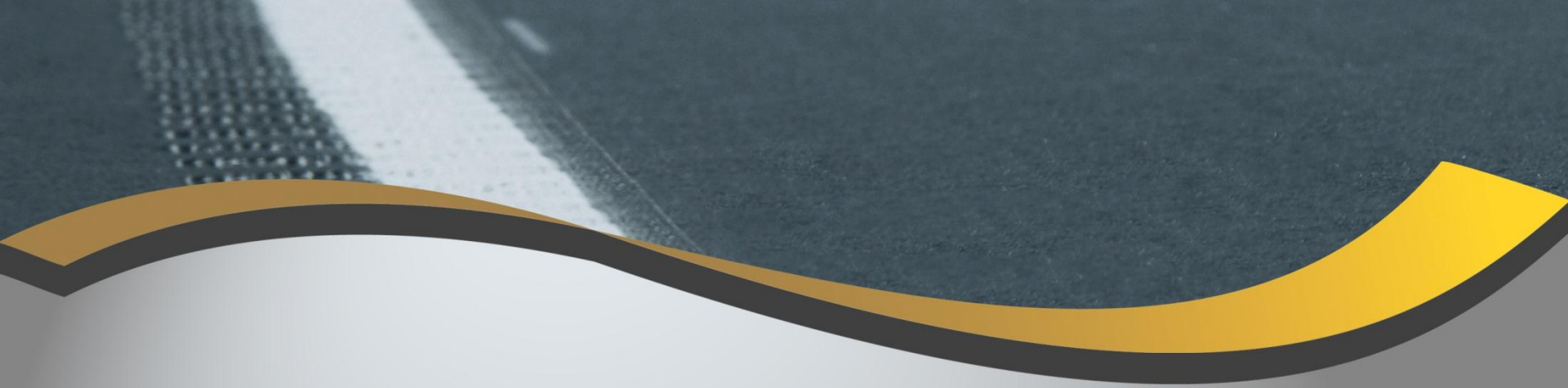




2015 MAPA Annual Conference

Asphalt Through the Years in Missouri

David Ahlvers
State Construction & Materials Engineer
Missouri Department of Transportation
January 13, 2015

Get Missouri Out of the Mud



Missouri Roads Pre 1900

Asphalt Roads Come to America

- Pennsylvania Ave. First paved in 1876.



Get Missouri Out of the Mud

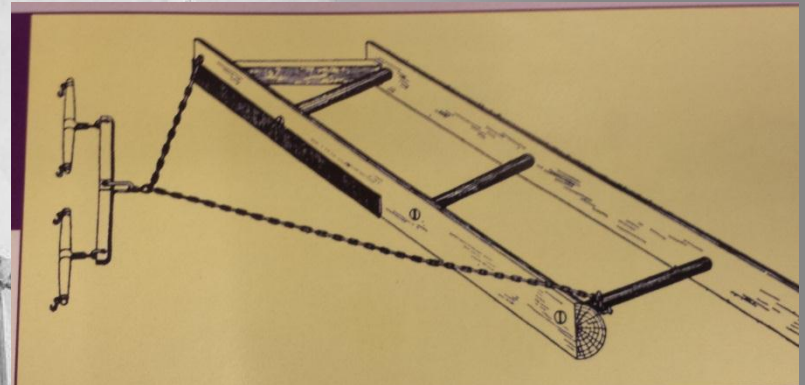
- Maitland Drag
- Macadam



Most of Missouri's early roads were dirt—on mud or dust, depending on the season. Rutting was so bad that traveling was often difficult.

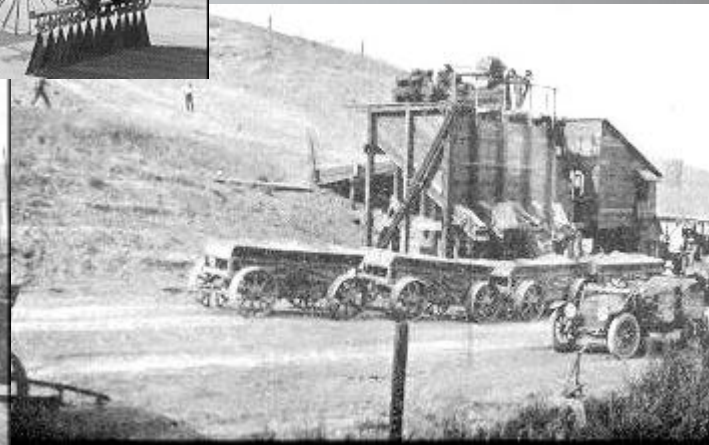
1900-1920

Maitland Drag



Road dragging the dirt streets of Maitland in 1910

Macadam Road Construction



Innovations Gone Awry



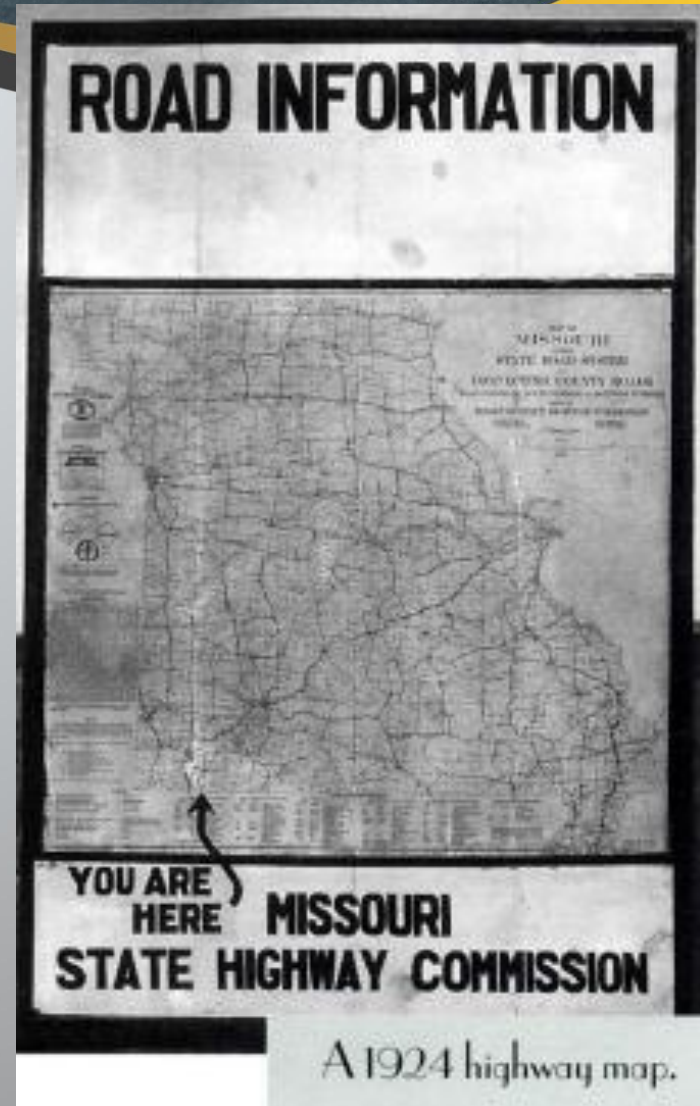
Centennial Road Law



Early Missouri road building—gravel replaces mud.

Fuel Tax

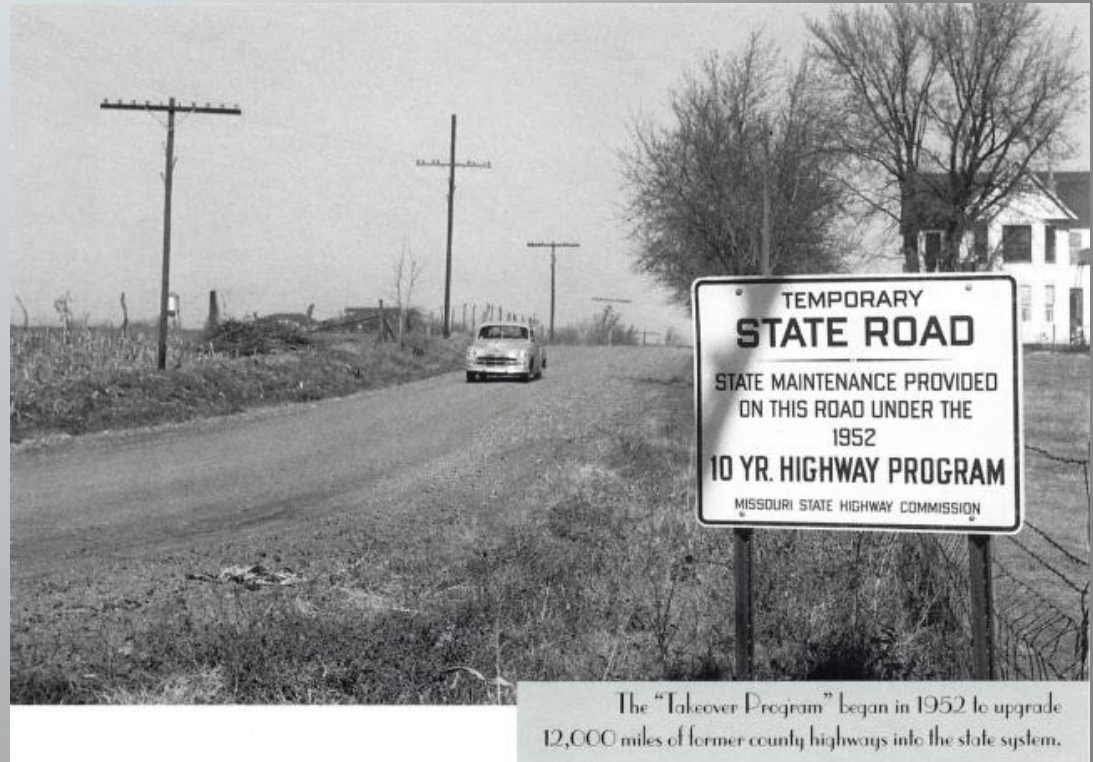
- 1924 – Missouri passed a 2 cent fuel tax.



A 1924 highway map.

Takeover Program

- 1952 – Missouri takes over responsibility of 12,000 miles of county highways.
- 95% of all Missourians within 2 miles of a hard surface road.



The "Takeover Program" began in 1952 to upgrade 12,000 miles of former county highways into the state system.

Federal Aid Highway Act of 1956

- August 2, 1956
Missouri became the first state to begin work on the Interstate Highway System.



Full Depth Asphalt - 1963

- First full depth interstate pavement – 12 ¼ inch.
- I-44 Lawrence & Jasper County
- 2002 Perpetual Pavement Award



Mixture Designs

- 1958
 - Hubbard-Field
- 1973
 - Hubbard-Field
 - Direct Compression (ASTM D 1074)
- 1977
 - Direct Compression (AASHTO T 167)
- 1981
 - Direct Compression (AASHTO T 167)
 - Marshall (AASHTO T 245) Bridge Decks
- 1988 (1987 IB & IC)
 - Direct Compression (AASHTO T 167)
 - Marshall (AASHTO T 245)



Mixture Designs

- 1996
 - Direct Compression (AASHTO T 167)
 - Marshall (AASHTO T 245) 75 Blow
 - Superpave (Pilots)
- 2000
 - Direct Compression (AASHTO T 167)
 - Superpave (AASHTO T 312)



Mixtures

- Type A, B and C
- Bit. Base, BP-1, BP-2, BP-3
- Surface Leveling
- Limestone-Porphyry and Limestone-Slag
- Type I-B and I-C
- Stone Matrix Asphalt (SMA)
- Sand Anti-Fracture
- Superpave SP125, SP190, SP250, SP095
- New and Improved BP-3

Binders

- 1958
 - Penetration (60-100)
 - Cut-back (RC, MC, SC)
- 1981
 - Penetration (85-100)
 - Viscosity (AC-20)
 - Cut-back (RC, MC)
 - Emulsions (SS-1)
- 1988
 - Viscosity (AC-20)
 - Cut-back (RC, MC)
 - Emulsions (SS-1)

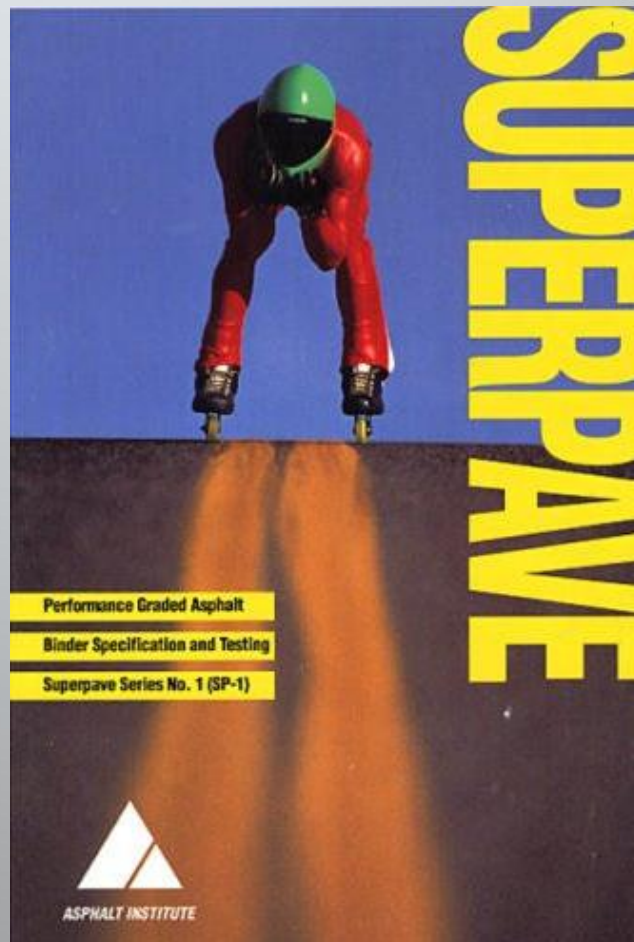


Binders

- 1996
 - Viscosity (AC-20)
 - Performance (PG 64-28)
 - Cut-back (RC, MC)
 - Emulsions (SS-1)
- 1999
 - Performance (PG 64-22)
 - Cut-back (RC, MC)
 - Emulsions (SS-1)



Superpave



Alternate Bidding

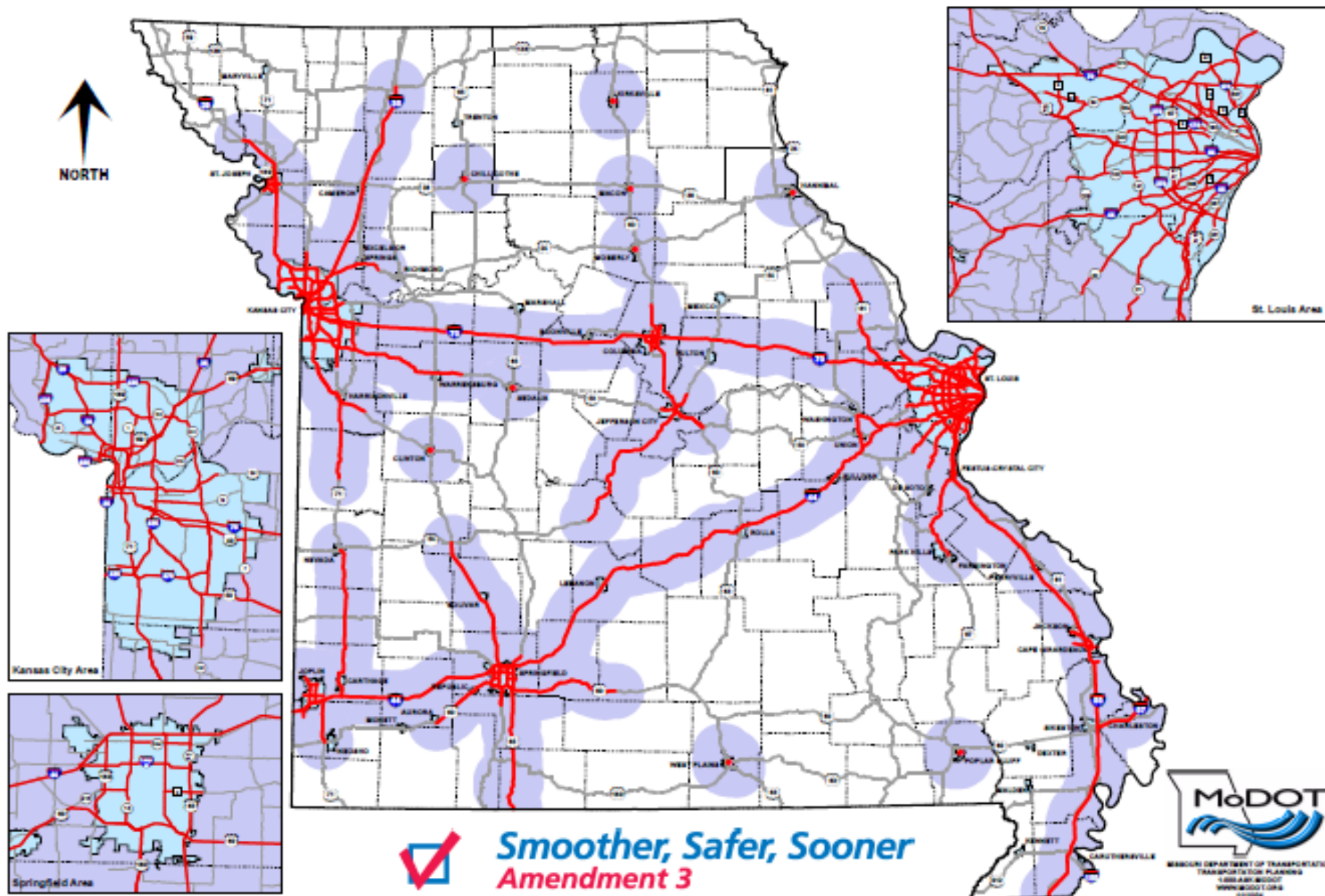
- 'Structurally Equivalent' PCC and HMA bid competitively by using life cycle cost analysis correction factors (September 2003).



SMOOTH ROADS INITIATIVE

— 2,200 MILES OF SMOOTH PAVEMENT ON THE MOST HEAVILY TRAVELED ROADS BY DECEMBER 2007

■ 86% OF MISSOURI'S POPULATION LIVES WITHIN A 10-MILE RADIUS



MoDOT's Use of Recycled Materials



Progress

