

2020 ISSA Preservation Performance Award Nomination



**Micro Surfacing
Highway 61
Tunica, Mississippi**

Nominated by



Why Nominate MDOT?

In 2005, the Mississippi Department of Transportation (MDOT) District 2 chose **Micro Surfacing** to treat 12 miles of Highway 61 in Tunica County, from the city limits of Tunica, Mississippi, north to the DeSoto County line.

This project has extended the service life of the pavement well beyond expectations, providing a durable wearing surface with a friction value well above the acceptable limits.

No additional work has been performed on this roadway since 2005.

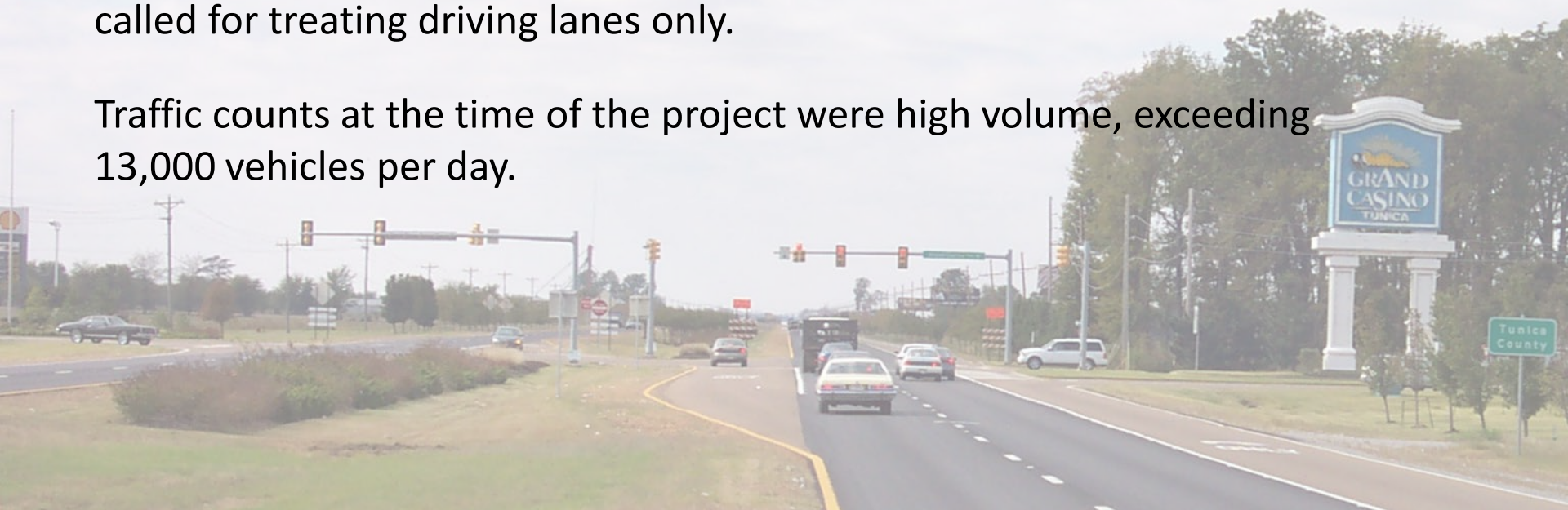
2005 Micro Surfacing Program

Scope

MDOT requested proposals in 2005 to treat 12 miles of Highway 61, a multi-lane divided highway leading into Tunica, Mississippi, in Tunica County. At the time, Tunica was one of the nation's largest gambling meccas, behind Las Vegas and Atlantic City.

MDOT wanted to reprofile the highway, adding a durable wearing course designed for life extension and condition-improving benefits. The project called for treating driving lanes only.

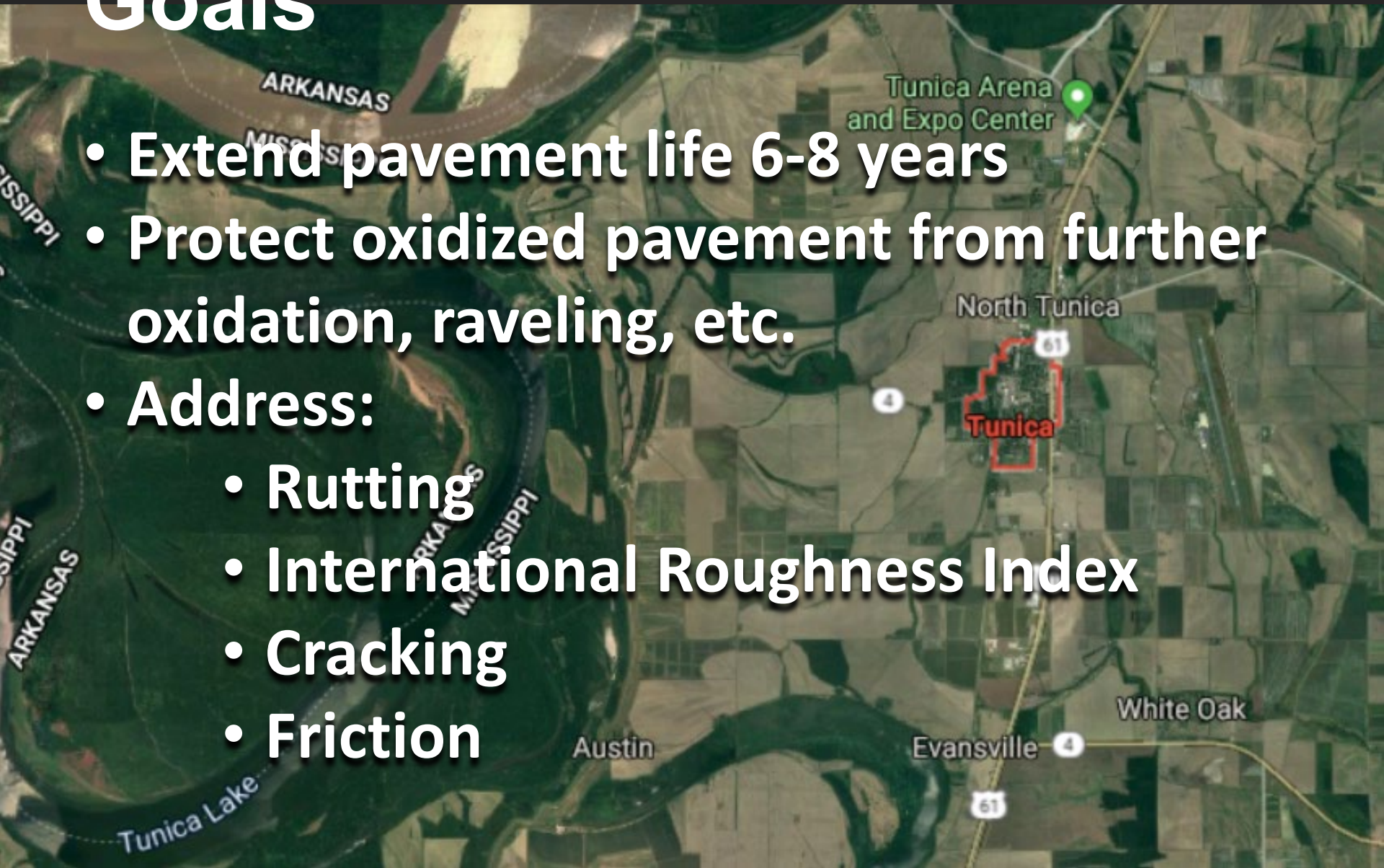
Traffic counts at the time of the project were high volume, exceeding 13,000 vehicles per day.



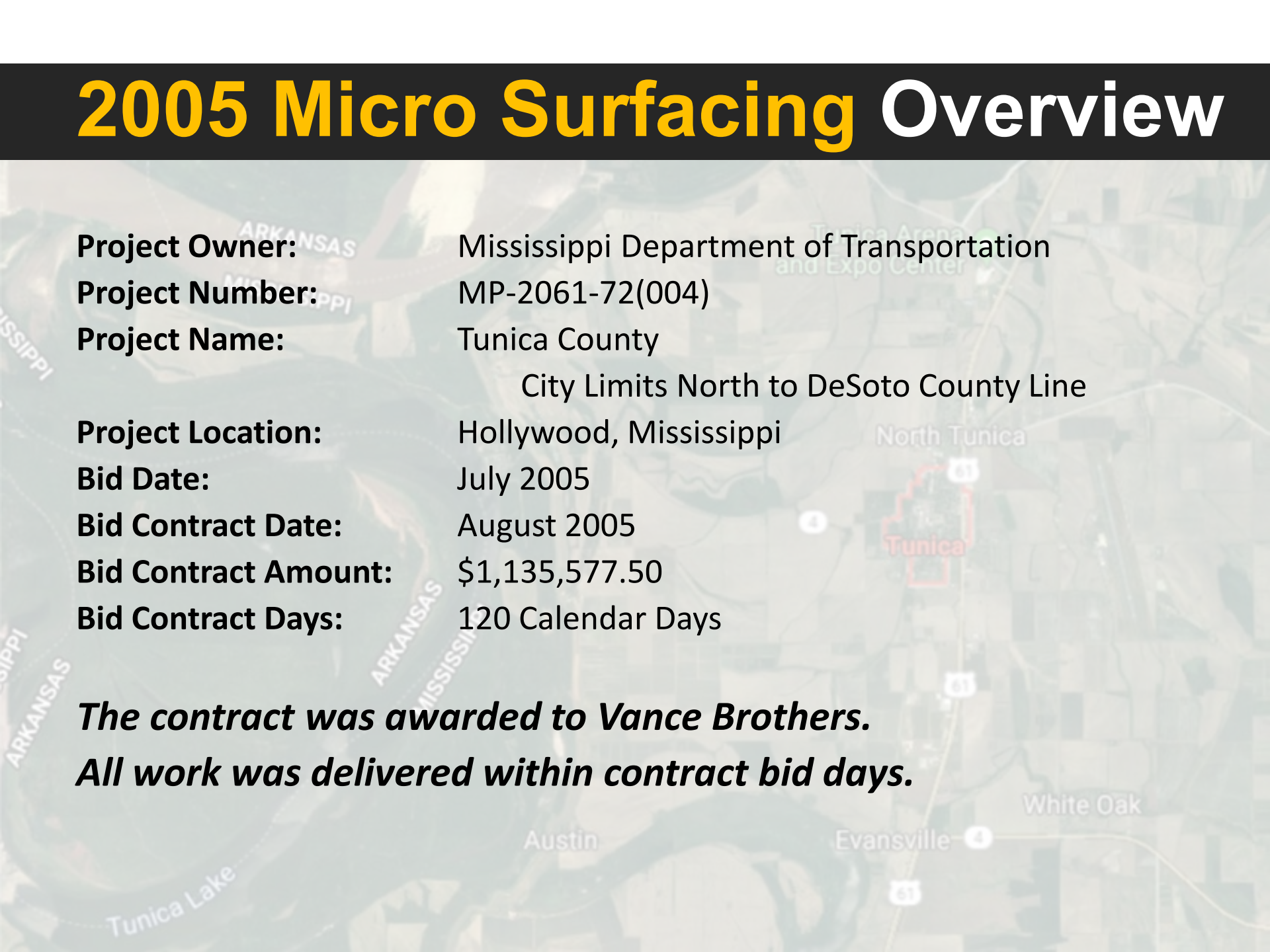
2005 Micro Surfacing Project

Goals

- Extend pavement life 6-8 years
- Protect oxidized pavement from further oxidation, raveling, etc.
- Address:
 - Rutting
 - International Roughness Index
 - Cracking
 - Friction



2005 Micro Surfacing Overview



Project Owner:	Mississippi Department of Transportation
Project Number:	MP-2061-72(004)
Project Name:	Tunica County City Limits North to DeSoto County Line
Project Location:	Hollywood, Mississippi
Bid Date:	July 2005
Bid Contract Date:	August 2005
Bid Contract Amount:	\$1,135,577.50
Bid Contract Days:	120 Calendar Days

***The contract was awarded to Vance Brothers.
All work was delivered within contract bid days.***

2005 Micro Surfacing Overview

12 Miles Treated

Part of MDOT/District 2 Pavement Preservation Program

- Previous pavement type: Dense Graded HMA
- Distresses: Oxidation, light raveling, minor rutting, cracking
- Start Date: August 2005
- Completion Date: End of September, 2005
- Micro Surfacing materials were applied in two thin lifts to driving lanes only:
 - First lift: 25 pounds of dry rock per square yard
 - Second lift: 20 pounds of dry rock per square yard
 - Total: 45 pounds of dry rock per square yard

2005 Micro Surfacing Product Details

Emulsion:

- Provided by Ergon Asphalt & Emulsions' Vicksburg, Mississippi plant
- Type: CSS-1HP – 204,500 gallons
- Applied at 11.0% +/- 1.0%

Aggregate:

- Provided by Vulcan Materials Company, Grand Rivers, Kentucky
- Type: Vulcan's Black 11s. Aggregate passed the Mississippi Type V aggregate specification
 - First lift (scratch course) 25 pounds of dry rock per square yard
 - Second lift 20 pounds of dry rock per square yard
 - Total of 45 pounds of dry rock per square yard

Mix Design:

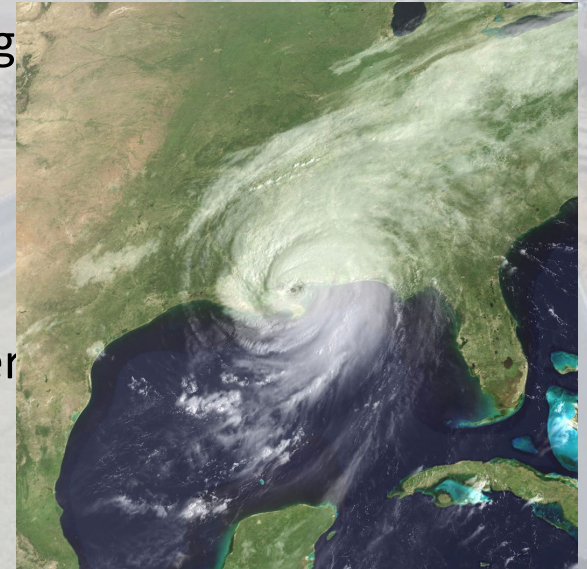
- Provided by Paragon Technical Services
- The mix design engineer reported that the optimum emulsion content was on the lower side of the specified range (11.0% +/- 1.0%) in order to address rutting observed on the roadway.

2005 Micro Surfacing Challenges

Weather:

The emulsion was formulated to address hot temperatures which are expected in Mississippi in August and September.

An unexpected weather event which happened during the course of this project was Hurricane Katrina, which made landfall on the coast of Mississippi on August 29, 2005. Although the Delta did not suffer the devastation experienced on the Coast, the job was shut down for several days due to weather. Traffic increased as people evacuated southern Mississippi and Louisiana. The hotel where Vance Brothers was boarding the crew for this job even tried to force them to leave, so they could charge higher rates to the evacuees.



NASA -
http://earthobservatory.nasa.gov/NaturalHazards/natural_hazards_v2.php3?img_id=13082

Pavement Preservation

Success

Restored Surface, Tougher Wearing Course, 14-Year Life Extension (and Counting)

- Micro Surfacing has provided the pavement with an additional 14+ years of service life, almost double the expectation.
- Passengers have enjoyed a more durable wearing course, able to withstand heavy traffic volumes.
- The friction value of this pavement has remained well above acceptable limits for more than 14 years.

The Numbers

	2006	2010	2018
Pavement Condition Index Rating	89	84	79
International Roughness Index	56.1	55.9	64.1
Rutting	0.18	0.21	0.33

	2011	2017
Average Friction Number (Ribbed Tire Measurement)	37.7	37.25

Project Costs

All-Inclusive Cost:
\$23,657.86
per lane mile

Costs include:

- **Micro Surfacing**
- **Mobilization costs**
- **Maintenance of traffic**
- **Pavement markings (temporary and permanent)**

Project Costs

A perspective view of a two-lane asphalt road stretching into the distance under a blue sky with scattered white clouds. The road is flanked by green grass. In the center of the road, a large, semi-transparent dollar sign (\$) is superimposed, with its vertical stroke acting as the road's center line.

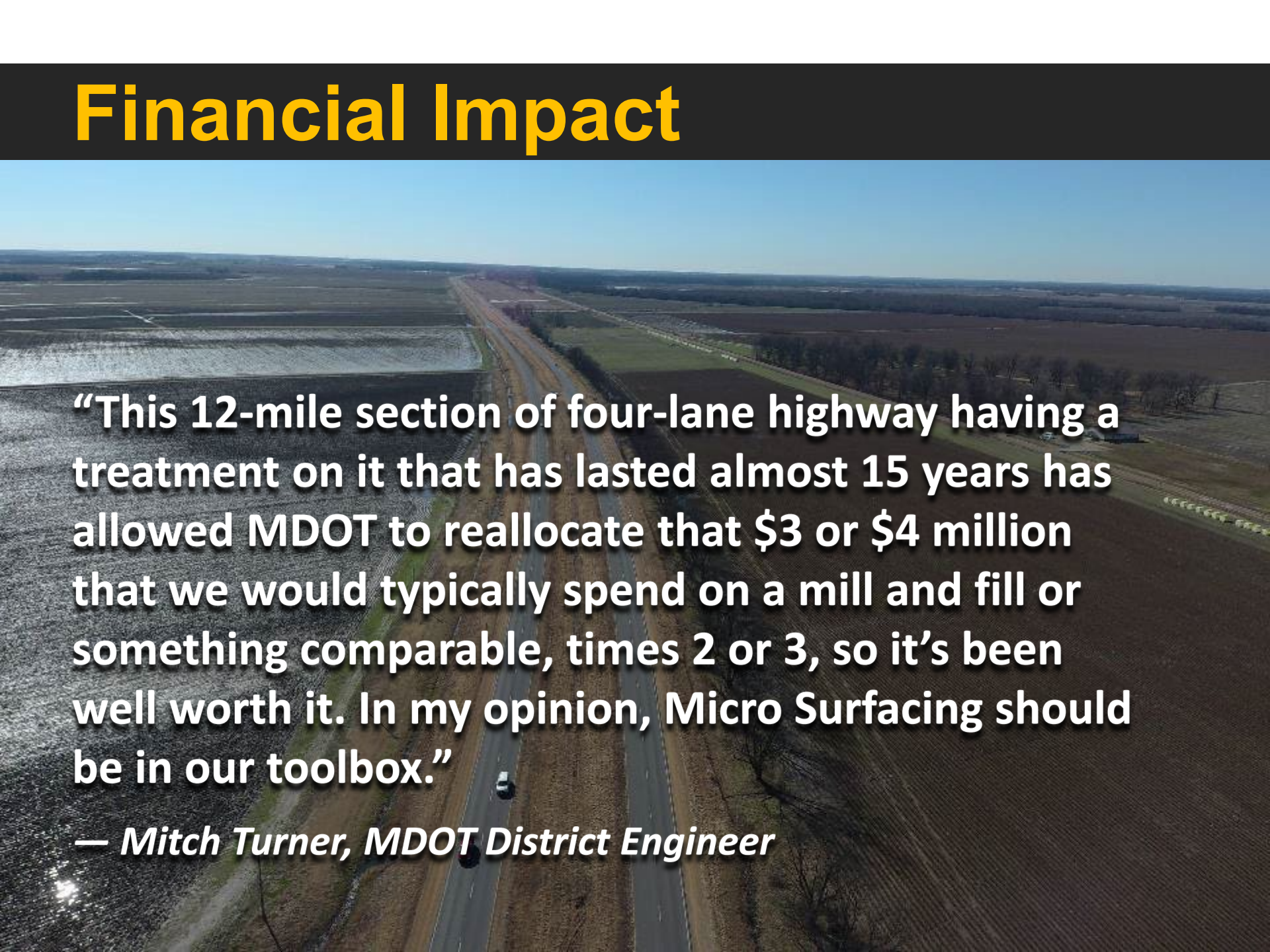
**The annualized cost of this
\$1,135,577.50 project,
which was completed over 14 years ago,
comes to
\$1,637 per lane mile,
or
\$0.24 per square yard.**

The Results Are In

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By treating Hwy 61 (*the right pavement*) with *the right treatment at the right time*, MDOT not only improved the performance and extended the life of the roadway, but they have been able to repurpose millions of dollars that would have been required for reconstruction, had this treatment not performed so well.

Financial Impact

An aerial photograph of a long, straight four-lane highway stretching from the foreground into the distance. The road is flanked by fields and a body of water on the left. The sky is clear and blue.

“This 12-mile section of four-lane highway having a treatment on it that has lasted almost 15 years has allowed MDOT to reallocate that \$3 or \$4 million that we would typically spend on a mill and fill or something comparable, times 2 or 3, so it’s been well worth it. In my opinion, Micro Surfacing should be in our toolbox.”

— Mitch Turner, MDOT District Engineer

MDOT Pleased With Results

“By taking preventative steps ... it protects the road foundation and prevents expensive reconstruction and rehabilitation projects. This preventative treatment has been very successful.”

— *Melinda McGrath, MDOT Executive Director*



Photo Recap

2005 Micro Surfacing Application



Photo Recap

2005 After Micro Surfacing Application



Photo Recap

2005 After Micro Surfacing Application



Photo Recap

2005 / 2017 Side-by-Side Comparison



Photo Recap

2020 – Over 14 Years Post Application



Contact Information

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