of uniformity for modified binders
- Variability in sampling locations, other details

Illinois

- M320 Table 1 plus Illinois requirements for separation, force ratio and elastic recovery
- Only SB, SBS, SBR allowed:
 - ◆ No one is currently supplying SBR
 - ◆ PG70-22, 76-22, 64-28, 70-28, 76-28 (mod)
- About 24% of binder used in 2007 was modified, up from 12.6% in 1998.

Indiana

- Blind specification
 - ◆ Do not know how much PMA used
 - ◆ Elastomers (SB, SBS) are supplied (market)
- PG70-22 is crossover grade, PG76-22 PMA
- No desire to “get back in the middle”
- Allows switching sources or grades during production without new design
- TSR on PG64, assume modified better.

Iowa

- CSBG - elastic recovery and DSR phase angle requirements for polymers
- Ban on acid modification & air blowing
- About 20% of binder is PMA
- No testing issues, looking to MSCR
- Construction - pick up on pneumatic rollers
- Very satisfied with performance

Kansas

- Blind by grade
 - ◆ Modified binders must meet all requirements with 0.5% high molecular amine anti-strip additive added
- About 34% of binder is modified
- Compaction more difficult - best practices to get density
- -28 grade shows good resistance to thermal cracking

Minnesota

- "Mostly blind" M320 specification (CSBG- ER + Phase Angle)
- Policy -- use -34 in top 4" of reconstruction or mill and overlay.
 - ◆ State happy with reduced thermal cracking; about 1/10th the cracking of other PG grades at same age
 - ◆ Contractors not happy with added cost
 - ◆ Limit of 20% RAP with -34 grade
- About 35-50% of binder is modified

Missouri

- Organic modifiers.
- PG + ER and cigar tube separation test
 - ◆ 55% for PG70, 65% for PG76
- About 80% of binder is modified
- Generally pleased with performance to date; have not used PMA for long

Nebraska

- Specifies the modifier to be used - SBS, SB, SBR. No acid. Max phase angle, min ER requirements
- Requires modification of all roadway binders - 80-90% of binder used
- State is satisfied with specification
- Concerns - acid modification, performance, risk of failure

Ohio

- Specify modified binder (SBS or SBR)
 - ◆ 70-22M for heavy interstate
 - ◆ 76-22M for Intersections, etc.
 - ◆ Some districts switching from 64-22
- PG + ER on 70-22
- Great performance, less rutting
- Probably 50% or more modified
- Say no acid, check TSR on mix with ASA

Wisconsin

- Follows CSBG Method of Acceptance
- Leader in the CSBG
- Pays for binder separately (except for SMA)
- About 15-20% modified

Other CSBG States

North Dakota

- Accepted according to CSBG

South Dakota

- ER on RTFO binder with 92 temperature spread
- Only SB, SBS and SBR allowed
- 80-90% of binder is modified

MSCR

- States are starting to look at it.
- CSBG looking to replace PG+ specs
- Have added to quarterly round robins
- Other states "in no hurry" - wait and see
 - ◆ Verify reproducibility, spec limits
- Seems to be more interest after recent User Producer Group meeting

Summary

- States all reported being generally satisfied to very satisfied with performance of modified binders
- No testing issues reported
- Minor construction issues - lessons learned
- Somewhat fragmented but *there is hope* to achieve more uniformity

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