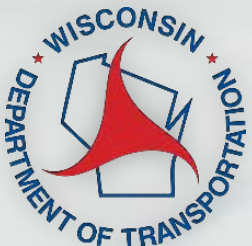


WHRP Updates

Erik Lyngdal & Dan Kopacz
Bureau of Technical Services

2019 WAPA Annual Conference
Pewaukee, WI

December 4, 2020



WHRP Introduction

Wisconsin Highway Research Program

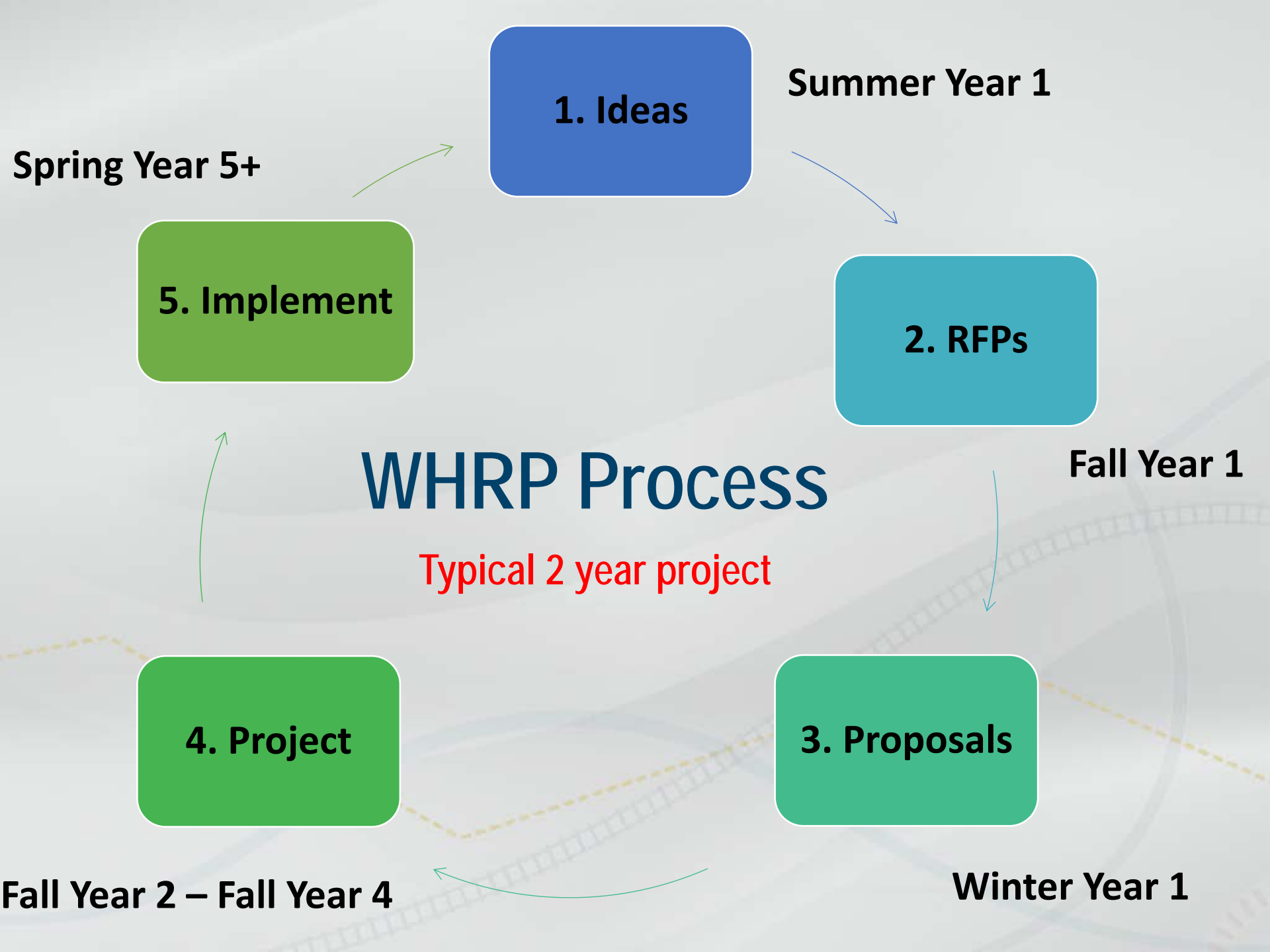
Wisconsin Highway Research Program Overview

- WHRP established in 1998 by the Wisconsin Department of Transportation in collaboration with the University of Wisconsin-Madison
- WHRP budget in FFY 2019 -- \$995,000
- Primary research areas
 - Flexible Pavements ◀
 - Rigid Pavements
 - Structures
 - Geotechnics

<http://wisconsindot.gov/Pages/about-wisdot/research/whrp.aspx>

Technical Oversight Committee

- Erik Lyngdal - DOT
- Steve Hefel - DOT
- Myungook Kang - DOT
- Tirupan Mandal - DOT
- Barry Paye - DOT
- Dan Kopacz - DOT
- Hani Titi - UW Milwaukee
- Danny Xiao - UW Platteville
- Aaron Coenen - FHWA
- Erv Dukatz - Mathy
- Stacy Glidden - Payne & Dolan
- Deborah Schwerman - WAPA
- Carl Johnson - Stark
- Signe Reichelt - Behnke Materials



Other Research Partners



MnROAD

Safer, Smarter, Sustainable Pavements Through Innovative Research

**National Center for
Asphalt Technology**
NCAT

at AUBURN UNIVERSITY

Research Categories

1. Project Delivery Challenges
2. Performance Testing
3. Emerging Technologies

Project Delivery Challenges

The background features a light gray and white color palette with abstract, wavy lines in shades of blue and yellow. A faint grid pattern is visible in the lower right quadrant, suggesting a technical or data-oriented theme.

17-06 Tack Coat



17-06 Tack Coat



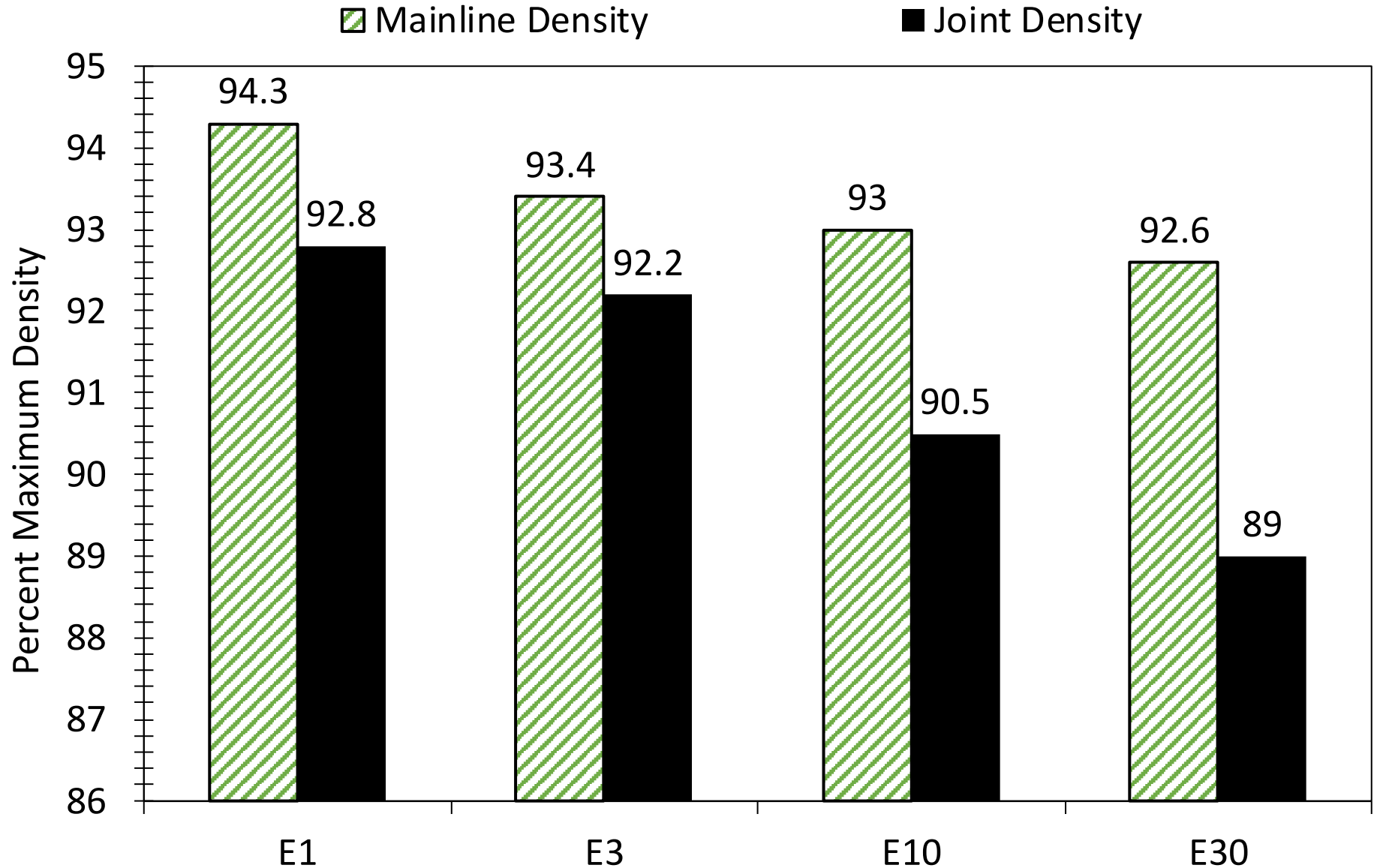
17-06 Tack Coat



15-09 Longitudinal Joints



15-09 Longitudinal Joint Density



Alternative Materials/Practices





Alternative Materials/Practices



Performance Testing



WHRP Project 14-06: Critical Factors Affecting Asphalt Durability



<http://www.interchem.at/produkte/strassenbau/bitumen/?lang=en>



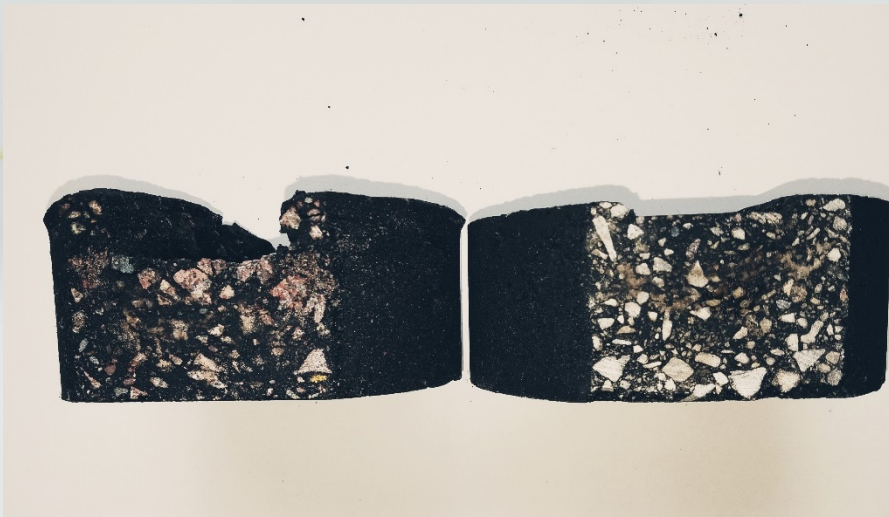
<http://generalpolymers.net/sbs.cfm>



<https://www.fhwa.dot.gov/pavement/recycling/rap/>



15-04 Analysis and Feasibility of Asphalt Pavement Performance-Based Testing



16-06 Regressing Air Voids

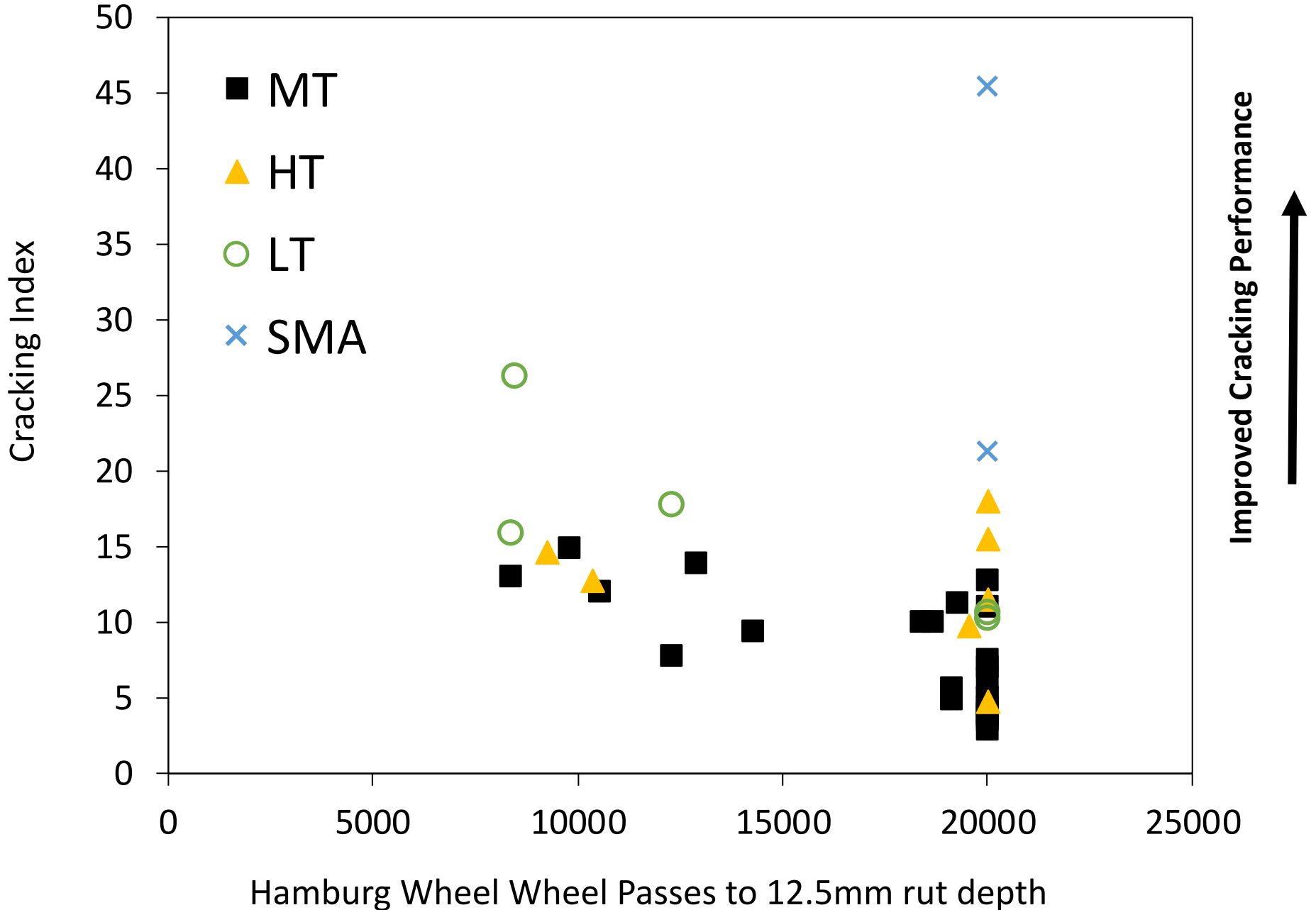


Increased asphalt binder → increased cracking resistance

20-04 Balanced Mixture Design Implementation Support

The background features a light gray and white color palette. It includes several overlapping, semi-transparent wavy lines in shades of blue and yellow. A faint grid pattern is also visible, particularly in the lower right quadrant, suggesting a technical or data-oriented theme.

Improved Rutting Performance



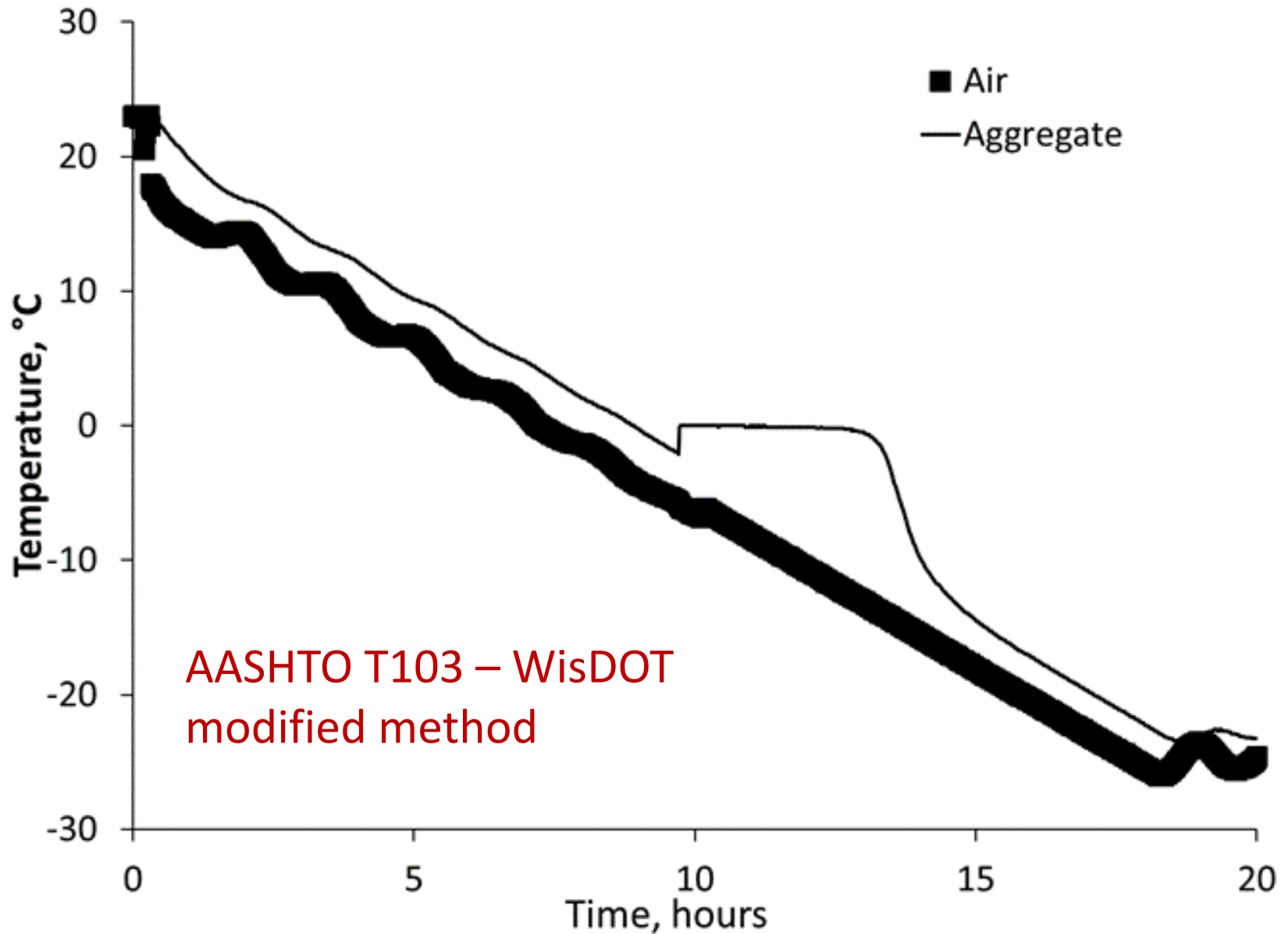
Emerging Technology

The background features a light gray and white color palette with abstract, flowing wavy lines in shades of blue and yellow. A faint grid pattern is visible in the lower right quadrant, suggesting a technical or digital theme.

20-05 Aggregate Freeze-Thaw (Geo)



20-05 Aggregate Freeze-Thaw



Material Testing



Recycling and Aging

10-06 Recommended recycled binder replacement

Recycled Binder Type	Maximum Binder Replacement ¹ , %	
	Surface Layers	Lower Layers ³
RAP ²	20	45
RAS	5	20
Combination of RAP and RAS	Reduce RAP binder replacement 4 % for each 1 % RAS binder replacement.	Reduce RAP binder replacement 2.25 % for each 1 % RAS binder replacement.

17-04 Field Aging and Oil Modification



19-04 Recycled Binders



19-05 Recycled Tire Rubber



19-05 Recycled Tire Rubber



Where is the rubber?



List of Active/recently completed projects

1. 20-04 Balanced Mixture Designs
2. 20-03 Expansion of AASHTOWare ME Design Inputs
3. 19-04 Recycled Asphalt Binder Study
4. 19-05 Rubber Asphalt Study for Wisconsin
5. 18-06 Enhanced Moisture Sensitivity Study
6. 18-05 Investigation of In-service Performance
7. 17-06 Investigation of Tack Coat Materials on Tracking Performance
8. 15-05 Evaluation of WisDOT QMP Activities and Impacts on Pavement Performance

Navigating to the Website



State of Wisconsin
Department of Transportation



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Welcome to WisDOT

- Madison West DMV moves January 22
- eNotify subscribers receive added level of identity security. Sign up for your account activity alerts.
- Calling all artists, age 7-17. Illustrate your vision of "Flight into the Future" for a chance to win an airplane ride!

All WisDOT news

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Get traffic information, incident alerts, travel conditions and updates on construction.

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Go paperless and receive renewal notices by email.

Principal Investigators, TOC Members, and Consultants



Principal Investigators, TOC Members, and Consultants

