FHWA

PAVEMENT PRESERVATION EXPERT TASK GROUP (PPETG)

Emulsion Task Force (ETF)

RMWPPP Annual Meeting Phoenix, Arizona – May 8th – 10th
Background

- Established in 1991
- Promote the institutionalization of the concepts of pavement preservation
- Parent group of “Emulsion Task Force”
Mission

- The FHWA PPETG will advance and improve the state of the practice in the area of pavement preservation by working collaboratively with federal, state, local agencies, industry, and academic interests.
Mission

- Pavement Preservation
  
  “A program employing a network level, long-term strategy that enhances pavement performance by using an integrated, **cost-effective** set of practices that **extend pavement life**, improve safety and meet motorist expectations”

PPETG

Emulsion – Part III
Components of Pavement Preservation

- Minor Rehabilitation
- Preventative Maintenance
- Routine Maintenance
Goals

- Pavement preservation acceptance and implementation by Agencies
- **Support preservation programs** at the federal, state, and local levels
- Identify and **address customer needs**
- **Support preservation centers** for excellence/regional organizations
- **Integrate** pavement preservation into pavement management
Working Topics

- Advocate the **implementation** of Pavement Preservation
- Expand **Training and Certification** Efforts
- In Conjunction with the Pavement Preservation Road Map Advance Pavement Preservation **Research**
- Examine **Impacts of New Policies** on Pavement Preservation Implementation
- MAP21 – Recognizes Pavement Preservation

( cont)
Working Topics (cont.)

- **Sanction** and Support Emulsion Task Force Efforts
- **Endorse Advancement** of New Treatment Technologies
PPETG Emulsion Task Force (ETF)
✓ Idea for ETF conceived at AEMA-ISSA-ARRA meeting February 2008 under guidance of Jim Sorenson, FHWA

✓ Identified need for industry expertise and involvement in ongoing research activities pertaining to asphalt emulsions and finished product systems

✓ First meeting in Newport Beach, CA April 7-8, 2008
“First, its goal was to review and refine material oriented research needs related to pavement preservation. This includes evaluation of the existing Pavement Preservation Roadmap Problem Statements and Consortium on Asphalt Research work plans and research. The group is expected to review and make recommendations to integrate related research activities as well as coordinate activities and knowledge sharing with SuperPave ETGs, TRB, NCHRP as well as within Industry through AEMA, ISSA, ARRA and the Asphalt Institute.”

“Second, the group is to proactively encourage adoption of uniform national standards for Pavement Preservation technologies through AASHTO and ASTM. This would include promotion of advanced performance based methods and specifications as well as material related certification standards.”
✓ Advance the Effort to Develop Performance Based Methods & Specification for Emulsions
  ● Protocols for design
  ● Protocols for performance
  ● Protocols for inspection & acceptance

✓ Encourage Adoption of Uniform National Standards
Original Tasks

- Review **needs** for Preservation Materials Research - Emulsion & Aggregate
- Evaluate **existing** R&D Roadmap Problem Statements in the Area of Emulsions
- Evaluate Work Plans and **Review Ongoing** Research in PP Emulsion

( cont )
Original Tasks (cont.)

 ✓ Coordinate and Share Activities and Results with Existing Superpave binder/mix/modeling ETGs

 ✓ Facilitate Adoption of New Findings and Research Results Through Appropriate AASHTO / ASTM Channels

 ✓ AEMA / ISSA / ARRA Coordination
Additional Tasks

- 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
Deliverables – Pre 2013

Emulsion Use and Performance Survey

- Emulsion Product/System Evaluation
- **Identify/prioritize** widely used emulsion applications
- Define **2 critical distresses** and mechanism of failure for priority application
- Determine testing needs
  - Existing Tests which are applicable
  - Research needs for new test methods
- Conducted by Andrew Hanz of Univ. Wisconsin Madison and Colin Franco of RIDOT
AASHTO Standards 2010

Four Standards submitted to AASHTO for Adoption


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
Current Members

Co-Chair- Chris Lubbers, Kraton Polymers
Co-Chair- Colin Franco RI DoT, TSP2, PPETG, SOMtrls, RRAC

Members From:
- Industry: AEMA/ ARRA/ ISSA
- Academics: CSU/ Tx A&M/ U.WISC/ NC State
- State DOT’s: TX, IA, RI, LA, AZ, MN
- FHWA
- National Center PP (NCPP)
Current Subcommittees

1. **Residue Recovery and Testing** - 18 members
   - Arlis Kadrmas (Chair) BASF - AEMA

2. **Design Group**
   - **Spray** (17 members) – Gary Hicks (Co-chair) CSU
   - **Mix** (13 members) – Jim Moulthrop (Co-chair) Fugro FP2

3. **Supplier Certification and Quality Assurance** - 16 members
   - Tom Wood (Chair) MnDOT

4. **Recycling Emulsions** - 9 members
   - Todd Thomas (Chair) COLAS ARRA

5. **Research** - 12 members
   - Darren Hazlett (Chair) TxDOT

6. **SWG – Update M140/M208/M316+SPG** – 5 members
   - Mike Voth (Chair) Central Federal Lands Emulsion – Part III
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
     a) Design Specs
     b) Design Practices
     c) Construction Guide Specs
To Accomplish Reenergized Mission

- ETF subcommittees should establish:
  1. Short term plan (1 year)
  2. Long term plan (3 years)
Next Steps (cont.)

- Short term Plan – Drafting AASHTO Stds for:
  - Micro-surfacing
  - Chip Seal
    a) Design Specification
    b) Design Practice
    c) Construction Guide Spec

- Certification: Protocols for various treatments

- Research
  - Studies
  - Update Roadmap
Next Steps (cont.)

- Draft AASHTO standards for:
  - Tack Coat
  - Fog Seal
  - Scrub Seal
  - Sand Seal
  - Slurry Seal
  - Cold Mixes
    - CIR
Long term Plans

- Promoting Emulsion Technologies through ETG
- Large Scale Studies
  - NCHRP
  - Pooled Fund
- QA Protocols for Emulsion Treatments

- Develop a PG Specification for Emulsion Using Superpave Principles.
Questions
Original Members

Co-Chair- Roger Hayner, Colas Inc., AEMA
Co-Chair- Colin Franco RI DoT, TSP2, PPETG, SOMtrls, SCOR

Members From:
- Industry: AEMA/ ARRA/ ISSA
- Academics: CSU/ Tx A&M/ U.WISC/ Cal State
- State DOT’s: TX, IA, UT, RI, CA, La
- FHWA
- National Center PP (NCPP)
Original Subcommittees

- Emulsion Testing & Residue Recovery Methods
  - Arlis Kadrmas- Chair

- Residue Tests
  - Gayle King- Chair

**Note:** Subcommittees Combined as of March 2010
  - Arlis Kadrmas to chair combined group
Aggregates, Mix Design, and Performance Tests
- Mary Stroup-Gardiner - Chair

Approved Supplier Certification
- Roger Hayner - Chair

Inspection & Acceptance
- Colin Franco - Chair

Tack Coat Review (Formed 7/26/10)
- Chris Abadie - Chair

Recycling Emulsions (NEW)
Emulsion Use and Performance Survey

- Emulsion Product/System Evaluation
- **Identify/prioritize** widely used emulsion applications
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- Determine testing needs
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Survey Results

- Top Emulsion Product Usage Priority
  - Chipseals = 100%
  - Tack Coat = 66.7%
  - Microsurfacing = 62%

- Modes of Failure Defined - e.g.: Chipseals
  - Chip Loss
  - Bleeding
  - Binder Cracking (Reflective or Environmental)
  - Underlying Mechanisms Identified

- Existing Tests Available - 84% Yes
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
- **Best Practices Document (draft)**
  - This was the original deliverable for Chip Seal and Micro-surfacing.
  - This is a working reference document for the 3 standards as well as for determining the gaps and needs for research.

- **Low Temperature Recovery Method**
  - Plan for Interlab Study and data collection (ongoing)