

INCREASING ASPHALT PRESERVATION EFFECTIVENESS WITH EARLY TREATMENT

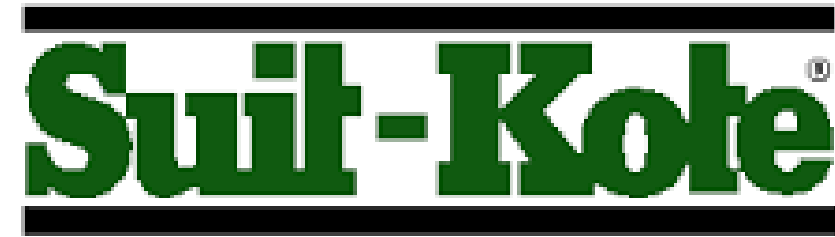
PAAMA/PennDOT Statewide Conference

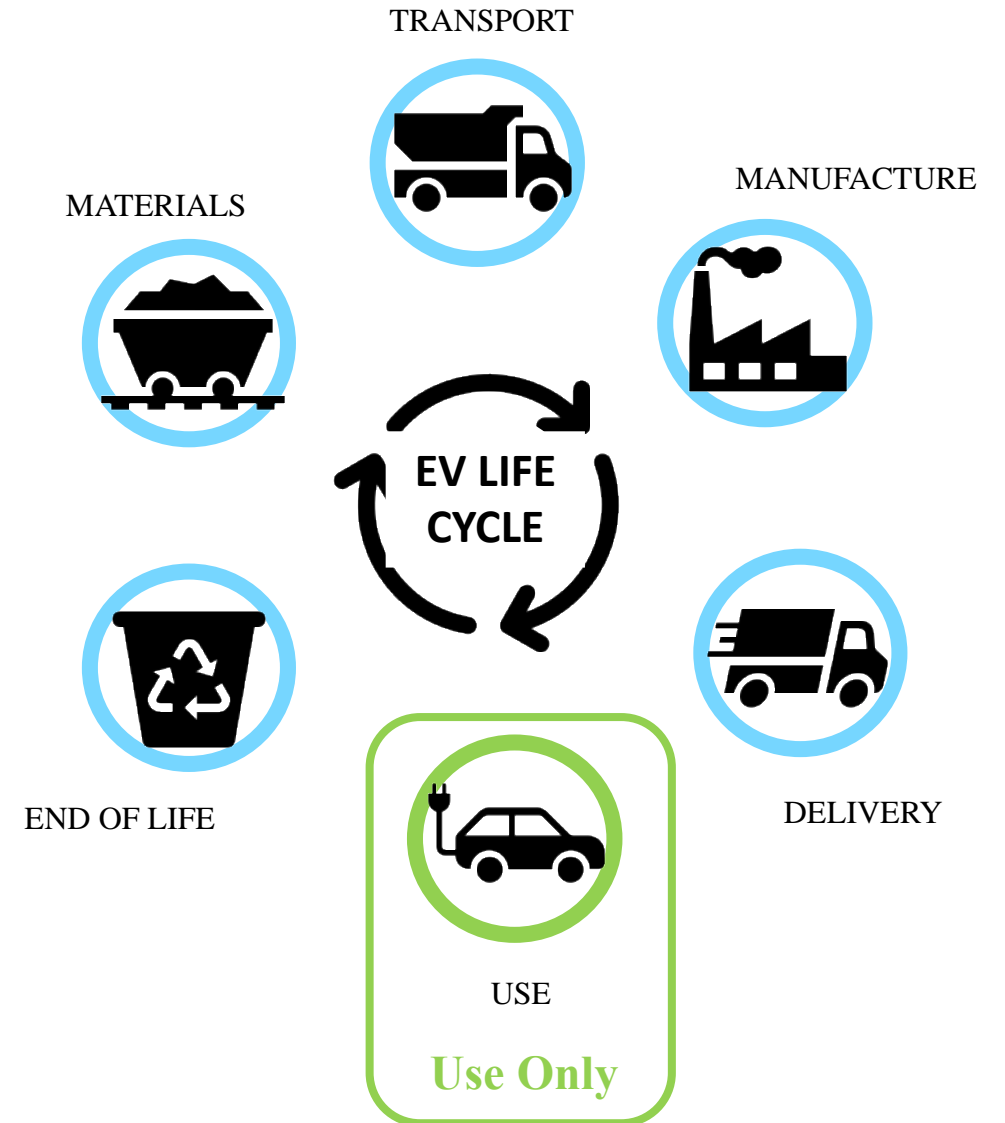
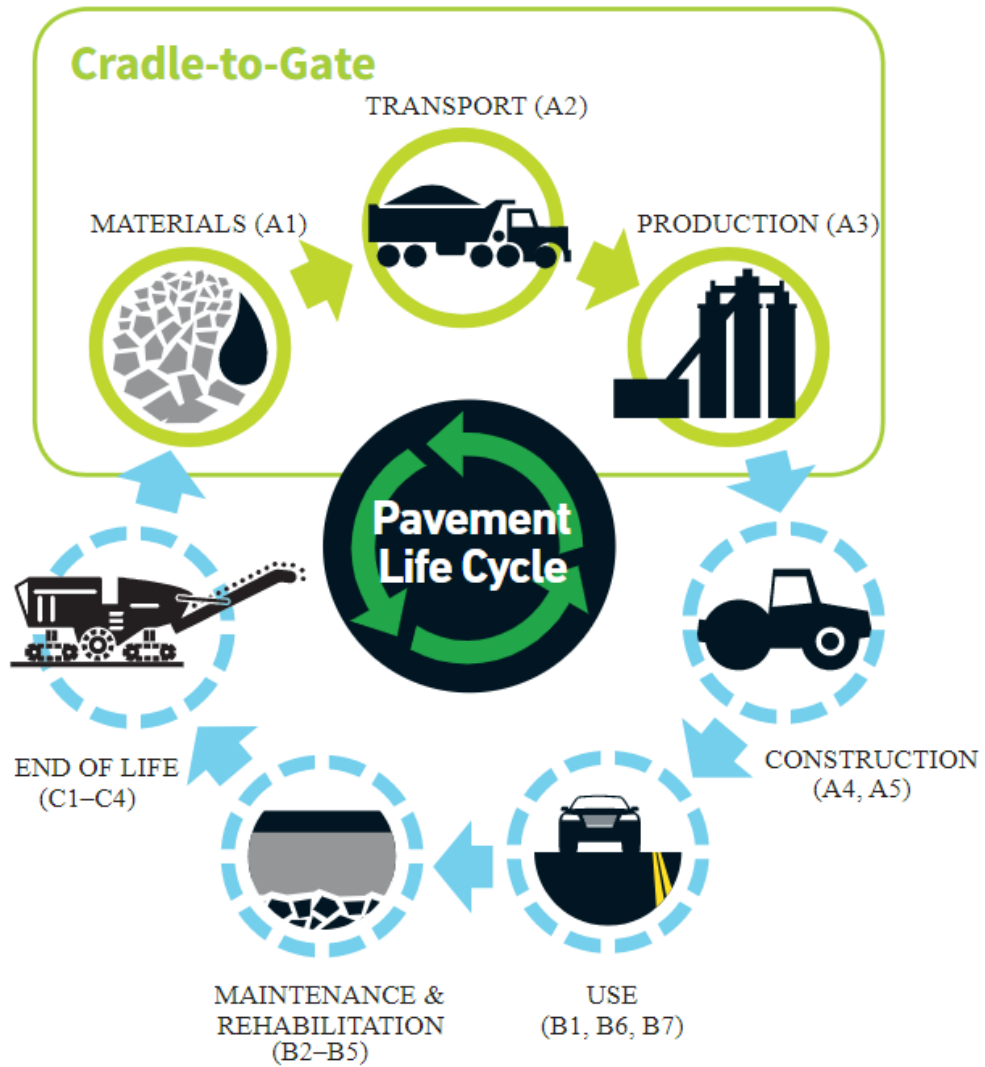
Boalsburg, PA – October 27, 2023

Gregory A. Harder, P.E.



Acknowledgements



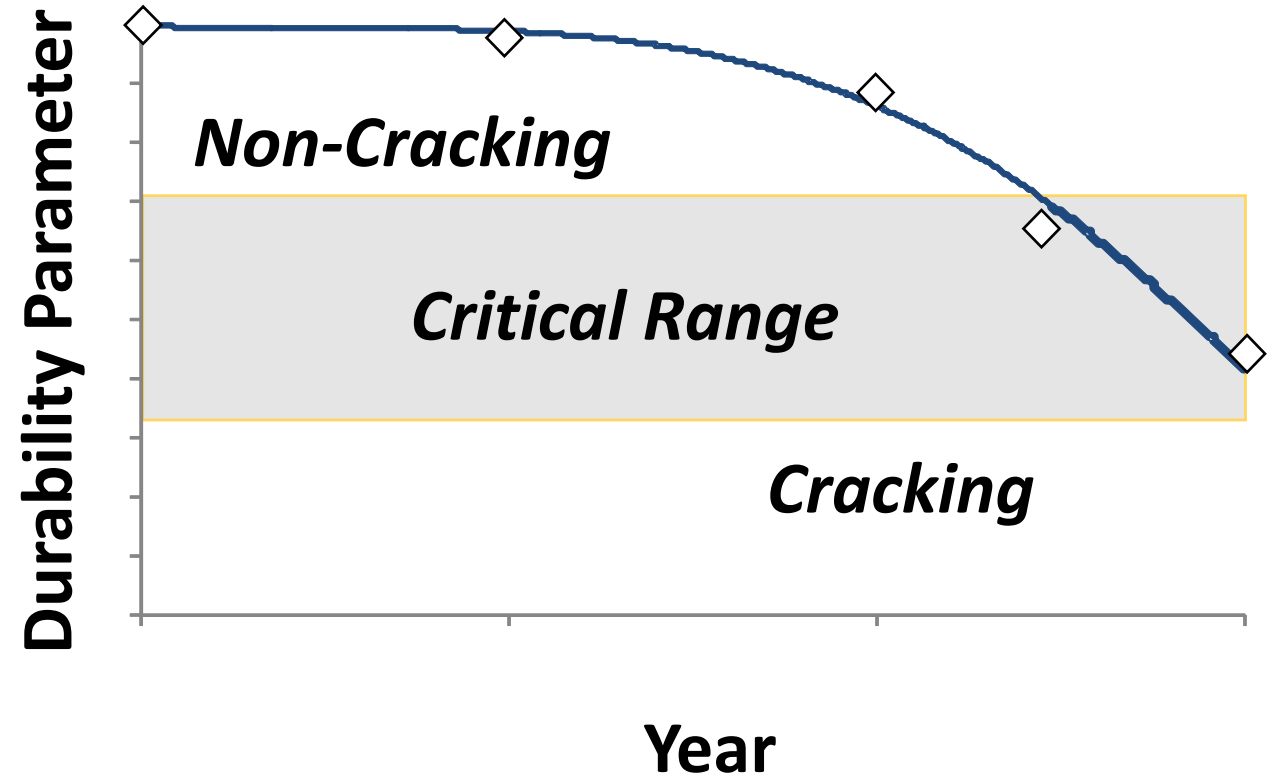


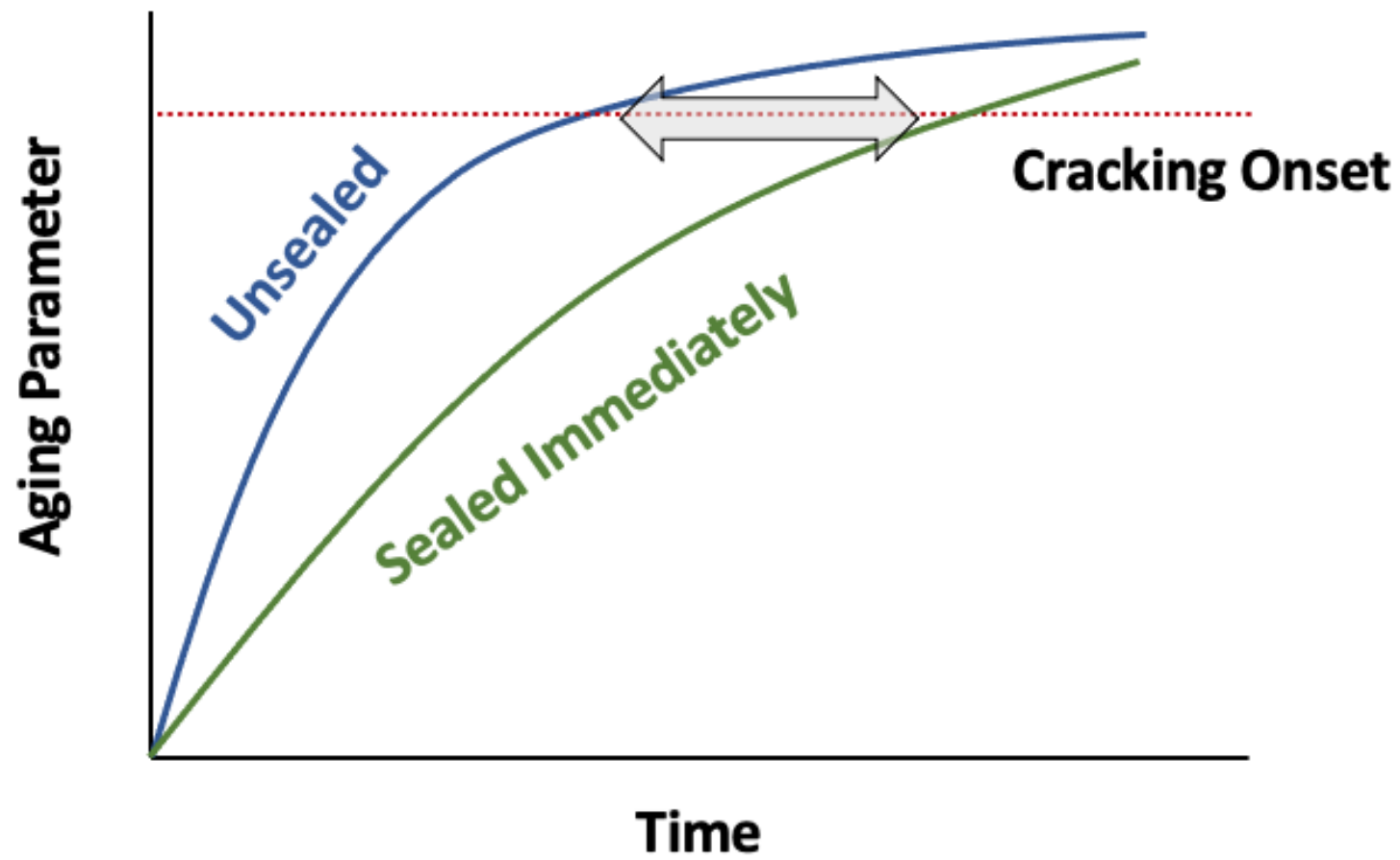
Purpose of This Study

As a pavement ages, the binder oxidizes and become brittle making it prone to cracking

Agencies use preservation treatments such as chip seals to mitigate cracking but most do so after cracking has begun

We want to quantify the benefits of early chip seal application on the postponement of the onset of cracking

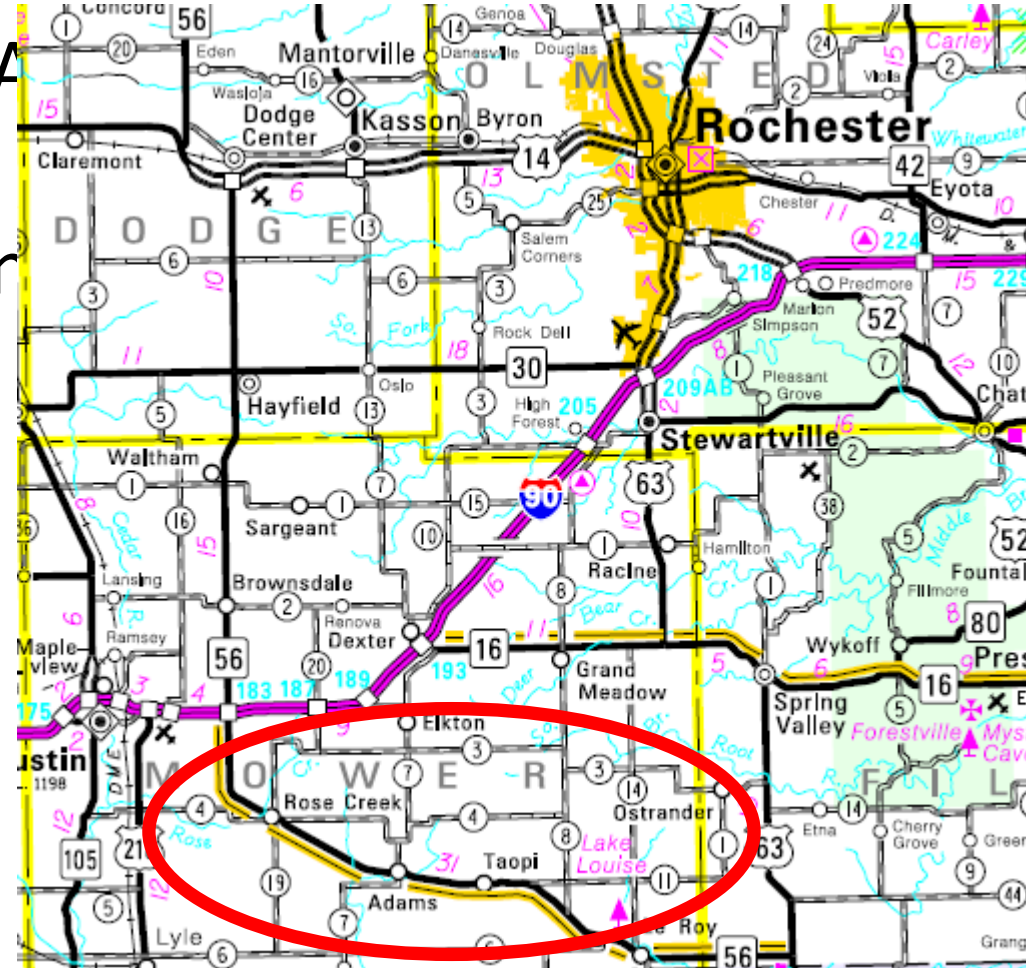




MN TH56 Test Sections

- TH56

- two-lane rural highway with A (construction)
- test sections located between



of

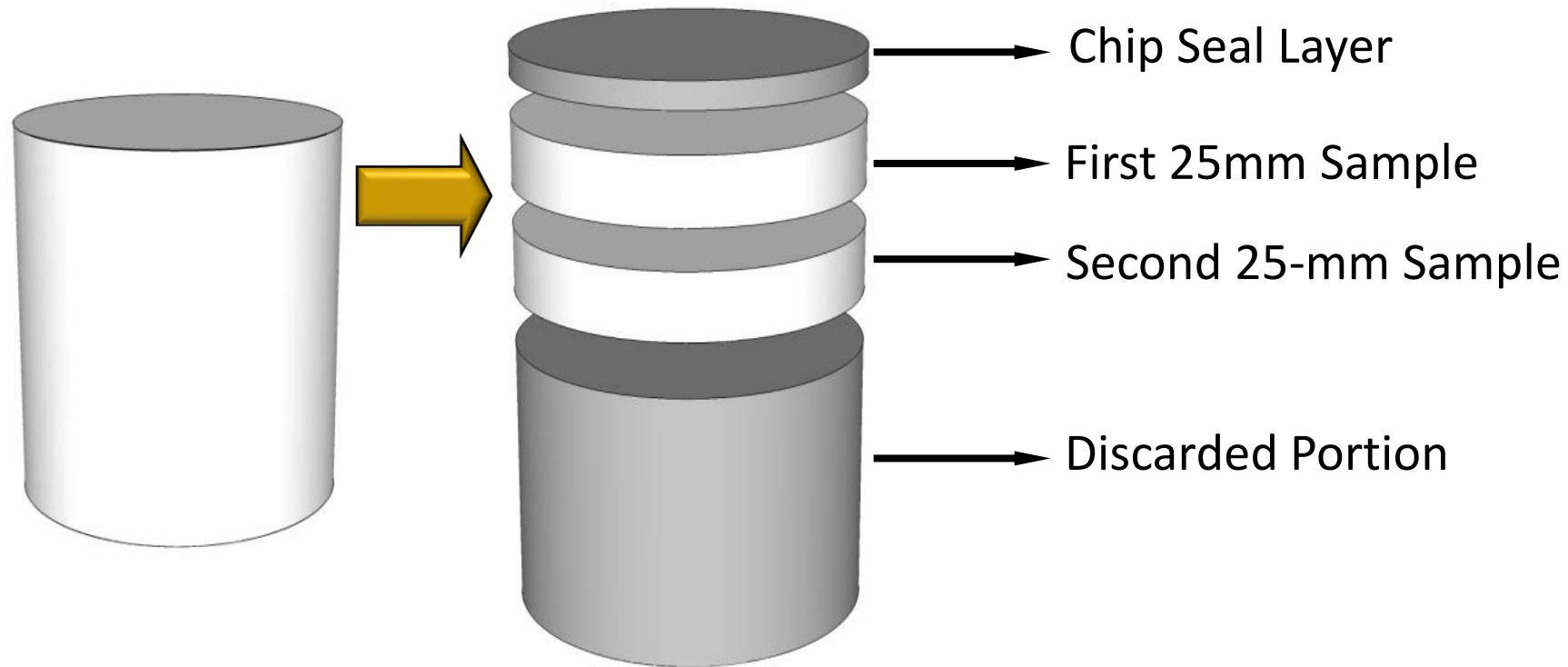
MINNESOTA TH 56 SITE LAYOUT

10 to 11	11 to 12	12 to 13	13 to 14	14 to 15
Control	2003	2002	2001	2000

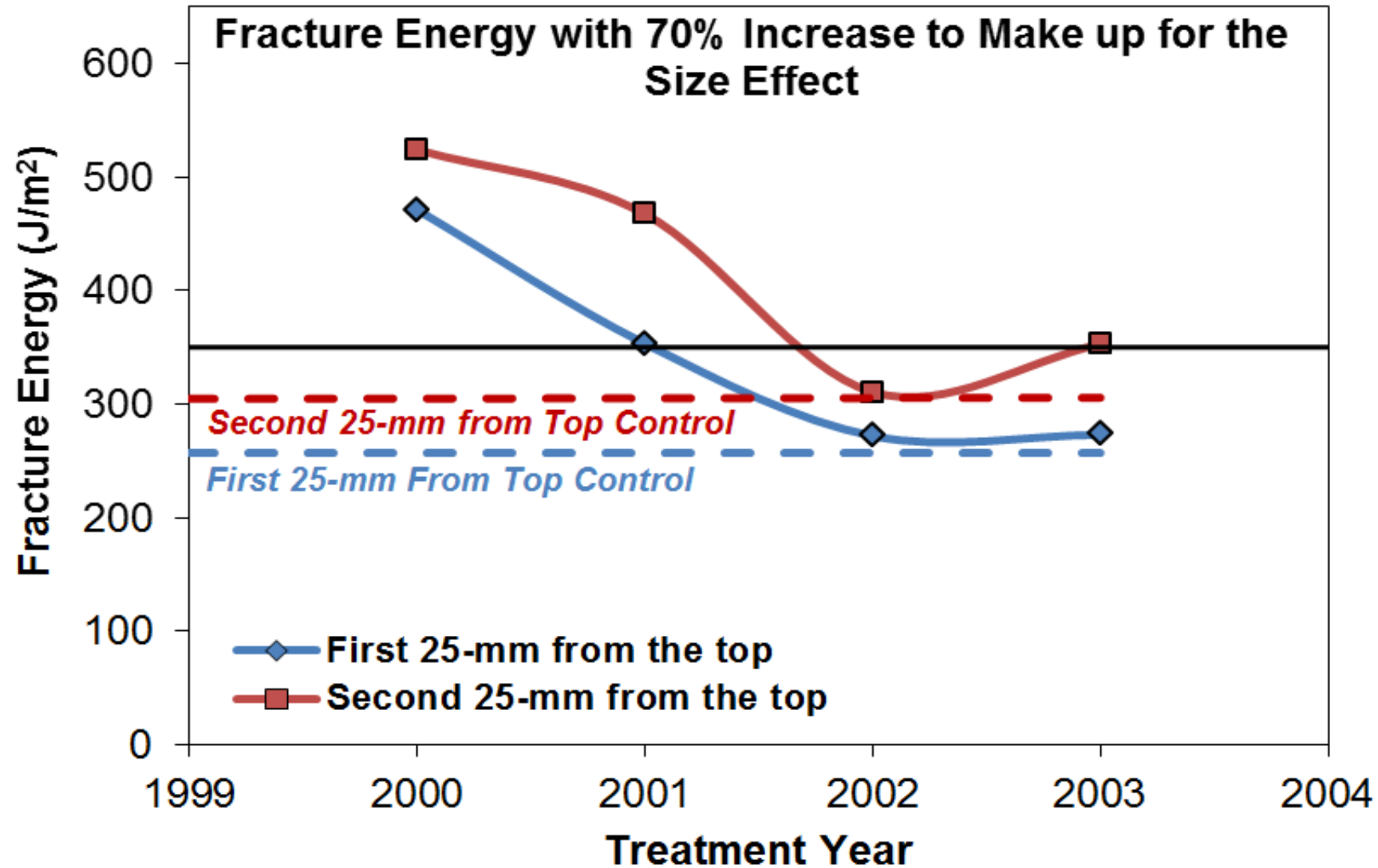
Age when treated	4 YEAR	3 YEAR	2 YEAR	1 YEAR
	ORIGINAL CONSTRUCTION - 1999			
	CRS-2P		CRS-2P	CRS-2P
	0.40 gal/yd ²		0.34 gal/yd ²	0.32 gal/yd ²
		CRS-2P		
		0.38-0.42 gal/yd ²		

Pavement Preservation - Chip Seal on TH 56, MN DOT

Preparation of Cores

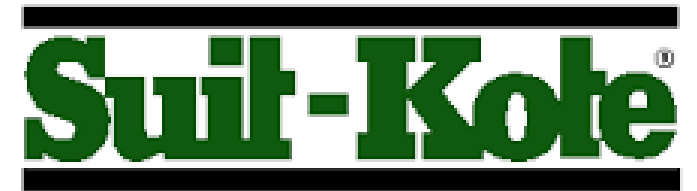


Pavement Preservation with Chip Seal

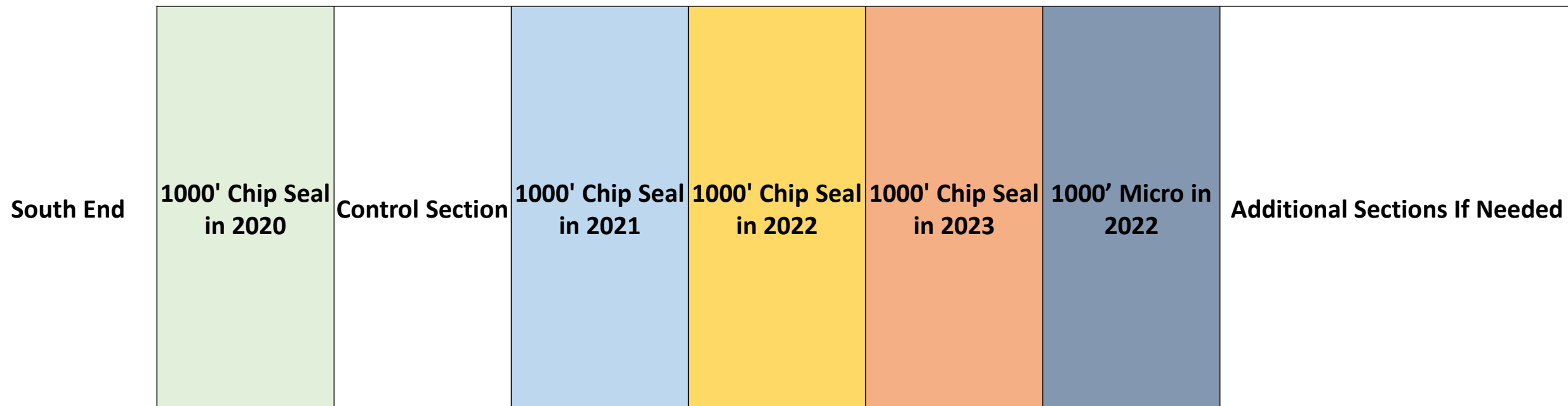


NYSDOT Rt. 11 Project Details

- 8.2 miles in length
 - 3-4 inches of CIPR (2019)
 - 1 inch of scratch course (2019)
 - 1 ½ inches of 9.5 mm HMA with PG 64V-22 (2020)
- 1st chip seal placed shortly after placement of wearing course
- 2000 AADT with 10% trucks

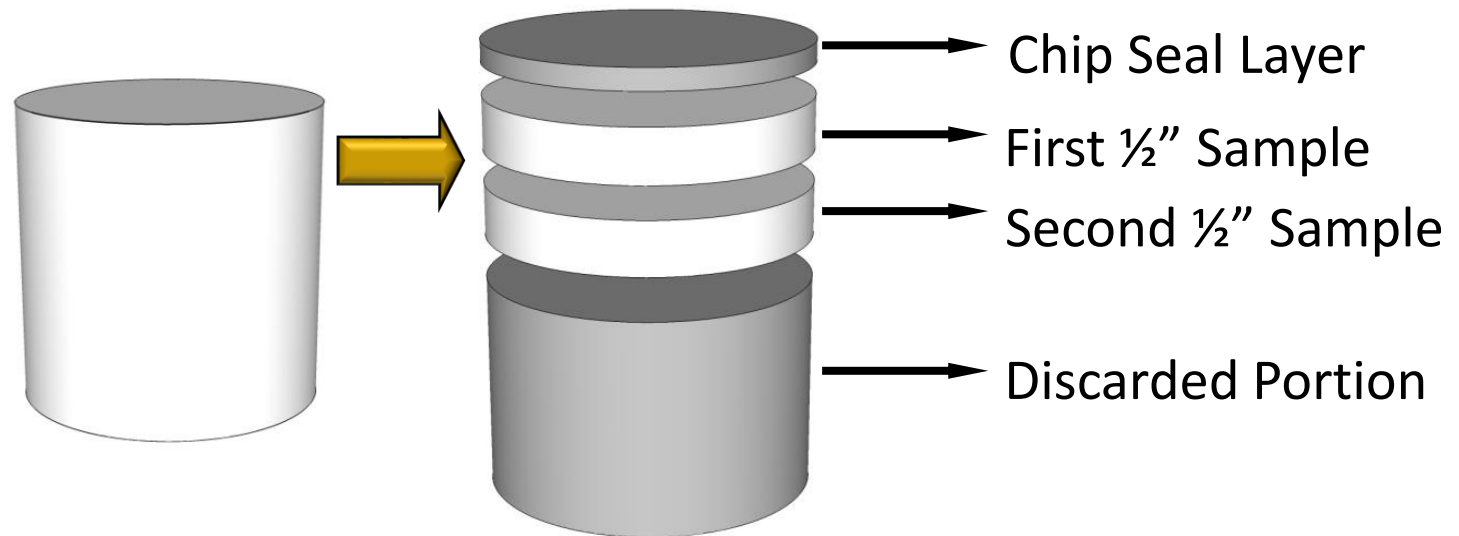


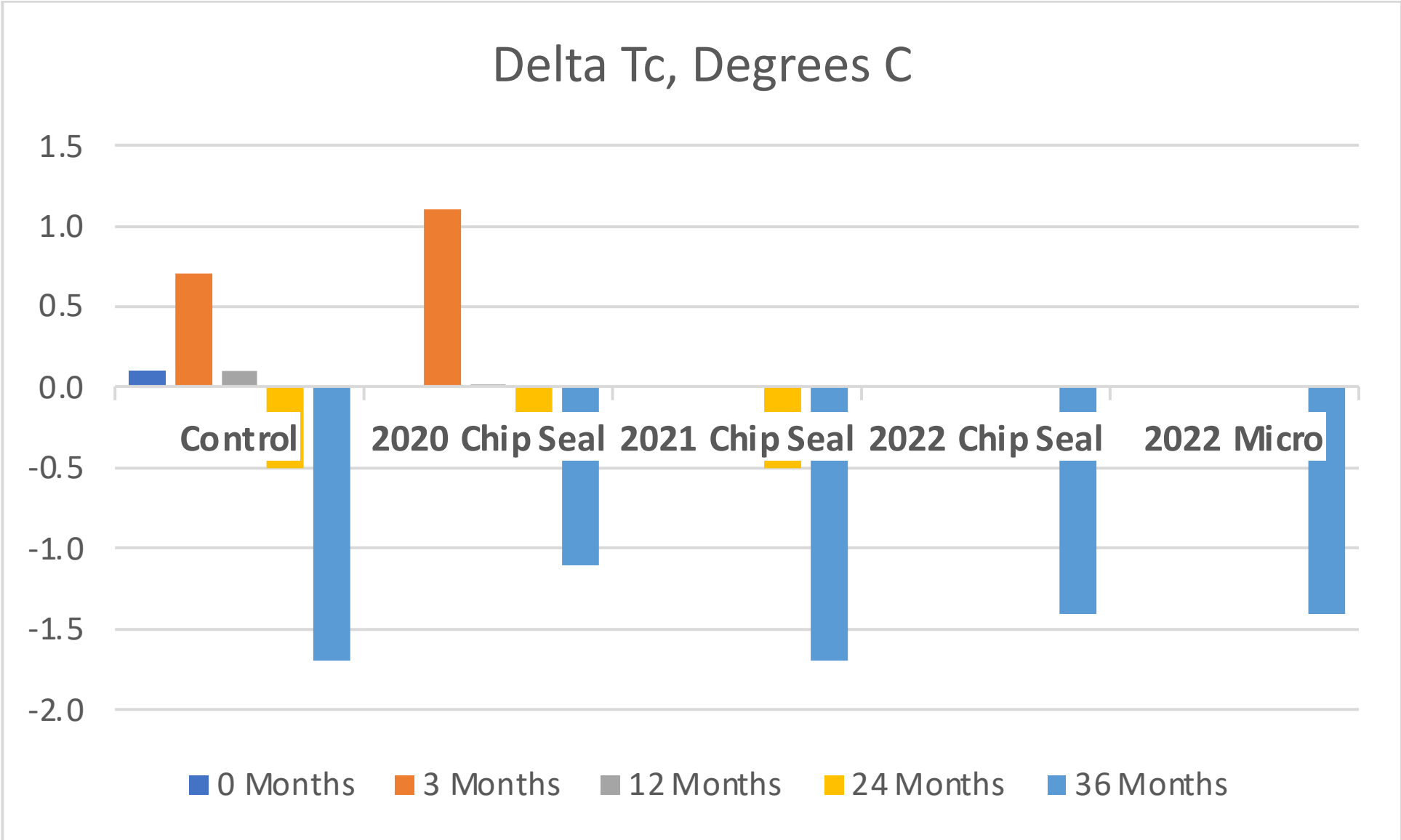
NYSDOT ROUTE 11 SITE LAYOUT

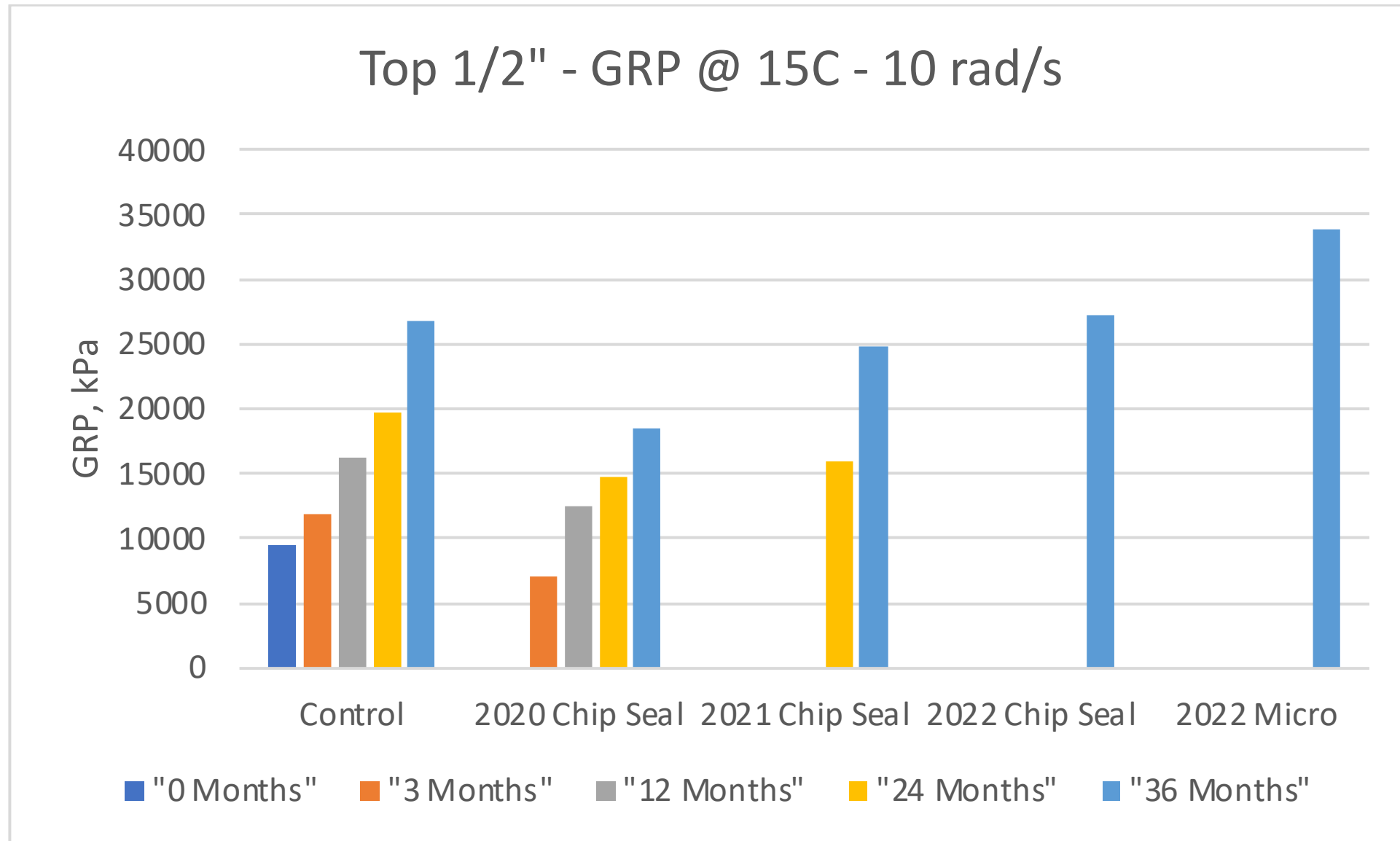


HFRS-2P with a fog and sand application

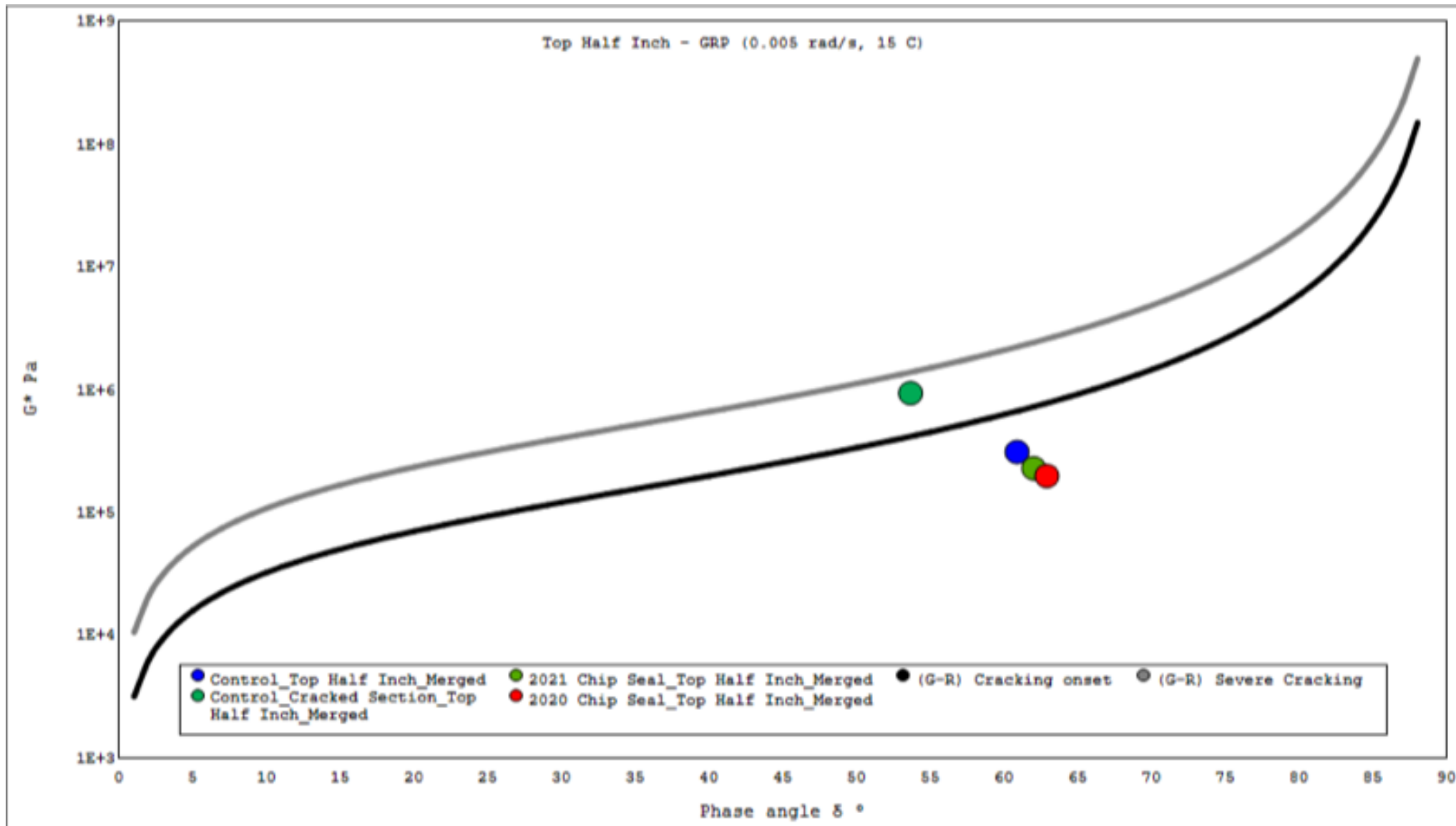
- Cores were taken at 0 , 3, and 12 months
- Recovered binder testing on the top $\frac{1}{2}$ " and the next $\frac{1}{2}$ " of the cores (chip seal removed) – Delta Tc; GRP
- Mixture crack testing performed on the $1 \frac{1}{2}$ " overlay (chip seal removed) – FI

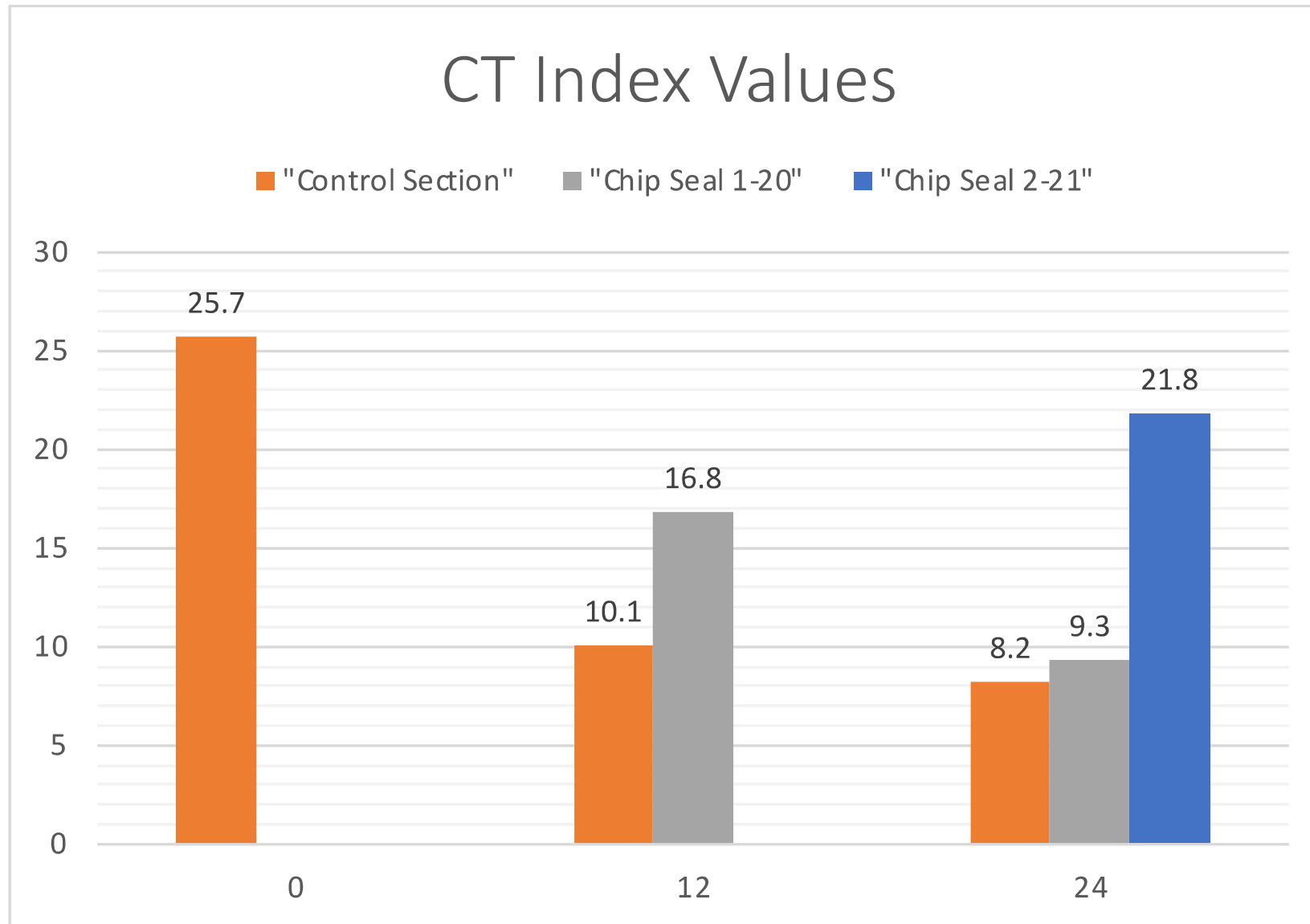






GRP -0.005 rad/s, 15C





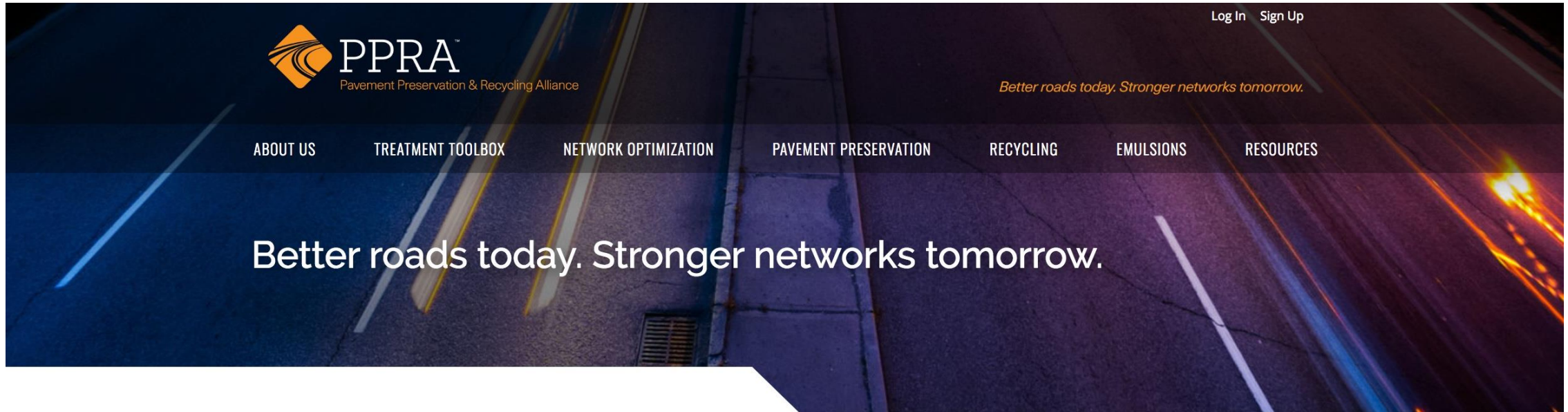
2022-26 Paving Program Resource Needs

	2019 Program Level	2022-2026
Lane miles (LM) Resurfaced	2,445	3,221
LM Renewal / % of Program	122/5%	966/30%
LM Correct. Maint. / % of Program	1,149/47%	1,546/48%
LM Prevent. Maint. / % of Program	1,149/48%	709/22%
Paving Cycle (Years)	15.7	12.0
Avg. Treatment Life (Years)	9.4	12.0
Resource Needs (\$millions)	431	1,188









The Pavement Preservation & Recycling Alliance provides a collective space to bring industry and agency together for the advancement of sustainable, eco-efficient, and innovative pavement applications.

Joining together resources from the Asphalt Emulsion Manufacturers Association, the Asphalt Recycling & Reclaiming Association, and the International Slurry Surfacing Association, PPRA unites a network of members dedicated to: "Better roads today. Stronger networks tomorrow."

Jointly, PPRA assists agencies by providing a centralized repository for comprehensive information related to pavement preservation and asphalt recycling and reclaiming. PPRA seeks to help agencies at the state, county, and local level to make the right choices for their road networks and be the best possible stewards of their roads and of taxpayer dollars.

Resources provided by PPRA help agencies to:

- Empower long-term planning
- Remove subjectivity in treatment determinations
- Connect funding to network condition
- Facilitate forecasting
- Demonstrate network-level progress

- [RoadResource.org](http://www.RoadResource.org)
- Completely free
- 18 pavement preservation, recycling, and emulsion treatments
- Network comparison calculators
- Tutorials
- Allows for customization
 - Structural coefficients
 - Cost information
 - Life extensions for treatments



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Life Cycle Cost *Get 40 years of life or more*

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Equivalent Annualized Cost *Applies to apples cost comparisons*

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Remaining Service Life *Add maximum life to your network*

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Cost Benefit Value *How-To Prioritize Projects*

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IMPROVE YOUR
OVERALL NETWORK
CONDITION



GET THE LOWEST
LIFE CYCLE COST
PER ROAD



MAXIMIZE
YOUR ECO
BENEFIT

Condition	A	B	C	D	F
PCI range	85-100	70-84	55-69	40-54	0-39
Crack Seal	5	3	1-2		
Fog Seal		4	2		
Rejuvenating Fog Seal		4	2		
Chip Seal		7-10	3-5	1-3	
Scrub Seal		7-10	3-5	1-3	
Slurry Seal	7-10	5-7.5			
Microsurfacing		8-10	4-6		
Cape Seal		8-10	6-8	4-6	
Thin Lift	8-10	6-8	4-6		

Changes in PCI

Route	Existing (2020)	After Placement (2020)	2021	2022
ND CR-2	95	100	100	100
MD Arrants Road	95	100	100	95
OHDOT SR 117	59	100	69	65
VDOT Beulah Road	73	100	88	78





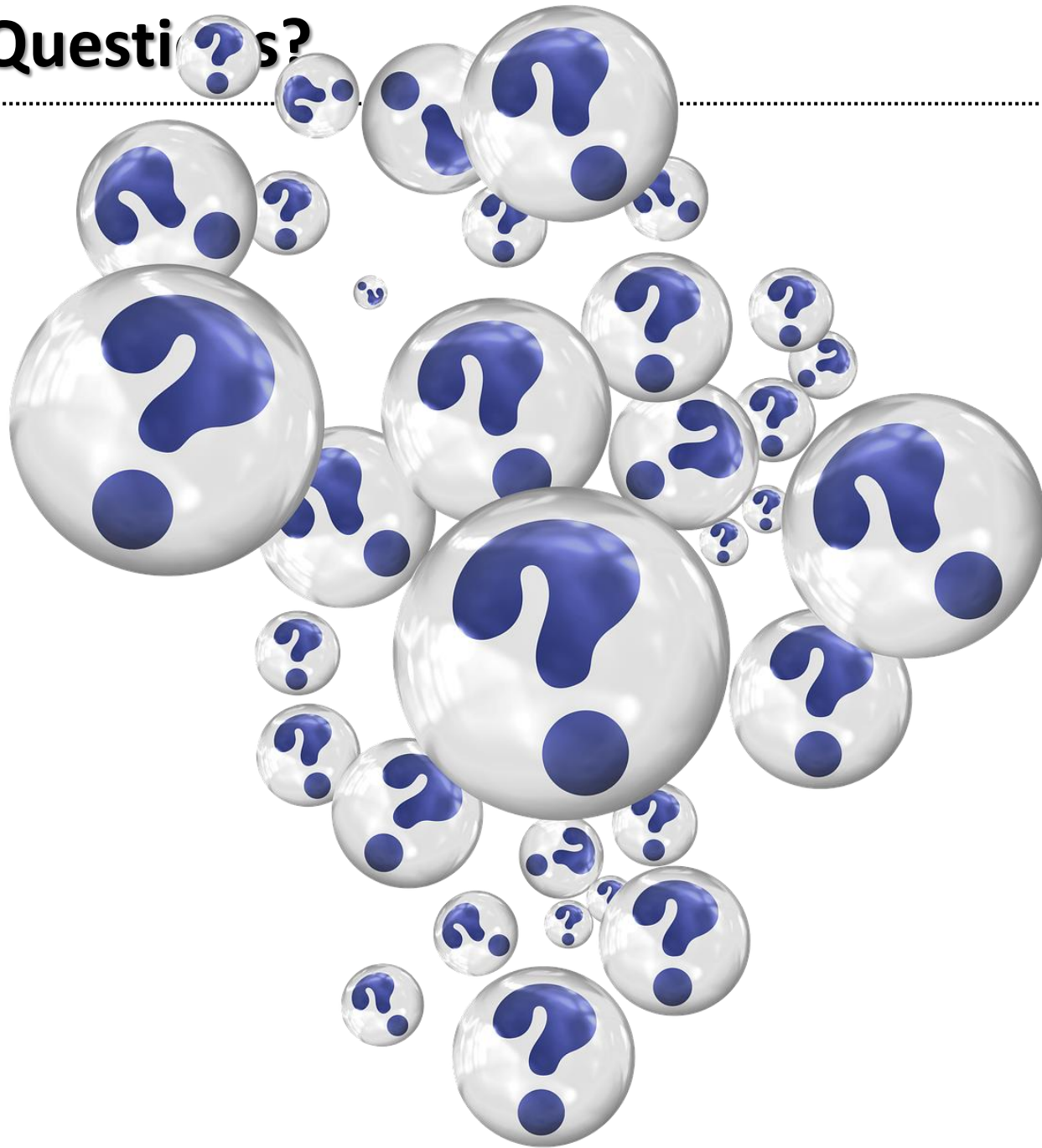


*In Loving Memory of
Gregory M. Harder
December 12, 2002
December 21, 2022*

#LLGH



Questions?



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Thank you



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