

Emulsion Task Force (ETF) AASHTO TSP²

NEPP Annual Meeting

Portland, ME - May 8, 2017

By: Colin A. Franco, P.E. Assc. Chief Eng. Infrastructure Planning- RIDOT



Pavement Preservation Expert Task Group (PPETG)

- Established in 1991 (Jim Sorenson of FHWA)
- Promote the institutionalization of the concepts of pavement preservation
- Parent group of "Emulsion Task Force"





Mission of PPETG

- To advance and improve the state of the practice in
- the area of **pavement preservation**.
- Working collaboratively with:
- Federal
- State
- Local Agencies
- Industry







Goals of PPETG

- Acceptance and Implementation of pavement preservation by state and local agencies
- Support preservation programs at the federal, state, and local levels
- Identify and address stakeholder needs
- Support preservation centers for excellence/regional organizations
- Integrate pavement preservation into pavement management / asset management





Working Agenda

- Advocate the implementation of Pavement Preservation
- Expand Training and Certification Efforts
- Advance Pavement Preservation Research in Conjunction with the Pavement Preservation Road Map
- Examine Impacts of New Policies on Pavement Preservation Implementation

(cont.)





Working Agenda (cont.)

- Endorse Advancement of New Treatments and Technologies in Pavement Preservation
- Sanction and Support Emulsion Task Force Efforts

Note: MAP21 – Recognized Pavement Preservation





PPETG Emulsion Task Force

(ETF)

Birthday: April 2008

RIP: ???



PERFORMANCE ENHANCEMENT THROUGH PAVEMENT PRESERVATION





Original Mandate

1) Advance the Effort to Develop Performance Based Methods & Specification for Emulsions (SPG)

- Protocols for design Materials Specs, Design Practices
- Protocols for performance Best Practices
- Protocols for inspection & acceptance QA

2) Encourage Adoption of Uniform National Standards

- AASHTO TSP², Regional Partnerships
- FHWA EGT





Added Tasks (2013 – Present)

 Develop Performance Specifications and Design Standards for Adoption by AASHTO for All Emulsion Treatments and Uses in Pavement
 Work with the PPETG to Facilitate Adoption of Emulsion Treatments in Pavement Preservation Programs





Current Membership (2013 – Present)

- Co-Chair- Colin Franco RI DoT [TSP2, PPETG, SOMtrls, RRAC, SHRP2, LTPP]
- **Co-Chair- Chris Lubbers Kraton Polymers**

Members From:

- Industry: AEMA/ ARRA/ ISSA/FP²
- Academics: CSU/ Tx A&M/ U.WISC/ NC State
- State DOT's: TX, IA, RI, NV, MN
- FHWA
- National Center PP (NCPP)





Current Subcommittees (2013 – Present)

1. <u>Residue Recovery and Testing</u>

Arlis Kadrmas (Chair) BASF - AEMA

2. Design Group

- Spray Gary Hicks (Co-chair) CSU
- Mix Jim Moulthrop (Co-chair) Fugro FP2

3. <u>Supplier Certification and Quality Assurance</u>

- Larry Galehouse
- Todd Shields (Co-Chair) IADOT

4. <u>Recycling Emulsions</u>

Todd Thomas (Chair) - COLAS ARRA

5. <u>Research</u>

Darren Hazlett (Chair) – TxDOT







Accomplishments – Pre 2013

AASHTO Standards 2010

Four Standards submitted to AASHTO for Adoption

- Standard Practice for Certifying Suppliers of Emulsified Asphalt Provision (PP 71)
- 2. Recovering Residue from Emulsified Asphalt using Low Temperature Evaporative Techniques Provision (PP 72)
- **3.** Determining Asphalt Binder Bond Strength by Means of the Bitumen Bond Strength Test (BBS) Provision (TP 91)
- 4. Performance-Graded Asphalt Binder for Surface Treatments (Surface Performance Graded (SPG) Spec) tabled





Accomplishments – Pre 2013

AASHTO Standards 2011

Six Provisional Standards submitted to AASHTO (currently being reviewed by ETF)

- 1. Test for Determining the Strain Sensitivity of Asphalt Emulsion Residue Using Strain Sweeps Performed on a Dynamic Shear Rheometer (DSR)
- 2. Test for **Embedment Depth of Chip Seal Aggregates** in the Lab and the Field
- **3.** Test for Laboratory **Chip Loss** from Emulsified Asphalt Chip Seal
- 4. Test for Measuring Moisture Loss from Chip Seals
- **5.** Test for **Recovery of Asphalt from Emulsion by Stirred-Can Method**
- 6. Test for Field Emulsion Viscosity

Note: -These have been tabled.

-We have to decide on what to do next.





Accomplishments – Pre 2013

- Best Practices Document (draft)
 - This was the original deliverable for Chip Seal and Micro-surfacing.
- Low Temperature Residue Recovery Method
 - Plan for Inter-lab Study and data collection (ongoing) TP 72
 - Precision and bias study with AMRL for TP 72





ETF Reenergized Mission - 2013

- 1) Advance the Effort to Develop Performance Based Methods & Specification for Emulsions
- 2) Encourage Adoption of Uniform National Standards
 - Develop AASHTO STDs for all the Emulsion Treatments (listed on next slide)
 - a) Materials Specs
 - b) Test Methods
 - c) Design Practices
 - d) Construction Guide Specs





ETF Reenergized Mission - 2013 (PP) Project Development Requirements for Project Development

1.Project Selection – for the STIP

- Pavement Management System
- Experience of Pavement/Maintenance Engineers

2.Project Design/Contract Documents

Standards and specs for Emulsion Treatments

- Materials Specifications (M-Stds)
- Materials Design Practices (R-Stds)





ETF Reenergized Mission - 2013 (PP) Project Development (cont.)

- 3. Construction guide Standards
 - Construction Guide Specifications
- 4. Quality Assurance
 - Acceptance Decision
 - Quality Control
 - Independent Assurance
 - Certification





ETF Reenergized Mission - 2013

Emulsion Treatments Requiring AASHTO STDs

1.Chip Seal 2. Micro surfacing 3.Tack Coat 4.Fog Seal 5.Scrub 6.Sand Seal 7.Slurry Seal 8. Foam Asphalt Stabilization **9.Bonded Surface Treatment (NOVA Chip) 10.Cold Mixes**

- » Virgin
- » Recycled
- » CIR





Accomplishments 2015

- 1) Micro-surfacing
- 2) Chip Seal
- Materials Specs Published Fall 2016 AASHTO STD
- Design Practices Published Fall 2016 AASHTO STD
- Construction Guide Spec (CGS) NCHRP Project 14-37
- Best Practices Draft





Accomplishments 2015 (Cont.)

Emulsion Binder Specifications

M 140 – Published Fall 2016 – AASHTO STD

M 208 – Published Fall 2016– AASHTO STD

M 316 – Published Fall 2016– AASHTO STD





Accomplishments 2016

- 1. Slurry Seals
- 2. Fog Seal
- 3. CIR (Cold In-place Recycled)

Design Specifications – To be Published Fall 2017

Design Practice – To be Published Fall 2017

Construction guide specs – Work in Progress, need Problem Statements for NCHRP

Best Practices – Work in Progress, drafts to be worked on and published





Work in Progress

Tack Coat
 Slurry Seals

Design Specifications – Draft with AASHTO SOM

Design Practice – Draft with AASHTO SOM

Construction guide specs – ???

Best Practices – ???





Next Steps Short Term Plan

- 1) Complete drafting of AASHTO STDs for remaining Emulsion treatments
- 2) QA Protocols for Emulsion treatments starting with microsurface and chip seals

3) Research

- Studies
- Update PP Research Roadmap





Next Steps (cont.)

Long Term Plans

1) QA Protocols for Emulsion Treatments

2) Develop a SPG Specification for Emulsion Using Superpave Principles. (Original Mandate)

3) Large Scale Studies / Research

- NCHRP
- Pooled Fund

4) Promoting Emulsion Technologies - ??? Up for discussion





QA Protocols - Emulsion

Work to develop QA Program for All Emulsion Treatments

1) Materials QA:

- Acceptance Testing (Agency)
- QC Quality Control (Contractor)
- IA Independent Assurance (Agency)
- New Process / Product Acceptance Procedures

2) <u>Materials Certification:</u>

- Agency Acceptance Plans
- QC Plans (Contractor)
- Vendor Supplied Material Certifications

Workmanship QA:

- Equipment Calibration
- Construction Process Checks





QA Protocols – (Cont.)

4) Education and Training:

- Define the training needs for Agency / Contactor Staff
- Education and Training Resources
 - D NHI
 - ТССС
 - Industry Sponsored Training
- Certification Program for Contractor / Agency Field Staff

Note: National Center for Pavement Preservation is taking the lead on education and training.





Development of a SPG Specification for Emulsion using Superpave Principles

- SWG Chair, Mike Voth of Federal Lands is leading this effort
- Research and Field studies being used for SPG development:
 1) TxDOT Chip seals, Darren Hazlett with Dr. Amy Epps
 - 2) NCHRP project 9-50 Dr. R. Kim at NC State
 - 3) Federal Lands chip seal research by Gayle King
 - Note: (1) SPG Surface Performance Graded

(2)This work will supplement the TxDOT SPG spec currently at the AASHTO SOM.





ETF – Where Are We Going

- **1.** Complete the AASHTO STDs for all Emulsion treatments
- 2. Develop QA protocols for each Emulsion Treatment
- **3.** Education and Training of Agency and Contractor personnel
- **4.** Certification of Agency and Contractor personnel
- 5. Develop a SPG Emulsion Specification using Superpave Principles





ETF – Where Are We Going

Promoting the use of Emulsions

Now that the AASHTO Standards exist for some Emulsion Treatments we need to:

- 1. Devlop a marketing plan / marketing tools
- 2. Promote the technology to
 - A. Agencies
 - B. Industry
 - C. Academia create course curricula
- 3. By whom and how will this be done For discussion
 - A. Regional PP groups?
 - B. AASHTO SOMat, SOMaint, SOHwyDesign, Asset Management?





ETF

- ETF is now an AASHTO group affiliated group, supported through the TSP² program.
- The work of the ETF is through an all volunteer effort.



Questions



