

## FHWA Asphalt Expert Task Groups Update

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## Asphalt Expert Task Groups Update.....

- Initially created by FHWA in 1994
- ETGs Role focused on Superpave
- Members: DOT, Industry, Academia
- ETGs reformed 2006
  - Asphalt Binder Properties
  - Asphalt Mix Design & Construction
  - Advanced Modeling

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## Role of Asphalt ETGs

- Provide a forum for government and industry discussion of emerging issues;
- Review research and technology activities;
- Identify potential improvements to binder, mixture & aggregate specification/standard test methods;
- Identify needed technology improvements.


Open meetings/public access to all records

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## LTPPBind version 3.1

- New procedure software to select the asphalt binder grade
- Available for download at [www.ltpbind.com](http://www.ltpbind.com)



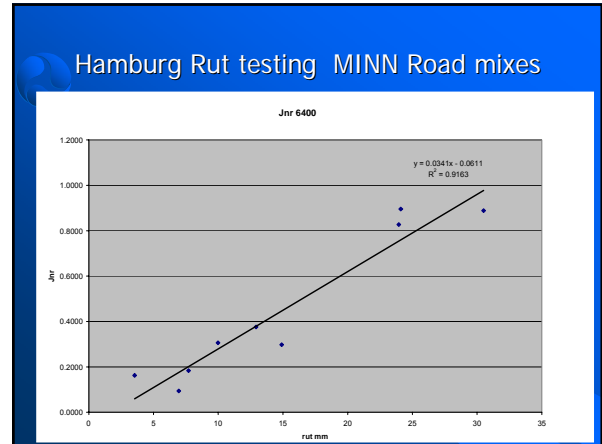
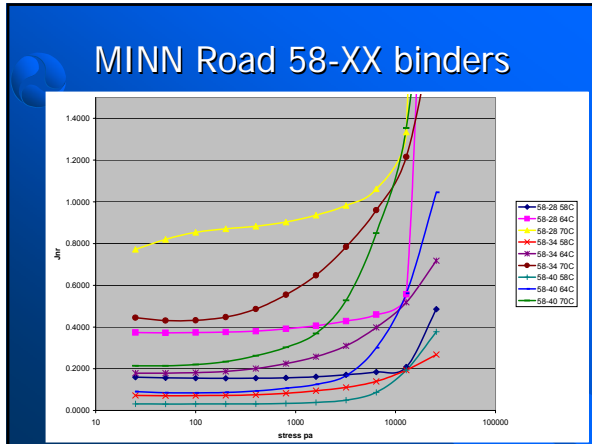
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## High Temperature Binder Criteria

- Study 
  - Refine the Multi-Stress Creep and Recovery Test
  - Evaluate multiple binders
  - Evaluate binder and mix properties to develop specification criteria.

(Non-recoverable compliance is determined by dividing the average non-recovered strain by the initial stress.)

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- ### Ongoing work
- Establish Jnr based on neat binders.
  - Evaluate SPT mixture creep and recovery to relate to the binder.
  - Evaluate test sections with known performance.

- ### Phosphoric Acid Modified Asphalt
- FHWA Study
- Acid modification method to increase the high temperature stiffness of asphalt binders.
  - Possible guidelines for State agencies.

- ### Conclusion – Based on Stiffness
- Any of the Phosphoric Acid Grades can be used
  - Acids Containing Water Cause Foaming
  - Green Acid is Likely to Cause Corrosion
  - Stiffness is Asphalt Dependant
    - AAK-1 (Boscan) is the Most Responsive
    - ABM-1 (CA Valley) Showed No Stiffness Increase

- ### Further Study Plan
- Three binders with different sensitivities to Phosphoric Acid
  - Two aggregates, non stripping and stripping
  - Amine anti-strip additives and lime



**Superpave Gyrotory Compactor Calibration**  
Making Superpave Mixtures Consistent



AASHTO Designation: T 312-03  
Preparing ... Specimens by ... SGC

4.1  
*Superpave Gyrotory Compactor* – ... an average internal angle of  $1.16^\circ \pm 0.02^\circ$   
.....  
(only internal angle with mix or with simulated mix measurement?)





Specification Recommendations

- Drop procedures related to use of HMA
- Implement new TP for simulated loading
  - add reference in T312
  - Precision: Troxler 4140 NOT INCLUDED
  - Refer to “manufacturers’ recommendations”
    - Applies to specific procedures for using various devices
    - Applies to hot-versus-cold question(s)
  - Inform users that RAM  $\neq$  DAV2/HMS
- Angle tolerance: move to +/- 0.03 deg

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Internal Angle of Gyration


- Mixless measuring devices
- AASHTO provisional procedures for mix simulation
- SGC guidance/rationale document

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TP-62 Determination of Dynamic Modulus

- 9-29: Superpave Performance Tester for dynamic modulus
- TP 62 **Dynamic Modulus E\***
  - Accommodate Superpave Performance Tester
  - Separate Std for sample preparation
  - Separate Std. for master curve



### Fine Aggregate Specific Gravity Issues

#### Task Group Objectives:

- Identify problems/issues with current standard AASHTO T 84
- Evaluate alternate methods
- Make recommendations regarding changes and/or new methods
- Additional scope -- Mixture gravity determination issues T 209



### 9-33: A Mix Design Manual for Hot Mix Asphalt

Final draft end of 2006 will modify build upon Superpave method to Asphalt Institute Manual SP-02:

- New volumetric criteria.
- N-design
- Simple performance test(s).
- Criteria developed with M-E design guide performance models and software.

*Advanced Asphalt Technologies*

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### Other NCHRP Projects

- 9-34: Improved Conditioning Procedure for Moisture Susceptibility
- 9-38: Endurance Limit of HMA Mixtures to Prevent Fatigue Cracking
- 9-39: Determining Mixing and Compaction Temperatures of PG Binders in HMA
- 9-45: Development of Specification Criteria for Mineral Fines Used in HMA

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### AASHTO M 323 Design Guidance

- Combined New and RAP Aggregates
  - Gradation
  - Angularity
  - Flat and Elongated
  - Other Tests ??
- Binder Grade Changes ??
  - < 15 % RAP, no grade change
  - 15 -25 % RAP, use one grade softer
  - > 25 % RAP, use blending chart



### Fundamental Properties and Advanced Modeling ETG

- Modeling of Healing Behavior
- Microstructure of Asphalt Mixtures
- Traffic Response Predictions
- Modeling Fatigue Response
- Modeling Mechanical Behavior

<http://www.asphaltmodelsetg.org/>

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Next Meetings  
February 5-9, 2007 Phoenix AZ

<http://www.fhwa.dot.gov/pavements>

<ftp://fhwaftp.fhwa.dot.gov>

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