Midwestern Partnership Reports

Indiana Department of Transportation

Bill Tompkins- Operations Field Engineer

Todd Shields – Systems Assessment Manager

Pavement Preservation Initiative (PPI)

HMA Treatments

1. Seal Coat – In-House
2. Micro-Surface- Contract
3. QC/QA HMA Surface 4.75mm – Contract
4. UBWC - Contract

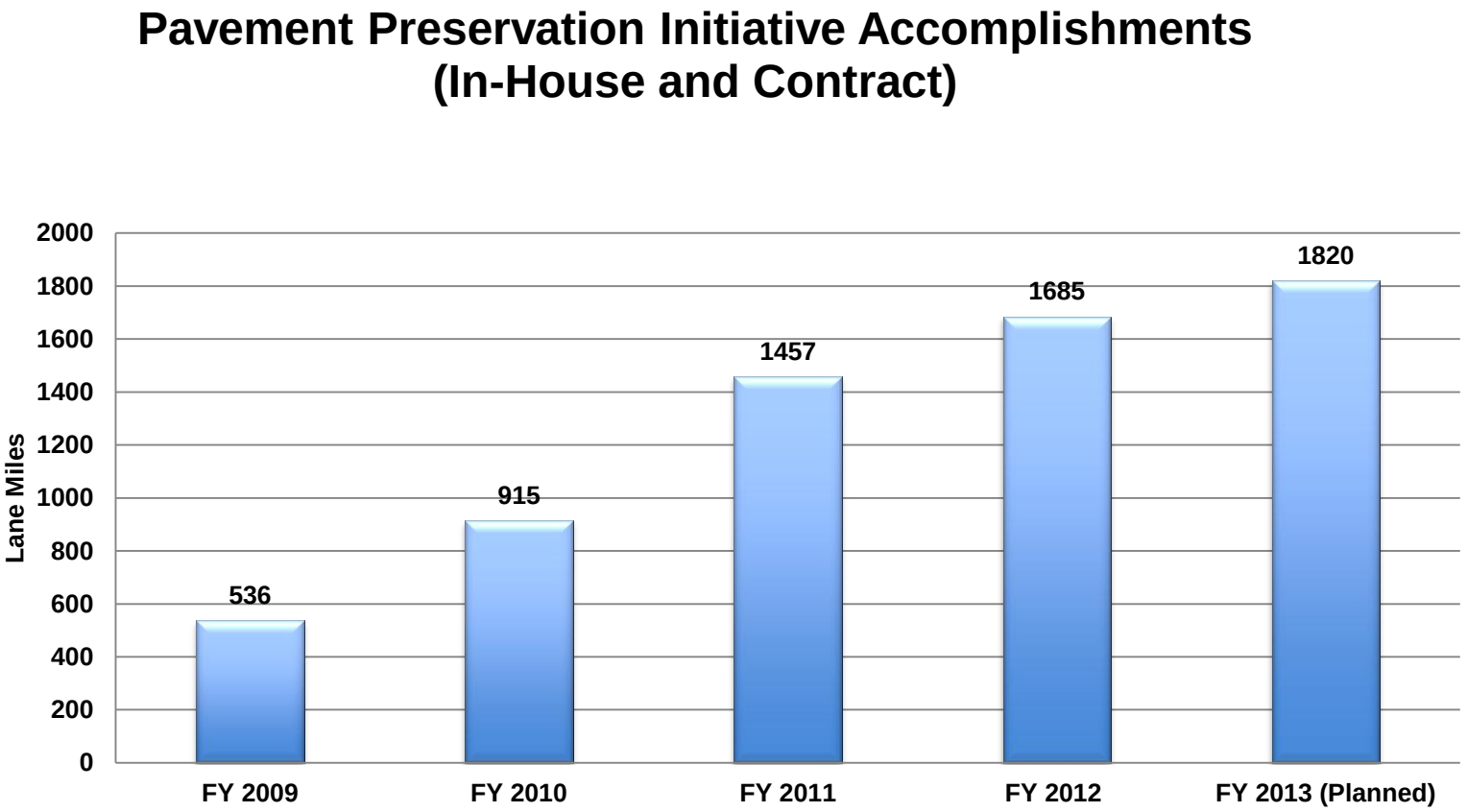
PCCP Treatments

1. PCCP Patching – Contract
2. PCCP Joint Sealing - Contract
3. PCCP Profiling/Retexturing – Contract
4. PCCP Dowel Bar Retrofit- Contract

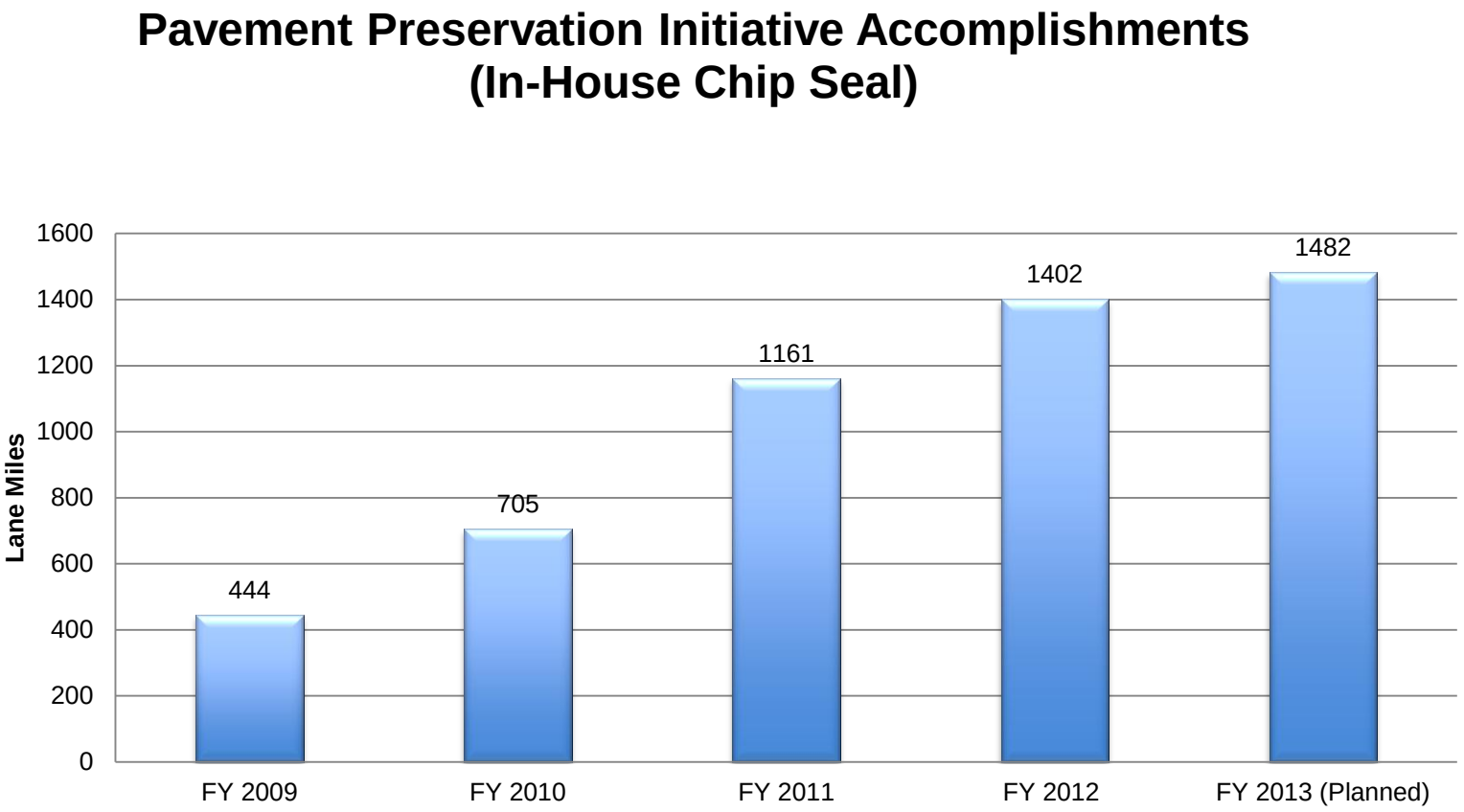
Best Success

- Revised Seal Coat aggregate specifications
- Increase in PPI Contract funding beginning FY 13 from 12 million to 18 million.
- Funding for In- House Chip Seal Approx. 12 million

Program Highlights/ Strides



Program Highlights/ Strides

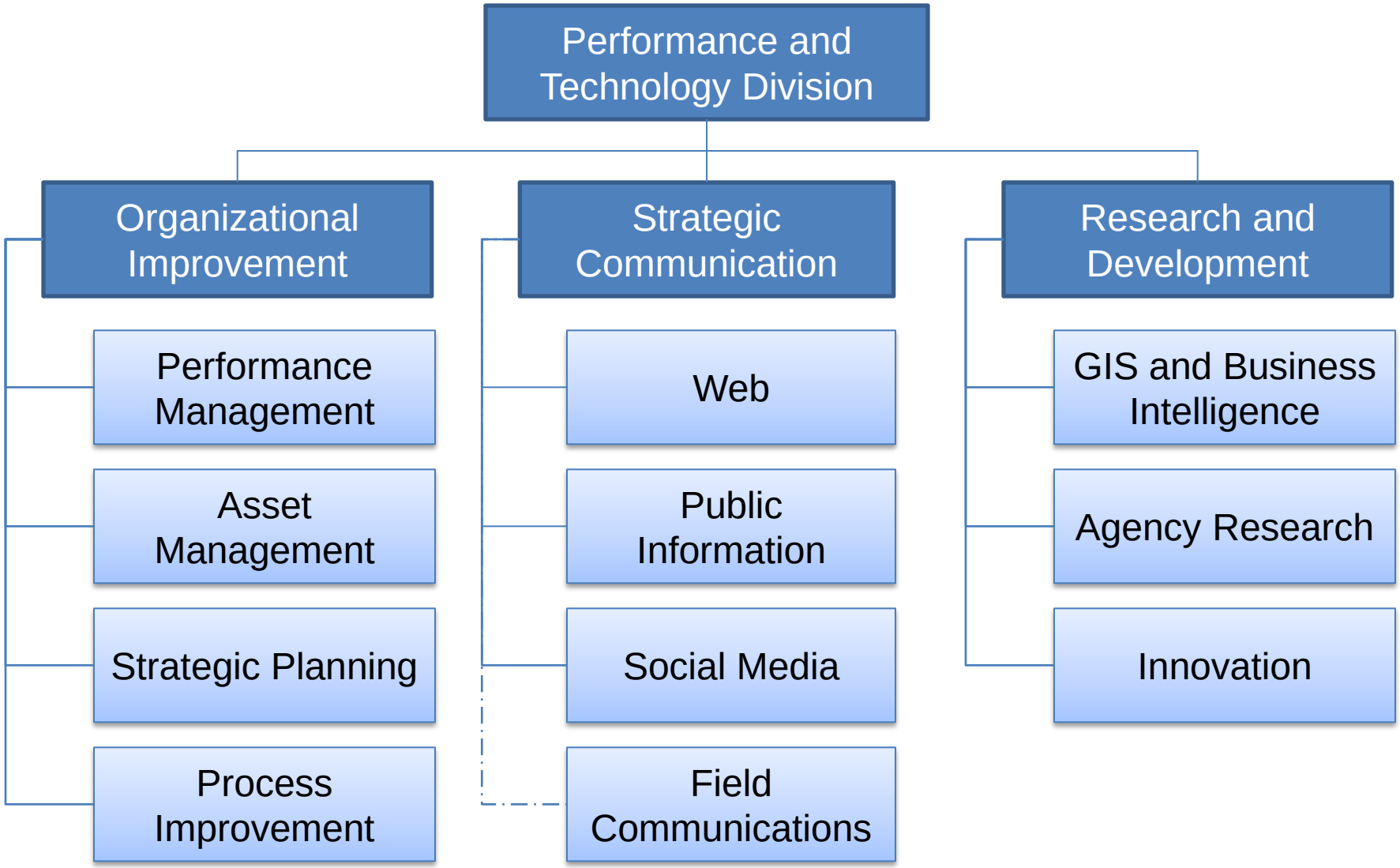


Iowa Department of Transportation

Asset Management & More

Related Key Functions

* With thanks to GDOT for the kernel of this concept

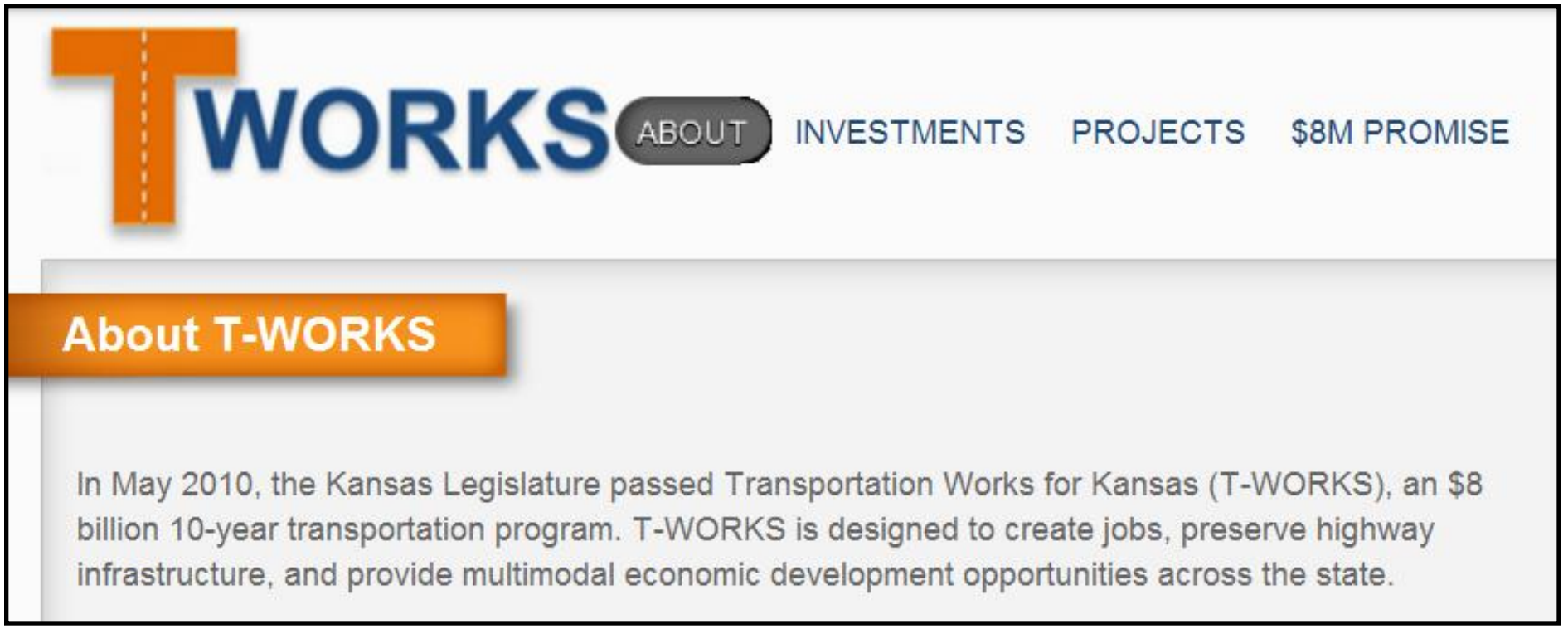

Performance and Technology Division
Organizational Improvement
Strategic Communication
Research and Development
Performance Management
Asset Management
Strategic Planning
Process Improvement
Web
Public Information
Social Media
Field Communications
GIS and Business Intelligence
Agency Research
Innovation

Kansas Department of Transportation

KS – Best Success

- T-WORKS still going…
- Placing attention on maintaining the travelway, not shoulders.
- PP tool box is big and flexible!
- No buzzard wings!

KS – Program Highlights



KS – Program Highlights

T-WORKS Funding

T-WORKS projects are funded primarily through a 4/10 cent sales tax. Below is break down of how much funding each program will receive over the 10 years of the program.

Highway Preservation Projects	$4.2 Billion
Highway Modernization & Expansion Projects	$1.8 Billion
Transit Services	$100 Million
Aviation Projects	$46 Million
Rail Projects	$40 Million
Special City County Highway Fund (Local Roads)	$1.6 Billion
Total Program	**$7.8 Billion**

KS – Advancing Pav. Pres.

- RAP, RAS, Blending Chart
- Pull Off Test (tack adhesion)
- Black Topping (D-cracking)
- White Topping (stability)
- No buzzard wings!
- New NOS van

Manitoba Infrastructure and Transportation

Nicole Fleury
Construction Programming Engineer
Contract Services Branch

Tara Liske
Surfacing Materials Engineer
Materials Engineering Branch

Strides Taken to Advance Pavement Preservation

- AST Strategy
- Highway Asset Management Study
- 3 preservation treatment trial (~12 miles each) for Microsurfacing, Slurry Seal, and Sealcoat.
- Investigating possible applications for Reclamite and TRMSS

Best Success

- Increased Microsurfacing Program
- Cold-in-place recycling and concrete pavement restoration
- In house sealcoat treatment performance
- Implemented specification changes to ensure construction of smooth pavements
- Increased awareness and focus at all levels on preserving the existing highways

Program Highlights

- Continued focus on :
  - Bituminous overlays, Microsurfacing, Sealcoat.
  - Concrete pavement restoration: diamond grinding, dowel bar retrofit, full and partial depth concrete repairs.
  - Improving our data and pavement management system

Questions?

Michigan Department of Transportation

Erin Chelotti

Preventive Maintenance Engineer

Fix Type Categories

- **Surface Sealing**
  - Micro-Surface
  - Chip Seal
  - Ultra Thin Overlay (Low and Medium Volume)
  - Paver Placed Surface Seal
  - HMA Crack Treatment
  - Overband Crack Fill Pretreatment
  - Concrete Crack Treatment
  - Concrete Joint Sealing with Minor Spall Repair
- **Functional Enhancement**
  - Non Structural HMA Overlay (1.5”)
  - Surface Milling with Non-Structural HMA Overlay (1.5”)
  - HMA Shoulder Ribbons
  - Full Depth Concrete Pavement Repairs
  - Diamond Grinding
  - Dowel Bar Retrofit
  - Concrete Pavement Restoration

2013 Program

- $92.21 Million Budget
  - **Surface Sealing**
    - $26.42 Million
    - 416 Lane Miles
  - **Functional Enhancement**
    - $62.95 Million
    - 505 Lane Miles

Strides Taken to Advance Pavement Preservation

- Research Project – Cost Effectiveness of Preventive Maintenance
- FHWA Technical Appraisal
- Overband Crack Fill Test Section
- Investigating the Use of Tack Coat on Micro-Surfacing Projects
- Joint Training with Michigan Road Preservation Association

Minnesota Department of Transportation

Jerry Geib
Research Operations Engineer

New Product Test Sections

- Longitudinal Joint Deterioration
  - Joint Treatment, Joint Adhesive, FHWA/Asphalt Institute Workshop
- Highly Modified Asphalt, 76-34
  - http://www.tsp2.org/pavement/other-information/research-pavement/
- Highly Modified Micro Surfacing
  - 49-34 base asphalt

Advancing Innovative Products

- MnDOT Destination Innovation
  - Micro-milling and a new surface
- MPPP "contacts" made this week !!
- Proprietary products

Advancing Innovative Products

- MnDOT Seal Coat program
- DOT comment
  - Do what we know. Do it right.

Pavement Preservation at the Missouri Department of Transportation

R. Todd Miller, P.E.

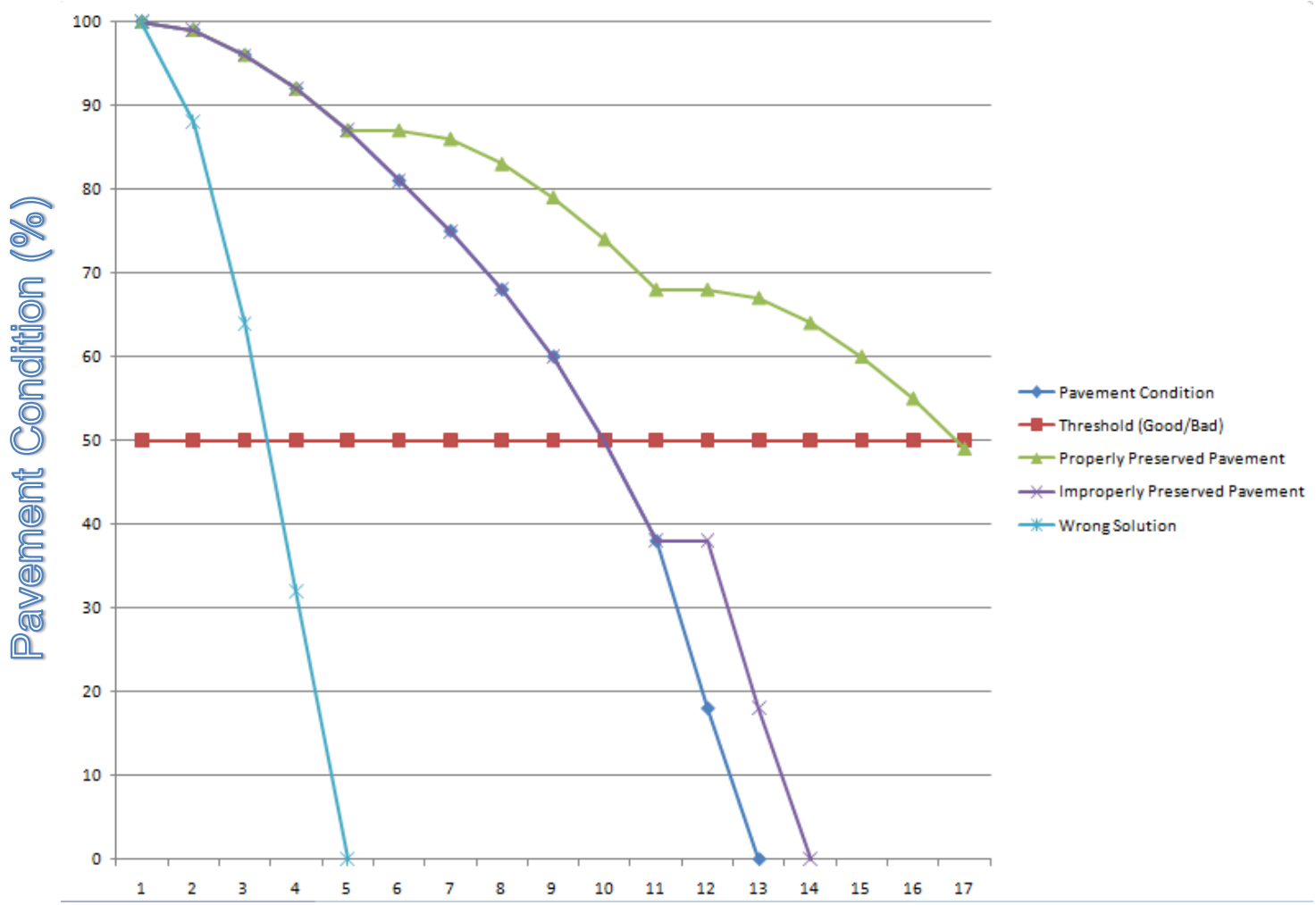
2012

Pavement Maintenance Direction

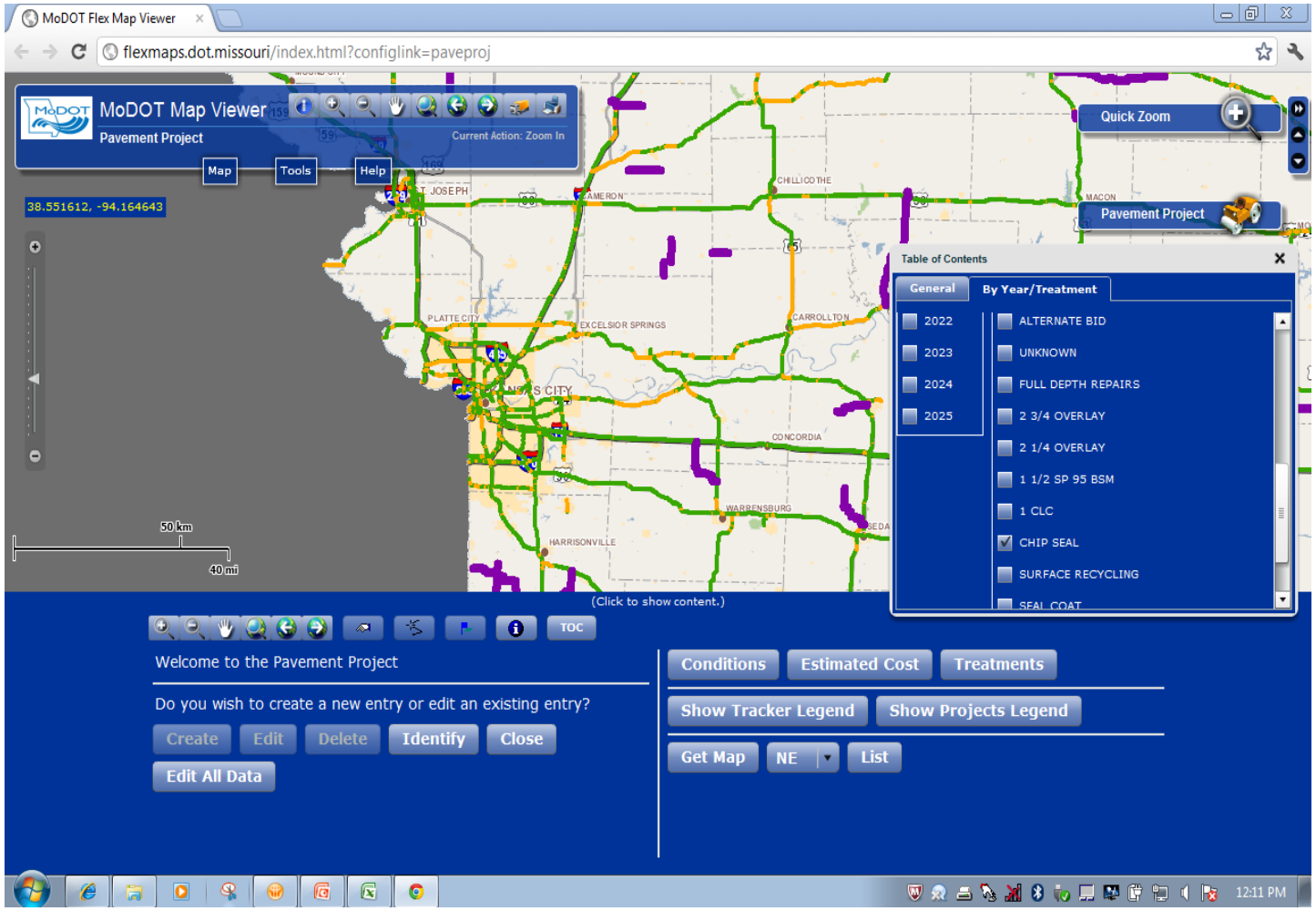
Maintenance Division

MoDOT

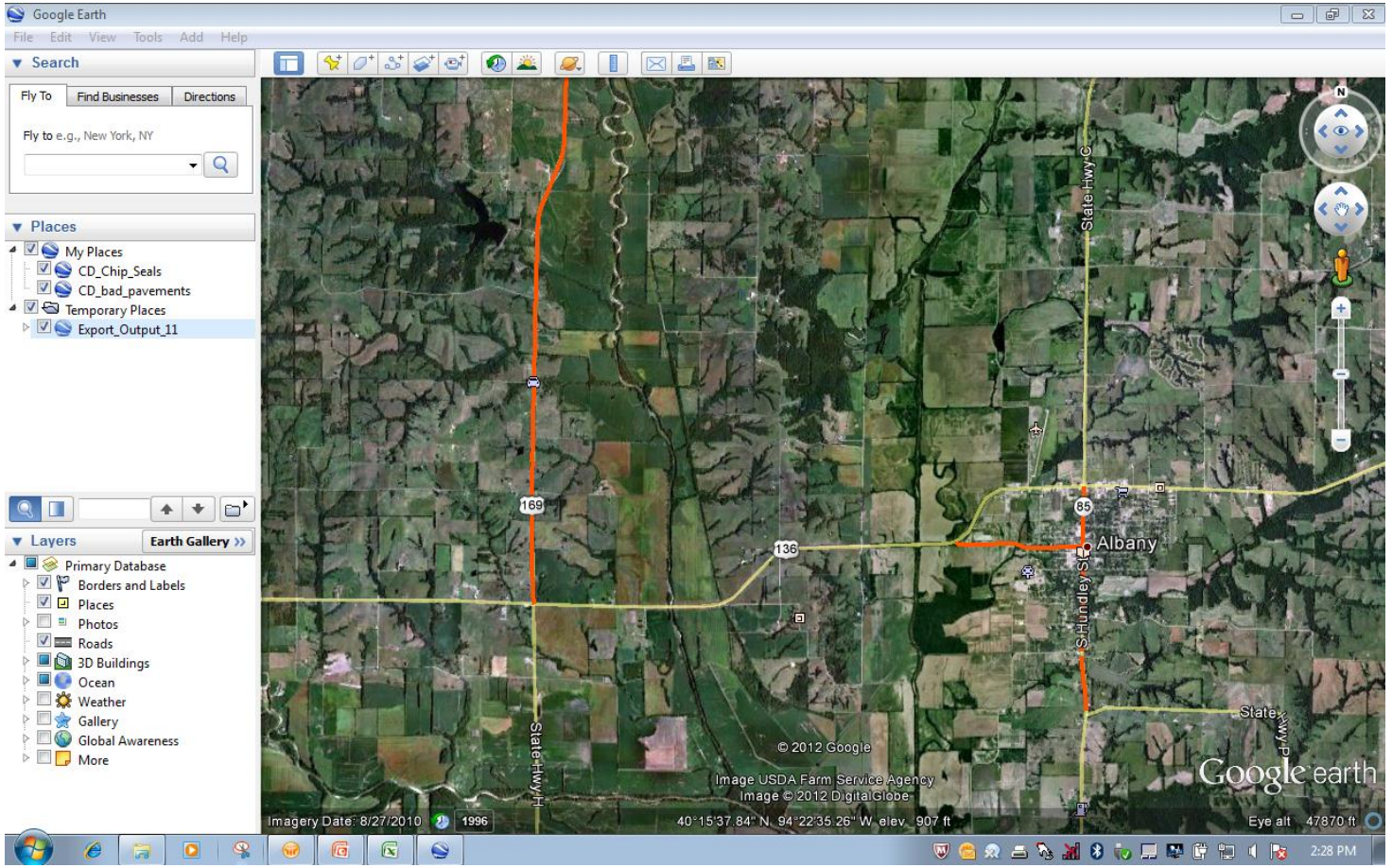
Keep Good Pavements Good



Transportation Planning Developed Pavement Planning Tool



Google Earth



MoDOT Pavement Selection Matrix
Regionally Significant Minor Roads

2 ¾" AC	1 ¾" AC	UBAWS	1" CLC	Microsurface	Coarse Aggregate Chip Seal (<2,500 AADT)	Fine Aggregate Chip Seal (<2,500 ADT)
$140,000/Mile 12-15 years	$70,000/Mile 8-10 years	$60,000/Mile 7-9 years	$30,000/Mile 8-12 years	$35,000/Mile 6-8 years	$10,000/Mile 5-7 years	$8,000/Mile 3-5 years
Contractor			MoDOT		Contractor and/or MoDOT	

MoDOT Pavement Selection Matrix
Minor Roads > 400 AADT

1" CLC	Cold Mix Overlay	Coarse Aggregate Chip Seal (<2,500 AADT)	Fine Aggregate Chip Seal (<2,500 ADT)	Fog Seal/ Fly Coat	Hot or Cold Mix Partial Overlay
$25,000/Mile 12-15 years	$13,000/Mile 4-5 years	$10,000/Mile 5-7 years	$8,000/Mile 3-5 years	$2,200/Mile 1-2 years	$2,000/Mile 2-3 years
Contractor		MoDOT		Contractor and/or MoDOT	

MoDOT Pavement Selection Matrix
Minor Roads < 400 AADT

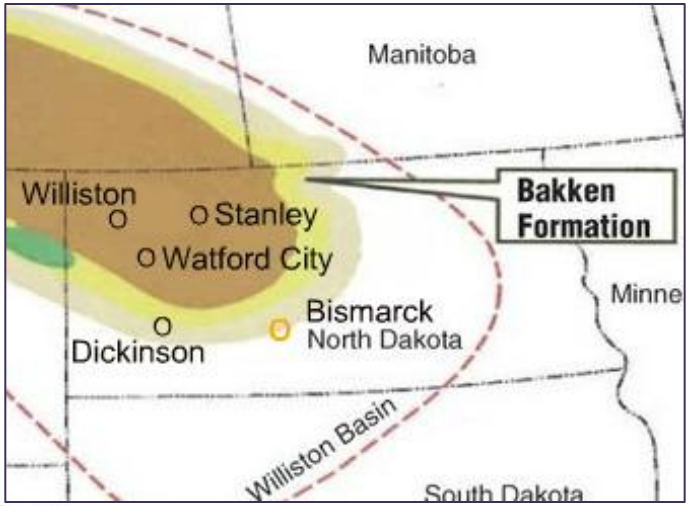
Cold Mix Overlay	Coarse Aggregate Chip Seal	Fine Aggregate Chip Seal	Fog Seal/Fly Coat	Hot or Cold Mix Partial Overlay
$13,000/Mile 4-5 years	$10,000/Mile 5-7 years	$8,000/Mile 3-5 years	$2,200/Mile 1-2 years	$1,200/Mile 2-3 years
Contractor		MoDOT	Contractor and/or MoDOT	

NDDOT Preservation Program

Traffic numbers have dramatically increased in western North Dakota.

From 2009 to 2012:

- **US 85 south of Williston - ADT increased from 2,685 to 13,245 (393%) and trucks increased from 590 to 5,560 (842%)**
- **ND 23 east of Watford City - ADT increased from 2,220 to 9,450 (325%) and trucks increased from 700 to 3,445 (392%)**
- **ND 1806 north of Watford City – trucks increased from 85 to 750 (782%)**



Increased Traffic Volume

NDDOT Preservation Program Highlights

Distribution of dollars by work type

Target % of Federal Dollars vs. Actual 2012 % of Federal Dollars

Work Type	Interstate		Inter-Regional		State Corridor District Corridor District Collector	
	45%	17%	20%	28%	35%	55%
Preventative Maintenance	27%	7%	26%	13%	36%	32%
Minor Rehabilitation/ Structural Overlay	27%	18%	42%	39%	42%	31%
Major Rehab/ Reconstruction	38%	73%	26%	46%	16%	29%
Structures	3%	1%	3%	0%	3%	5%
Safety	5%	1%	3%	2%	3%	3%
	100%	100%	100%	100%	100%	100%

Lane Miles Treated by Type

Project Type	2008	2009	2010	2011	2012
Thin Lift Overlay	300	523	589	444	74
CPR	29	74	39	63	39
Microsurfacing	121	40	38	131	75
Slurry Seal	118	166	80	166	62
Chip Seal	540	242	171	276	196
Crack Sealing	38%	21%	34%	18%	-

Strides Taken

Lime in Asphalt Pavement: Will be incorporating lime into “a few” asphalt projects in 2013.

Recently added a “Bridge Maintenance” program into our Maintenance Manual.

Ontario

Precast Concrete Pavement Slabs

- An alternative to Fast Track concrete

High Early Strength Concrete Roadbase

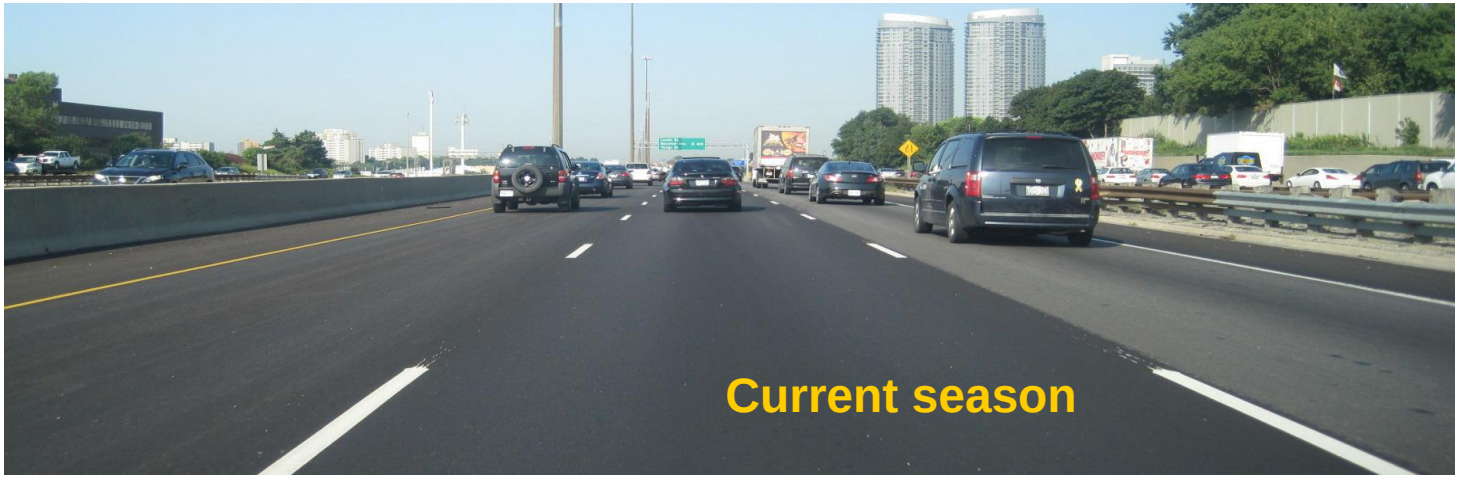
- Variety of concrete mix designs
- Require 24, 48 or 72 hours for adequate strength gain

Joint and Crack Treatments

- Rout and seal
- Strip repair
- Microsurfacing

Selective Resurfacing

- 3-year+ holding strategy
- Single lift milling and patching
- Full lane width
- Patches can be short (50 ft.) to address critical deficient surface areas



Ontario

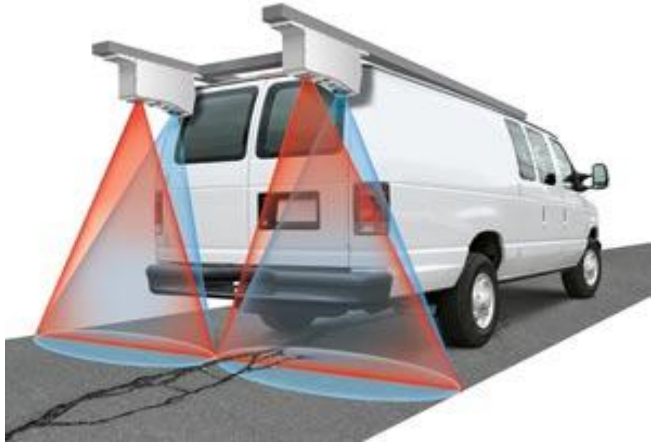
- Partial Paved Shoulders
- Microsurfacing

Saskatchewan Ministry of Highways & Infrastructure

ADVANCING PAVEMENT PRESERVATION IN SASKATCHEWAN

Measuring Distresses

- ARA Rolling Weight Deflectometer
  - 500 km trial underway
- EBA INO Laser Crack Measuring System
  - 200 km trial underway



Treatments

- Fibre-Reinforced Seals
- Sandwich Seal
- Thin Lift Overlays
- Stress Absorbing Interlayer with TLO

Management Tools

- Preservation Policy
- New Performance Measures
  - Benefits for Taxpayers & Road Users
- Needs Based Maintenance Planning & Reporting
  - Proactive & Reactive Maintenance

Illinois Pavement Preservation

LaDonna Rowden

Ron Price

Status of Program

- Commitment to industry to program projects each year.
- Treatments used for commitment same as previous years.

Targeted Treatments

- Emulsion Based Surface treatments
  - Bituminous Surface Treatment (Chip Seal)
  - Cape Seal
  - Micro-surfacing
  - Slurry Seal
- Most promising
  - Micro-surfacing of centerline
  - Several districts impressed with initial performance

Pavement Preservation Program

Treatment	FY 2012	FY2013	Total per Treatment
Bituminous Surface Treatment	$545,000	$676,000	$1,221,000
Cape Seal	$1,600,000	$500,000	$2,100,000
Micro-Surfacing	$435,000	$700,000	$1,135,000
Slurry Seal	--	--	--
Total per FY	$2,580,000	$1,876,000	$4,456,000

Future of Program

- Continue efforts to advance program
  - Encourage districts to use pavement preservation treatments to impact more miles with fewer dollars.
  - Encourage industry to expand list of treatments allowed to meet commitment.

Streets, Roads & Highways Preserved with GSB-88

Gee ASPHALT SYSTEMS, INC.

Preservation is about starting sooner…

Aging, hardening begins in the Hot Mix Process…

Refineries, Modern Binders aging more quickly than they used to …

Why wait so many years while the most important attribute (flexibility) escapes?

Gilsonite - Nothing Else Like it…

Gilsonite resin acts like binders used to act…

- **Tougher**, traffic wear non-issue
- **More resilient** against environment
- **Better adhesion** to aggregates
- **Oxidizes much more slowly**

GSB-88 = High Performance

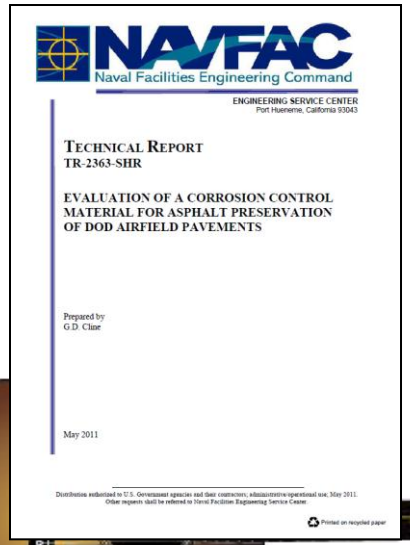
Made with Gilsonite,

Sealer Binder & Rejuvenator…

- Adds superior binder ***into*** matrix
- Stops aging of pavement better

  Lasts longer

  Lowest Life Cycle Cost (NAVFAC Study)


NAVFAC
Naval Facilities Engineering Command
ENGINEERING SERVICE CENTER
Port Hueneme, California 93043

TECHNICAL REPORT
TR-2363-SHR

EVALUATION OF A CORROSION CONTROL MATERIAL FOR ASPHALT PRESERVATION OF DOD AIRFIELD PAVEMENTS

Prepared by
G.D. Cline

May 2011

Distribution authorized to U.S. Government agencies and their contractors; administrative/operational use; May 2011. Other requests shall be referred to Naval Facilities Engineering Service Center.

Printed on recycled paper

Gee ASPHALT SYSTEMS, INC.

GSB-88 = Lowest Cost


GreenCircle
Certification System
GreenCircle Certified, LLC certifies
that an independent, third-party evaluation has been conducted for:
Asphalt Systems, Inc.
GSB-88®
Salt Lake City, UT
One application of GSB-88® every five years can
extend the lifetime of a road and have the following
environmental impact reductions on a road:
Global Warming - 49.15%
Acidification - 48.44%
Eutrophication - 49.31%
Ecotoxicity - 35.64%
Smog - 49.38%
These impact results are based on a published Ecoinvent LCA study on an average
road in Switzerland that has been adapted to United States road conditions. US road
conditions last half as long as in Europe; therefore, a 20 year lifetime for the sub-base was assumed.
The impacts from the sub-grade was excluded from this analysis. Each application
is assumed to extend the life of a road by 5 years.
Certification Period: June 1, 2012 – May 31, 2013
Certificate Number: 12-0131
Tad Radzinski, PE, LEED AP
Certification Officer
GreenCircle CERTIFIED

Applied to:

- Chip seals, halts chip loss
- Primary road surfaces
- Shoulders
- Rumble Strips
- Parks departments, parking lots, trails
- More info at ***geeasphalt.net***

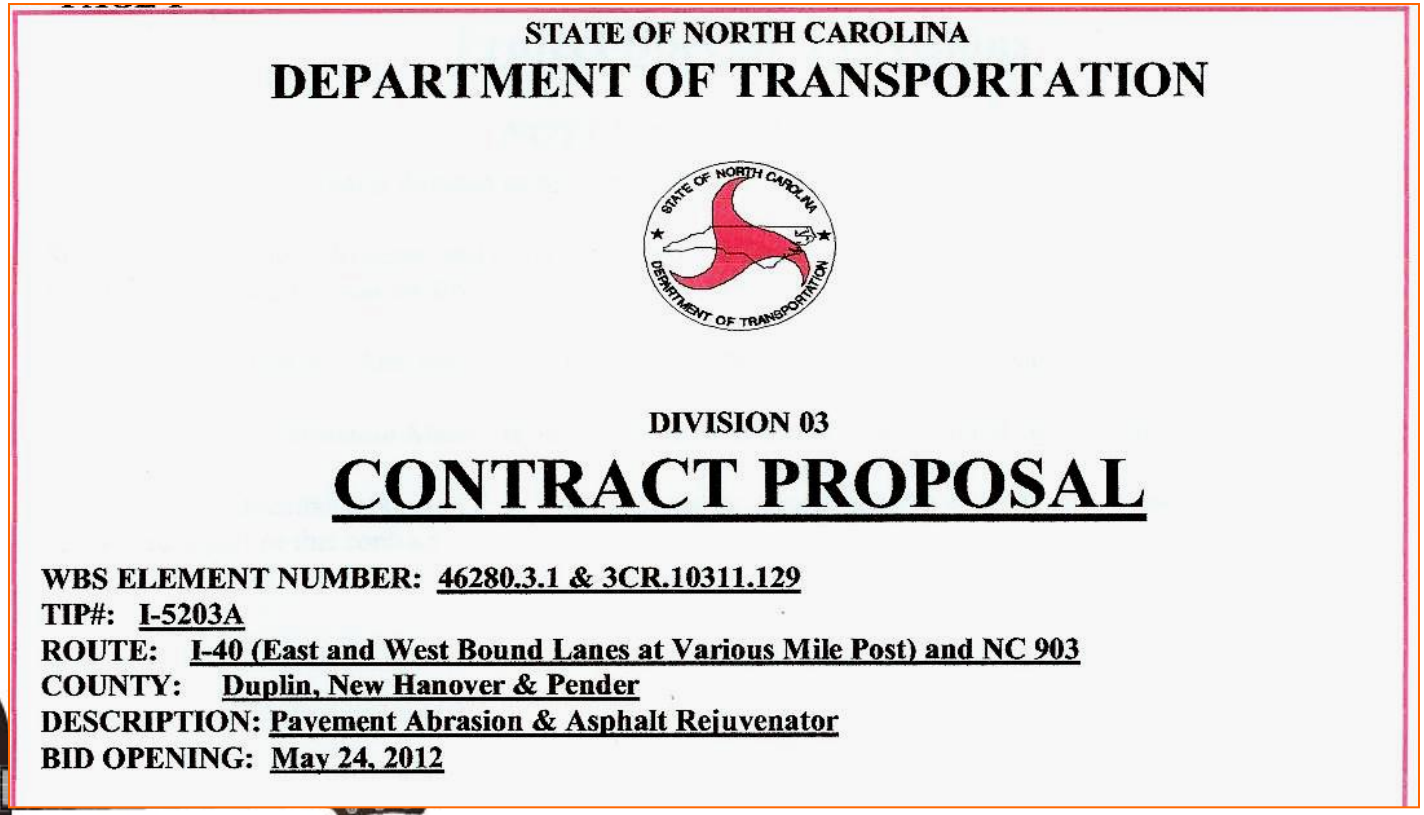
Gee ASPHALT SYSTEMS, INC.

Pavement Technology, Inc.

Celebrating 40 Years

A Noteworthy 2012 Project

Pavement Abrasion & **Asphalt Rejuvenator** Application on I-40 for NCDOT



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION 03

CONTRACT PROPOSAL

WBS ELEMENT NUMBER: 46280.3.1 & 3CR.10311.129
TIP#: I-5203A
ROUTE: I-40 (East and West Bound Lanes at Various Mile Post) and NC 903
COUNTY: Duplin, New Hanover & Pender
DESCRIPTION: Pavement Abrasion & Asphalt Rejuvenator
BID OPENING: May 24, 2012

- Project addressed approximately 20 lane miles on I-40 near Wilmington

- Involved using surface abrasion by SKIDABRADER to increase skid numbers to a level that would be acceptable for interstate traffic after the application of Reclamite® Asphalt Rejuvenator.

GOAL :

Extend the life of the interstate pavement surface by using a maltene based *asphalt rejuvenator* to improve the asphalt binder's condition through improving its viscosity and elasticity and to increase surface friction for safety.

Project Involved:

- **Taking pavement cores for testing before and after abrasion and Reclamite application**

- **Conducting Skid Test before abrasion then before and after Reclamite application**

THE PROCESS:

Surface abrasion by **SKIDABRADER**

Reclamite® application

Skid Numbers Before & After

Dynatest®

Average Skid Test **Before:**

39.34

Average Skid 30 Minutes After Skidabrader/Reclamite Process:

47.33

Average Skid 24 Hours After Skidabrader/Reclamite Process:

51.7

Average Skid **48 Hours After** Skidabrader/Reclamite Process:

54.6

Testing summary

I40				
Location	Lane	Direction	Test	Average SNR40
MP 417.73 to 418.37	Right	East	Before	36.27
			After abrasion	79.34
			After spray	46.88
			After 24 hrs	51.94
			After 48 hours	49.77
MP 417.73 to 418.37	Left	East	Before	40.98
			After abrasion	74.58
			After spray	49.10
			After 24 hrs	50.75
			After 48 hours	61.02
MP 418.37 to 417.73	Right	West	Before	41.10
			After abrasion	67.8
			After spray	44.50
			After 24 hrs	52.43
			After 48 hours	50.63
MP 418.37 to 417.73	Left	West	Before	39.02
			After abrasion	73.66
			After spray	48.86
			After 48 hours	57.01

CORE TESTS RESULTS

Pavement core samples were taken and tested by Tri Mat Materials Testing two weeks before and after the Reclamite was applied.

The asphalt binder's Viscosity had an average improvement of 40.25% at 4 of the 5 locations.

Table 1 - Core Results for Pre and Post Treatment

	Sample Number and Location				
	3374	3375	3376	3377	3378
Test	MM 418 W	MM 418E	MM 411 In	MM 411 Out	MM 409
	Pre-Treatment				
Complex Modulus, 60C, G* (kPa)	230.0	209.0	283.0	294.0	257.0
Viscosity, 60C, (Pa-s)	230000	209000	283000	294000	257000
Phase Angle, 60C (degrees)	60.6	60.8	58.3	59.9	59.6
	Post-Treatment				
Complex Modulus, 60C, G* (kPa)	227.0	125.0	160.0	174.0	162.0
Viscosity, 60C, (Pa-s)	227000	125000	160000	174000	162000
Phase Angle, 60C (degrees)	57.6	57.5	59.7	58.1	58.6
Percent Reduction	**1%**	**40%**	**43%**	**41%**	**37%**

- **Extraction and recovery testing performed as per ASTM D1856 and D5404.**
- **Asphalt binder viscosity tested per AASHTO Test Method T315.**

Stop at Booths 26 & 27
For More Information

Pavement Technology, Inc.

Celebrating 40 Years

www.pavetechinc.com

(800) 333-6309

Westlake, OH - Dayton, OH - Charlotte, NC

Oak Ridge, TN - St. Petersburg, FL