Fundamental Properties of Asphalts and Modified Asphalts III

Year-1 Work Plan Overview

Fred Turner, WRI

Fundamental Properties and Advanced Models ETG

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"Fundamental Properties of Asphalts and Modified Asphalts III"

FHWA Contract No. DTFH61-07-D-00005
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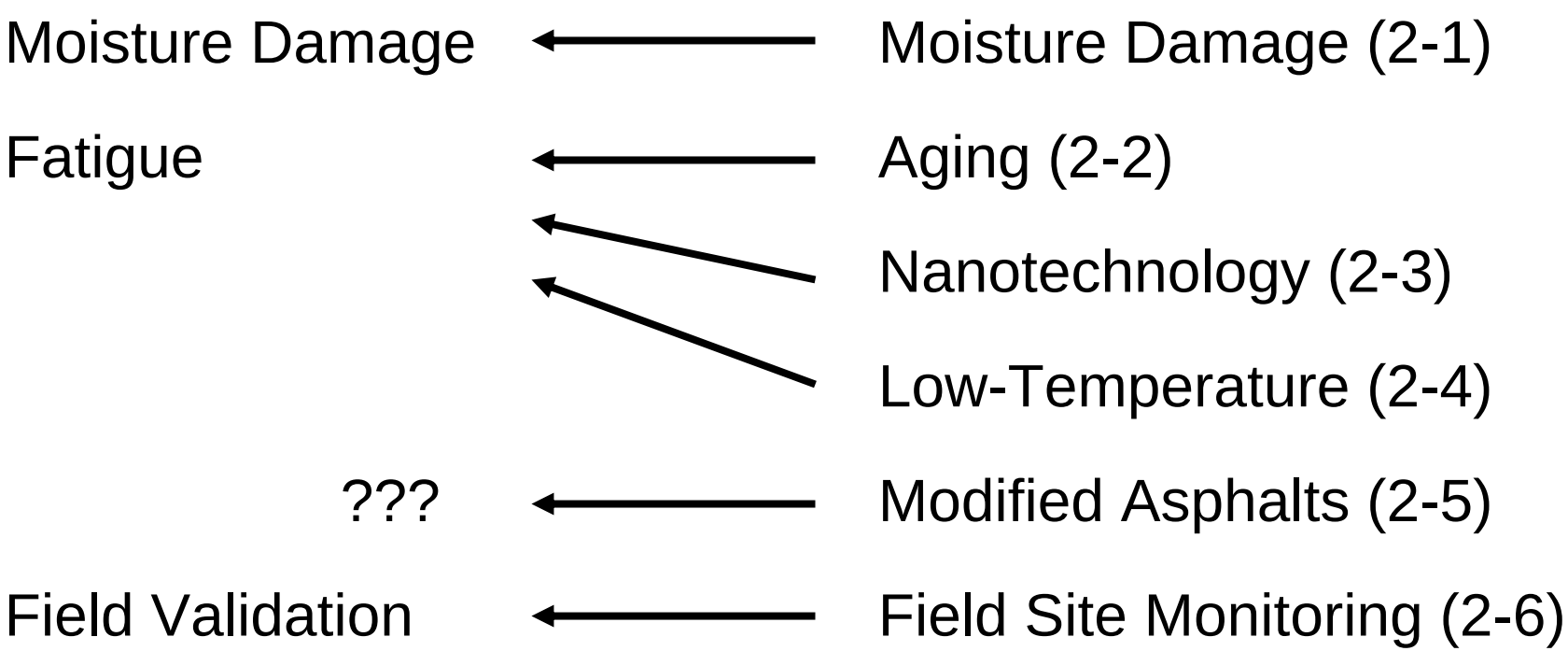
The Plan

- The WRI focus today & tomorrow will be on Tasks 2 & 3
- For Task 2, we have submitted work plans. Written FHWA & ETG comments have been received.
- For Task 3 (IDIQ), eight areas are proposed
  - White papers are required first
  - Then, proposals based on selected white papers are required
  - Then, detailed work plans based on selected proposals are required
  - Then, ETG input will be sought.

The Plan

- Present an outline of our current plans for each research area (subtask) in Task 2, and how the work may be continued later in Task 2 and/or Task 3.
- After each subtask presentation, open the floor for discussion, recommendations and advice on each research area.
- Because the topics in the agenda are based on the ARC organization, we have necessarily made some judgments about where to discuss some of our FPIII subtasks.

The Plan


Moisture Damage
Moisture Damage (2-1)
Fatigue
Aging (2-2)
Nanotechnology (2-3)
Low-Temperature (2-4)
???
Modified Asphalts (2-5)
Field Validation
Field Site Monitoring (2-6)

FHWA Contract Personnel

C.O. – Arlan Finfrock

Contract Specialist – Sarah Berman

TFHRC Team Leader – Dr. Jack Youtcheff

COTR – Dr. Ernest Bastian, Jr.

WRI Principals are shown at
www.westernresearch.org

Recommendations and advice from the ETG's must be coordinated through TFHRC

Contract Objectives

"…to conduct fundamental research on asphalts and modified asphalts, as well as their individual components, and through partnership with other research initiatives and innovation, significantly increase fundamental knowledge so that technological capabilities develop and superior practices proliferate in support of FHWA's Strategic Pavements Roadmap."

Scope of Work

… identify, initiate, and complete fundamental research in asphalts and… modified asphalts.

… the goal of this research is to provide the fundamental scientific basis for predicting and increasing the performance of flexible pavements…

… research shall include, in addition to asphalt studies, fundamental aspects of aggregates and of pavements that relate to their performance in asphalt highways.

… of the activities shall be in support five focus areas included in FHWA's Strategic Pavements Roadmap.

Scope of Work (cont.)

… is envisioned that the activities shall form an advancing understanding and testing of fundamental properties of asphalt, particularly those affecting moisture damage and fatigue.

FHWA Focus Areas (from Roadmap)

Optimize Pavement Performance

- Environment: Moisture Damage, Oxidation/Aging/Embrittlement
- Properties: Fatigue, Thermal Cracking, Permanent Deformation

Advanced Quality Systems

- Structural & Performance Prediction Models
- Fundamental and Performance-Based Tests (Lab. And Field)

Pavement Surface Characteristics

- No work planned

Technical Capability Building

- Practitioner Education Through Symposia & Conferences

Environmental Stewardship

- Monitor and investigate “greener” technologies: warm-mix asphalt,…

Contract Structure

1. Coordination

1. Maintain contact with State-of-the-Art and State-of-the-Science in fundamental research related to asphalt and modified asphalt through literature and personal contact.
2. Monitor current on-going science & technology in fundamental research in asphalts and modified asphalts.
3. Learn the needs of the technical community to aid in planning and executing research.

Contract Structure

2. Sustaining Effort

1. Moisture Damage
2. Aging
3. Nanotechnology
4. Low-Temperature Properties (1st year only)
5. Modified Asphalts (1st year only)
6. Monitoring of Existing Validation Sites (all years of contract)

Contract Structure

3. Indefinite Delivery, Indefinite Quantity (IDIQ)

1. Development of new techniques for measurement or analysis of asphalt properties.
2. Partnerships to develop molecular models of asphalt performance.
3. Examination of new paving technologies, for example WMA.
4. Development and utilization of forensic tools.
5. Specialized analyses for FHWA
6. Complete core and sample analyses for MN validation site.
7. Low-temperature cracking
8. Multiple modification

Contract Structure

4. Information Deployment

- Communication & Outreach
- Web Site
- Databases
- Semiannual Meetings

Reporting (technical)

Quarterly technical reports	**4/yr**
Congressional report	**1/yr**
Annual research sketches	**1/yr**
Annual work plans	**1/yr**
Semiannual Review Meetings/ Technical Symposia	**2/yr**
White papers	**?**
Proposals from white papers	**?**
Work plans from proposals	**?**
Draft Final Technical Report	**1/5yr**
Final Technical Report	**1/5yr**

Coordination With ARC: Research Scope