Update

NCHRP Project 20-7 Task 400
Effect of Elevation on Rolling Thin Film Oven Aging of Asphalt Binder

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Research Team

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Today’s Outline

• Review Objective
• Review Analysis of Existing Data
• Review Experimental Work
• Update Status
Objectives

• Confirm or refute previous studies showing an elevation effect in properties of RTFOT residue

And if there is an effect and it is of engineering significance then….

• Improve the AASHTO T 240 procedure to minimize differences in physical properties of RTFOT residue obtained at different elevations.
Approach

• Perform statistical and engineering analysis of available data:
  – Western Cooperative Testing Group
  – AASHTO Resource Proficiency Samples

• Select method to minimize elevation effect

• Design, execute, and analyze an experiment to confirm viability of the selected method

• Prepare documentation
  – Recommended modifications to AASHTO T 240 with commentary
  – Report with data files
WCTG Binder 552

- Graph 1: G'/sinθ vs. Elevation, 1000 ft
- Graph 2: JMR vs. Elevation, 1000 ft
- Graph 3: Mass Change, % vs. Elevation, 1000 ft
- Graph 4: Recovery, % vs. Elevation, 1000 ft

Data points are shown for Original and RTFOT treatments.
What Are the Options?

• Modify RTFOT to condition at a constant pressure
• Relate elevation effect to other measured binder properties
• Vary RTFOT temperature with elevation
• Vary RTFOT time with elevation

2 min/1,000 ft
Experiment Design

- Graph showing the relationship between RTFOT Conditioning Time (min) and Elevation (ft).
- Two sets of data points:
  - Lab Testing
  - Expected

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Experimental Design

- 25 Labs
  - 181 ft to 7124 ft
- 8 Binders

<table>
<thead>
<tr>
<th>Binder</th>
<th>Type</th>
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<tbody>
<tr>
<td>PG 64-22</td>
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<tr>
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<td>Polymer</td>
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Status

• Received mass change data and conditioned residue from all labs
• Residue from 12 labs has been tested
• Statistical analysis of data is underway
• Final recommendations this summer
Questions/Discussion

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