



Training - Our Journey

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THANK YOU!



Training is intended to demonstrate the need for adoption of the AASHTO specification and will be accomplished by:

- 1) Highlighting sections of the documents that are significant.
- 2) A PowerPoint presentation will be developed to convey the information for each treatment.
- 3) The PPT will be created, narrated, recorded and posted on an appropriate hosting site(s). A method of facilitating Q&A for viewers will be developed.
- 4) Information exchange will take place with the Outreach and Messaging Groups as needed to assist in facilitating education related to the product, where it can be found and utilized.
- 5) For on-site presentations where the agency is considering conducting a demo, specific differences between the agency specification and the proposed specifications can be more closely evaluated.
- 6) Additional training will be developed to assist local agencies in adoption of the AASHTO product into their bid packages.
- 7) A training document will be developed/distributed in the form of a hand-out at various meetings.

DELIVERABLES



TSP2 Emulsion Task Force

[About ETF](#)[Meetings & Presentations](#)[Specs & Checklists](#)[NCHRP 20-44\(26\)](#)[Training](#)[Members](#)[Site Map](#)

Specifications

Draft Construction Guide Specifications

- [Construction Guide for 406 Emulsified Chip Seal \[2020-09-02\] \(V-2\)](#)
- [Construction Guide for 407 Hot Applied Chip Seal \[2020-09-04\] \(V-3\)](#)
- [Construction Guide for 408 Micro Surfacing \[2020-09-02\] \(V-6\)](#)
- [Construction Guide for 410 Emulsified Asphalt Fog Seal \[2020-09-04\] \(V-2\)](#)

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 Design Specifications

- [Design for Chip Seals \[2016-05-17\] \(V-1 Final\)](#)
- [Design for FDR \[2018-07-25\]](#)
- [Design for Fog Seal \[2016-11-04\] \(V-1 Final\)](#)
- [Design for Micro Surfacing \[2016-07-11\] \(V-1 Final\)](#)
- [Design for Sand Seal \[2017-11-14\] \(V-1 Final\)](#)
- [Design for Sand Seal \[2017-12-19\] \(V-2 Final\)](#)
- [Design for Scrub Seal \[2017-06-02\] \(V-1 Final\)](#)
- [Design for Slurry Seal \[2016-11-13\] \(V-1 Final\)](#)
- [Design for Tack Coats \[2016-11-04\] \(V-1 Final\)](#)
- [Design for UTBWC \[2019-06-04\] \(V-4.0 Final\)](#)

Draft Materials Specifications

- [Materials for Chip Seals \[2016-07-11\] \(V-1 Final\)](#)
- [Materials for Emulsified Asphalt Scrub Seal \[2020-04-23\] \(V-2 Final\)](#)
- [Materials for FDR \[2018-07-25\] \(V-1 Final\)](#)
- [Materials for Fog Seal \[2016-11-04\] \(V-1 Final\)](#)
- [Materials for Micro Surfacing \[2016-07-10\] \(V-1 Final\)](#)

Construction Guide Specification for Emulsified Asphalt Chip Seals

<p>Specification AASHTO Construction Guide Specification 406</p> <p>Description This guide specification is intended to provide information needed for owners or contractors to construct emulsified asphalt chip seals. An emulsified asphalt chip seal is the application of emulsified asphalt, followed immediately by a single layer of aggregate chips to a prepared surface.</p> <p>Construction <u>Equipment:</u> Asphalt Distributor, Aggregate Spreader, Pneumatic-Tire Rollers, Broom. <u>Equipment Calibration</u> Tolerance and methods of calibrating distributors and aggregate spreaders. <u>Preconstruction Meeting</u> Importance of a preconstruction meeting prior to construction to discuss specific topics listed. <u>Road Surface Preparation</u> Sweep pavement no more than 30 min before application of emulsion and aggregate. Remove thermoplastic pavement markings. <u>Application</u> Addresses topics: Weather limitations, test strips, and the application of the materials; longitudinal and transverse joint construction methods; rolling and sweeping operations; traffic control and protection of motor vehicles; and fog seals. <u>Quality Control</u> Outline of roles for quality staff, testing facilities, stockpile management, calibration and workmanship. Requires certification of crew members. <u>Agency Acceptance Activities</u> Inspection overview, materials acceptance testing, and final inspection recommendations.</p> <p>Deal breakers and no fly zone Top keys that are critical to a successful project:</p> <ol style="list-style-type: none"> 1. Aggregate gradation and quality specs met 2. Conduct mix design 3. Perform calibration 4. Weather requirements are met 5. Incorporate a QA/QC program into spec 6. Trained (certified) inspector & contractor staff 	<p>Author AASHTO COMP Technical Subcommittee 5b</p> <p>Terminology The terminology in this specification covers the different grades of asphalt emulsion. Specifically the names, additives, and governing standards for different grades.</p> <p>Materials <ul style="list-style-type: none"> • Emulsified Asphalt: That meet the requirements of AASHTO M 140, M 208, & M 316. • Aggregate: Gradations described in AASHTO MP 27 Tables 1 and 2. </p> <p>Measurement <ul style="list-style-type: none"> • Emulsion by volume • Aggregate by area (or weight) • Completed Chip Seal by area • Fog Seal Emulsion by volume </p> <p>Payment Payment for chip seals can be done by either paying for the materials in unit costs, or for the completed chip seal by area of pavement sealed. Unit price examples: Emulsified asphalt (gal), Aggregate (sq.yd.), Aggregate (tn), Chip Seal (sq.yd), diluted emulsion for fog seal (gal)</p> <p>Points to Understand <ol style="list-style-type: none"> 1. Aggregate dust above the limits inhibit bond between the chips and the asphalt emulsion. 2. Slower setting emulsions take much longer to cure thus sweeping and traffic must be delayed. 3. Rounded aggregate is difficult to bond with asphalt emulsion in chip seals. 4. First roller pass within two minutes, limit roller speed to 3 mph maximum. 5. Longitudinal spray rate of emulsion is verified through calculation of tank volume and area of application. 6. Aggregate spread is verified checking truck weight and dividing by the area covered. 7. Aggregate gradations from both the stockpile and hopper ensure the aggregate quality on the project. 8. Quick checks of application rates (volume of emulsion/area & weight of aggregate/area) are recommended ~4 times a day. 9. Ambient and pavement temperatures both need to meet requirements. </p> <p>Referenced Documents AASHTO: M 140, M 208, M 316, MP 27, PP 82, T 27, T 49, T 50, T 59, T 96, T 301, T 335 AASHTO 10th Edition of Guide Specifications for Highway Construction ASTM: D5624 The Asphalt Institute: Manual Series 19 Texas DOT: Tex-224-F NCHRP: Report 680</p>
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Construction Guide Specification for Emulsified Asphalt Fog Seal

<p>Specification AASHTO Construction Guide Specification 410</p> <p>Description The terminology in this specification is intended to provide information needed for owners or contractors to construct emulsified asphalt fog seals. An emulsified asphalt fog seal is the application of emulsified asphalt, either diluted or undiluted, to a surface and may be immediately followed by a light application of blotter sand.</p> <p>Construction <u>Equipment:</u> Asphalt Distributor, Aggregate Spreader, Broom. <u>Equipment Calibration</u> Tolerance and methods of calibrating distributors and aggregate spreaders. <u>Preconstruction Meeting</u> Importance of a preconstruction meeting prior to construction to discuss specific topics listed. <u>Road Surface Preparation</u> Sweep pavement no more than 30 min before application of emulsion and aggregate. Remove thermoplastic pavement markings. <u>Application</u> Addresses topics: Weather limitations, test strips, and the application of the materials; longitudinal and transverse joint construction methods; traffic control and protection of motor vehicles. <u>Quality Control</u> Outline of roles for quality staff, testing facilities, stockpile management, calibration and workmanship. Requires certification of crew members. <u>Agency Acceptance Activities</u> Inspection overview, materials acceptance testing, and final inspection recommendations.</p> <p>Deal breakers and no fly zone Keys that are critical to a successful project:</p> <ol style="list-style-type: none"> 1. Emulsified asphalt quality specs met 2. Aggregate gradation and quality specs met 3. Conduct test strip or ring test 4. Perform calibrations 5. Weather requirements are met 6. Do not allow traffic until completely set 7. Incorporate a QA/QC program into spec 8. Trained (certified) inspector & contractor staff 	<p>Author AASHTO COMP Technical Subcommittee 5b</p> <p>Terminology The terminology in this specification covers the two most typical grades of emulsified asphalt used in fog seal applications.</p> <p>Materials <ul style="list-style-type: none"> • Emulsified Asphalt: That meet the requirements of AASHTO M 140 or M208. Table 2 covers typical application rates. • Blotter Aggregate: When used, should adhere to Table 1. Normal application rate can vary from 1-3lbs/sqyd. </p> <p>Measurement <ul style="list-style-type: none"> • Emulsion by volume • Aggregate by area (or weight) </p> <p>Payment Payment for fog seals can be done by either paying for the materials in unit costs, or for the completed fog seal by area of pavement sealed.</p> <p>Points to Understand <ol style="list-style-type: none"> 1. Fog Seals are intended as: a water and air barrier on the pavement surface, blacken the surface to help chip seals with rock retention. 2. If diluting the emulsified asphalt, dilution at the plant is necessary to control residual content. 3. Final residual after dilution should be at least 20% and should be shot the same day. 4. Blotter aggregate can be used to absorb excess emulsified asphalt. 5. Necessary application rates should be verified by conducting a test strip or ring test. 6. Longitudinal spray rate of emulsion is verified through calculation of tank volume and area of application. 7. Ensure the fog seal application does not cause a significant reduction in the surface texture of the pavement. 8. Aggregate spread is verified checking truck weight and dividing by the area covered. 9. Application rates (volume of emulsion/area & weight of aggregate/area) are recommended daily. 10. Ambient and pavement temperatures both need to meet requirements. 11. Traffic may be allowed on the fog seal after the emulsified asphalt has completely set and after aggregate has been applied, if used. </p> <p>Referenced Documents AASHTO: M 140, M 208, T 27, T 304, AASHTO 10th Edition of Guide Specifications for Highway Construction</p>
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Construction Guide Specification for Micro Surfacing

<p>Specification AASHTO Construction Guide Specification 408</p> <p>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.</p> <p>Construction <u>Design:</u> Must follow AASHTO PP83 <u>Pre-Construction Meeting:</u> Importance of preconstruction meeting to discuss topics listed. <u>Road Surface Preparation:</u> Pavement shall be clean and dry with cracks properly prepared. <u>Equipment:</u> Guidelines given for equipment necessary to construct micro surfacing. <u>Calibration:</u> Frequency and method of paver calibration. <u>Application:</u> Addresses weather limitations, test strips, application rates, importance of following job mix design, surface moisture, hand work, rut filling, and rolling. <u>Aggregate Stockpile Testing:</u> Guidance on proper testing and maintenance of a stockpile. <u>Workmanship:</u> Defines acceptable workmanship and processes to achieve it. <u>Return to traffic:</u> Describes when and how to open a project to traffic. <u>Project Documentation:</u> Provides list of required documentation to be recorded daily. <u>QA/QC:</u> Referred to COMP TS 5c</p> <p>** Recommend a post construction walk-thru meeting with the contractor before demobilization.</p> <p>Deal breakers and no fly zone Keys that are critical to a successful project:</p> <ol style="list-style-type: none"> 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 	<p>Author AASHTO COMP Technical Subcommittee 5b</p> <p>Terminology The terminology in this specification covers the two grades of asphalt emulsion used in Micro Surfacing as recognized by AASHTO.</p> <p>Materials All materials shall meet AASHTO MP 28: Components of micro surfacing include asphalt emulsion, aggregate, mineral filler, water, and additives.</p> <p>Measurement Upon completion of acceptable work: <ul style="list-style-type: none"> • Emulsion, by gallon via certified BOL including weigh back bucket of unused emulsion • Aggregate, by dry ton via calibration totals • Mineral Filler, by 94-pound sack and is included as aggregate. </p> <p>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.</p> <p>Points to Understand <ol style="list-style-type: none"> 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. 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. </p> <p>Referenced Documents AASHTO: M 140, M 208, M 316, MP 28, PP 83, T 11, T 27, T 31 AASHTO 10th Edition of Guide Specifications for Highway Construction National Cooperative Highway Research Program Synthesis 411 Manual on Uniform Traffic Control Devices for Streets and Highways, (MUTCD), 2009 Edition</p>
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One Pagers

If you take nothing else away from the spec.....

Points to Understand

1. Aggregate dust above the limits inhibit bond between the chips and the asphalt emulsion.
2. Slower setting emulsions take much longer to cure thus sweeping and traffic must be delayed.
3. Rounded aggregate is difficult to bond with asphalt emulsion in chip seals.
4. First roller pass within two minutes, limit roller speed to 3 mph maximum.
5. Longitudinal spray rate of emulsion is verified through calculation of tank volume and area of application.
6. Aggregate spread is verified checking truck weight and dividing by the area covered.
7. Aggregate gradations from both the stockpile and hopper ensure the aggregate quality on the project.
8. Quick checks of application rates (volume of emulsion/area & weight of aggregate/area) are recommended ~4 times a day.
9. Ambient and pavement temperatures both need to meet requirements.

Deal breakers and no fly zone

Top keys that are critical to a successful project:

1. Aggregate gradation and quality specs met
2. Conduct mix design
3. Perform calibration
4. Weather requirements are met
5. Incorporate a QA/QC program into spec
6. Trained (certified) inspector & contractor staff

TSP2 Emulsion Task Force

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Training

- Fog Seal Training - Power Point - with voice
- Chip Seal Training - Power Point - no voice
- Chip Seal Training - Power Point - with voice
- Micro Surfacing Training - Power Point - with voice

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Chip Seal with voice.pptx

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Brewster, Stormy R

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Sections Covered

- Materials
 - Emulsion and aggregate quality requirements
- Design
 - PP 82
- Equipment
 - Type, requirements and calibration
- Construction
 - Weather, test strips, application rates, construction methods, traffic control
- Important Points/Critical Keys
 - No Fly zones
- References
 - Throughout the presentation – AASHTO (noted as P, M, R and T) and ASTM

TSP? EMULSION Task Force

In this presentation, the goal is to give a general overview on what is covered in the construction guide. You can see the agenda here: Materials, Design, Equipment, Construction and References. The Critical Keys to success are scattered throughout the presentation. We are referring to these as "no fly zones" in that you really have to pay attention to these and get them correct to ensure a good project. Important points to understand are summarized at the end of the presentation

Depending on audience:

- Fog Seal: 30-40 minutes
- Chip Seal: 30-40 minutes
- Micro: 50-60 minutes
- Plan for extra time!

Chip Seal with voice.pptx

Search

Brewster, Stormy R

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Emulsified Asphalt

- Rapid Setting type meeting M140, M208 or M316
- Certification from the material supplier should be provided for each tanker
- QC Tests and frequency are outlined in the QA Guide for Chip Seals

Emulsified Asphalt Test Results	
Density @ 77°F, initial	8.28
Viscosity, Saybolt @ 59°C, SF/S	171
Sieve Test, retained on 850 µm sieve, %	0.00
Durability, 35 ml, 0.02 N CaCl ₂ , %	71.0
Storage Stability (24 hr), %	0.5
Coating Test, 3 minutes	
Cement Mixing Test, %	
Particle Charge Test	
Residue from Distillation to 190°C, %; Oil	70.4
Distillate by volume to 190°C, %	1.0
Characteristics of Distillation Residue	
Float Test @ 60°C, sec.	1200
Penetration @ 25°C, 100g, 5 sec., 0.1 mm	140
Ductility @ 25°C, mm	
Solubility in Trichloroethylene, %	
Absolute Viscosity, 60°C, Pa·s	
Elastic Recovery, 13°C, 200mm, 1 hr, %	76.30
Softening Point, °C	

Sample Certification

TSP? EMULSION Task Force

Starting with the emulsified asphalt, the AASHTO specifications for these materials are M140 which covers anionic emulsions, M208 which covers cationic emulsions and M316 which covers both anionic and cationic polymer modified emulsions. In all of these different types of emulsions represented in the standards, preference is given to the rapid setting type. Certifications should be provided for every tanker load of material used in the job. We have an example of a certification here. Samples should also be collected from the job site for additional testing. Depending on the test, this can be every 200-500 tons. Those QC tests and frequencies are outlined in the QA Guide for Chip Seals.

- Presentations are ready for conferences and agency meetings
- Handouts ready for print/distribution
- In my experience, at least 2 sets of training:
 - agency
 - more agency
 - contractor
 - depending on specification acceptance, even more agency
- Certification training for contractors – directed towards NCPP(1 person per crew must be certified for the treatment)
- Though outside the scope of this project, necessary to be prepared to discuss project/site selection, best practices, detailed equipment calibration.

RINSE AND REPEAT WITH NEW STANDARDS





Questions?