



Pavement Preservation Minnesota's Experience

ND Asphalt Conference
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Thermal Movement



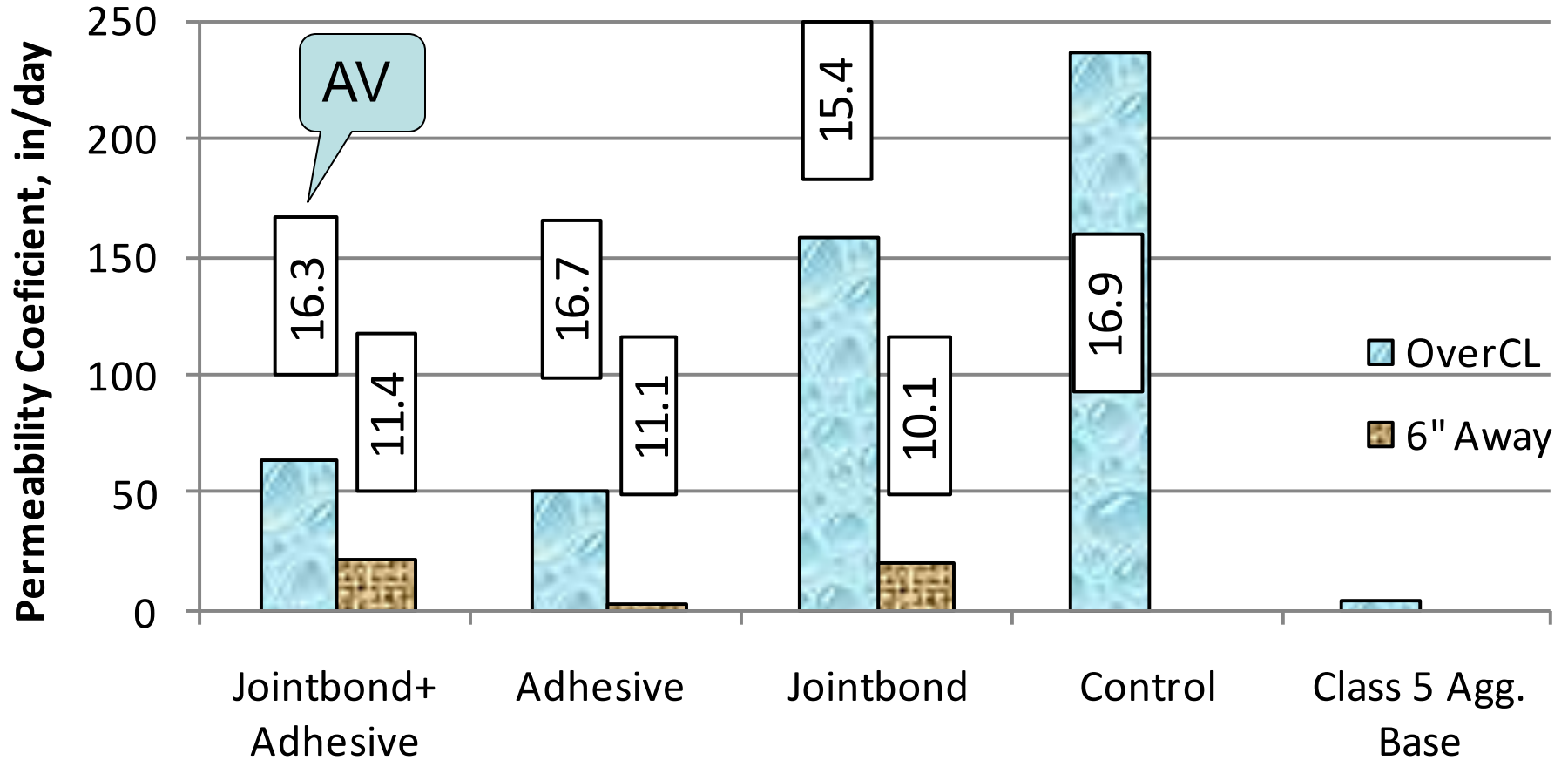
Water, Water, Water





Results

Permeability & Density of Ljt



New Products

- HiMA (highly modified asphalt)
- HiMA micro surfacing
- Texas underseal
- Aging study TPF-5(153)
- Bio based sealers
- Mastics
- Micro milling



HiMA (highly modified asphalt) pavement

- Kraton SBS polymer D0243, at 7.5%
- 76-34 with 25% RAP, vs 64-28 with 25% RAP
- On TH 100, paved 2011
- 1.5" and 2" mill and fill
- Similar reflective cracking into the 2nd winter, slight edge to Kraton
- NCAT cell North 7



HiMA micro surfacing

- MnRoad cell 1
- PG 49-34 base AC (vs. 64-22)
- Kraton SBS polymer D0243, at 6%
- Scratch 12 lbs/sy
- Surface course 15 lbs/sy
- 16% emulsion (vs. 13% typical)

- One lane mile on TH 23, District 3



Cell 1



Cell 1 IRI

	Passing lane	Driving lane
IRI Before	190 in/mi	125 in/mi
IRI After	96 in/mi	95 in/mi
% Improvement	49%	25%



Texas underseal mill, seal coat, fill

- TH 101, R.P. ~ 13.9 to 14.8
- 3" mill, two lift overlay, 64-28
- Underseal = seal coat on the milled pavement
- CRS-2p at 0.30 gal/sy
- FA-3 at 16 lbs/sy
- **NO REFLECTIVE CRACKS**, 2 winters
- Cracks in the standard overlay



TPF-5(153) Optimal Timing of Preventive Maintenance for Addressing Environmental Aging in Hot-mix Asphalt Pavements

R. Michael Anderson, Asphalt Institute

MnROAD Research Conference
Minneapolis, MN

October 4, 2011

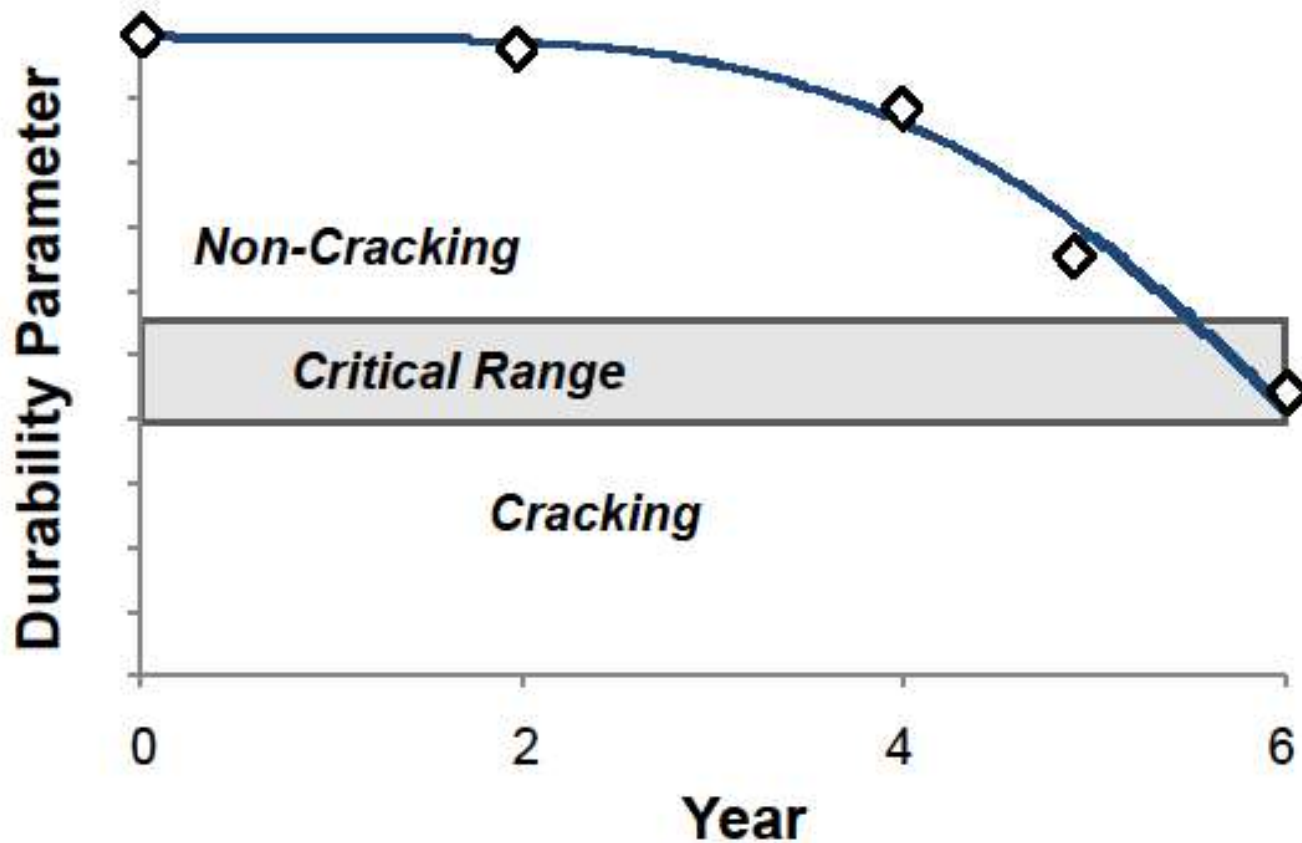


AAPTTP 06-01 Research Objectives

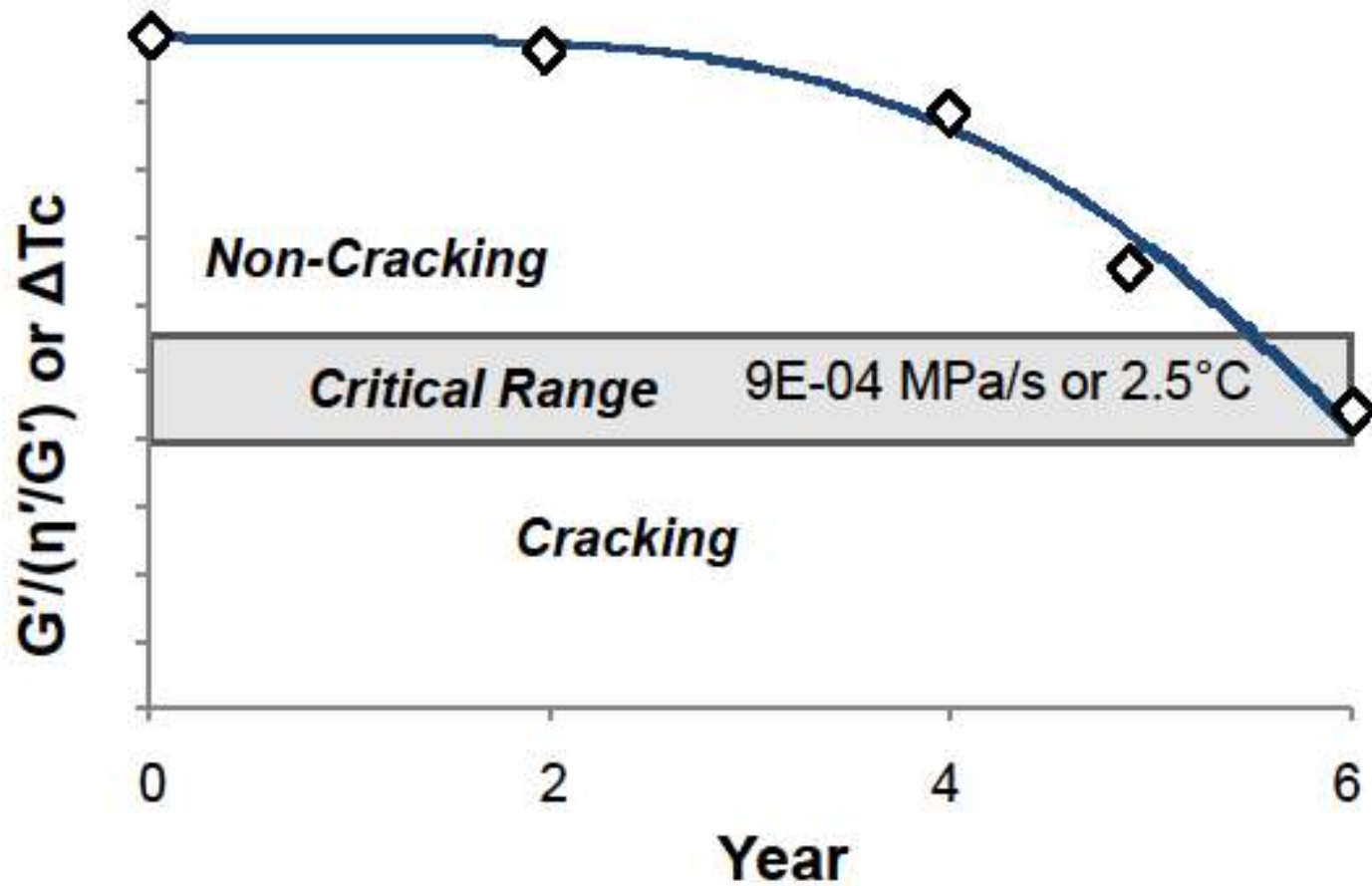
- Develop a practical guide identifying means to prevent and mitigate cracking caused by environmental effects.
- Develop one or more test procedures that could be used by a pavement manager to determine when preventative maintenance is needed to prevent the development of cracking (specifically block cracking).



Concept



Concept



BBR Cracking Parameter - ΔT_c

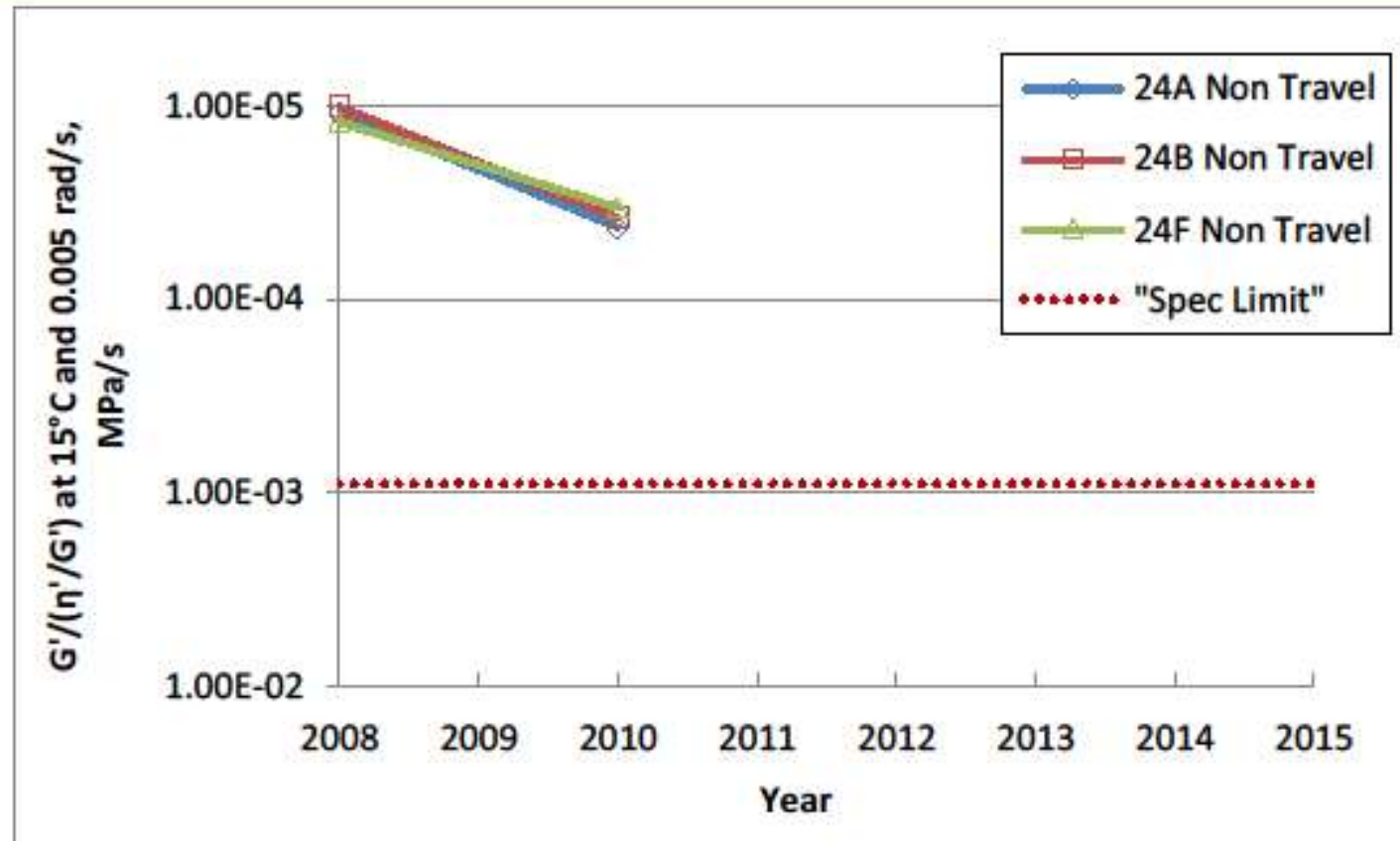
asphalt institute

$$\Delta T_c = T_c (m\text{-value} = 0.30) - T_c (S = 300 \text{ MPa})$$

- Relationship to ductility
- Relationship to $G' / (\eta' / G')$
- Relationship to R-value (CA model)



MnROAD Cell 24



Bio based sealers



Bio based sealers

- Apply before year 2
- 0.015 gallons/square yard
- Does not effect striping
- No overspray issues (grass, curb)
- \$1/sy
- Minimal friction loss



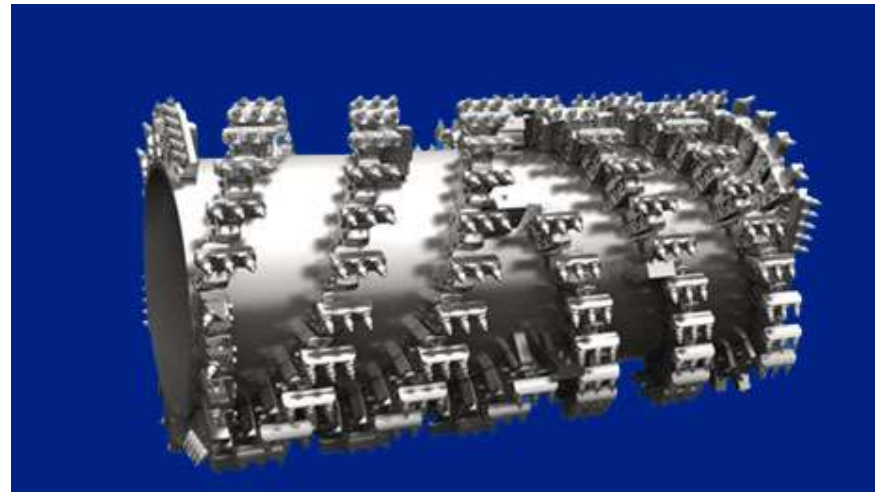
Mastics

- 3 manufacturer's
 - ✓ Crafcoc
 - PolyPatch and Mastic One
 - ✓ Derry
 - Level & Go, and Recessed Repair Mastic
 - ✓ Maxwell
 - Nuvo Gap
- Melt in kettle
- Big cracks, potholes



Micro milling

- Special provision is available
- 3x more teeth vs. standard mill
- Ride spec
- Cover with a new surface



Resources

- National Center for Pavement Preservation - 90 Videos !!

<http://nationalpavement2012.org/presentation-multimedia/>





Conclusion

- Products are constantly evolving and improving
- How to measure success
- Quantify costs and benefits

Q. Will it work?

A. Try it, you will find out



Thank You!

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