Update on AAPTP and Use of State Highway HMA Specs for Airfields

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SWIFT Conference in Toronto, CA

Sept 17th, 2009

Topics

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- AAPTP
  - Background / Future
  - Projects
- Use of State Highway Specs for Airfields
  - AAPTP Project 06-05
  - Guideline Document
- A Few AI Education Efforts
  - AI / FAA Airport Pavement Workshop
  - New Technical Pubs

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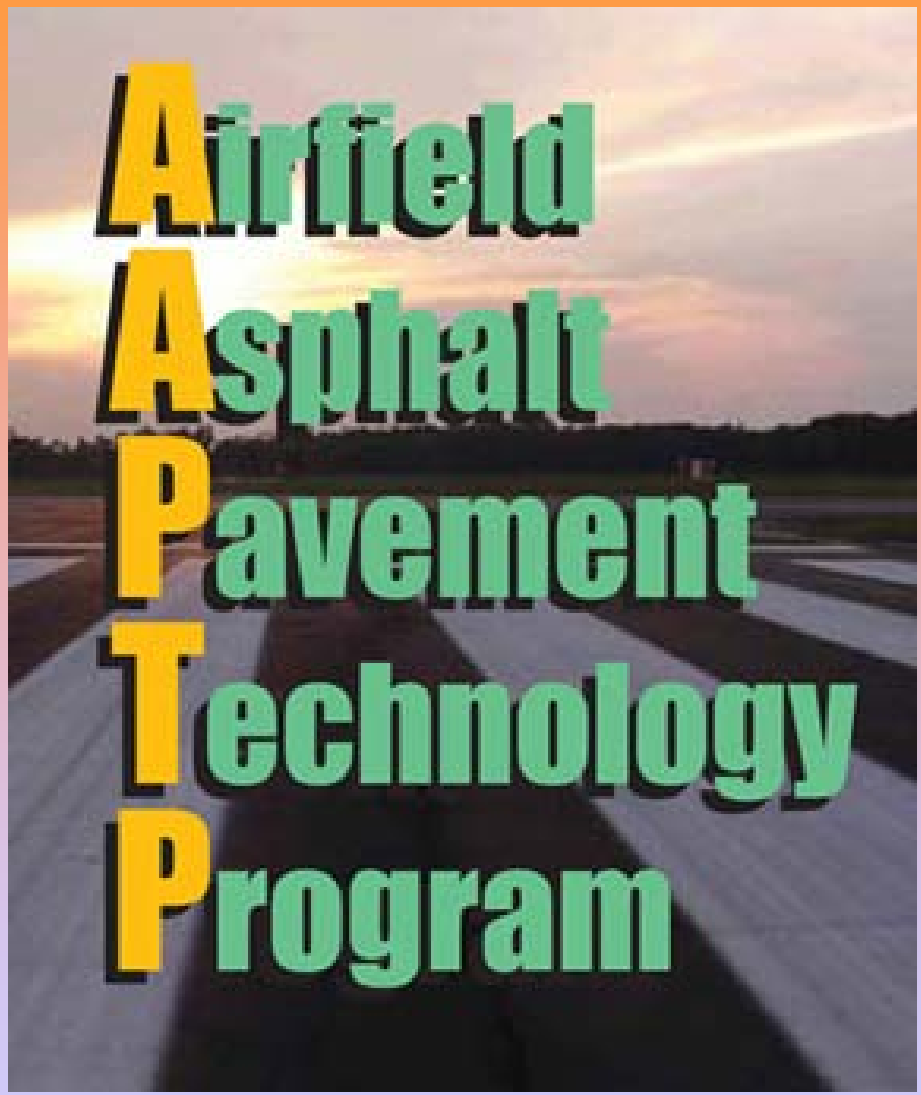
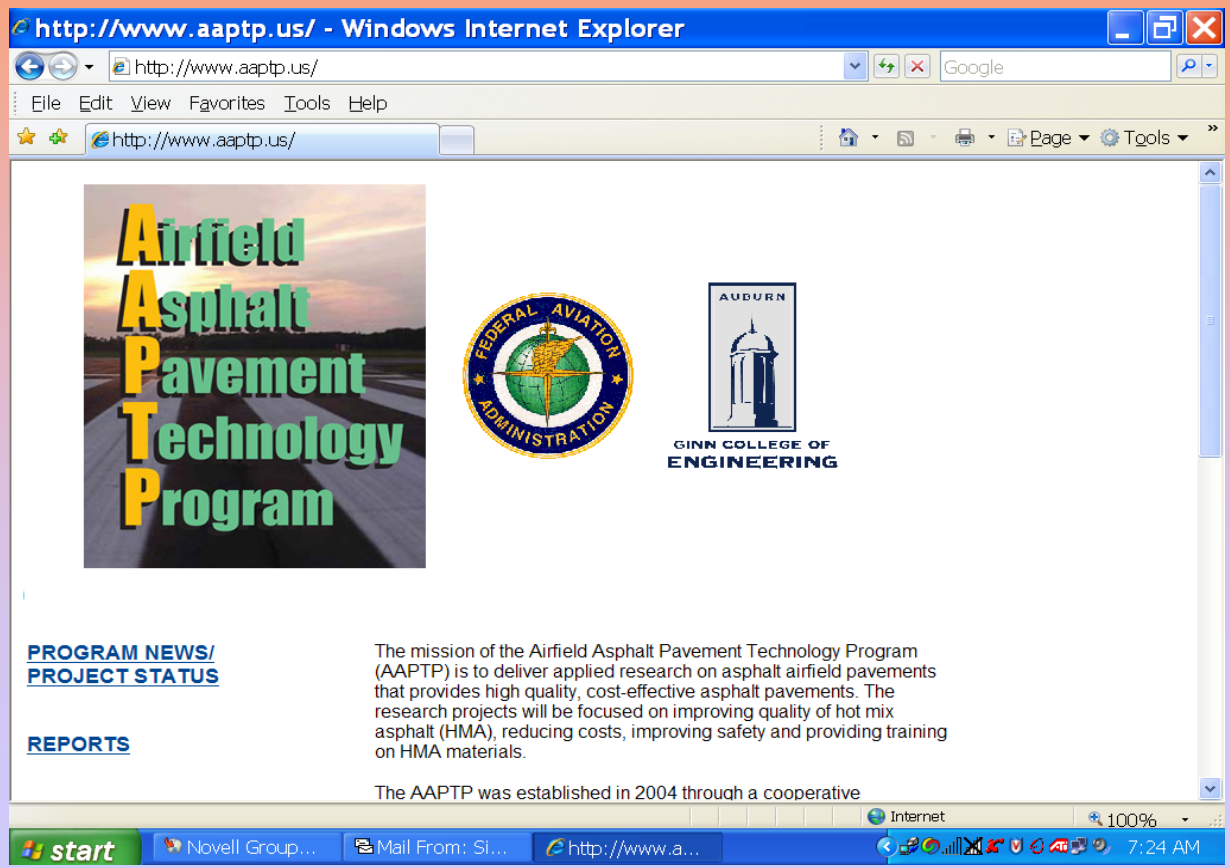

Airfield
Asphalt
Pavement
Technology
Program

Website: http://www.aaptp.us



Includes:

- **RFPs**
- **Reports**
- **Status**

AAPTP Background / Status

- FAA Cooperative Agreement Started in 2004
  - Mirrors IPRF Program for PCC Airfield Research
  - Administered through Auburn University
  - Program Manager is Monte Symons
  - Funding Level: $1.6Million/yr for 3 Yrs
- 19 Projects Completed or Underway
- Both AAPTP and IPRF Programs Officially End May 2010

Highway Pavement Technologies Implemented / Improved for Airfield Applications

- Guidelines for Rubblization (04-01)
- PG Binder Grade Selection (AAPTP 04-02)
- Superpave Mix Design (04-03)
- Stone Matrix Asphalt (SMA) (04-04)
- Longitudinal Joints (04-05)
- Porous Friction Course (PFC) (04-06)

Projects of Special Interest

- HMA Airport Construction Best Practice Manual (05-01)
- Non Coal Tar Based Fuel Resistant Sealers (05-02)
- Effect of De-icing Chemicals on HMA Airfield Pavements (05-03)
- Mitigation of Reflective Cracking (05-04)
- Plan for National Certification of HMA Inspectors (05-05)
- USE of RAP in Airport HMA (05-06)

Projects of Special Interest (Con't)

- Use of Recycled ASR PCC in HMA (06-02)
- Performance Base Specs for Airfields (06-03)
- Guidelines for Use of State DOT HMA Specs for Airfields (06-05)

Projects Underway

- Techniques for Prevention and Remediation of Non-load Related Distresses (06-01)
- NDT Testing to Identify Presence / Extent of Delamination of HMA Layers (06-04)
- Life Cycle Cost Analysis For Airfield Pavements (06-06)
- Assessment of Existing Overlay Design Procedures for Airfield Pavements (06-07)

AAPTP Project 06–05: Guidelines for Use of Highway Specs for HMA Airport Pavements

Project Overview

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- **Deliverable:** Comprehensive guide to practicing airport designers on the selection and modification of state highway specifications for use on airport HMA pavement projects serving less than 60,000 lb aircraft.

- **Final Report completed and available at www.aaptp.us**

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Benefits to Using State Hwy HMA Spec versus FAA P-401 or P-401SP

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- Lower cost per ton due to familiarity by local contractors
  - Well documented premium for P-401 mix
- Hwy spec relies heavily on referencing other state standards (specifications, test procedures, methods, etc.)
  - State Standard Spec Manual reviewed and updated each year with improvements and new technology
- GA airfields don't see heavy loads
  - Under 60,000lbs aircraft

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Concerns to Using State Highway HMA Spec on Airfields

- FAA expects HMA to meet quality and performance standard of FAA ’s P-401 or P-401SP
  - Airfield’s greater sensitivity to FOD and environmental distresses
  - Long proven track record with P-401
- No motivation for airfield consultants to request a Modification of Standard to deviate from P-401
- 10-year federal funding moratorium (no additional federal dollars to fix future problems on same section) when “state standard” used on FAA project

Approach

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- Develop Draft FAA Engineering Brief (EB)
  - Guideline document for engineer to help select a State standard highway HMA spec and then modify into State standard airfield pavement (SSAP) spec
    - SSAP spec ties all other state standards
    - E.B. addresses critical elements for FAA airfields
- Concept: one SSAP spec per state
  - After FAA approval, can routinely be used on projects (<60K lb aircraft) without 10-yr moratorium

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Outline of Topics covered in E.B.

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- **Traffic**
- **Materials**
- **Composition**
- **Construction**
- **Acceptance**
- **Quality Control**
- **Measurement**
- **Payment**

Follows format of most state specs

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Traffic and Materials

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- Traffic

Traffic Level	Million ESALs	Aircraft Gross Weight, (#)
A	<0.3	<12,500
B	0.3 to <3.0	12,500 to <60,000

- Aggregate Properties
  - Same as state highway spec
- Binders (per AAPTP 04-02)
  - Standard grade by DOT for area
    - AASHTO M-320
    - Plus any additional state requirements (PG-Plus)
  - Grade bump one on high temp for Traffic Level B

Mix Composition

- If State spec uses Marshall
  - 50 Blows for Traffic Level A or B
  - Gradation: use P-401 or P-403
- If State spec uses Superpave
  - 50 gyrations (Traf. Level A) or 65 gyrations (Traf Level B)
  - Gradation: AASHTO M-323
- Mix Type Guidance
  - Base/Intermediate Course: 37mm, 25mm or 19mm
  - Leveling Course: 12.5mm or 9.5mm
  - Surface Course: Fine-graded only 19mm or 12.5mm
- RAP Limits (per AAPTP 05-06)
  - 15-30% depending on whether surface or base mix, and on recovered PG grade of RAP binder
- JMF Submittal Requirements

Construction

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- Plants and equipment
  - Rely on state spec
- Mandatory test section requirements
  - On initial production lot
- Grooving criteria (if shown on plans)
  - ¼” wide x ¼” deep at 1.5” c-c spacing
  - Acceptance tolerances
- High quality longitudinal joints a must!
  - Include a joint density spec

Material Acceptance by Engineer

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All acceptance sampling and testing must be done by owner, separate from contractor's QC

Acceptance Criteria and Frequency Provided

- Plant Produced Mix (PPM) - Air Voids **[Mandatory]**
- PPM – Pass #8 Sieve **[Optional]**
- PPM – Pass #200 Sieve **[Optional]**

- Field Placed Mix (FPM) – Mat Density **[Mandatory]**
- FPM - Joint Density **[Mandatory]**
- FPM – Thickness **[Optional]**
- FPM – Grade **[Mandatory]**
- FPM – Smoothness **[Mandatory]**

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Contractor's Quality Control

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- QC Program
- Lab Facility
- QC Testing
  - AC%, gradations, moisture contents of aggregates and mix, temperatures, roadway densities, etc.
- Control Charts of Processes

Payment

- Can’t exceed 100% of contracted unit price, but can take payments of lots that are over 100% anuse them to offset payments less than 100%
- PWL is not required

E.B. Refined and Validated

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- 10 Different State Test Cases
  - AI Regional Engineers developed SSAP specs by applying the E.B. to their respective state spec
- E.B. improved thru this process
- SSAPs:
  - FL, MN, PA, TX, VA, CA, MT, OH, WA, MO
    - In Appendices of Final Report
    - Not official SSAPs but rather examples
- Final Report Documents Project
  - 58 pages total
    - Last 17 pgs is the Final Draft E.B.
  - Appendices is several hundred pages

AI Regional Engineer Offices and User Producer Groups

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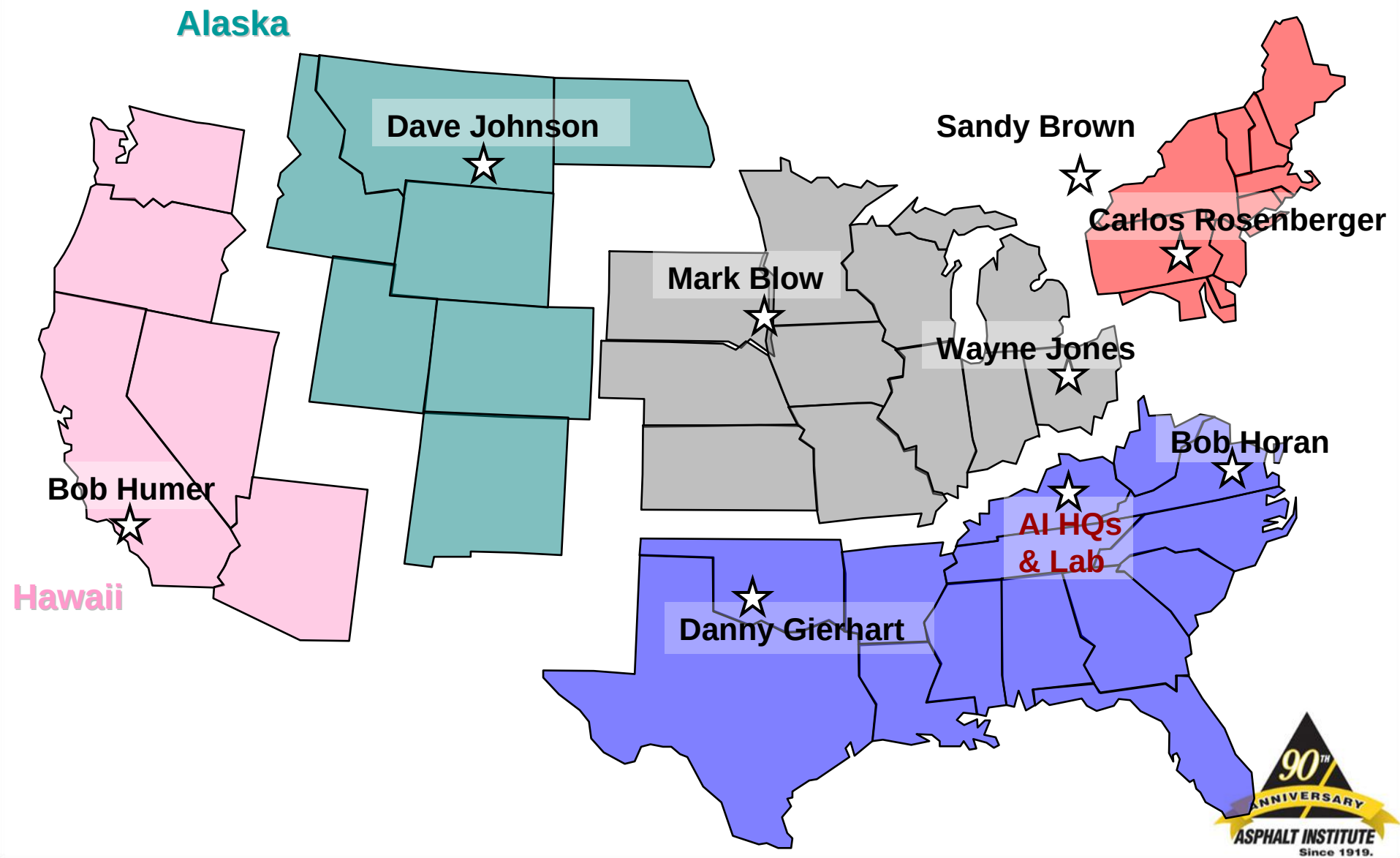

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A Few AI Educational Programs

Airport Pavement Workshops

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- Partner with FAA
- Rotate among Regions
  - Oct 27-29, 2009 in Baltimore
  - April 6-8, 2010 in Dallas
- Airfield Specific Topics
  - Materials
  - Structural Design
  - Construction & Rehab
  - QC/QA
  - Pavement Management
  - Preservation & Maint.

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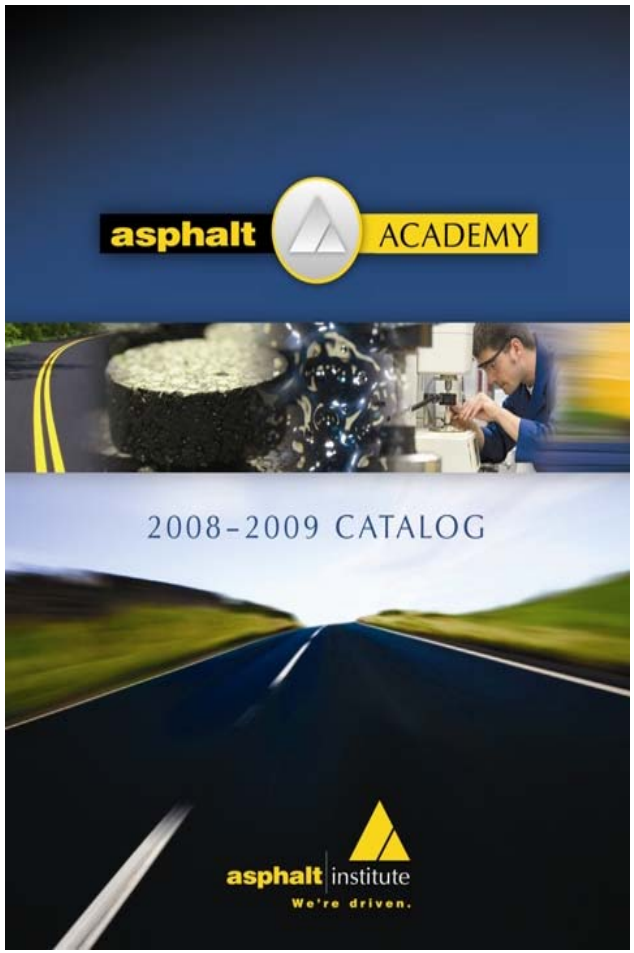
Other Upcoming AI Courses



- HMA 101
  - Nov 4-5 in PA
- HMA for Local Govts
  - Nov 12 in PA
- Mix Design Technologies
  - 2 offerings Jan-Feb at AI HQs
- Optimizing Volumetrics
  - Feb 1-4 at AI HQs
- Binder Technician Training
  - 4 offerings Feb-Apr at AI HQs
- Binder Technology
  - Jan 19-21 at AI HQs
- Quality Construction
  - 5 offerings Apr-May out West

Basic Asphalt Emulsion Manual

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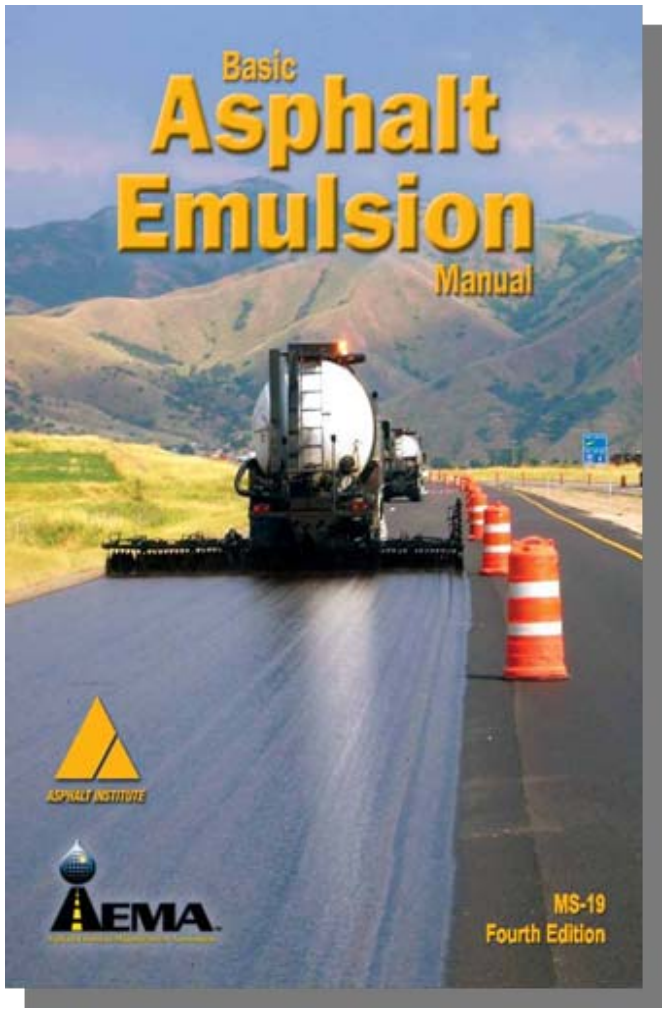

- MS-19; New Edition
  - Released early Jan '09
  - Price: $60
- AI, AEMA co-publishers
- Joint AI and AEMA Technical Writing Team
- Complete Rewrite of Content
- Upcoming Webinar Series

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MS-4 - The Asphalt Handbook (7th Ed.)

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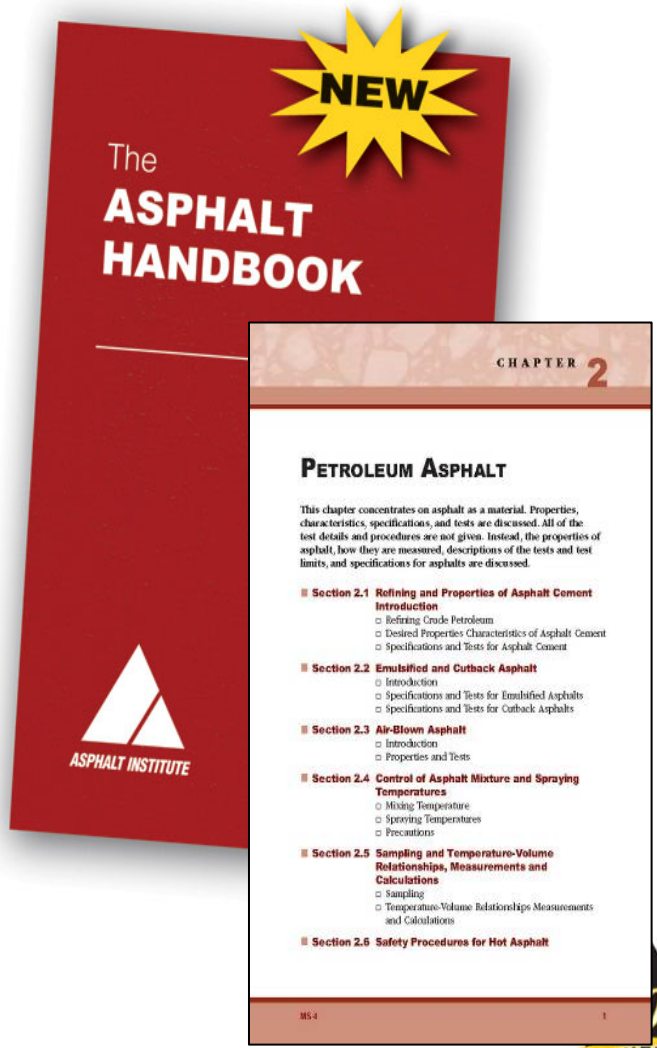
- MS-4 is the Asphalt Institute's comprehensive manual on the use of asphalt.
- For 70 years, it has served the asphalt industry as the primary reference manual for contractors, engineers, consultants, specifiers, and user agencies.
- New edition is 832 pages, 15 Chapters
  - Complete rewrite of text, graphics, photos
- Many new topics and an index
  - Superpave, specialty mixes, modified binders, etc
- $ 120

www.asphaltinstitute.org/handbook



Updated Maintenance Manual Released Later this Year!

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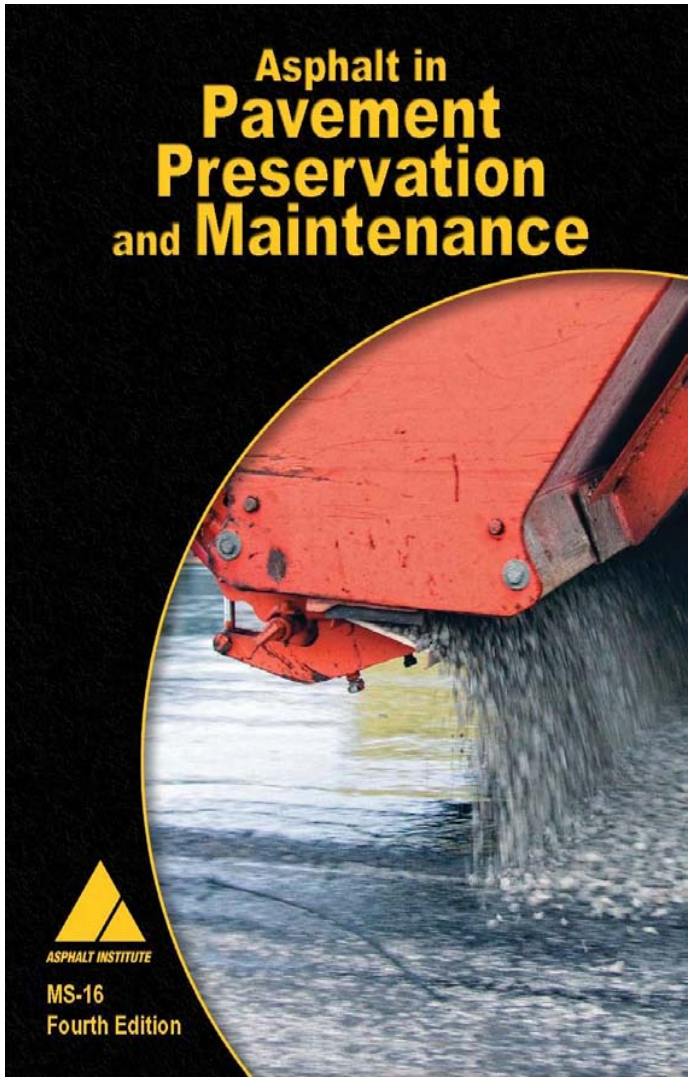

- *MS-16 Asphalt in Pavement Preservation and Maintenance*
  - Price: $65
- Topics:
  - Concepts and Definitions
  - Pavement Evaluation and Distresses
  - Materials
  - Crack Sealing/Filling
  - Patching
  - Surface Treatments

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