Long-Life Asphalt Pavements for the 21st Century

WARM MIX ASPHALT TECHNOLOGY

WARM MIX ASPHALT OPEN HOUSE

May 7, 2008
Morro Bay, CA

warmmixasphalt.com
WMA Technical Working Group (WMA TWG)

- Formed in 2005
- Purpose:
  - Promote Technology Transfer
  - Facilitate Product Approval Methods
  - Encourage Research
  - Develop Quality and Environmental Testing Protocols
  - Provide Guidelines for Mix Design and Construction
  - Identify Other Benefits of WMA
WMA Technical Working Group (WMA TWG)

- 2 - 3 meetings annually
- May 6, 2008
- December 11-12, 2007
  - Current Technology Overview and Updates
  - Plant Setup, Operations, and Efficiency
  - Research Activities
  - Select Project Experiences
  - WMA European Scan Tour
WMA TWG Accomplishments

- www.warmmixasphalt.com
- Material Testing Framework
- Emission Testing Framework
- WMA Best Practices Document
- Research Needs Identified
  - Developed three (3) research statements
  - Submitted through AASHTO to NCHRP
    - All projects highly ranked by SCOR
    - Total $1.4 million
NCHRP Research Projects

NCHRP Project 09-43

“Mix Design Practices for Warm Mix Asphalt”

$500,000.00

Principal Investigator:
Dr. Ramon Bonaquist,
Advanced Asphalt Technologies, LLC

Completion Date:
March 2010

http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=977
NCHRP Research Projects

NCHRP Project 09-47
- “Engineering Properties, Emissions, and Field Performance”
- $900,000.00
- Principal Investigator: TBD
- Completion Date: not to exceed 42 months
- [Link to TRBNet Project Display](http://www.trb.org/TRBNet/ProjectDisplay.asp?ProjectID=1625)
WMA Technologies

Test Frameworks
The Warm-Mix Asphalt Technical Working Group has devised test frameworks to help researchers obtain data in a uniform format so that analysis can be done by using data from a multitude of projects. There is one framework for material properties and another for emissions and energy reductions.

Products and Processes
These products and processes are listed for information only. The WMA Technical Working Group does not endorse any particular proprietary product or technology. These applications should be considered as experimental.

Advanced Concepts Engineering Co.: LFA CO
Arkema Group: CECABASE RT
Aspha-min: Aspha-min Online
Asteck Industries: Double Barrel Green System
MeadWestvaco Asphalt Innovations: Evotherm
PQ Corporation: Adverse WMA
Sasol Wax Americas, Inc.: Sasobit
Laboratory Evaluation: Wax Additives in Warm-Mix Asphalt Binder

Evaluate the effect of wax additives on physical properties and characteristics of asphalt binders and their subsequent performance in mixtures.
Binder ETG Research Projects

- Asphalt – One (1)
  - Lion Oil PG64-22 Eldorado, AR Refinery
- Wax Additives – Nine (9)
  - Non-Paraffin Wax Additives
- Aggregates
  - Vulcan Barin Quarry Granite, Columbus, GA
- Mix Design
  - 12.5mm Dense Graded SuperPave Gyratory
    - ~5.5% Binder
    - ~7.0% Air Voids
Binder ETG Research Projects

- Fourier Transform Infra-Red Spectroscopy
- Gel Permeation Chromatography
- Glass Transition (Tg)
- Branching
- Physical Hardening (32 days saturation at -12°C) Bending Beam Rheometry
  - Testing at 1, 2, 4, 8, 16 and 32 Days
- Multi-Step Creep Recovery (MSCR)
- Binder Stress Sweep Fatigue
- Additional testing ... etc.
International WMA Conference

- FHWA, AASHTO, NAPA sponsored
- November 11-13, 2008 in Nashville, TN
- Features:
  - Processes
  - Mix Production & Placement
  - Energy consumption
  - Mix Design
  - Material Properties
  - Environmental Performance
  - Engineering
  - State of the Practice
  - Future Direction

warmmixasphalt.com
Warm Mix Asphalt: Best Practices

- Quality Improvement Series (QIP) 125
  - Stockpile Moisture Management
  - Burner Adjustments and Efficiency
  - Aggregate Drying and Baghouse Temperatures
  - Drum Slope and Flighting
  - Combustion Air
  - RAP usage
  - Placement Changes
WMA European Scan Tour

- Joint Program w/ FHWA, AASHTO, NCHRP and Industry
- Publication FHWA-PL-08-007
- Scan Final Report
  - Electronic copy .pdf available at warmmixasphalt.com
There is a consensus among the WMA SCAN Team that WMA is a viable technology. U.S. Agencies and the HMA Industry need to cooperatively pursue this path.

The U.S. has already made great strides in evaluating WMA, thanks in part to Public-Private Partnerships like the WMA TWG and the WMA SCAN Tour.
WMA Trials and Demonstrations
Mobile Asphalt Testing Laboratory (MATL)
WMA Investigation and Implementation

- FHWA working in partnership with AASHTO and Industry to establish clear targets for implementation
- WMA Technical Working Group (TWG)
- FHWA Expert Task Groups
  - Binder, Mixture, and Models
- Regional User-Producer Groups
  - Share data and information
- Move out of demonstration phase
- Training and Education
Thank You!

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Warm Mix Asphalt Program Manager

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