Mississippi PG3 Training

By Mark Waits
NCPP

National Center for Pavement Preservation

MICHIGAN STATE UNIVERSITY

Specification and Construction Reviews

Specification and Construction Reviews

What have we covered?

- Pavement Preservation Introduction
- Scrub Seal Best Practices
- Micro-Surfacing Best Practices

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  - Scrub Seal Best Practices
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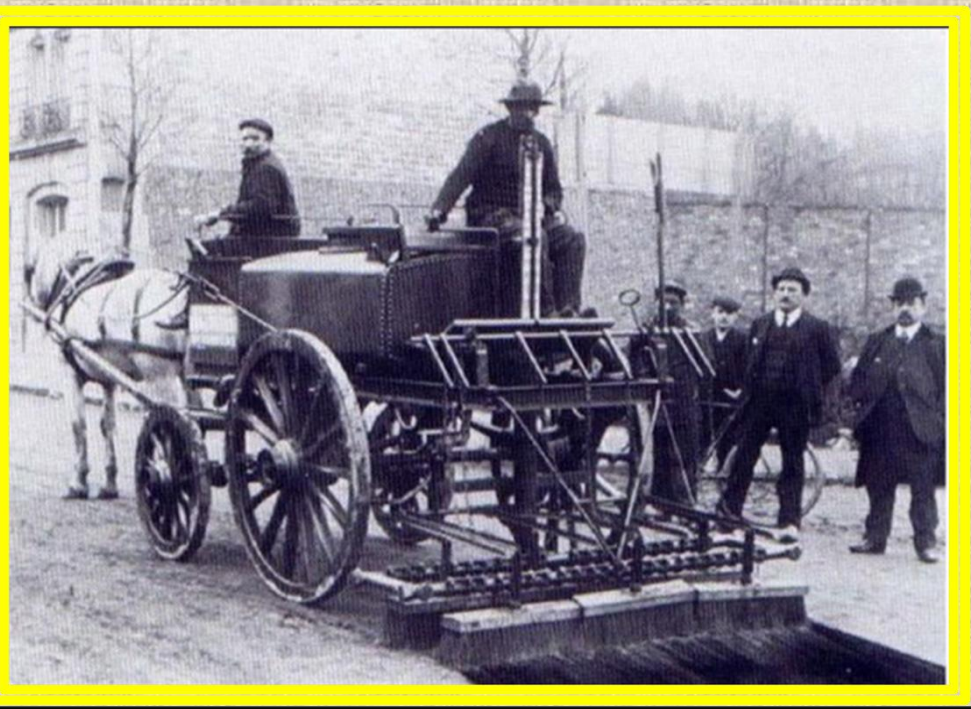

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Specification and Construction Reviews

What We Need to Cover?

- Special Provisions and Specifications Review
- Test Cell Construction
  - Requirements and Responsibilities
  - Recordkeeping
  - Construction Practices

Specification and Construction Reviews

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- ***Special Provisions and Specifications Review***
- Field Visits
- Test Cell Construction
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Special Provisions and Specifications Review

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- **Compare Mississippi's Past and Present Special Provisions**

Special Provisions and Specifications Review

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Special Provisions and Specifications Review

- **Compare Mississippi's Past and Present Special Provisions**
  - ***Scrub Seal 907-414-2***
  - ***Micro-Surfacing 907-418-3***

Scrub Seal Special Provision

SP 904-414 Polymer Modified Asphalt Rejuvenating Scrub Seal

- SP 907-414-1 dated 5/2/2017
- SP 907-414-2 dated 1/09/2025

Scrub Seal Special Provision 907-414-2

- **414.01-Description;**
  - aggregate application rates added
- **414.02.1 Aggregate;**
  - Sampling site is at the stockpiles
  - Stockpile areas are to be cleaned and grubbed, firm, smooth and well drained
  - Sieve passing rates for #200 and #89
  - Only one aggregate type or combination unless approved by the Engineer

Scrub Seal Special Provision 907-414-2

- **414.02.2-Asphalt Emulsion for Scrub Seal;**
  - **AASHTO T 201 Test on Rejuvenating Agent changed**
- **410.02.3 Mix Design; ADDED**
  - **Mix Design using a method such as AASHTO R 107**
  - **Performed a minimum once per season and more frequently if ordered by the Engineer**
- **414.03- Construction Requirements**
  - **414.03.1- Prime coats meet Section 408**

Scrub Seal Special Provision 907-414-2

- **414.03.2- Seasonal and Weather Limitations;**
  - **Emulsified and Cutback asphalts applied when air and pavement temps are over 70F, AC 75F.**
  - **Cutback asphalts cannot be placed between Oct 15 and March 1.**
  - **Bituminous materials cannot be placed between November 1 and March 1**

Scrub Seal Special Provision 907-414-2

- **414.03.2- Seasonal and Weather Limitations;**
  - **Projects between November 1 and March 1 may be done if in the best interest of the public, but have strict requirements**
  - **Blanket authorization will not be given**
  - **Mix design may be changed due to undesirable conditions prior to November 1 and after March 1.**

Scrub Seal Special Provision 907-414-2

- **414.03.3.2- Scrub Broom;**
  - Contractor is responsible for maintaining scrub broom heads in satisfactorily condition. They must be approved by the engineer prior to starting operations.
- **414.03.3.3- Aggregate Spreader;**
  - Must have computerized spread control
- **414.03.3.4- Pneumatic Tire Rollers;**
  - Weight changed to 6-8 tons, ***NO steel wheel rollers***

Scrub Seal Special Provision 907-414-2

- **414.03.3.5- Brooms;**
  - **Defines what the broom is capable of and that it's bristles are stiff enough to sweep but do not damage the surface.**
- **414.03.4- Preparation of Surface; ADDED**
  - **1' outside of the proposed treated surface shall be cleaned**
  - **Herbicide requirements.**
- **414.03.4.1- Cleaning Pavement;**
  - **Cleaned by sweeping no more than 30 minutes prior to application**

Scrub Seal Special Provision 907-414-2

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Scrub Seal Special Provision 907-414-2

- **414.03.4.2- Protecting Accessories; ADDED**
  - Covering utilities and catch basins
- **414.03.4.3- Stripe Removal; ADDED**
  - Remove all thermoplastic striping, marking and legends and raised pavement markers.
- **414.03.5- Application; ADDED**
  - Neat lines from edge of to edge of pavement. No application on concrete gutters or pads.

Scrub Seal Special Provision 907-414-2

- **414.03.5.1- Application of Bituminous Material; ADDED**
  - **Material shall not be applied until the cleaned surface has been approved**
  - **Shots should be greater than 500’ but should not exceed the ability to place the aggregate before the bitumen hardens.**
  - **Asphalt emulsion temps should be between 140F and 180F.**
  - **Surface shall receive a uniform application, with recommendations for corrections.**

Scrub Seal Special Provision 907-414-2

- **414.03.5.1- Application of Bituminous Material; ADDED**
  - **Begin with the Mix Design rates and adjust to field conditions if needed.**
  - **The application shall stop before the distributor runs out of emulsion.**
  - **Paper material used to catch initial nozzle application.**
  - **Spray Bar and nozzles shall be kept clean.**
  - **Longitudinal joints shall be reasonably true and parallel to the centerline. Overlap shall be the Minimum.**

Scrub Seal Special Provision 907-414-2

- **414.03.5.1- Application of Bituminous Material; ADDED**
  - **Construction joint edges shall be blended so there are no gaps.**
  - **Application of the emulsion shall cease 40’ prior to the end of the application. The remaining emulsion in the broom should finish to the of the application.**

Scrub Seal Special Provision 907-414-2

- **414.03.5.2- Application of the cover Coat Material; ADDED**
  - **Application of cover material shall immediately follow the application of bituminous material.**
  - **Adjustments to the cover material rates may need to be done.**
  - **Application rates shall be verified on the first day of production and at least one week thereafter.**
  - **Section explains the calibration method.**
  - **Section explains the pneumatic roller requirements … at least 5 complete coverages of the treated surface.**

Scrub Seal Special Provision 907-414-2

- **414.03.5.2- Application of the cover Coat Material; ADDED**
  - **If a fog seal is required, it should be applied at 0.11 gallons per square yard.**
  - **The fog seal shall not be placed until after the final brooming.**
- **414.03.6- Control of Traffic; ADDED**
  - **Operations for application should *stop at least 2 hours* before dusk**
  - **Initial brooming should not commence until after one hour of initial rolling and the emulsion has cured.**

Special Provisions and Specifications Review

- **Compare Mississippi's Past and Present Special Provisions**
  - ***Scrub Seal 907-414-2***
  - ***Micro-Surfacing 907-418-3***

Special Provisions and Specifications Review

- Scrub Seal 907-414-2
- **Micro-Surfacing 907-418-3**

Micro-Surfacing Special Provision 907-418-3

- SP 907-418-1 dated 4/13/2021
- SP 907-418-2 dated 1/09/2025
- SP 907-418-3 dated 2/18/2025

Micro-Surfacing Special Provision 907-418-3

What was changed between SP 907-418-1, and SP 907-418-2?

Micro-Surfacing Special Provision 907-418-3

What was changed between SP 907-418-1, and SP 907-418-2?

418.02.3- Cationic Asphalt Emulsion; **CQS**-1P meeting AASHTO M316 replaced **CSS**-1P

Micro-Surfacing Special Provision 907-418-3

What was changed between SP 907-418-2, and SP 907-418-3?

Micro-Surfacing Special Provision 907-418-3

- 418.03.9-Quality Control;
  - Mention of calibration factors being used as a method of payment.
- 418.04-Method of Payment;
  - Explains the different method of payment between micro-surfacing emulsion by the gallon or by the calibration method.

Specification and Construction Reviews

What We Need to Cover?

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- Field Visits
- ***Test Cell Construction***
  - *Requirements and Responsibilities*
  - *Recordkeeping*
  - *Construction Practices*

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Field Visit and Test Cell Construction

Field Visit and Test Cell Construction

Scheduling

- **NCPP Preservation Specialists and / or industry volunteers must be on site for Test Cell construction.**
- **The Agency and Contractor shall provide the following notices to the NCPP Representative.**
  - **14-days' notice of anticipated Test Cell construction date.**
  - **5-day schedule review.**

Field Visit and Test Cell Construction

Scheduling

- 48-hour Go / No Go
  - It is understood that this is construction and things happen. If the representative arrives on site and Test Cell construction is delayed due to weather, equipment or materials a decision will be made to hold or return at a later date

Field Visit and Test Cell Construction

Requirements

- It is preferable but not required that Test Cell construction be completed during weekday day-time hours.
- Test cell details shall be approved by PG3 Data Team prior to scheduling Test Cell construction.
- Contractor shall provide unlimited access to equipment, calibration information, mix designs, supervisors and crew members for recordkeeping and training purposes.

Field Visit and Test Cell Construction

Requirements

- ***Agency*** **shall designate at least one on-site individual to assist in the recordkeeping process.**
  - **Data forms will be provided by NCPP**
  - **Meet specifications and best practices**

Field Visit and Test Cell Construction

Responsibilities

- ***Agency***
  - Test cell and control cell location
  - Material Testing
  - Inspection of work
  - Gathering data with NCPP assistance
  - Maintain Data Records

Field Visit and Test Cell Construction

Responsibilities

- ***NCPP***
  - Equipment Review
  - Material and Stockpile Review
  - Discussion of Best Practices with crew and inspectors
  - Assist agency with completion of Data Form
  - Completion of "After Action Review" of Test Cell Construction.

Field Visit and Test Cell Construction

Responsibilities

- ***Contractor***
  - Provide access to equipment, employees and materials
  - Perform work that meets project specification and industry best practices.
  - Assist in gathering data.

Field Visit and Test Cell Construction

Mississippi (SP) Section 904- Notice To Bidders No.6614 “Test Sections”

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 – NOTICE TO BIDDERS NO. 6614 **CODE: (SP)**

DATE: **01/14/2025**

SUBJECT: **Test Sections**

This project is part of the TPF-5(522) Pooled Fund Study - Improving the Quality of Pavement Preservation Construction and Data Collection Practice. The project is designed to bring awareness and facilitate a wider acceptance and implementation of sound pavement preservation technologies and practices. Ultimately, the project's aim is to help transfer technologies and current knowledge to transportation agencies. With this knowledge, they can better extend the service life of the pavements and reduce their life-cycle costs as well as help minimize impact to the traveling public.

The contractor should be aware that they may be required to:

- Attend additional preconstruction and pre-work conferences
- Make key field personnel available for up to 8 hours of Just – In-Time training
- Complete additional equipment calibrations, test strips and adjustments immediately prior the start of construction
- Cooperate with investigators during the construction of Test Section(s) that are embedded within the project limits.
- Provide up to seven days’ notice prior to construction of the test section.

Bidders are advised that this project will include three test sections within the limits of the project on State Route 511 in Clarke County. These sections shall be near the BOP (Beginning of State Maintenance) and be approximately 800’ in length. They will be comprised of the following: an untreated (control) section, a scrub seal section, and a cape seal section.

Bidders shall provide a minimum of 7 days’ notice to the Engineer before work commences in these test sections to allow for additional monitoring staff to be on site during construction.

Additional Quality Control (QC) and equipment checks may be required during construction of these test sections.

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Additional Quality Control (QC) and equipment checks may be required during construction of these test sections.

Field Visit and Test Cell Construction

Responsibilities

- ***Industry Volunteers***
  - Assist NCPP with gathering project data.
  - Take photos and/or videos and provide to NCPP.

Field Visit and Test Cell Construction

Construction Practices

- Application through Test Cell shall be:
  - Contractor, PG3 team and Agency will collectively work together prior to the Test Cell application to assure Construction Form data is completed.
    - This would include full access to equipment and materials

Field Visit and Test Cell Construction

Construction Practices

- Application through Test Cell shall be:
  - Contractor, Agency and PG3 team will discuss specifications and best practices prior to applications if needed or requested.
  - Non-stop with no switching of haul trucks

Field Visit and Test Cell Construction

Record keeping

Record keeping

- The ***Agency*** shall be responsible for all field data retention and storage.
- The data shall be shared with the Pool Study team (MnDOT, NCPP, NCAT) in a common protocol.

Field Visit and Test Cell Construction

Record Keeping

There are 4 forms that need to be completed for the Scrub Seal and Micro-Surfacing Test Section

- **LTPP**
- **Preconstruction**
- **Construction**
- **Micro Design Materials Tests**

Preconstruction and Construction Forms

MAU-PG3 – Project Forms – All Documents

LTPP Form

LTPP SPS-11 DATA SHEET 34 MICRO-SURFACING APPLICATION DATA	STATE CODE [_____] SHRP ID [_____]

1. LAYER NUMBER (From LTPP Data Sheet 4) [___]
2. DATE SEALING BEGAN (dd/mmm/yyyy) [_____/_____/_____]
3. DATE SEALING COMPLETE (dd/mmm/yyyy) [_____/_____/_____]

DESIGN INFORMATION

4. APPLICATION RATE FOR BITUMINOUS MATERIAL (gallons/sq. yard) [__._____]
5. APPLICATION RATE FOR AGGREGATE (pounds/sq. yard) [_____.___]
6. APPLICATION RATE FOR MINERAL FILLER (pounds/sq. yard) [_____.___]
7. APPLICATION RATE FOR MIXTURE (pounds/sq. yard) [_____.___]
8. RESIDUAL ASPHALT CONTENT (pounds /sq. yard) [__._____]
9. WEAR VALUE (WTAT loss) (g/sq. ft) (ASTM D3910) [_____]

GENERAL CONDITION INFORMATION

10. CONDITION OF EXISTING PAVEMENT SURFACE [___]

Flushed-bleeding 1
Smooth, non-porous 2
Slightly porous, slightly oxidized 3
Slightly pocked, porous, oxidized 4
Badly pocked, porous, oxidized 5

11. INITIAL PREPERATION OF EXISTING PAVEMENT SURFACE [___] None
.....1
Cold Mill 3
Sweep Clean Only 2
Shot Blast 4
Other (Specify) [_____] 5

LTPP Form

12. FINAL PREPARATION OF EXISTING PAVEMENT SURFACE [___] None
(Other Than Identified Above) 1
Primarily Air Blast 2
Primarily Water Blast 3
Primarily Sand Blast 4
Sand Blast and Air Blast 5
Other (Specify)[_____] 6

13. SURFACE CLEANLINESS PRIOR TO PLACEMENT
Clean....1 Moderately Clean....2 Dirty....3 [___]

14. SURFACE MOISTURE AT PLACEMENT—Dry.....1 Wet.....2 [___]

AMBIENT CONDITIONS AT TIME OF APPLICATION

15. AIR TEMPERATURE (F) [_____]
16. SURFACE TEMPERATURE (F) [_____]
17. RELATIVE HUMIDITY (percent) [_____]
18. CLOUD COVER (percent) [_____]
19. WIND SPEED (mph) [_____]

PREPARER EMPLOYER DATE

LTPP Form

LTPP SPS-11 DATA SHEET 35 MICRO-SURFACING APPLICATION DATA (CONTINUED)	STATE CODE [_____] SHRP ID [_____]

1. LAYER NUMBER (From LTPP Data Sheet 4) [___]

EQUIPMENT INFORMATION

MIXING MACHINE

2. MANUFACTURER/MODEL [_____]
3. SPREADER BOX WIDTH (inches) [_____]
4. TYPE OF DRAG USED [___]

None..... 1 Burlap 2

Other (Specify)[_____] 3

ROLLERS

	ROLLER CODE	ROLLER DESCRIPTION	GROSS WGT (tons)	TIRE PRES. (psi)	SPEED (mph)	COVERAGES (number of passes)
5.	E	PNEUMATIC-TIRED	_____.	_____.		_____
6.	F	PNEUMATIC-TIRED	_____.	_____.		_____
7.	G	PNEUMATIC-TIRED	_____.	_____.		_____
8.	H	PNEUMATIC-TIRED	_____.	_____.		_____
9.	Q	OTHER	_____.			_____

CONSTRUCTION INFORMATION

LTPP Form

CONSTRUCTION INFORMATION

10. TACK COAT MATERIAL (See Table 54) [_____] Other (Specify)[_____]
11. TACK COAT APPLICATION RATE (gallons/sq. yard) [__._____]
12. BITUMINOUS MATERIAL APPLICATION RATE (gallons/sq. yard) [__._____]
13. AGGREGATE APPLICATION RATE (pounds/sq. yard) [_____.___]
14. MINERAL FILLER APPLICATION RATE (pounds/sq. yard) [_____.___]
15. WATER ADDED TO MIX (gallons/sq. yard) [__._____]
16. MICRO-SURFACING APPLICATION RATE (pounds/sq. yard) [_____.___]
17. BITUMINOUS MATERIAL TEMPERATURE (ºF) [_____]
18. APPEARANCE OF NON-UNIFORM APPLICATION (ft) [_____]
19. WEAR VALUE (WTAT loss)—AS PLACED (g/sq. ft) (ASTM D3910) [_____]

AGGREGATE CONDITION PRIOR TO USE

20. CLEANLINESS - Clean...1 Moderately Clean...2 Dirty...3 [___]
21. WETNESS—Very Dry..1 Only Slightly Damp..3 Slightly Wet..5 [___]
Dry.....2 Somewhat Damp.....4 Wet.....6
22. MOISTURE CONTENT (percent by weight) [_____.___]

23. ESTIMATED TIME BETWEEN SPREADING AND FOOT TRAFFIC (hours) [__.___]
24. ESTIMATED TIME BETWEEN SPREADING AND VEHICLE TRAFFIC (hours) [_____.___]

FINISHED SURFACE INFORMATION

25. APPROXIMATE FINISHED SURFACE TREATMENT THICKNESS (inches) [__.___]
26. SURFACE TEXTURE PROVIDED [___]
Rough and Open .....1 Somewhat Smooth and Tight.3 Somewhat Rough and Open .2
Smooth and Tight.....4
27. DOES BROOMING DISLODGE SURFACE (Y/N) [___]

PREPARER_____EMPLOYER_____DATE_____

Pre-Construction Micro

Form	Slurry/Micro Surfacing Construction Data Sheet	
Project	Location Description	
Owner	Agency	
Design Information		
1	TYPE OF SURFACE	Dropdown (Micro/Slurry/Polymer Modified Slurry)
2	DESIGN COMMENTS	Text
3	% ASPHALT EMULSION	%
4	% MIX RESIDUE	%
5	% MINERAL FILLER	%
6	APPLICATION RATE FOR AGGREGATE	Pounds/SYD
7	APPLICATION RATE FOR PLACED MIXTURE	Pounds/SYD
8	MATERIAL TEST RESULTS	Attached Sheet
General Condition Information		
9	PRIMARY DISTRESS	Dropdown?
10	PRIMARY DISTRESS SEVERITY	LTPP Severity
11	PRIMARY DISTRESS EXTENT	LTPP Extent
12	SECONDARY DISTRESS	Dropdown?
13	SECONDARY DISTRESS SEVERITY	LTPP Severity
14	SECONDARY DISTRESS EXTENT	LTPP Extent
15	DISTRESS COMMENTS	Text
16	CRACK SEALED?	Dropdown (Yes/No)
17	CRACK SEAL MATERIAL	Text
18	CRACK SEAL DATE	dd/mm/yy

Construction Micro

Form	Slurry/Micro Surfacing Construction Data Sheet	
Project	Location Description	
Owner	Agency	
Item	**Description**	**Data**
1	LAYER NUMBER (From Data Sheet XX)	Numeric
2	DATE SEALING BEGAN	dd/mm/yy
3	DATE SEALING COMPLETE	dd/mm/yy
Surface Preparation		
4	PAVEMENT SURFACE PREPARATION	Dropdown (Sweep/Micro Mill/None/Other Describe in Comment)
5	PAVEMENT SURFACE PREPARATION COMMENT	Text
6	EXISTING PAVEMENT MARKING TREATMENT	Dropdown (Total Removal/Fog/None/Other Describe in Comment)
7	EXISTING PAVEMENT MARKING TREATMENT COMMENT	Text
8	TACK APPLIED	Dropdown (Yes/No)
9	TACK MATERIAL	Text
10	TACK APPLICATION RATE	Gallons/SYD
11	TACK COMMENTS	Text
Ambient Conditions at Time of Placement		
12	SURFACE MOISTURE AT PLACEMENT	Dropdown (Dry/Damp)
13	AIR TEMPERATURE (°F)	Numeric
14	SURFACE TEMPERATURE (°F)	Numeric
15	RELATIVE HUMIDITY (%)	Numeric
16	CLOUD COVER (%)	Numeric
17	WIND SPEED (MPH)	Numeric

Construction Micro

Equipment Information		
18	TYPE OF PAVER	Dropdown (Continuous/Truck Mount)
19	PAVER CONTROL	Dropdown (Electronic/Mechanical)
20	PAVER CALIBRATED?	Dropdown (Yes/No)
21	PAVER CALIBRATION DATE	dd/mm/yy
22	PAVER CALIBRATION COMMENTS/DOCUMENTATION	Text
23	PAVER MANUFACTURER/MODEL	Text
24	SURFACE ROLLED?	Dropdown (Yes/No)
25	NUMBER OF PNEUMATIC TIRE ROLLERS ON PROJECT	Numeric
26	PNEUMATIC ROLLER COMMENTS	Text
27	NUMBER OF POWER BROOMS ON PROJECT	Numeric
28	BROOM #1 MANUFACTURER/MODEL	Text
29	BROOM #2 MANUFACTURER/MODEL	Text
30	BROOM COMMENTS	Text
31	SCREENING PLANT USED	Dropdown (Yes/No)

Construction Micro

Material Information		
32	AGGREGATE SOURCE	Text
33	AGGREGATE TYPE	Text (geology)
34	GRADATION TYPE	Dropdown (Type 1, Type 2, Type 3)
35	AGGREGATE MOISTURE	%
36	AGGREGATE APPLICATION RATE (LB/SYD)	Numeric
37	MINERAL FILLER SOURCE	Text
38	MINERAL FILLER TYPE	Text
39	BREAK ADDITIVE SOURCE	Text
40	BREAK ADDITIVE TYPE	Text
41	EMULSION SOURCE	Text
42	EMULSION TYPE	Text

Construction Micro

Construction Information		
43	WAS ROLLING PERFORMED?	Dropdown (Yes/No)
44	ROLLING COMMENTS	Text
45	YIELD CHECK #1	Pounds/SYD
46	YIELD CHECK #2	Pounds/SYD
47	YIELD CHECK #3	Pounds/SYD
48	TIME FROM PLACEMENT TO OPENING TO TRAFFIC	Numeric
Test Cell Information		
49	BREAK TIME	Seconds
50	SET TIME	Minutes
51	CURE TIME (OPEN TO ROLLING TRAFFIC)	Minutes
52	YIELD CHECK (APPLICATION RATE)	Pounds/SYD
53	YIELD CHECK (EMULSION %)	%
54	PRINT TICKET DURING TEST CELL	Printout

Micro Materials Test Results

Form	Slurry/Micro Material Test Results	
Aggregate Tests		
Gradation		
	Sieve	**% Passing**
	3/8"	
	#4	
	#8	
	#16	
	#30	
	#50	
	#100	
	#200	
	Decant	
Wet Cohesion		kg-cm
Wet Stripping		%
Compatibility Classification		pts
Wet Track Abrasion Loss		g/sq m
Mix Time@77° F		sec
Mix Time@104° F		sec
Excess Binder		g/sq m
Deformation		%

Why all the extra work on a Cape Seal project?

Why all the extra work on a Cape Seal project?

- This is the third National Partnership pooled funded study project (PG3) thru the Transportation Pooled fund (TPF).
  - The PG1 lead State was Alabama and helped develop the Lee Co. Rd. 59 and US 280 test sections near the NCAT facility.
  - The PG2 lead State was Minnesota and help develop the MnDOT test track.

Why all the extra work on a Cape Seal project?

- The PG3 was created to improve the Quality of Pavement Preservation Treatment Construction and Data Collection Practices.
- The partnership consists with the NCPP, FP2, NCAT, MnDOT as the lead, and 17 participating States..

Why all the extra work on a Cape Seal project?

- Learn more about Preservation Group 3 (PG3) pool funded study at

www.pooledfund.org/details/study/754

- www.pg3study.org

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Questions!

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Why all the extra work on a Cape Seal project?

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