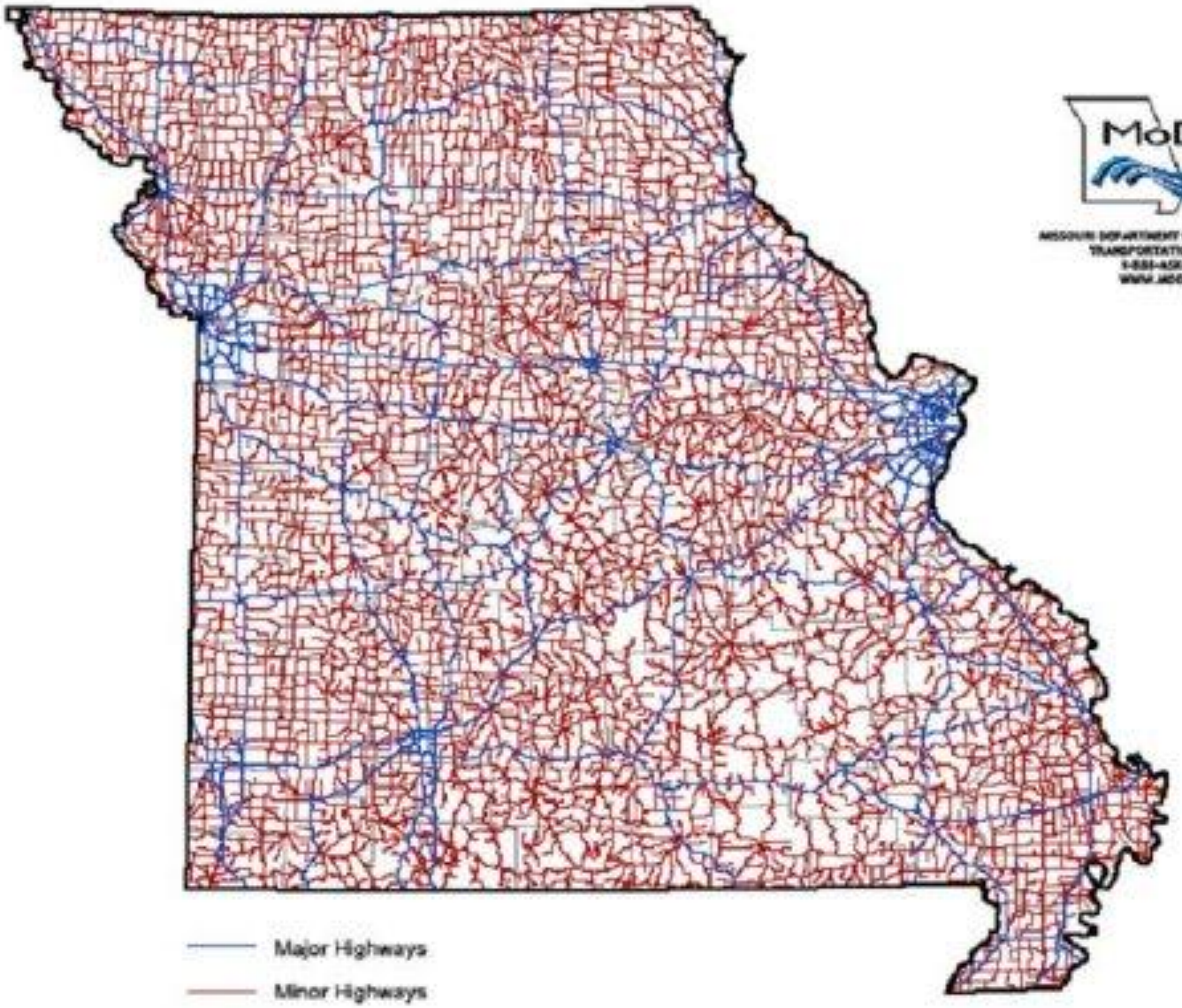
Missouri's Major and Minor Highways



MoDOT Demographics

- 6,200 Employees
- 33,685 Centerline Miles
  - 7th Largest in United States
  - Larger than IA, KS & NE Combined
- Fiscal Year 2010
  - $1.3 Billion
  - 377 Projects

Construction Awards

COLD-IN-PLACE AND HOT-IN-PLACE RECYCLING PROJECT LOCATIONS

Hot-in-Place Recycling Projects
Cold-in-Place Recycling Projects
Full Depth Reclamation
State Routes
County Boundaries

MoDOT

COLD-IN-PLACE OR HOT-IN-PLACE RECYCLING PROJECT LOCATIONS

Legend

- Projects
- Other State Routes
- County(Style2)
- MoDOT Districts(style2)

MoDOT

MISSOURI DEPARTMENT OF TRANSPORTATION
TRANSPORTATION PLANNING
1-888-ASK-MODOT
WWW.MODOT.ORG

2/24/2009

In-Place Recycling Contracts

- 9 HIR – $14 Million
- 4 CIR – $8.6 Million
- 1 FDR – $0.5 Million

Why MoDOT Uses CIR & FDR

- $$$$$$$$$$$$$
- Mitigate Deep Distresses
- "Environmentally Responsible"

Why MoDOT Uses HIR

- $$$$$$$$$$
- "Environmentally Responsible"
- $$$$$$$$$$

Recycling Limitations

- Proven Performance – CIR
- Existing Pavement Structure – HIR
- Limited Competition
- $$$$$$

In-Place Recycling Suggestions

- Mix Design Process
- QC/QA Specifications
- Standardized Emulsions

STATE ANIMAL

Missouri Mule

For More Information

www.modot.org

1 888 ASK MODOT

Iowa DOT In-Place Recycling Activities

Midwestern States Regional In-Place Recycling Conference
August 11 – 12
Bloomington, MN

Scott Schram, Ph.D., P.E.
State Bituminous Engineer
Iowa Department of Transportation

Iowa Department of Transportation

Iowa Department of Transportation

IDOT Demographics

- 8,994 centerline miles
- IDOT maintains 9,450 maintenance centerline miles (plus 510 miles of ramps).
- 114,225 total miles (Rank = 13th)
- More public road miles in Iowa than interstate miles in the entire U.S.
- 24,598 bridges (2,664 are wooden)
- 3,063 FTE's
- 581 total projects let in FY08
- $1.2 billion contracted

Iowa Department of Transportation

Experience with In-Place Recycling

- Cold-in-place Recycling (foam and emulsion)
  - 5-year Total
    - 39 projects
    - $116M
    - 1800 lane-miles
  - Many more local CIR projects
- Full Depth Reclamation (fly ash stabilization)
  - 5-year Total
    - 3 Projects
    - $8.6M
    - 100 lane-miles

Iowa Department of Transportation

In-Place Recycling Benefits in Iowa

- CIR
  - Cost effective
  - Minimal impact on traffic
  - Material availability
  - Slows reflective cracking
- FDR
  - Cost effective
  - Efficient way to regain structure
  - Material availability

Iowa Department of Transportation

Why Not More?

- Traffic limitation (CIR < 2,000 VPD)
- Only works with adequate structure
- Hot-in-place for intermediate traffic levels
- Research will provide framework for new stiffness spec
- 39 let in last 5 years, 38 let for next year

Iowa Department of Transportation

Iowa State Bird

- Eastern Goldfinch

Iowa Department of Transportation

Thank you

In-Place Recycling in Nebraska

Midwest States In-Place Recycling Conference

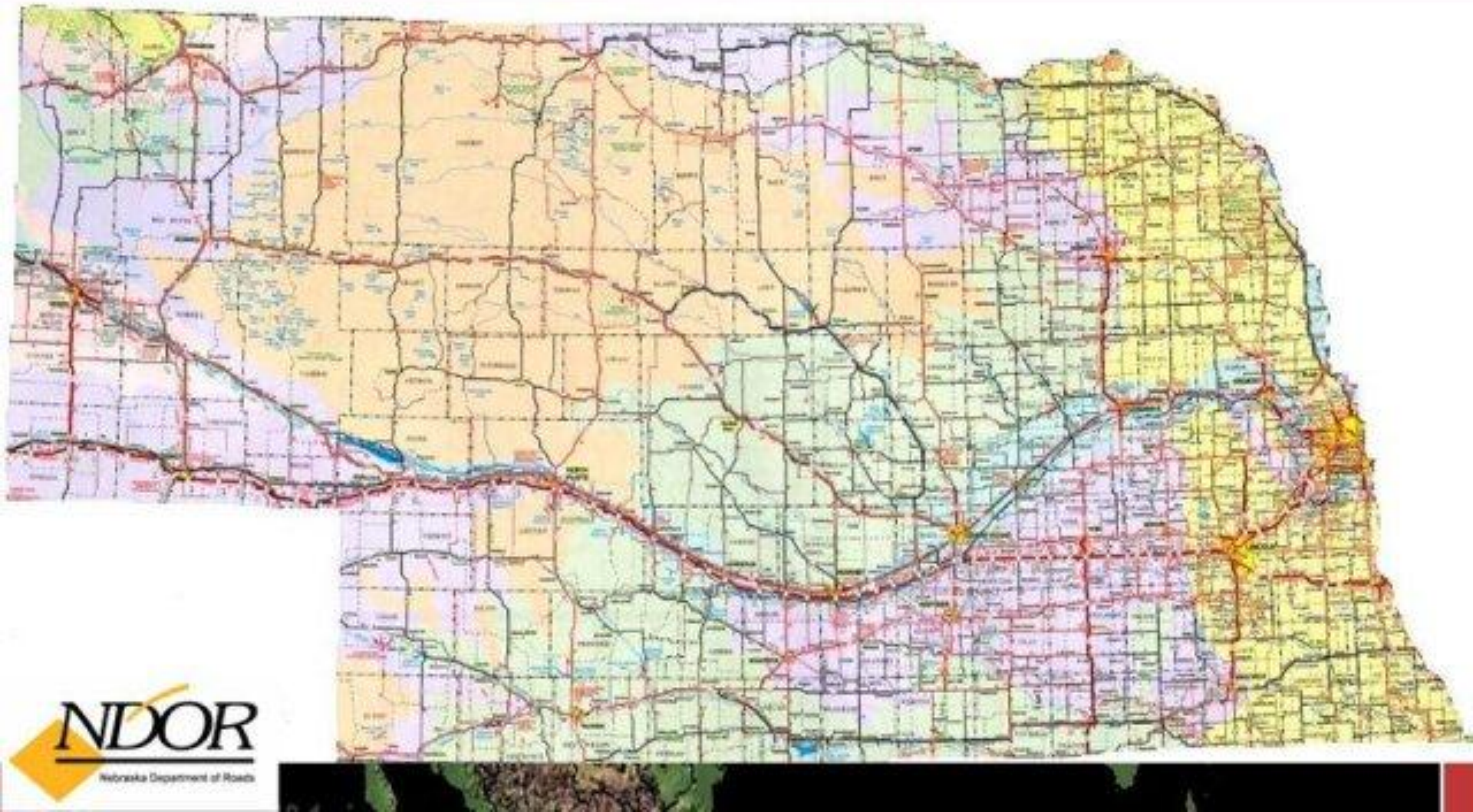
August 11, 2009

Bloomington, Minnesota

Mick Syslo, P.E.
Pavement Design Engineer, NDOR

NDOR
Nebraska Department of Roads

Demographics of my State



Demographics of my State

Nebraska Dept. of Roads (NDOR)

- 2,200 Employees (same for 18 years)
- Approximately 9,950 center-line miles
- FY 09 – 153 Construction projects
- FY 09 - $303.5 Million
- FY 10 – With ARRA, $478.2 Million

NDOR
Nebraska Department of Roads

Demographics of my State

State Animal

White Tailed Deer

NDOR
Nebraska Department of Roads

Experiences with In-Place Recycling

Hydrated Lime Slurry Stabilization

Full Depth Reclamation
Fly Ash, Cement, Water

Cold In-Place Recycling with HFE

Hot In-Place Recycling

Experiences with In-Place Recycling

Hydrated Lime Slurry Stabilization

Past 5 yrs – 70 HLSS projects Let
Totaling about 638 miles
Costs w/asphalt wearing surface $202 Million

NDOR
Nebraska Department of Roads

Experiences with In-Place Recycling

Full Depth Reclamation
Fly Ash, Cement, Water

Past 5 yrs – 27 FDR w/FlyAsh projects Let
Totaling about 210 miles
Costs w/asphalt wearing surface $69 Million

NDOR
Nebraska Department of Roads

Experiences with In-Place Recycling

Cold In-Place Recycling w/ HFE

Past 5 yrs – 4 CIR projects Let
Totaling about 31 miles
Costs w/asphalt wearing surface $12 Million

NDOR
Nebraska Department of Roads

Experiences with In-Place Recycling

Hot In-Place Recycling

Past 5 yrs – 1 HIP project Let
Totaling about 12 miles
Costs w/no asphalt surface $1.1Million

NDOR
Nebraska Department of Roads

Why We Chose to Use In-Place Recycling

We can process in-place material several inches and still cost less than 1" of Hot Mix .... saving money, doing more miles and renewing our existing roadway asset.

NDOR
Nebraska Department of Roads

Why We Chose to Use In-Place Recycling

Bituminous products continue to rise in cost and availability has been uncertain.

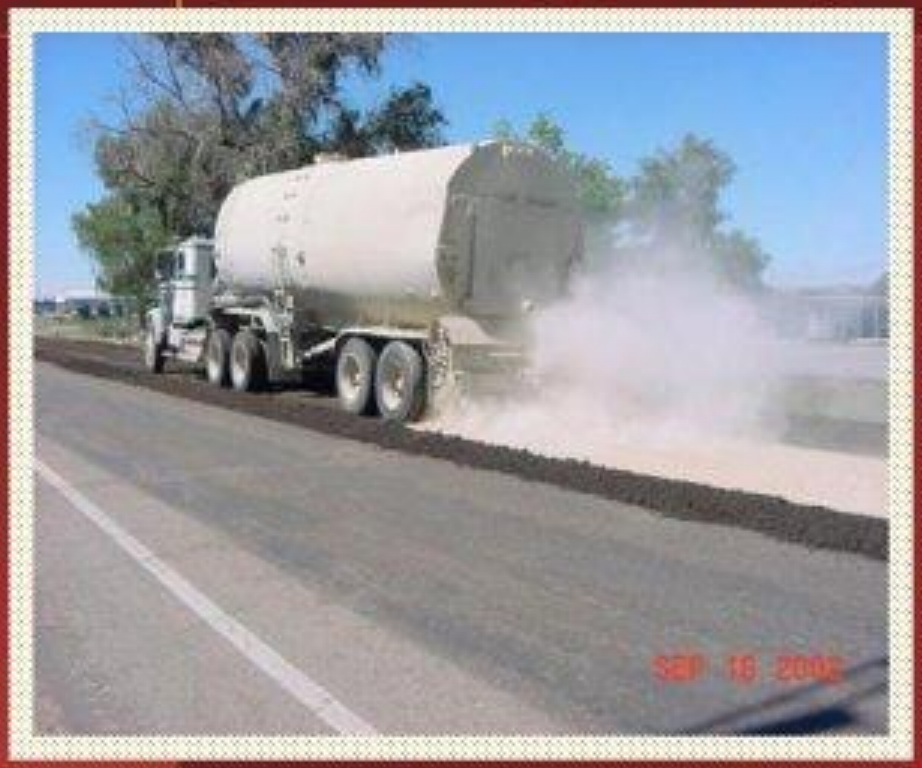
NDOR
Nebraska Department of Roads

Why We Chose to Use In-Place Recycling

Recycling In-Place allows us to correct deep distresses while avoiding full reconstruction of the pavement and to do it all under traffic.

NDOR
Nebraska Department of Roads

Why In-Place Recycling is not utilized more in our State



Contructability Issues:

- **Urban vs Rural conditions**
- **Maintaining Traffic during construction**

NDOR
Nebraska Department of Roads

Some Specialty type equipment:

The type and/or size can be a limitation

NDOR
Nebraska Department of Roads

Why In-Place Recycling is not utilized more in our State

Environmental Conditions on an already restricted construction season.

NDOR
Nebraska Department of Roads

Suggestions to the Industry

Continue to communicate with your DOT. Sharing of experiences, new ideas and passing on education (especially due to turnover) will be beneficial for both parties .

Prime Contractors should be familiar with In-Place strategy and have good communication with DOT before opting not to use experienced sub-contractors.

NDOR
Nebraska Department of Roads

In-Place Recycling in Kansas

KANSAS
DEPARTMENT OF TRANSPORTATION

KDOT Demographics

- 10,000 mile system, 26,144 lane miles
- 3,100 State Employees
- Average of 370 projects per year for the last 10 years
- Average of $590 million per year over the last 10 years

Kansas Buffalo

CIPR

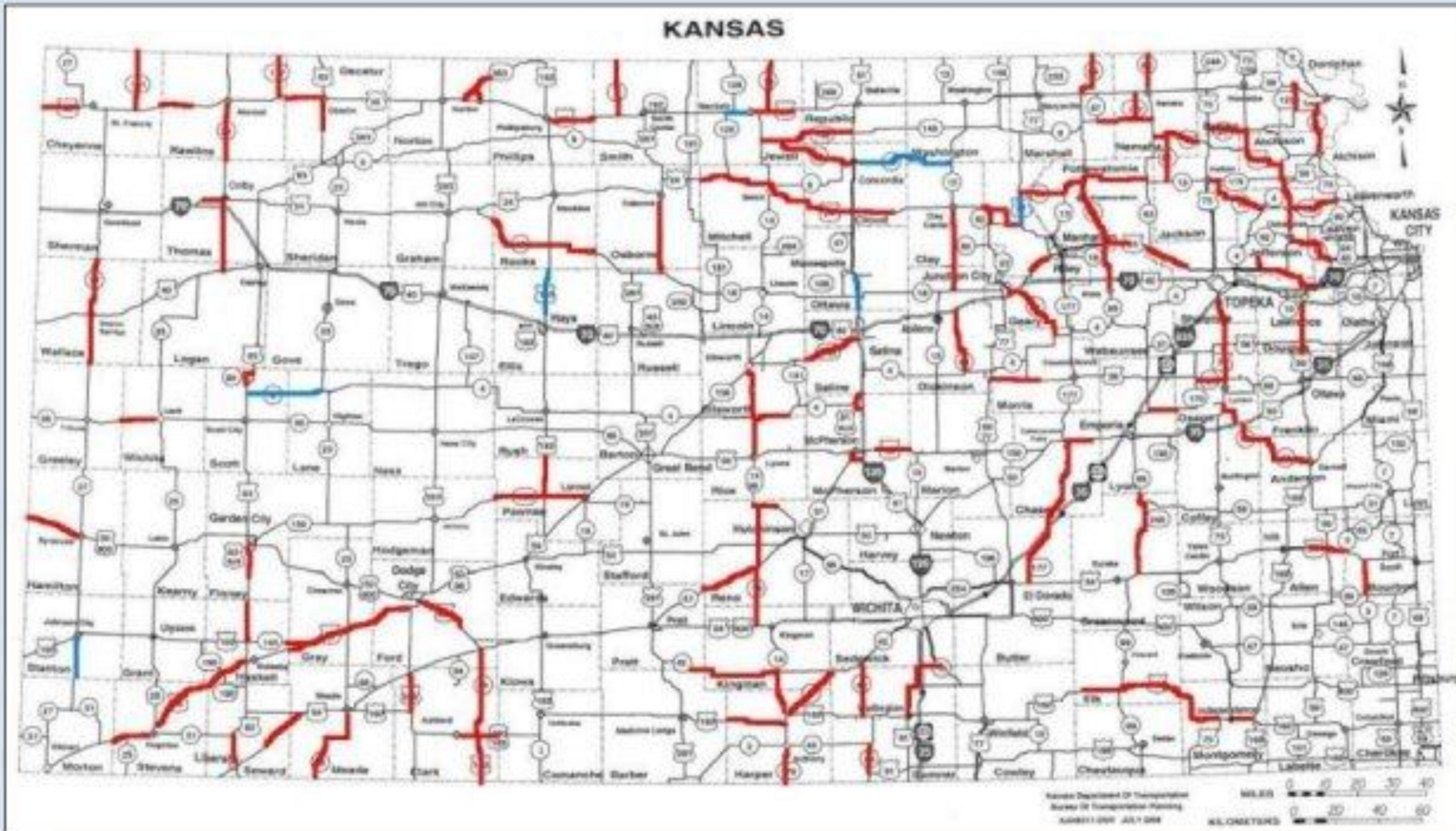
KDOT's Experience

- CIPR
  - 4" CIPR using lime/emulsion with 1.5" HMA overlay
  - Past five years experience
    - 3 projects – 4" CIPR and >2.0" HMA overlay
    - 4 projects – 4" CIPR and 1.5" HMA overlay
    - Total project cost - $51 million
      - CIPR Cost - $7 million

HIPR

KDOT's Experience

- HIPR
  - 1" and 2" HIPR
  - Surface Course – Chip Seals, HMA overlays, Novachip
  - 100 1" and 2" HIPR
  - Cost – $ 99 million
    - HIPR Costs - $53 million


KANSAS
Cheyenne
Rawlins
Decatur
Norton
Phillips
Smith
Jewell
Republic
Washington
Marshall
Nemaha
Brown
Doniphan
Atchison
Sherman
Thomas
Sheridan
Graham
Rooks
Osborne
Mitchell
Cloud
Clay
Riley
Pottawatomie
Jackson
Jefferson
Leavenworth
KANSAS CITY
Wallace
Logan
Gove
Trego
Ellis
Russell
Lincoln
Ottawa
Saline
Dickinson
Geary
Wabaunsee
Shawnee
TOPEKA
Douglas
Johnson
Greeley
Wichita
Scott
Lane
Ness
Rush
Barton
Ellsworth
Rice
McPherson
Marion
Morris
Lyon
Osage
Franklin
Miami
Hamilton
Kearny
Finney
Hodgeman
Pawnee
Stafford
Reno
Harvey
Butler
Chase
Coffey
Anderson
Linn
Stanton
Grant
Haskell
Gray
Ford
Edwards
Kiowa
Pratt
Kingman
Sedgwick
WICHITA
Greenwood
Woodson
Allen
Bourbon
Morton
Stevens
Seward
Meade
Clark
Comanche
Barber
Harper
Sumner
Cowley
Chautauqua
Montgomery
Labette
Cherokee

Why KDOT utilizes In-Place Recycyling

- CIPR
  - Thermal Cracking Repair
  - Economical
  - Green 100% recycling saves Natural Resources
- 1" to 2" HIPR
  - Economical
  - Rejuvenates Surface
  - Green 100% recycling saves Natural Resources

Why In-Place Recycling is not Utilized

- Political (HMA Industry)
- Lack of Competition
- Additional action needed to seal surface

Project Quality Improvements

- Improved final density and Void Structure
  - Implement a WMA type product in with the rejuvenating agent