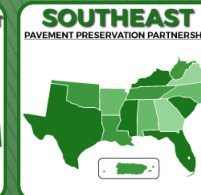


# Pavement Preservation Demonstration Projects Using NCHRP Provisional Specification for Chip Seal and Microsurfacing at VDOT

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# Background

- Partnered with the research team of NCHRP 20-44(26), three provisional specs were developed by VDOT/VTRC:
  - Chip seal, micro-surfacing, and *fog seal*
- Incorporated recommendations from AASHTO:
  - MP 27-16 Standard Spec. for Materials for Emulsified Asphalt Chip Seals
  - PP 82-16 Provisional Stand. Practice for Emulsified Asphalt Chip Seal Design
  - MP 28-17 Standard Specification for Materials for Micro Surfacing
  - PP 83-16 Provisional Standard Practice for Micro Surfacing Design
  - MP 33-17 Standard Specification for Materials for Emulsified Asphalt Fog Seal
  - PP 88-17 Standard Practice for Emulsified Asphalt Fog Seal Design
- Significant changes/differences from the current specs

# Objectives

- To document the construction process and monitor the short-term field performance of these sections to evaluate if the changes made to the specifications return any initial benefits to VDOT
  - Chip Seal control section
  - Chip Seal demo section
  - Microsurfacing control section
  - Microsurfacing demo section

# Tasks

1. Document the differences between VDOT current and provisional specifications
2. Document the existing conditions of each demonstration site and evaluate the structural condition of the existing pavements
3. Monitor and document the construction process for each demonstration site
4. Periodic monitoring of the performance of the projects for a year: Rut, IRI, Friction, and Macrotexture. Also, take field cores for permeability analysis (at time “zero” and year 1)
5. Analysis of the field performance between control and demo
6. Final report

# Chip Seal Project

# New Pro. Chip Seal Specification

Materials per AASHTO MP27

- Emulsions: M140; M 208, M316
- Aggregates: T11, T27, T96, T335, but gradation and % fractured

**Table 1—Requirements for Chip Seal Aggregates**

Sieve Size (see T 11 or T 27)	Passing, %			
	A	B	C	D <sup>a</sup>
<sup>3</sup> / <sub>4</sub> in.	100	—	—	—
<sup>1</sup> / <sub>2</sub> in.	90–100	100	—	—
<sup>3</sup> / <sub>8</sub> in.	5–30	90–100	100	100
No. 4	0–10	5–30	90–100	0–65
No. 8	—	0–10	5–30	0–15
No. 16	0–2	—	0–10	0–10
No. 30	—	0–2	—	—
No. 50	—	—	0–2	0–6
No. 200	0–1	0–1	0–1	0–3

<sup>a</sup> Limit use to Class I chip seals as defined in Table 2.

# New Pro. Chip Seal Specification

Materials per AASHTO MP27

**Table 2—Fracture and Abrasion Requirements for Chip Seal Aggregates**

Property	Chip Seal Class <sup>a</sup>		
	I	II	III
Fracture, 1 Face, % min (see T 335)	70	85	95
Fracture, 2 Faces, % min (see T 335)	60	80	90
Los Angeles Abrasion, max % loss (see T 96)	40	35	30
Flakiness Index Value, max % (see FLH T 508)	35	30	25

<sup>a</sup> Class I is less than  $\leq 500$  AADT; Class II is 501–5000 AADT; and Class III is greater than 5000 AADT.

# Chip Seal Control Site - Prior to the construction





# Chip Seal Control Site - Prior to the construction



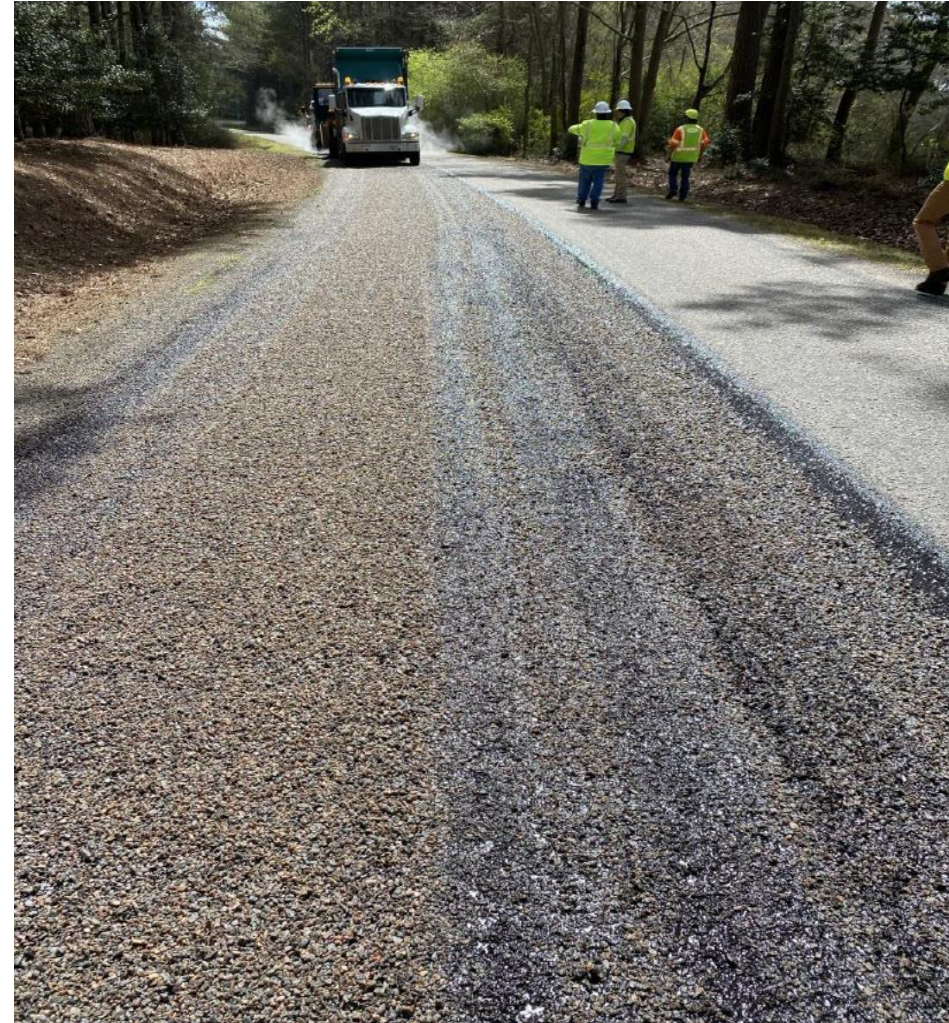
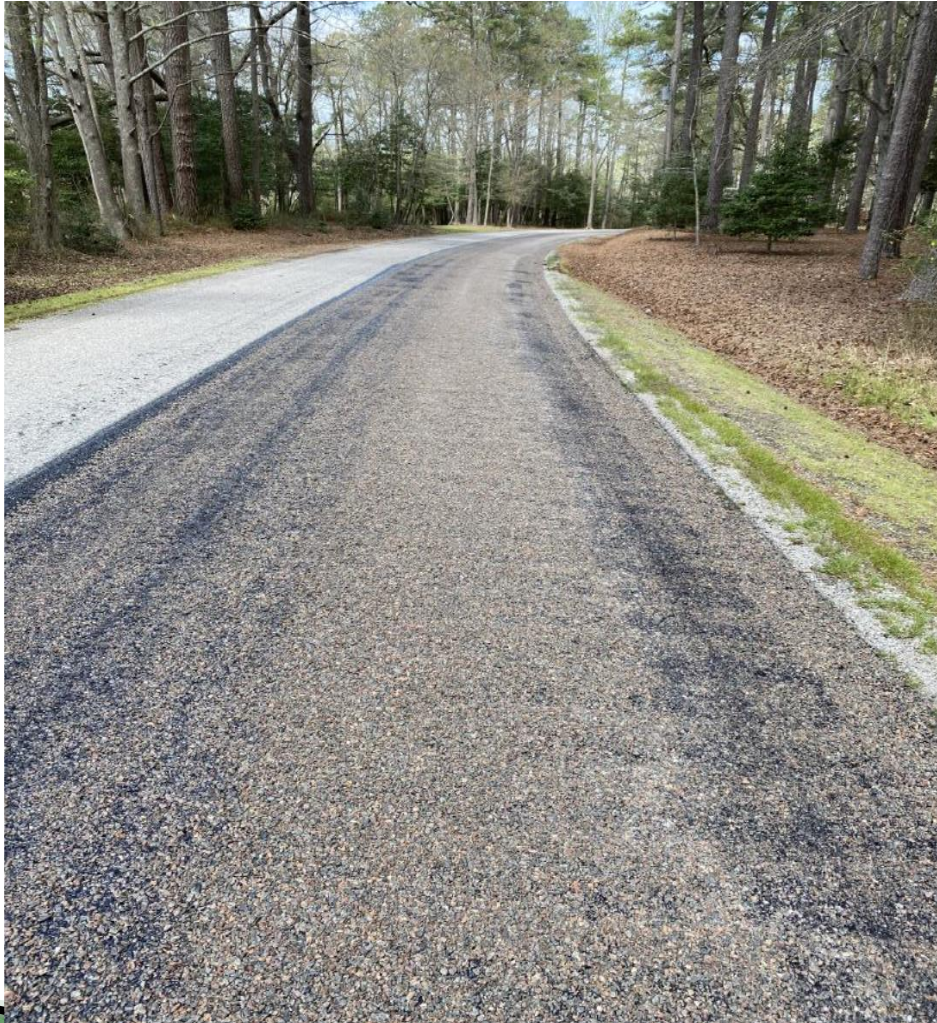
# Chip Seal Control Site - After the construction



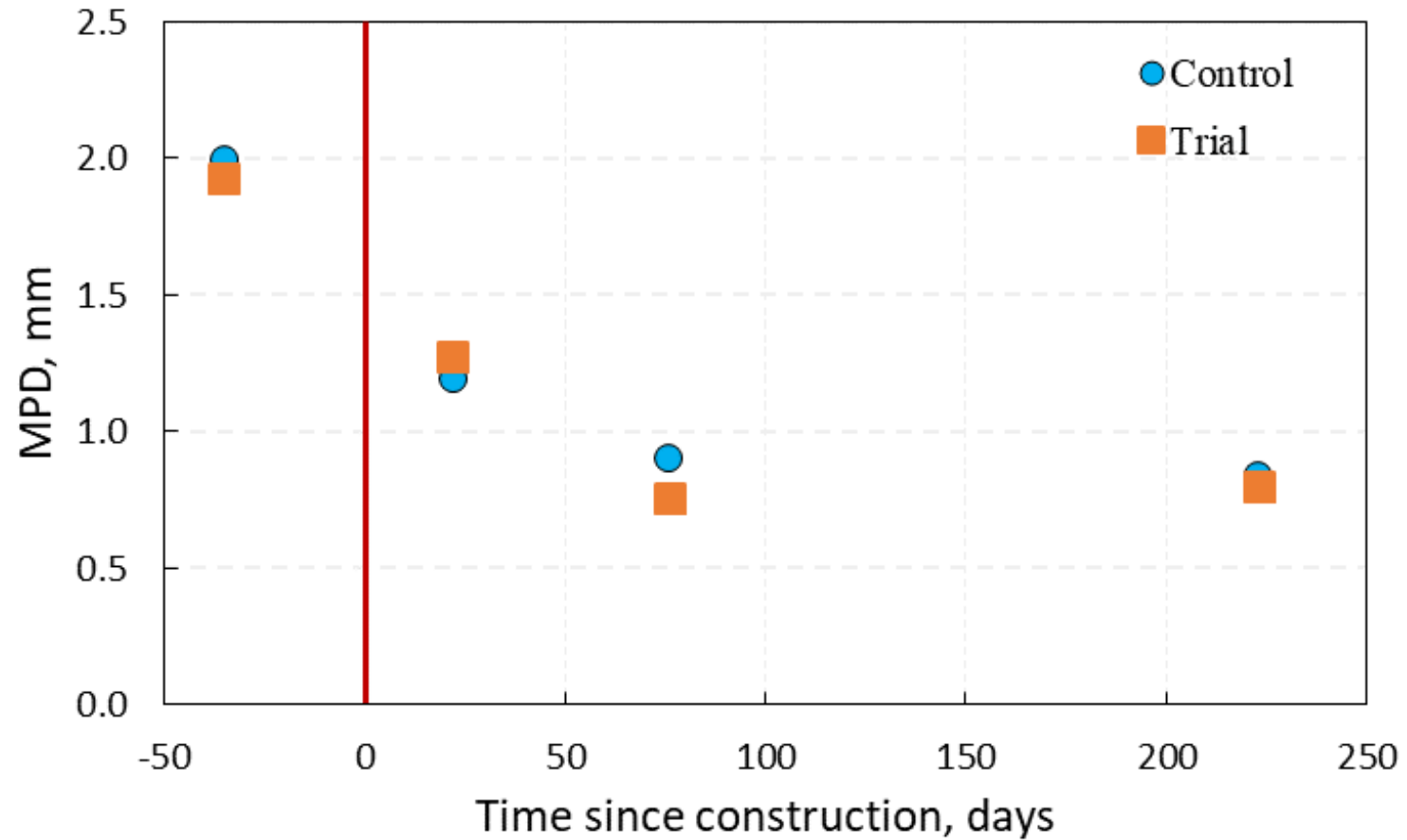
# Chip Seal Demo Site - Prior to the construction



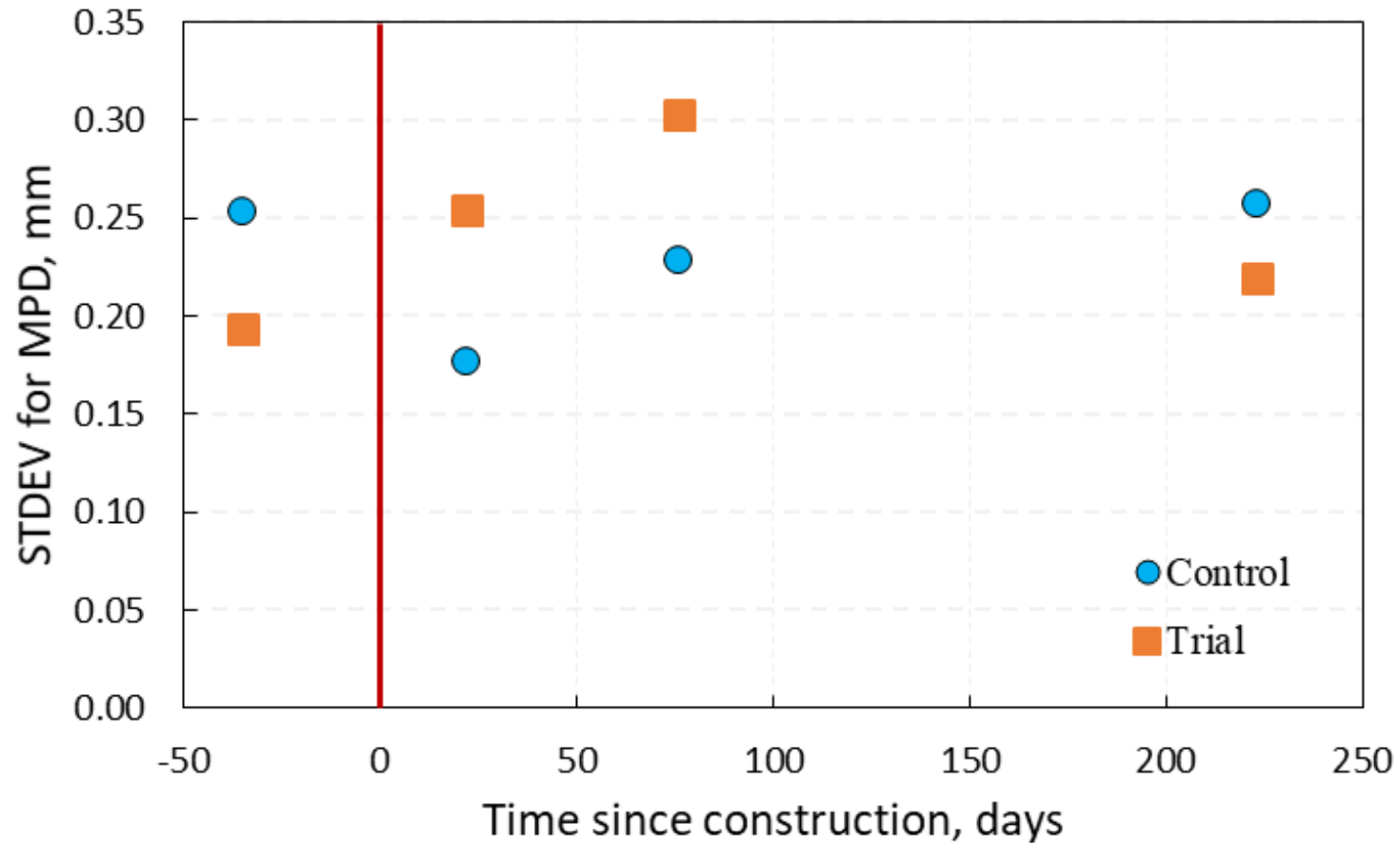
# Chip Seal Demo Site - During the construction



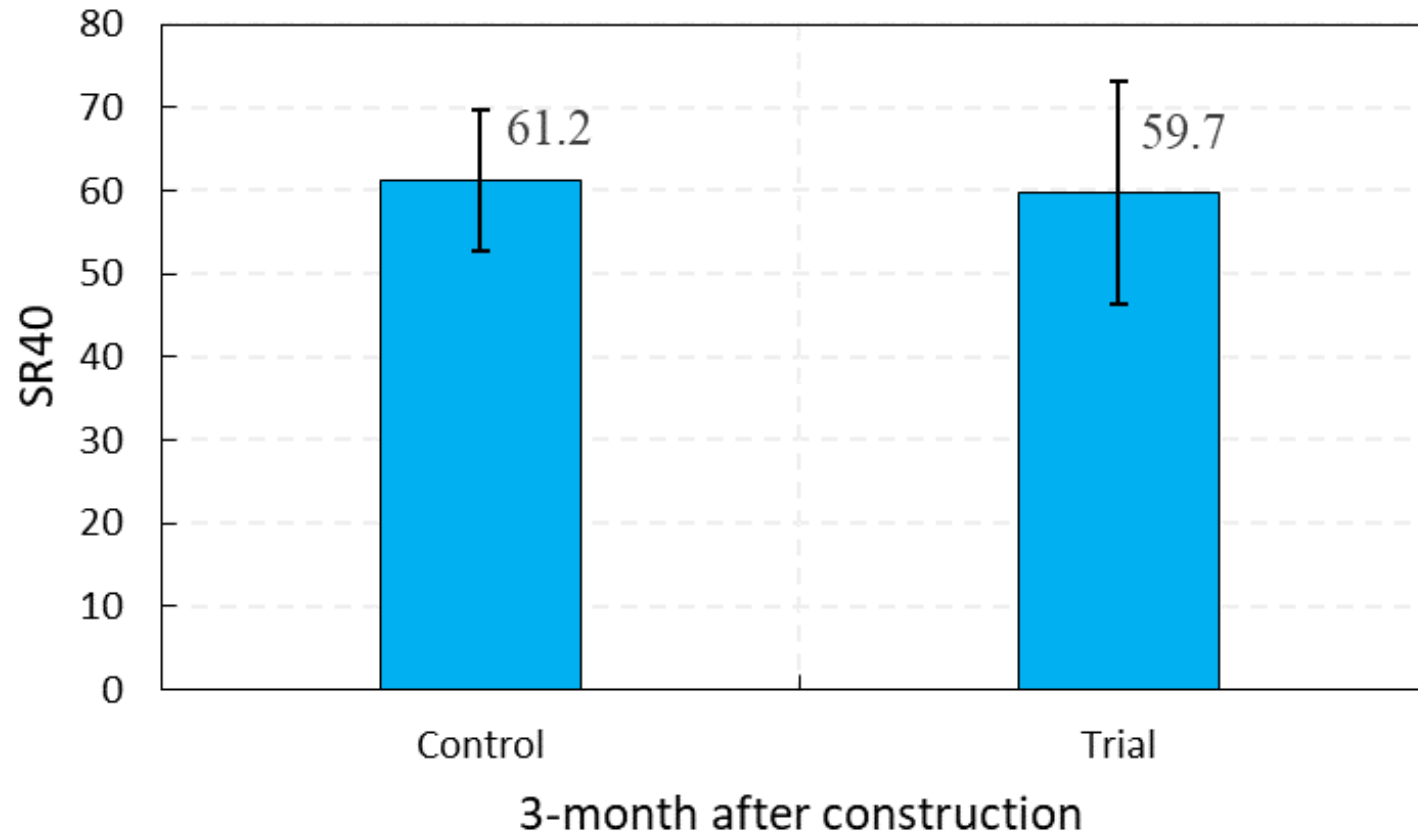
# Chip Seal Project -



# Chip Seal Project –



# Chip Seal Project – Friction



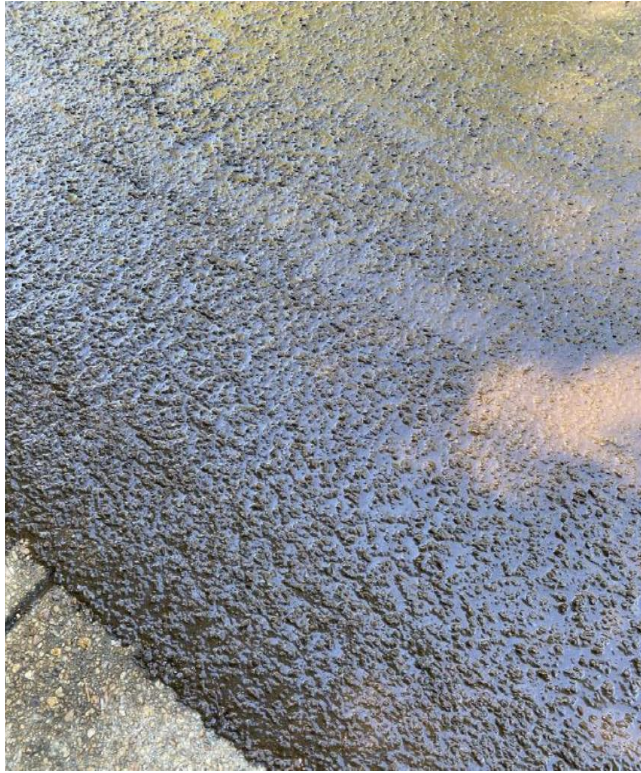
# Microsurfacing Project



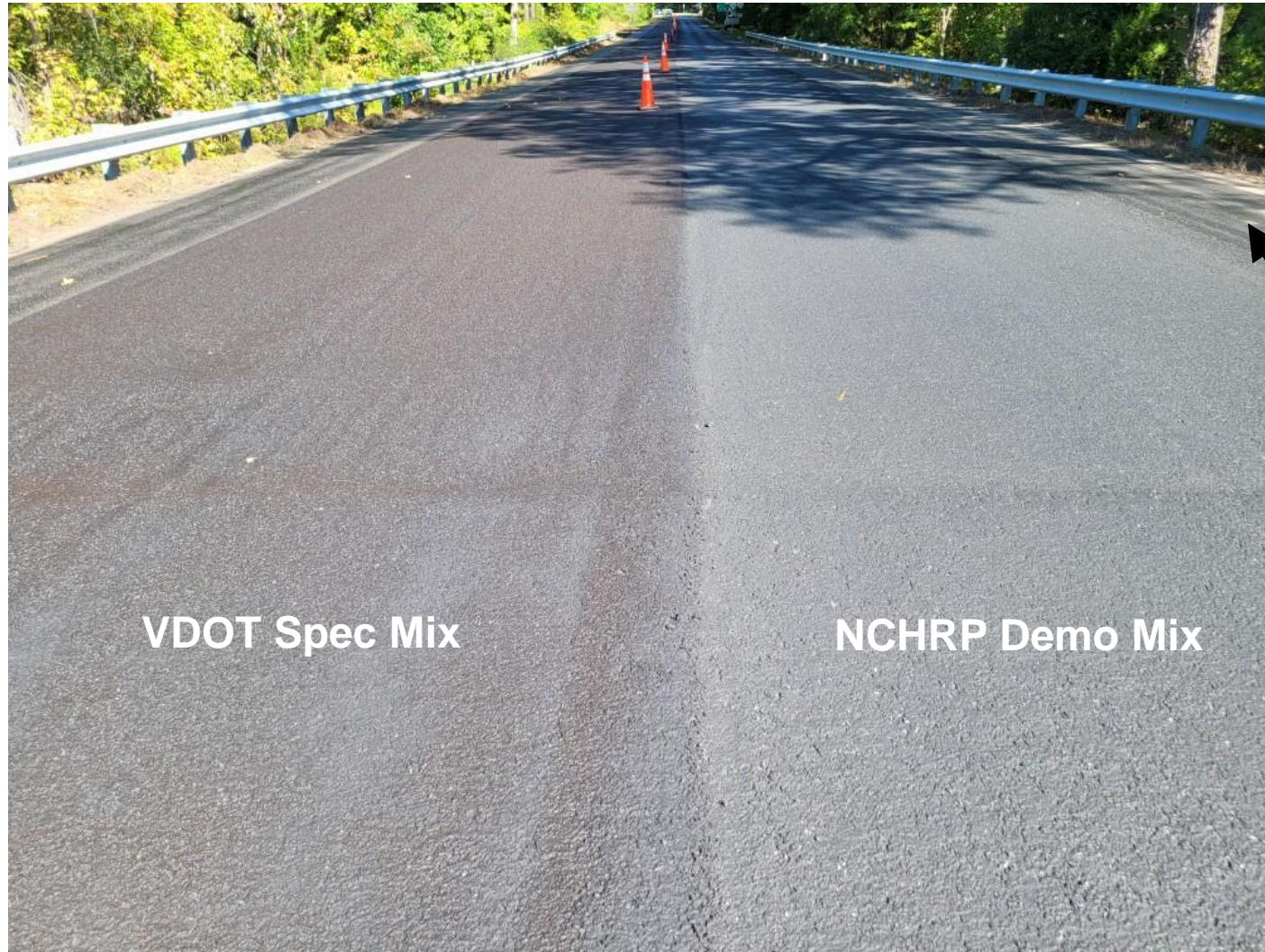
# SR 132, York County: Existing Surface



# SR 132, York County: Microsurfacing



# SR 132, York County: Microsurfacing



# SR 132, York County: Microsurfacing

Sieve	AASHTO Type III	VDOT Type C	MM Anderson Cr	LS Rockville	LS Ruckersville
	Percent Passing				
3/8	100	100	100	100	100
No. 4	70 - 90	70 - 95	94.0	92.4	81.7
No. 8	45 - 70	45 - 70	66.3	62.2	53.6
No. 16	28 - 50	32 - 54	43.2	39.5	37.2
No. 30	19 - 34	23 - 38	28.0	25.6	28.6
No. 50	12 - 25	16 - 29	17.9	17.0	23.1
No. 100	7 - 18	9 - 20	11.2	10.8	16.8
No. 200	8 - 15	5 - 12	6.8	6.6	9.5

VDOT Spec Mix

NCHRP Demo Mix

# SR 132, York County: Microsurfacing

	September 1 <sup>st</sup> , 2022		November 15, 2022	
<b>VA 132</b>	SB (Control)	NB (Trial)	SB (Control)	NB (Trial)
<b>SR40</b>	64.1	61.5	83.1	66.0
<b>SD</b>	4.5	5.1	3.7	4.1
<b>MAX</b>	76.1	75.2	91.7	86.5
<b>MIN</b>	37.3	44.1	73.0	55.6
<b>MPD</b>	0.82	0.90	1.13	0.85
<b>SD</b>	0.08	0.22	0.13	0.19
<b>MAX</b>	1.04	1.65	1.36	1.37
<b>MIN</b>	0.63	0.44	0.63	0.41

Air temperature:

September -70° F

November -48° F

Pavement temperature:

September -75° F

November -50° F

# THANK YOU