Implementing the New AASHTO Preservation Guide Specs

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NATIONAL PAVEMENT PRESERVATION CONFERENCE
npc23
IMPACTS AND BENEFITS FROM PAVEMENT PRESERVATION

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AASHTO TSP2 PAVEMENT PRESERVATION

ROCKY MOUNTAIN WEST PAVEMENT PRESERVATION PARTNERSHIP
SOUTHEAST PAVEMENT PRESERVATION PARTNERSHIP
MIDWESTERN PAVEMENT PRESERVATION PARTNERSHIP
NORTHEAST PAVEMENT PRESERVATION PARTNERSHIP

- **Emulsion Task Force – ETF**
  - Started by FHWA's Jim Sorenson in 2008
  - Moved under the AASHTO Umbrella in 2015
    - Administered by NCPP
  - Comprises of Government, Industry, Academia
- **Major Tasks**
  - **Task I** – Advance the Effort to Develop Performance-Based Methods and Specifications for Emulsions. A goal will be development of Performance-Graded Emulsions.
  - **Task II** – Encourage Adoption of Uniform National Standards
  - **Task III** – Quality Assurance, Training, and Certification
  - **Task IV** – Miscellaneous Specifications, Test Methods, Quality System and Research

Members of the ETF developed Preservation Guide Specs through NCHRP Project 14-37. Guide Specs for Chip, Micro surfacing and Fog Seal are approved and published in the 2022 AASHTO Update.

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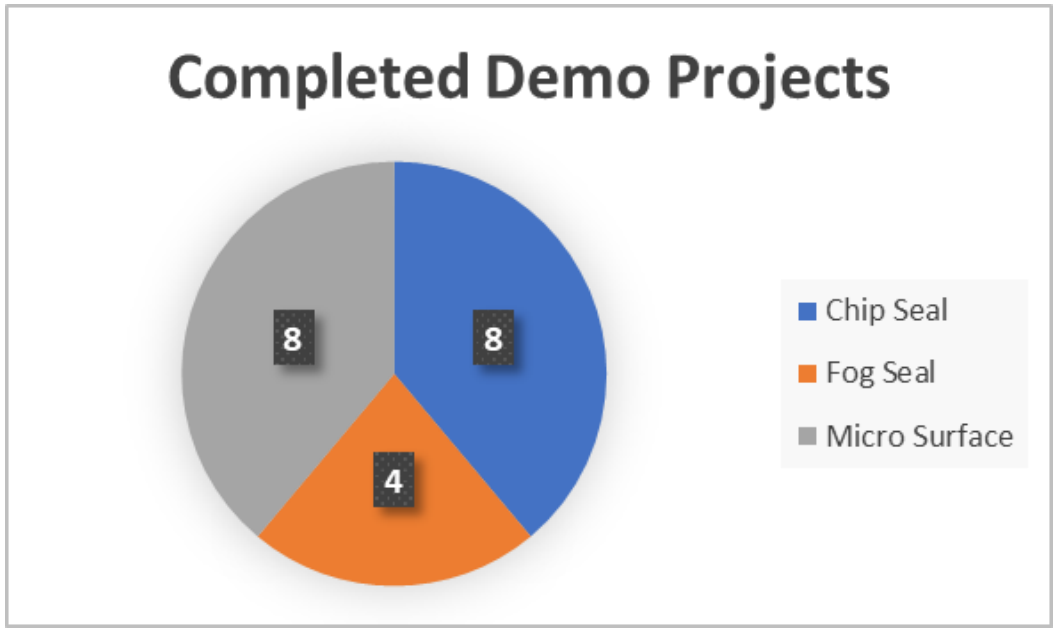
NCPP along with our ETF partners was then tasked with Marketing the new specifications through *NCHRP 20-44(26) Implementing Guide Specifications for the Construction of Chip Seals, Micro Surfacing, and Fog Seals.*

NCHRP 20-44(26)

Steps to achieve the GOAL.

1. **Information Dissemination**
2. **Outreach**
3. **Training**
4. **Demonstrations**

20 Demonstration Projects were completed across the country to allow agencies to trial the new Construction Guide Specifications



TSP2 TRANSPORTATION SYSTEM PRESERVATION TECHNICAL SERVICES PROGRAM

AASHTO PAVEMENT PRESERVATION

NCHRP 20-44(26) Demo Project
Connecticut DOT Fog Seal

Project Overview

This project involved the application of a Fog Seal on the shoulders of I-84. n 11.08 CL miles on I-84 in the towns of Middlebury and Waterbury, CT between Mile Posts 26.48 and 32.00. The pavement is 2 lanes in each direction with maximum ADT of 129,500 vehicles per day. The previous pavement and shoulder surfaces were placed in 2015 and 2016. The surface of the shoulders was in good condition making this an excellent demo project for Fog Seal.

The specification for the Fog Seal was developed by modifying the AASHTO adopted spec to Connecticut standards and needs. The Fog Seal was part of a larger CTDOT contract to apply ultra-thin bonded wearing course (UTBWC) on the mainline and then Fog Seal the existing shoulders. The general contractor was Tilcon Industries, and the Fog Seal applicator was Comer Contracting.

The project scope included fine milling of the existing pavement, patching necessary areas and application of joint and crack material on the pavement and shoulders as needed. The pavement was overlayed with 5/8" of UTBWC utilizing a spray paver. The shoulder edge of the UTBWC was not milled to be flush with the shoulder but rather was tapered by the rolling process leaving a roughly 3/8" rise about the adjacent shoulder. This is a common practice for CTDOT. The shoulders that were less than 4 feet were overlayed with UTBWC. The emulsified asphalt Fog Seal was applied to the shoulders wider than 4 feet. Most shoulders were 10 feet wide.

Project Details At-a-Glance

Agency:	Connecticut DOT
Route/Location:	I-84 Middlebury/Waterbury
Area/Length:	11.08 Miles (MM 26.48± to 32.00±)
Traffic:	129,500 AADT (Shoulder application)
Pre-Condition:	PCI (1-9 Rating) - EB 7.3, WB 7.9
Completion Date:	September 2022
Materials:	CSS-1h diluted 1:1 emulsion Black Beauty© cover aggregate
Application Rates:	Emulsion - 0.10 gal/sy Aggregate - 0.50 lbs/sy
Weather:	68° F, 70% humidity, mostly sunny

Completed Projects

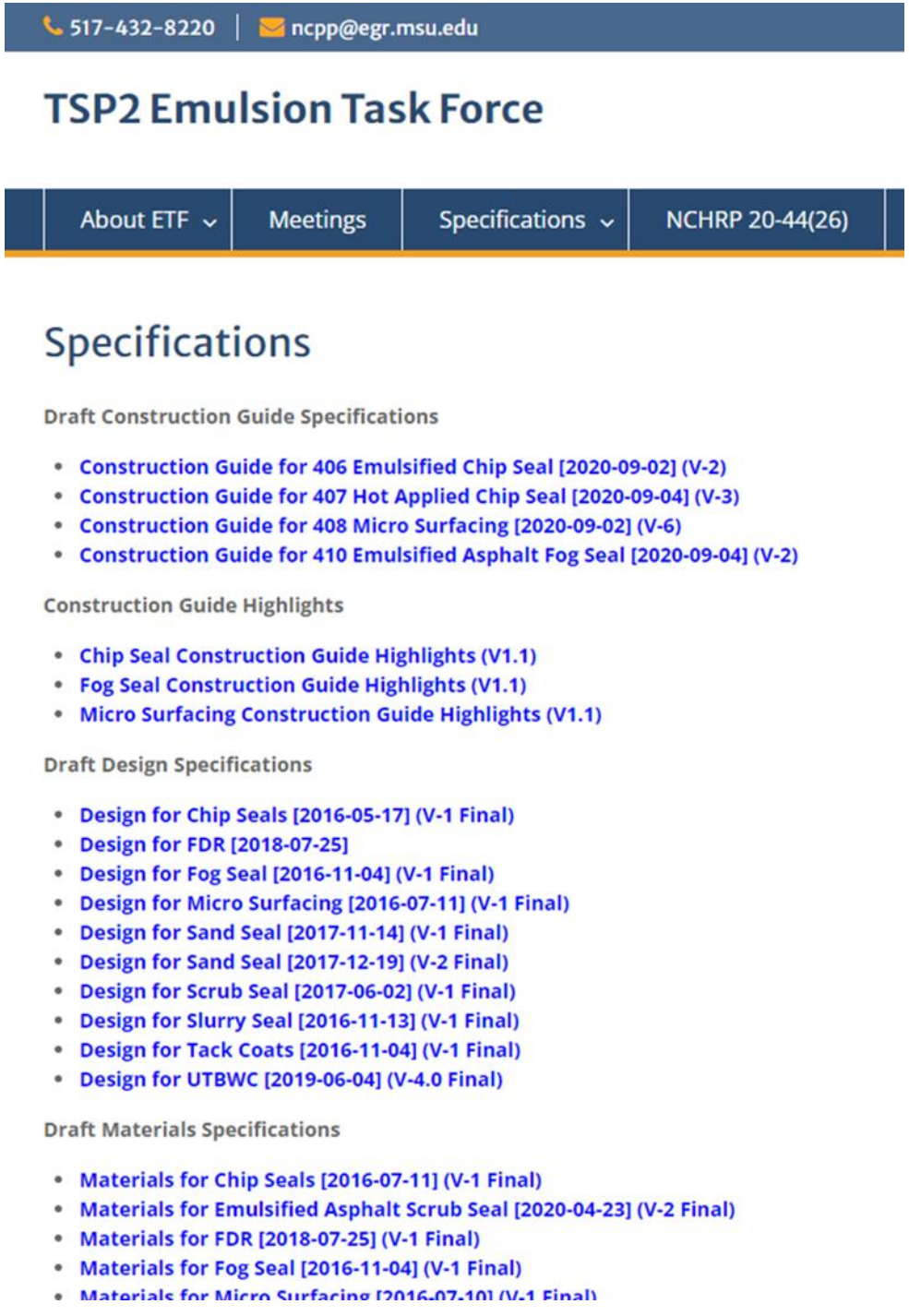
- Midwest Partnership
  - Illinois DOT – Chip Seal
  - Ottawa Co. MI – Chip Seal
  - Ottawa Co. MI – Fog Seal
  - Ottawa Co. MI – Micro surfacing
- Rocky Mountain West
  - Utah DOT – Chip Seal
  - Montana DOT – Fog Seal (2023)

Completed Projects (Cont.)

- Northeast Partnership
  - Maryland SHA – Micro surfacing
  - New Hampshire – Chip Seal
  - Vermont AOT – Chip Seal
  - Connecticut DOT – Fog Seal
  - Nova Scotia PW – Micro Surfacing
- Southeast Partnership
  - Alabama DOT – Micro surfacing
  - Virginia DOT – Chip Seal
  - Virginia DOT – Chip Seal (2023)
  - Virginia DOT – Fog Seal
  - Virginia DOT – Micro surfacing
  - Rankin Co. MS – Micro surfacing
  - Mississippi DOT – Chip Seal
  - Mississippi DOT – Fog Seal
  - Mississippi DOT – Micro surfacing

The Construction Guide Specifications, along with Design and Materials Specifications are available in Draft form on the ETF Website.

[Specifications – TSP2 Emulsion Task Force (tsp2-etf.org)]



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Also Available are Construction Guide Highlights and Quality Assurance Guides

Construction Guide Highlights

- Chip Seal Construction Guide Highlights (V1.1)
- Fog Seal Construction Guide Highlights (V1.1)
- Micro Surfacing Construction Guide Highlights (V1.1)

Draft Quality Assurance Guides

- QA Guide for Chip Seals [2020-08-27] (V.2 Final)
- QA Guide for Slurry Systems [2020-08-27] (V.2 Final)

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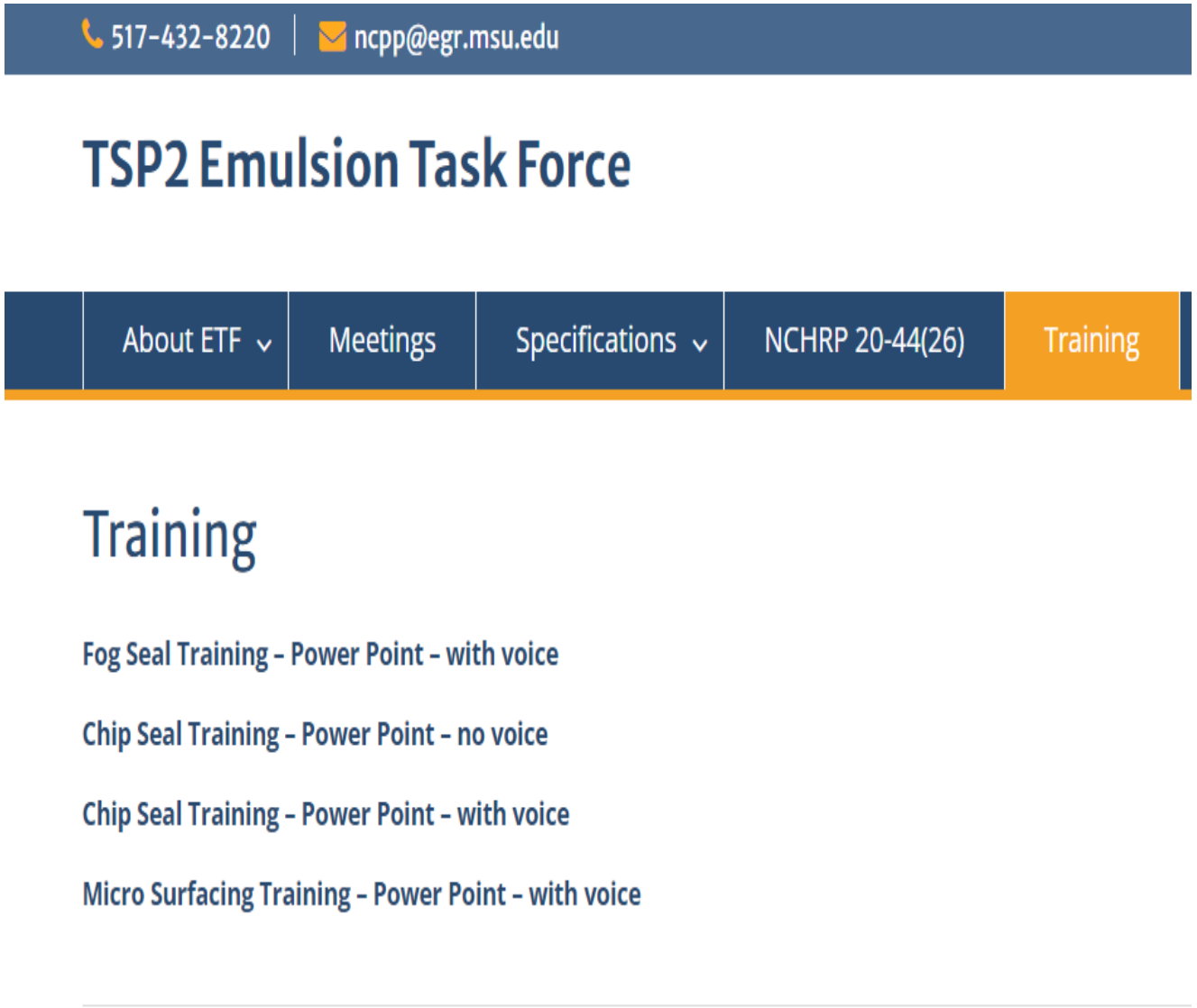
We didn’t forget Training!

Training Videos are also available on the ETF Website,



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5 Steps to Better Preservation Projects

*using the AASHTO Guidelines

- Replace or Enhance Your Current Specification
- Implement QA Steps from the Quality Assurance Guides
- Use Construction Guide Highlights and Best Practice Guides to provide vital information to Inspectors.
- Train Inspectors using the ETF Training Videos
- Use Certified Contractors and Inspectors on Micro / Chip and Crack Seal Projects.

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Replace or Enhance Your Current Specification

408.4. MATERIAL

408.4.1. *Emulsified Asphalt*—Emulsified asphalt for micro surfacing shall meet the requirements of MP 28. The emulsified asphalt properties are determined by the Owner Agency utilizing regional climatic and traffic conditions. Only emulsified asphalt from certified or approved sources is allowed. Each load of emulsified asphalt shall have a certificate of compliance/analysis which is to be submitted to the Agency daily.

Commentary

The base asphalt used for micro surfacing emulsified asphalt might be a PG 64-22 which is acceptable in moderate to warm climates, whereas in colder climates a PG 58-28 might be more appropriate.

408.4.2. *Aggregate*—Mineral aggregates for micro surfacing shall meet the requirements of MP 28.

Commentary

The Type II gradation is used mainly on roads and streets to correct moderate surface defects, fill surface voids, and as a wearing surface for medium to heavy traffic. The Type III gradation is used on collectors, arterials, and major highways to improve friction and durability. Rut fill courses using the rut box are recommended to be a Type III. The Type II gradation is a better choice if traffic noise is a concern.

408.4.3. *Mineral Filler*—Mineral filler for micro surfacing shall meet the requirements of MP 28.

Commentary

Portland cement or aluminum sulfate are the typical mineral fillers used in micro surfacing. The amount to be used is determined by the requirements of the mix design.

408.4.4. *Water*—Water for micro surfacing shall meet the requirements of MP 28.

Commentary

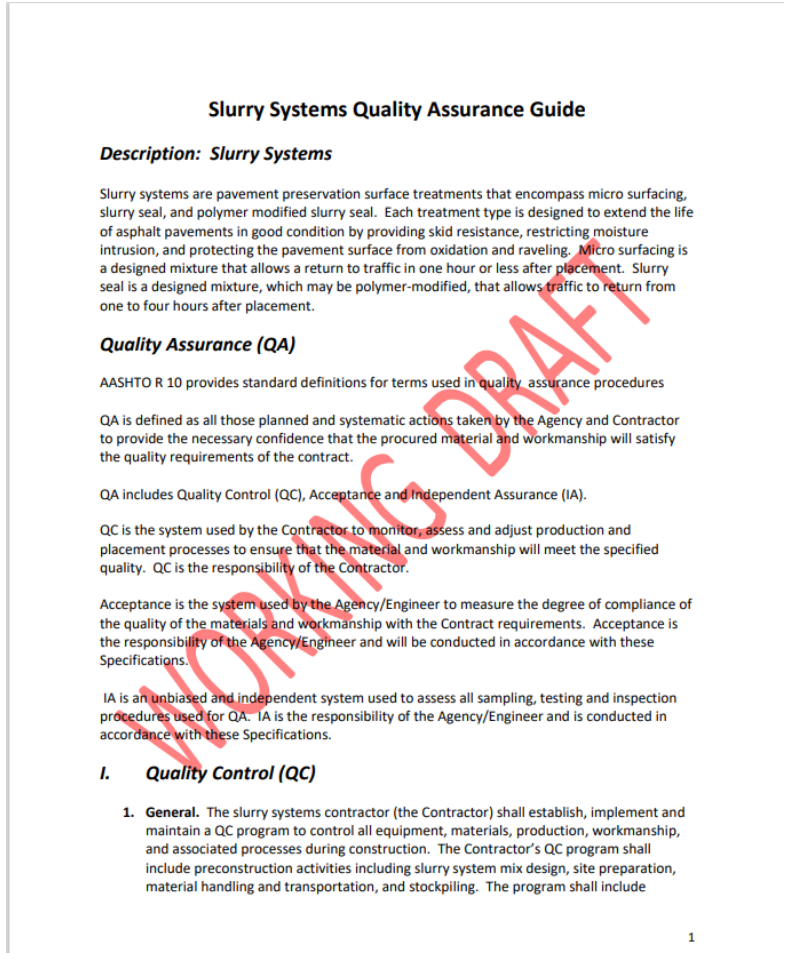
The amount of water used in micro surfacing is based on the requirements of the mix design. Adjustments to the water content may be made based on field conditions, however, adjustments that negatively affect mix properties or aesthetics shall not be permitted.

408.4.5. *Additives*—Additives used in micro surfacing shall meet the requirements of MP 28.

Commentary

Additives to control the set of the mixture are applied during placement and are designed to perform with the system. It is typically used when either placement conditions are very warm, or the aggregate reactivity requires it to delay premature breaking of the mixture.

Implement QA Tools from the Quality Assurance Guides



Slurry Systems Quality Assurance Guide

Description: Slurry Systems

Slurry systems are pavement preservation surface treatments that encompass micro surfacing, slurry seal, and polymer modified slurry seal. Each treatment type is designed to extend the life of asphalt pavements in good condition by providing skid resistance, restricting moisture intrusion, and protecting the pavement surface from oxidation and raveling. Micro surfacing is a designed mixture that allows a return to traffic in one hour or less after placement. Slurry seal is a designed mixture, which may be polymer-modified, that allows traffic to return from one to four hours after placement.

Quality Assurance (QA)

AASHTO R 10 provides standard definitions for terms used in quality assurance procedures

QA is defined as all those planned and systematic actions taken by the Agency and Contractor to provide the necessary confidence that the procured material and workmanship will satisfy the quality requirements of the contract.

QA includes Quality Control (QC), Acceptance and Independent Assurance (IA).

QC is the system used by the Contractor to monitor, assess and adjust production and placement processes to ensure that the material and workmanship will meet the specified quality. QC is the responsibility of the Contractor.

Acceptance is the system used by the Agency/Engineer to measure the degree of compliance of the quality of the materials and workmanship with the Contract requirements. Acceptance is the responsibility of the Agency/Engineer and will be conducted in accordance with these Specifications.

IA is an unbiased and independent system used to assess all sampling, testing and inspection procedures used for QA. IA is the responsibility of the Agency/Engineer and is conducted in accordance with these Specifications.

I. Quality Control (QC)

1. **General.** The slurry systems contractor (the Contractor) shall establish, implement and maintain a QC program to control all equipment, materials, production, workmanship, and associated processes during construction. The Contractor's QC program shall include preconstruction activities including slurry system mix design, site preparation, material handling and transportation, and stockpiling. The program shall include

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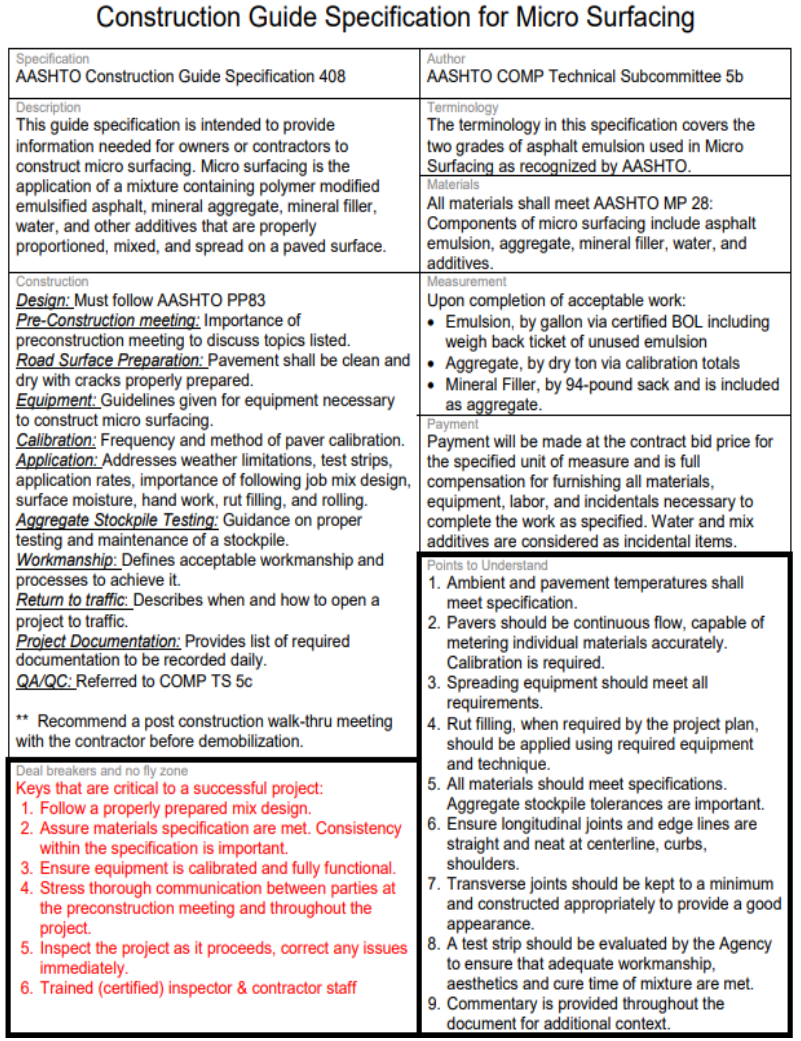
Use Construction Guide Highlights and Best Practice Guides to provide vital information to Inspectors.

Deal breakers and no fly zone

Keys that are critical to a successful project:

1. Follow a properly prepared mix design.
2. Assure materials specification are met. Consistency within the specification is important.
3. Ensure equipment is calibrated and fully functional.
4. Stress thorough communication between parties at the preconstruction meeting and throughout the project.
5. Inspect the project as it proceeds, correct any issues immediately.
6. Trained (certified) inspector & contractor staff



Construction Guide Specification for Micro Surfacing

Specification AASHTO Construction Guide Specification 408	Author AASHTO COMP Technical Subcommittee 5b
Description This guide specification is intended to provide information needed for owners or contractors to construct micro surfacing. Micro surfacing is the application of a mixture containing polymer modified emulsified asphalt, mineral aggregate, mineral filler, water, and other additives that are properly proportioned, mixed, and spread on a paved surface.	Terminology The terminology in this specification covers the two grades of asphalt emulsion used in Micro Surfacing as recognized by AASHTO. Materials All materials shall meet AASHTO MP 28: Components of micro surfacing include asphalt emulsion, aggregate, mineral filler, water, and additives.
Construction *Design:* Must follow AASHTO PP83 *Pre-Construction meeting:* Importance of preconstruction meeting to discuss topics listed. *Road Surface Preparation:* Pavement shall be clean and dry with cracks properly prepared. *Equipment:* Guidelines given for equipment necessary to construct micro surfacing. *Calibration:* Frequency and method of paver calibration. *Application:* Addresses weather limitations, test strips, application rates, importance of following job mix design, surface moisture, hand work, rut filling, and rolling. *Aggregate Stockpile Testing:* Guidance on proper testing and maintenance of a stockpile. *Workmanship:* Defines acceptable workmanship and processes to achieve it. *Return to traffic:* Describes when and how to open a project to traffic. *Project Documentation:* Provides list of required documentation to be recorded daily. *QA/QC:* Referred to COMP TS 5c ** Recommend a post construction walk-thru meeting with the contractor before demobilization.	Measurement Upon completion of acceptable work: • Emulsion, by gallon via certified BOL including weigh back ticket of unused emulsion • Aggregate, by dry ton via calibration totals • Mineral Filler, by 94-pound sack and is included as aggregate. Payment Payment will be made at the contract bid price for the specified unit of measure and is full compensation for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified. Water and mix additives are considered as incidental items.
Deal breakers and no fly zone Keys that are critical to a successful project: 1. Follow a properly prepared mix design. 2. Assure materials specification are met. Consistency within the specification is important. 3. Ensure equipment is calibrated and fully functional. 4. Stress thorough communication between parties at the preconstruction meeting and throughout the project. 5. Inspect the project as it proceeds, correct any issues immediately. 6. Trained (certified) inspector & contractor staff	Points to Understand 1. Ambient and pavement temperatures shall meet specification. 2. Pavers should be continuous flow, capable of metering individual materials accurately. Calibration is required. 3. Spreading equipment should meet all requirements. 4. Rut filling, when required by the project plan, should be applied using required equipment and technique. 5. All materials should meet specifications. Aggregate stockpile tolerances are important. 6. Ensure longitudinal joints and edge lines are straight and neat at centerline, curbs, shoulders. 7. Transverse joints should be kept to a minimum and constructed appropriately to provide a good appearance. 8. A test strip should be evaluated by the Agency to ensure that adequate workmanship, aesthetics and cure time of mixture are met. 9. Commentary is provided throughout the document for additional context.

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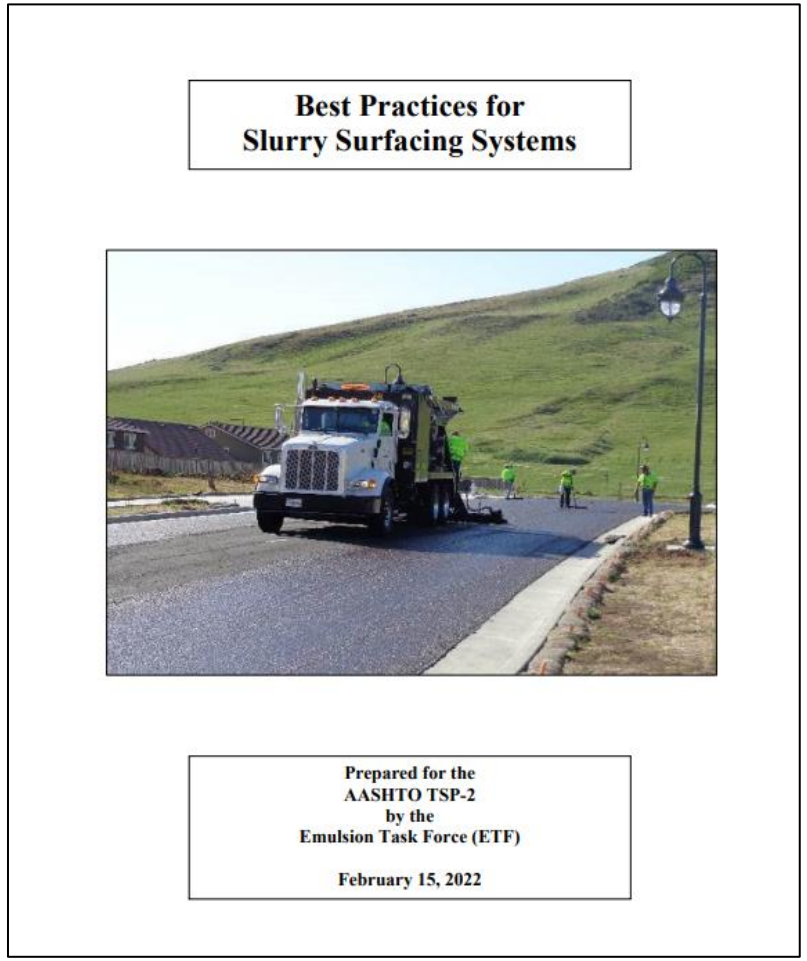

Detailed Best Practices Guides, written by industry experts that closely match the Guide Specifications

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Use Certified Contractors and Inspectors on Micro / Chip and Crack Seal Projects.

AASHTO TSP·2
Transportation System Preservation Technical Services Program

Pavement Preservation Company Certification

for 2022

ViaSun Corporation

of

Phoenix, Arizona

has met all requirements and highest quality standards for the placement of

Slurry System Treatments

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Questions?

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