NCHRP 9-63 Field Update

ETF Meeting

May 30, 2024

The following slides were not developed using artificial intelligence (AI)

Field Data

PROJECT INFO					
Route	CR 2		**Owner Agency**	Divide County	
Length, miles	3		**Application**	Microsurfacing	
Start MP	SR 5		**Contractor**	ASTECH	
End MP	106th St. NW		**Emulsion Source**	McAsphalt-Regina	
Width, ft.	29		**Emulsion Type**	CQS-1HP	
# of Lanes	2		**Aggregate Source**	Strata	
Lane Width, ft.	12		**Aggregate Type**	Gravel	
Shoulder Width, ft.	2.5		**Aggregate Size, in.**	Type 3	
AADT	<750		50	**Application Rates**	
Posted Speed, mph	55			**Target**	**Actual**
Mix design method			**1st Micro, lb/sy**	25	20.0
			2nd Micro/ lb/sy		

TEST SECTION					
Start MP	1278 from RR	**1st Date Placed**	8/27/20	**Time Placed**	8:45AM
End MP	1278+500	**Air Temperature at Placement, F**			54.0
Lane Direction	SB	**Pavement Surface Temperature, F**			71.0
Canopy	Open-sunny	**Relative Humidity, %**			84.0
		2nd Date Placed	n/a	**Time Placed**	n/a
		Air Temperature at Placement, F			n/a
		Pavement Surface Temperature, F			n/a
		Relative Humidity, %			n/a
Layout	Straight and Flat				
Existing surface type	Micro/slurry				
Existing Primary Distress	Weathering				
Existing Secondary Distress	None				
Existing Surface Clean?	Yes				

	Existing	**After Placement**	**2021**	**2022**
Average rut depth, in.	0.029		0.208	0.211
Sand patch results, avg. diam., in.	19.30	9.67	11.78	12.50
Mean texture depth, in.	0.042	0.167	0.113	0.101

Field Data

	Existing	After Placement	2021	2022	2023
PCI *(ASTM D6433)*	95	100.0	100	100	
Other notes	Berkamp M1A continuous unit - 1 power broom - 9 support units - Tom Litchy 320-248-9124 foreman - no visible mile post markings so test section begins at 1278 south of railroad track - Colgan ND - roadway has extremely low traffic volumes - 3 miles from Canada - existing pavement is approximately 2-3 years old - very minor rutting and no cracking - Type 3 micro - 29 ft roadway plus safety edge				
Weather Station	KNDCROSB4				
wunderground.com		**Air Temperatures, F**			
1st Lift - Date:	8/27/20	**High**	**Low**	**Precipitation, in.**	
2 Days Prior to placement		93.4	64.8	0.00	
Day Prior to placement		87.6	57.2	0.00	
Day of placement		85.3	47.1	0.01	
Day after placement		76.5	48.7	0.00	
2 Days after placement		82.8	49.1	0.00	

Field Data

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Existing Pavement Measurements

		Existing		2021		2022	
Rutting		Outside Wheelpath	Inside Wheelpath	Outside Wheelpath	Inside Wheelpath	Outside Wheelpath	Inside Wheelpath
MP		Dial Gauge Reading	Dial Gauge Reading	Dial Gauge Reading	Dial Gauge Reading	Dial Gauge Reading	Dial Gauge Reading
1278 from RR		3	28	221	202	235	181
1278 from RR	+50	9	0	239	178	240	150
1278 from RR	+100	0	0	224	206	239	222
1278 from RR	+150	0	65	221	181	192	271
1278 from RR	+200	8	86	138	216	118	224
1278 from RR	+250	15	149	211	193	227	236
1278 from RR	+300	0	58	203	189	189	226
1278 from RR	+350	8	62	179	281	127	227
1278 from RR	+400	5	52	159	238	184	256
1278 from RR	+450	0	44	210	180	203	221
1278 from RR	+500	11	42	325	184	301	174
Average Reading		5	53	212	204	205	217
Average Rut Depth, in.		0.005	0.053	0.212	0.204	0.205	0.217
Overall Average Rut Depth, in.		0.029		0.208		0.211	

Sand Patch			Date	8/26/20			
MP	Wheelpath	D1	D2	D3	D4	AVG.	MTD, in.
	Outside	19.25	19.00	19.50	20.00	19.44	0.041
	Inside	18.25	19.25	18.50	19.00	18.75	0.044
	Outside	20.00	19.25	19.75	20.75	19.94	0.039
	Inside	19.25	19.00	19.00	19.00	19.06	0.043
					Average	19.30	0.042

Field Data

Application Measurements

Emulsion Temperature, F			160	**Notes**				
Emulsion S.G. at 60F			1.006					
Emulsion lbs./gallon			8.400					
% Residue by Distillation			62.8					
Correction Factor								

Mixture Application

1st Lift Sample	Bag wt., g	Bag w/micro wt., g	Roofing Tare wt., g	Roofing w/micro wt., g	Area, sq. in.	Wheelpath	Aggregate Application Rate in lbs./ sq. yd.
1	24.0	1930.0	500.0	581.0	253	Outside	22.4
2	24.0	1722.0	500.0	566.0	253	Between	19.9
3	24.0	1502.0	500.0	582.0	253	Inside	17.6
						Average	20.0

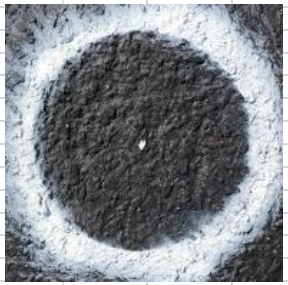
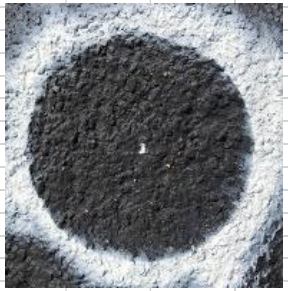
Field Data

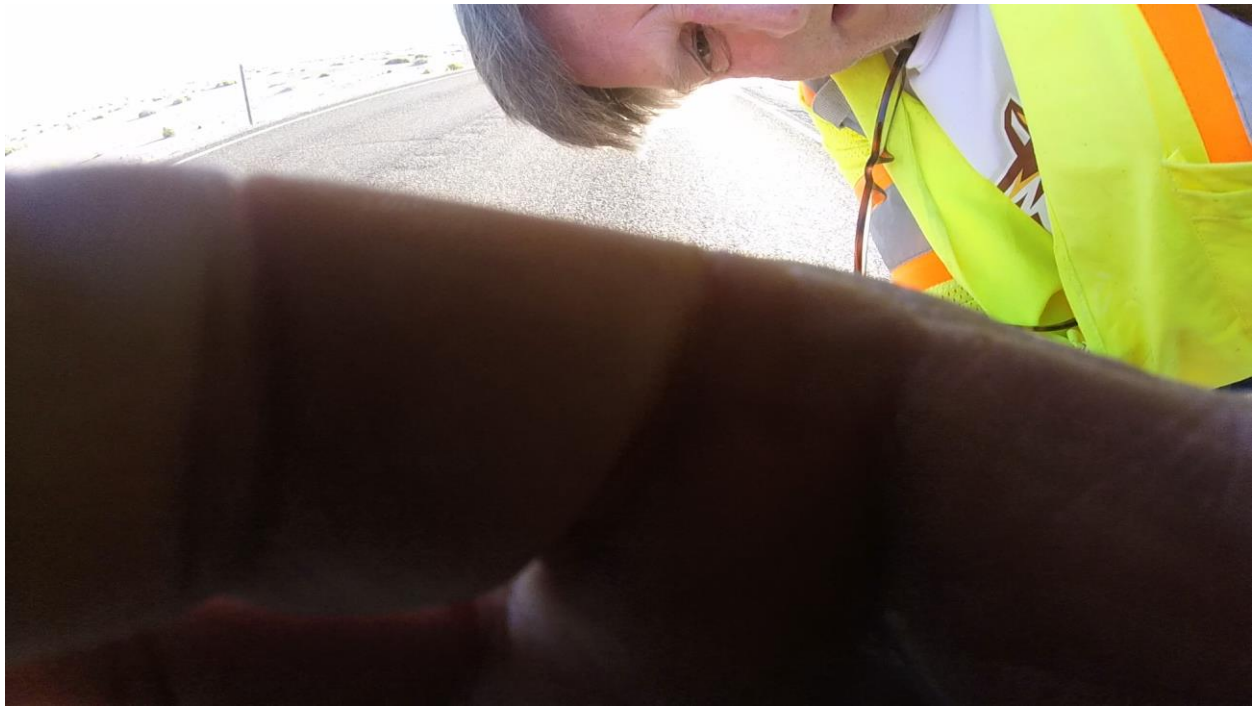
Sand Patch After Application			Date	8/28/20			
MP	**Wheelpath**	**D1**	**D2**	**D3**	**D4**	**AVG.**	**MTD, in.**
1278 RR+100	Outside	9.50	9.50	9.25	9.75	9.50	0.172
1278 RR+100	In between	9.00	9.50	9.00	9.25	9.19	0.184
1278 RR+100	Inside	9.75	9.50	9.50	9.75	9.63	0.168
1278 RR+400	Outside	9.75	11.00	10.00	10.25	10.25	0.148
1278 RR+400	In between	8.50	10.25	9.50	9.50	9.44	0.174
1278 RR+400	Inside	9.50	10.50	10.00	10.00	10.00	0.155
					Average	9.67	0.167

Sand Patch After Application - Year 1			Date	9/16/21			
MP	**Wheelpath**	**D1**	**D2**	**D3**	**D4**	**AVG.**	**MTD, in.**
1278 RR+100	Outside	12.50	13.75	12.50	12.75	12.88	0.094
1278 RR+100	In between	13.00	12.50	12.00	13.00	12.63	0.097
1278 RR+100	Inside	11.00	12.00	12.00	11.50	11.63	0.115
1278 RR+400	Outside	11.75	12.00	12.25	11.00	11.75	0.113
1278 RR+400	In between	11.50	10.50	10.50	11.00	10.88	0.131
1278 RR+400	Inside	11.00	11.25	11.00	10.50	10.94	0.130
					Average	11.78	0.113

Sand Patch After Application - Year 2			Date	9/29/22			
MP	**Wheelpath**	**D1**	**D2**	**D3**	**D4**	**AVG.**	**MTD, in.**
1278 RR+100	Outside	12.50	13.50	13.00	12.75	12.94	0.093
1278 RR+100	In between	12.00	13.00	12.00	12.50	12.38	0.101
1278 RR+100	Inside	11.00	12.00	11.00	11.25	11.31	0.121
1278 RR+400	Outside	12.75	13.50	13.25	12.75	13.06	0.091
1278 RR+400	In between	13.75	13.50	13.00	14.50	13.69	0.083
1278 RR+400	Inside	12.00	12.00	11.25	11.25	11.63	0.115
					Average	12.50	0.101

Field Data

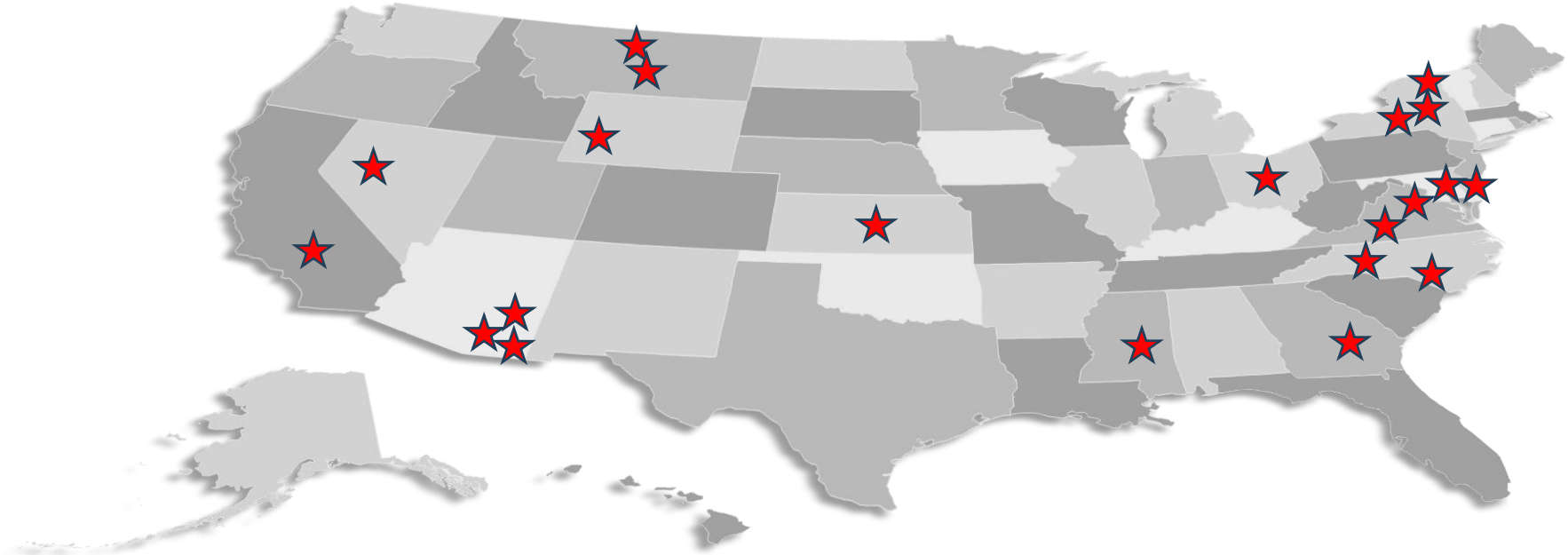
Location 1 : +125 OWP			
	2020-1	2021-1	2022-1
Location 2 : +125 BWP			
	2020-2	2021-2	2022-2
Location 3 : +125 IWP			
	2020-3	2021-3	2022-3



Projects to date

- 21 projects placed to date
- 2019 – 1 project
  - NY
- 2020 – 12 projects
  - NY (2), NC, OH, VA (2), ND (2), SD, MD, KS, NV
- 2021 – 7 projects
  - DE, NC, AZ (3), MS
- 2022 – 1 project
  - CA

Projects to date



Projects Requirements

- Must be a good candidate road for the application type i.e. don't want a project putting micro on a severely cracked existing road
- Minimum of 1000 feet – actual test section will be 500 feet but need 250 on either end
- Test section should be relatively flat and straight with good sight distance and consistent traffic (posted) speed
- Test section should not have side roads or other sources of traffic entering (businesses, manufacturing facilities, etc.)
- We will need traffic information as well as design/production info (chip seal, micro, slurry) – past construction history of the section would also be helpful but not absolutely necessary
- It's not necessary but would ideal if one or more emulsions (residues) could be used on the same project to have multiple test sections i.e. CRS-2, CRS-2h, CRS-2p, RS-2, RS-2h, RS-2p – not all of these but just giving some examples for chip seal

Potential Projects

- Currently working on final plans for projects in AL, TN, GA, NY, New England
- Need projects in the northwest, southwest, and Midwest

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In Loving Memory of

Gregory M. Harder

December 12, 2002

December 21, 2022

#LLGH

Questions?

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