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Illinois in the 2018 Research Cycle

- Mix performance testing (CG)
- Benefits of preservation (PG)
- Northern climate focus (MnROAD)

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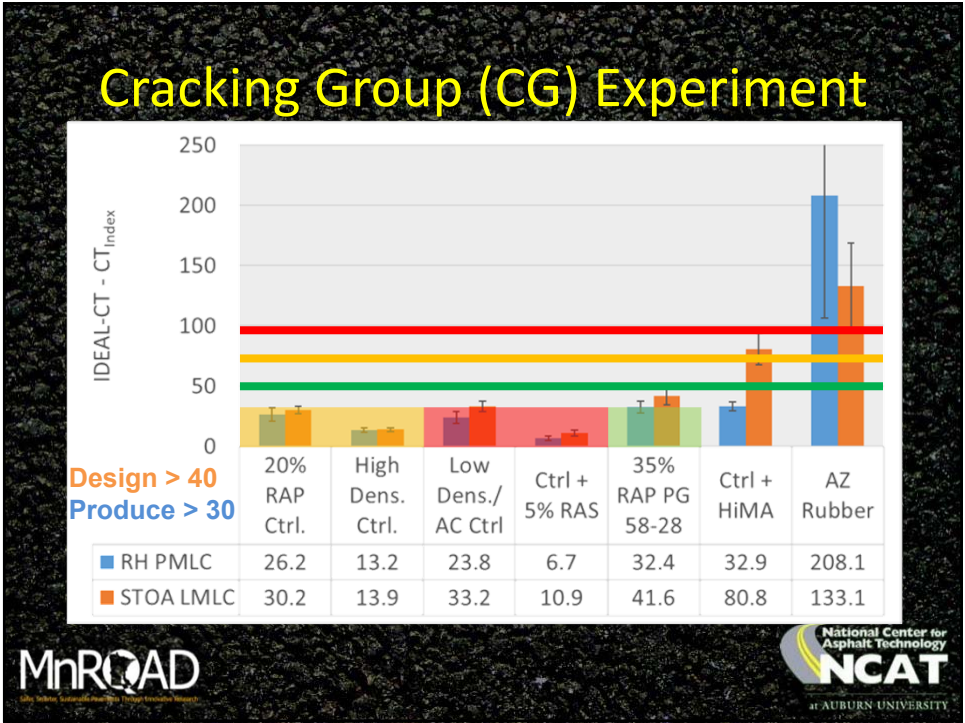
Why Performance Optimization?

- Optimized use of available virgin, recycle materials
- Volumetrics don't necessarily relate to mix quality
- Rutting, cracking, durability, friction assurance _{BMD}
- Recycling agents (rejuvenators versus softeners)
- Numerous experiments on the 2015, 2018 Tracks
- Both "volumetrics plus" & "performance modified"
- Low & high RAP, with and without recycling agents
- Some 2018 mixes produced with lower air voids.

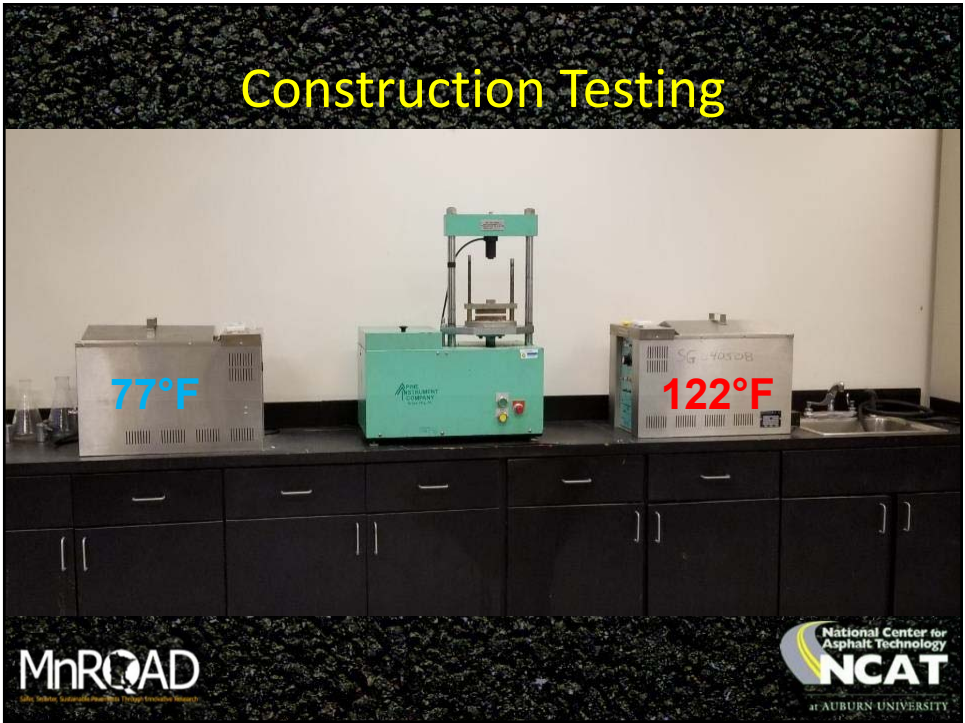
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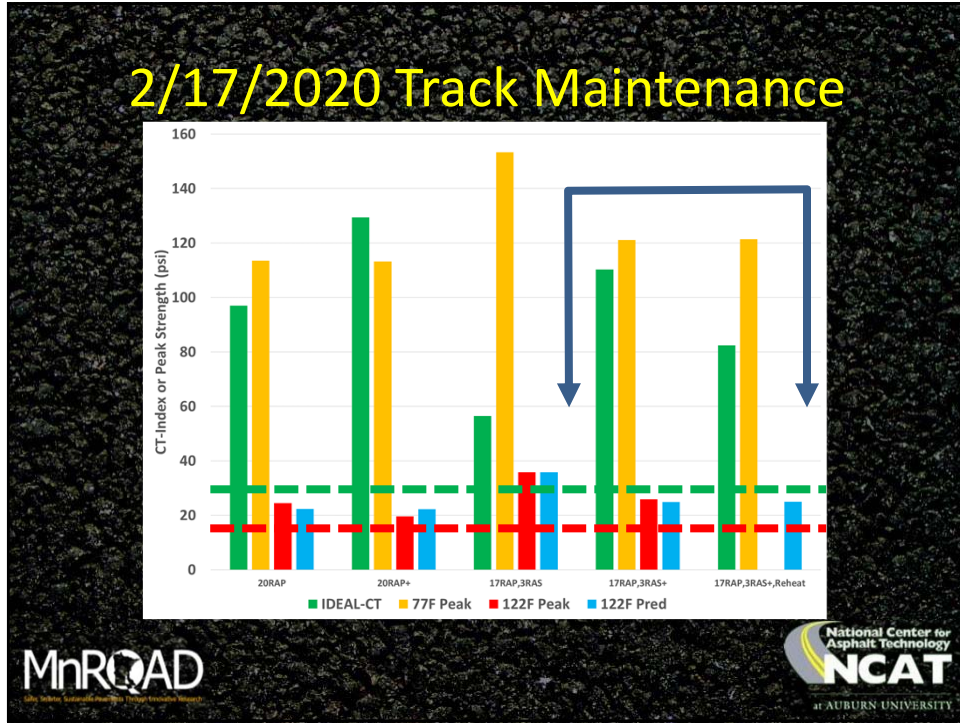
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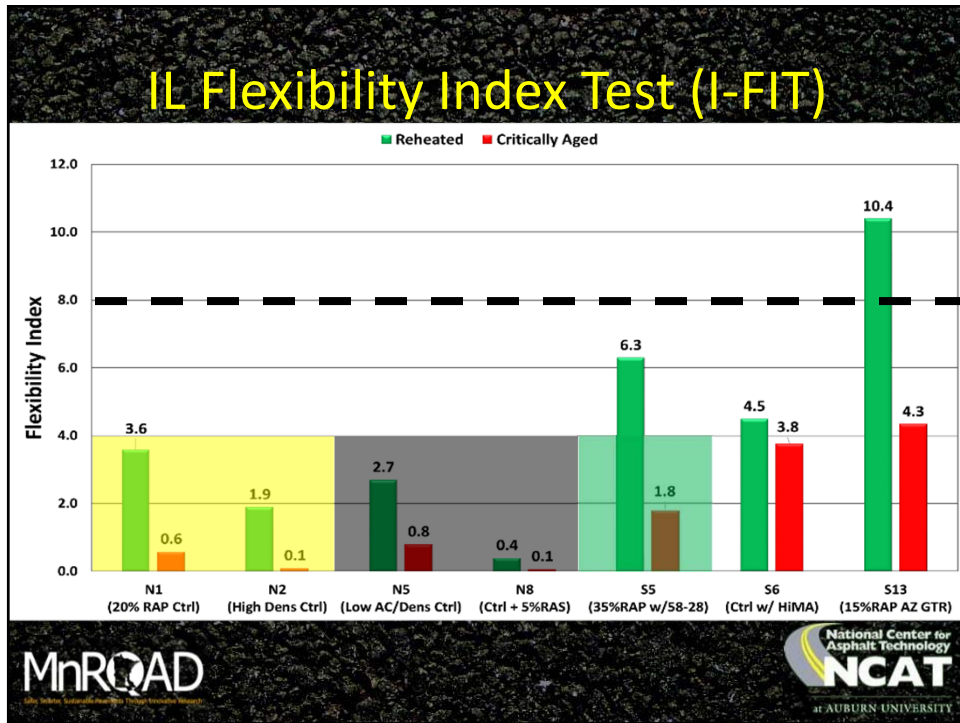
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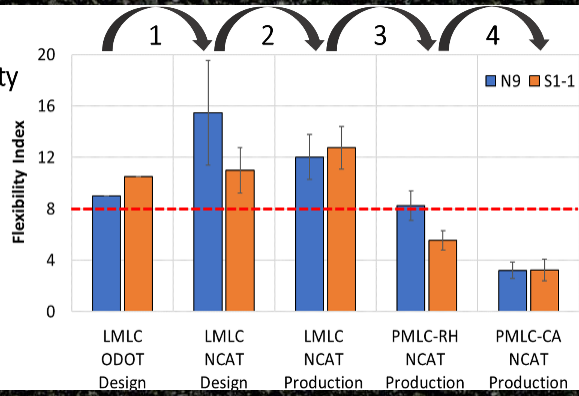
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Example Data from 2018 Track Build

- 1. Between-lab Variability
- 2. Binder Source
- 3. Mix Production
- 4. Critical Aging



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What About Friction ?



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NCAT Three Wheel Polishing Device



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Wheel Tracked Path

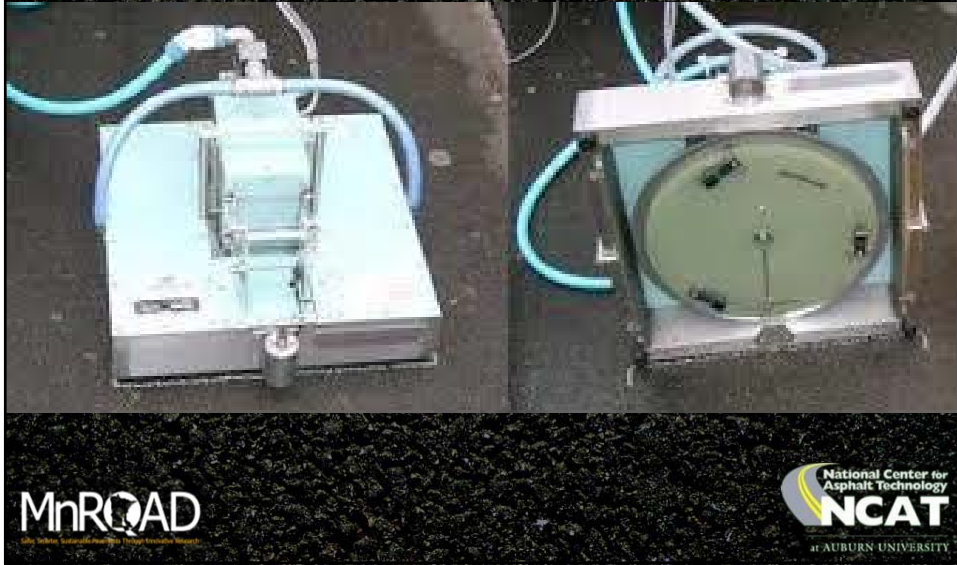


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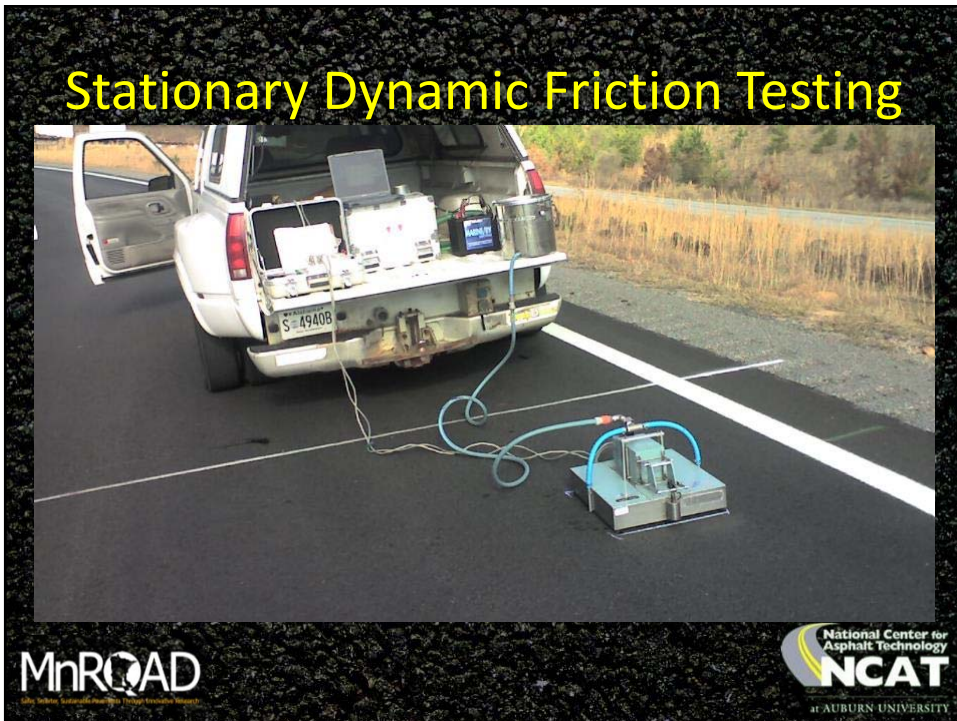
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Dynamic Friction Tester

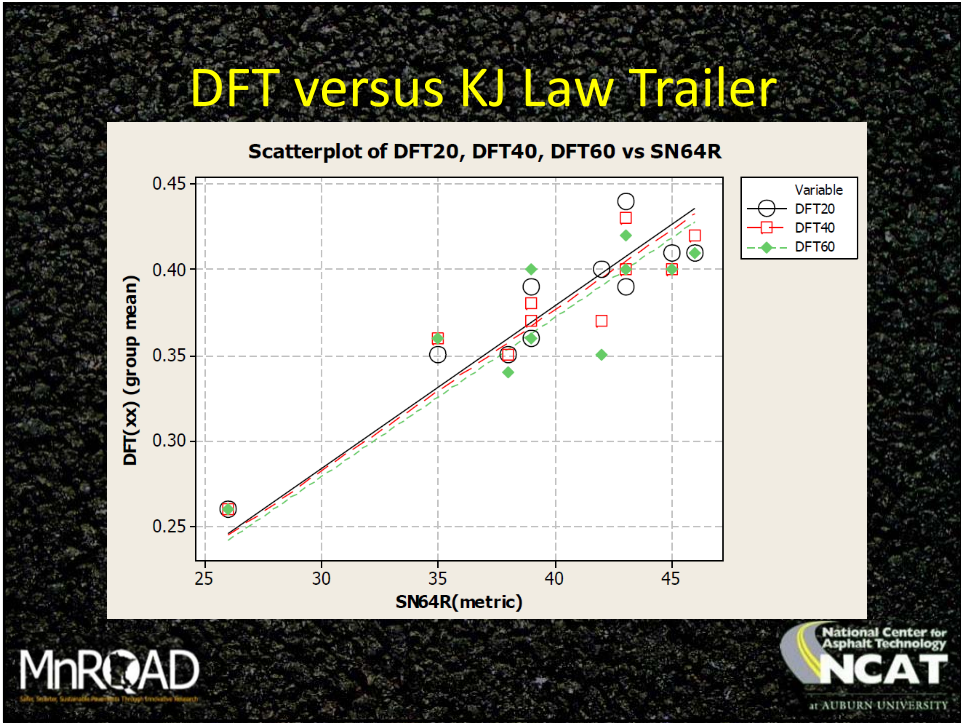


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Stationary Dynamic Friction Testing



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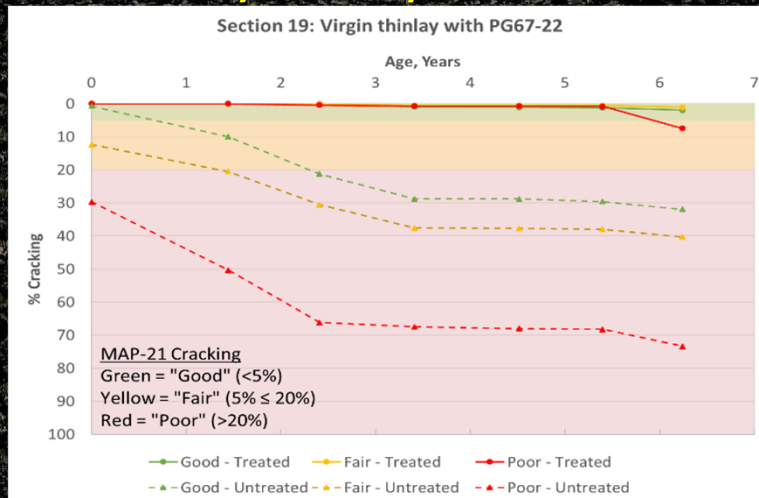
Pavement Preservation

- Key to perpetual pavement philosophy
- Advantage of flexible over rigid pavements
- MAP-21 for cracking, rutting, & roughness
- Distinction between good, fair, & poor surfaces
- Data driven preservation alternative selection
- Benefits as function of pretreatment condition.

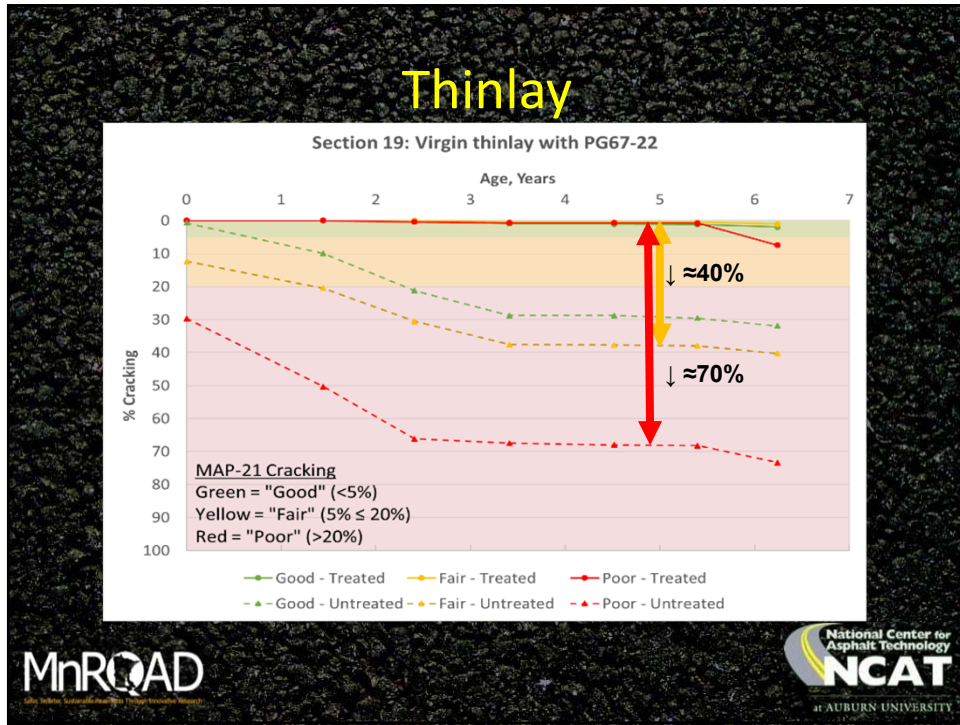


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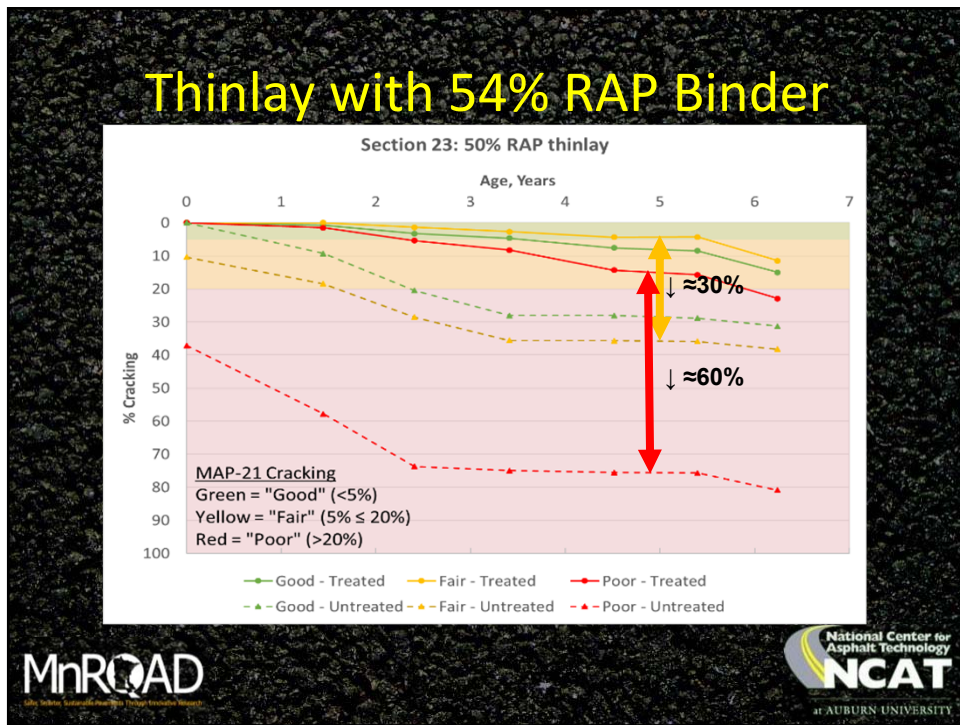
Selection by Life Cycle Performance



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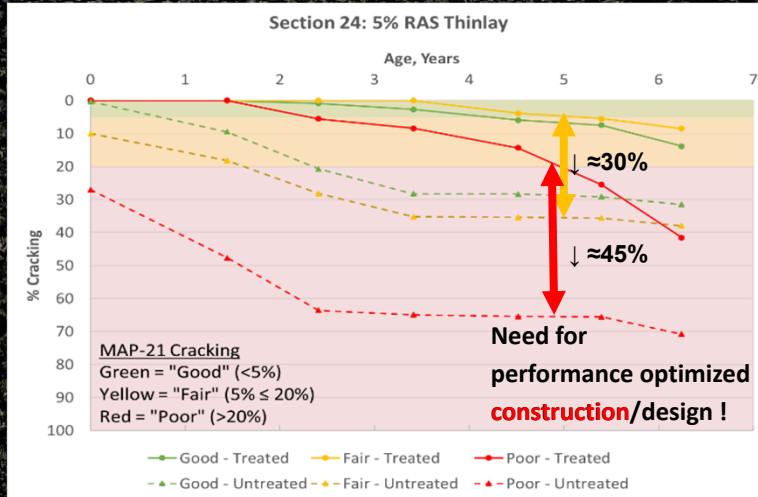


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Thinlay with 19% PC-RAS Binder



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Implementation (Reduced Cracks_{Year 5})

Treatment	Poor	Fair	Good
Single Micro	16	14	8
Double Micro	84	39	28
Single Chip + CS	68	25	28
Double Chip	60	31	28
Triple Chip	76	38	30
Fiber Chip	72	32	27
Virgin Thinlay	81	40	34
50% RAP Thinlay	71	31	23
5% RAS Thinlay	66	33	23



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End-of-Cycle Conference for the
2018 NCAT Pavement Test Track and the
MnROAD Pavement Research Partnership

April 20-22, 2021
Auburn, AL

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