

Models Used to Predict Pavement Performance

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FEDERAL HIGHWAY ADMINISTRATION

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WESTERN RESEARCH INSTITUTE

Washakie Center Rendezvous Room, University of Wyoming
Laramie, Wyoming ▪ June 21-23, 2006



Wednesday, June 21

1:30-1:40 **Introduction** **Ray Robertson**
Western Research Institute

Each speaker will address conceptually (rather than purely mathematically), how the subject model type contributes to prediction of all forms of pavement distress (rutting, fatigue, moisture damage, thermal cracking and age-hardening) and hence to long-term pavement performance.

The moderator of each session will challenge speakers and participants to identify elements and missing elements of predictive capability of each model type with an emphasis on the interrelation among models. Symposium attendees are strongly urged to participate significantly in the discussions as it is impossible to formally present every model in two days. Attendees are encouraged to bring their own data (preferably on CD, flash drive or overheads) thoughts and ideas about various models as they participate in the discussions.

Compositional Models — Moderator: John D'Angelo, FHWA

1:40-2:25	Computer Simulations of Asphalts	Michael L. Greenfield, University of Rhode Island
2:25-3:10	Asphalt Microstructure Model	Troy Pauli, WRI
3:10-3:30	BREAK	
3:30-4:15	Asphalt Solidification Theory	Troy Pauli, WRI
4:15-5:00	Oxidative Aging Model—How it Relates to Pavement Performance	Claine Petersen, Consultant WRI-Retired

Thursday, June 22

Rheological Models — Moderator: Gaylon Baumgardner, Paragon Technical Services

8:00-8:55	Cracking/Healing/Surface Energy	Dallas Little, Texas A&M University
8:55-9:50	Rheological Modeling of Asphalt Binders	Hussain Bahia, University of Wisconsin, Madison
9:50-10:15	BREAK	
10:15-11:10	Low Temperature Cracking	Mihai Marasteanu, University of Minnesota

Mixture Models — Moderator: Jack Youtcheff, FHWA

11:10-12:00	Finite Element Analysis for Moisture Damage	Tom Scarpas, Delft University of Technology
12:00-1:30	LUNCH	
1:40-2:30	The Virtual Cement and Concrete Testing Laboratory: A modeling example from the world of concrete	Edward Garboczi, NIST
2:30-3:20	HMA Fracture Mechanics	Reynoldo Roque, University of Florida
3:20-3:35	BREAK	
3:35-4:25	Summary of Micromechanical Models	Robert Lytton, Texas A&M University
4:25-4:45	Microbial Degradation of Pavement	Ken Thomas, WRI

Mechanistic-Empirical Pavement Design Guide Models — Moderator: Tom Harman, FHWA

4:45-5:00	FHWA and the MEPDG	Katherine Petros, FHWA
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Friday, June 23

8:00-8:45	Use of Field Data to Implement the MEPDG	Mike Farrar, WRI
8:45-9:20	MEPDG Models	Mohamed El-Basyouny, Arizona State Univ.
9:20-10:15	Improved Mechanistic-Empirical Models for Predicting HMA Rutting	Charles Schwartz, University of Maryland
10:15-10:35	BREAK	

Summary/Coalescence of Models

10:35-12:00	Panel Discussion with Session Moderators: (1) Contribution of each model to a unified predictor of pavement performance; (2) Missing elements among models	
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