

MAPA Black to Basics
Columbia, MO
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Steve Jackson, PE
General Manager
West Contracting

Specifying Asphalt for Success



Steve Jackson



- B.S. of Civil Engineering
- B.S. of Economics
 - **THE** University of Missouri- Rolla
- Professional Engineer
- 29 years in construction
 - Residential, Commercial and concrete
- 21 years in asphalt
 - Quality Control, Project Engineer and Plants

Steve Jackson



- 13th year with West Contracting
- 7+ years with Pace Construction
- 1 year with Hall & Riley Paving

- MAPA Vice President
- NAPA Engineering Advisory Council
 - Sub-committees on plants and Balanced Mix Design
- NCAT Applications Steering Committee
- Instructor for Superpave Technician Course at UMR/Missouri S&T since 1998

Introduction

- The challenge is to get a job that will last and provide value to the taxpayers or owners.
- There are many specifications out there and the question becomes “Whose Specification Should I Use?”

Outline

- Basis of Specifications
 - Asphalt Institute
- Typical Specifications in Missouri
 - Missouri Department of Transportation (MoDOT)
 - Municipal – St. Louis County DOT
 - Consultant – specific to a project
- New Specifications

Asphalt Institute

- The Asphalt Institute is the international trade association of petroleum asphalt producers, manufacturers and affiliated businesses. Through education, engineering, technical development, environmental stewardship and marketing leadership, the Asphalt Institute promotes the safe use, benefits, and quality performance of petroleum asphalts in a unified voice for our membership.
- **Founded in 1919**, the Institute's members represent 90% of the liquid asphalt produced in North America and an increasing percentage in international markets.

Asphalt Institute

- Many state specifications reference the Asphalt Institute's MS-2 Asphalt Mix Design Methods
- MoDOT ...(St. Louis County, Columbia)
 - **401.4 Job Mix Formula.** ...The mixture shall be designed in accordance with Asphalt Institute Publication MS-2, *Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types*

What is Success?

- Your thoughts?

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Success



Success?



How bonded are pavement layers?

- Slippage



Utah - 2009



How bonded are pavement layers (cont.)?

- Slippage



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This is what success looks like!



Pro tip from your ol' buddy Steve

- Success Looks Boring

What is Success?

- Stuck
- Durable
- Look Good
- We don't want to have to worry about it for the next 10 years

Stuck

- Specification needs to have a good requirement for bonding lifts together
- Requirements should address:
 - Shot Rate with a residual requirement
 - Can you cut it in the field?
 - Cure time
 - Tracking

Is this Stuck?



KDOT US 81 Cloud County 2011

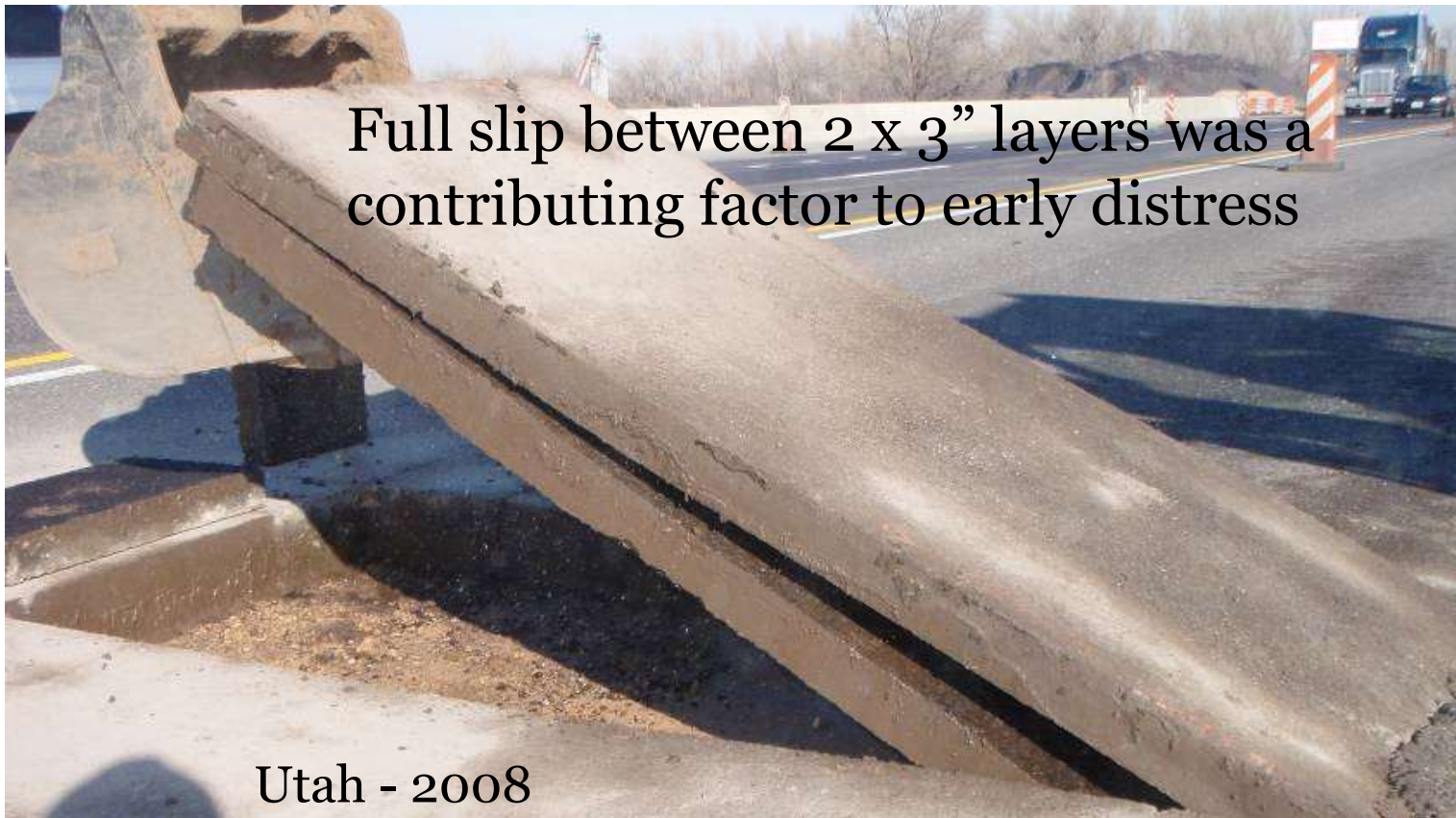


Stuck

- Test Question:
 - Do you need tack coat between lifts when you have two hot lifts?

How bonded are pavement layers (cont.)?

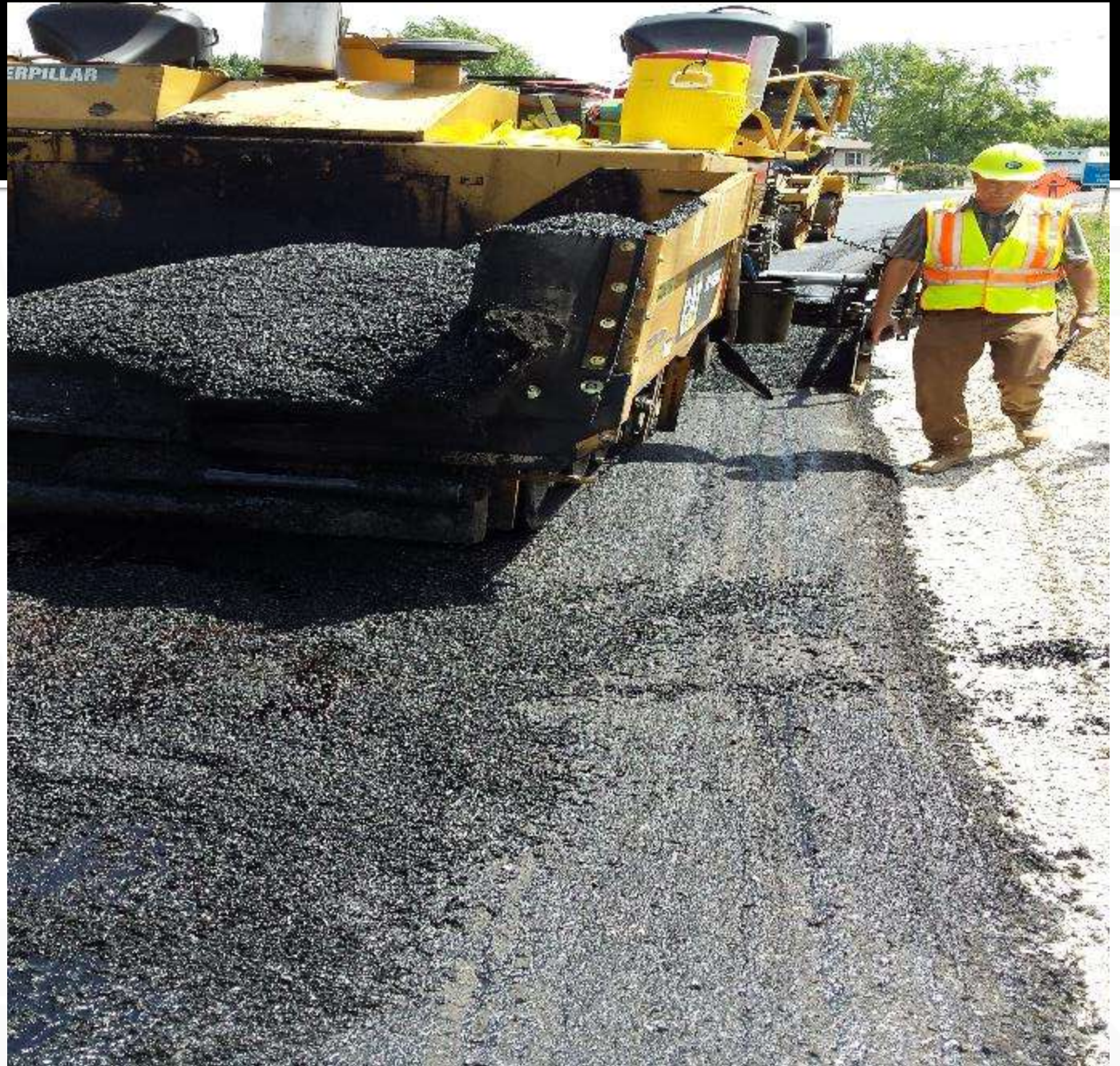
- Premature pavement failure – within 1 year
 - Longitudinal cracking in the wheel path and rutting



Utah - 2008



Stuck





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Stuck



Stuck

- The best solution is to use a spray paver on all projects that can support the equipment
- Next best is trackless tack

Durable

- Test Question
 - What is the primary reason that mixes fail prematurely?
 - Rutting?
 - Cracking?
 - Debonding?

Quality Control

- How do we check in the field that our mixes are going to perform?

Inspection

- Asphalt binder samples
- Gradation
- Deleterious
- Asphalt content
- Density

Inspection Superpave

- Air Voids
- Voids in the Mineral Aggregate
- Asphalt Binder Content
- Density

- Smoothness
- Stripping resistance – Tensile Strength Ratio
- Intelligent Compaction
- Infrared Scanning – temperature variance

**Do any of these items guarantee
Success?**

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Mix Designs

- Market conditions that impact mix design selection and design
- Cold Weather Paving
- Wet Weather Paving
- Solutions

Balanced Mix Design

- Start with a Superpave mix design
- Adjust the mix design to achieve
 - Rutting Resistance
 - Cracking Resistance

Rut Resistance

- Aggregate skeleton
- Polymer modified oils
- Recycled Asphalt Pavement - RAP

Cracking Resistance

- Asphalt Binder Content
- Mixes that compact easily
- Durable aggregates
- Durable bases that drain

Balanced Mix Design

- Testing mix sampled from the project for the properties that you want
- Superpave Performance Testing and Increased Density NJSP-20-01
 - MoDOT website

Wrap Up

- Do you need Superpave?
- Who is doing your testing?
- Polymer modified asphalt?
- Balanced Mix Design is coming to a road near you!

Contact Information

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