



State of Missouri

2013 Governor's Award for Quality and Productivity

Executive Summary

Project or team name: Route 5 Shared Four-Lane Highway

Nominator: Nicole Hood

Nominating Department: (Nominations must include names of all agencies/departments/organizations/businesses, etc.)

Missouri Department of Transportation

Category: Efficiency/Process Improvement

Executive Summary: (Executive Summary page must be 500 words or less, 12 points, Times New Roman font, and left justified. **Attach the Executive Summary to the front of the nomination.**)

MoDOT has designed an attractive alternative between two- or four-lane roads called a Shared Four-Lane Highway. This unique design provides a cost-effective solution to improve traffic flow, increase safety and reduce driver frustration from slow moving vehicles.

A Shared Four-Lane Highway consists of passing lanes along a conventional two-lane highway to better accommodate traffic volumes and improve safety. The passing lane alternates between both sides of the highway to give drivers periodic opportunities to pass. In essence, drivers share passing opportunities about half the time with the opposing direction. The addition of a passing lane improves safety because it eliminates the need for a driver to cross into the opposing lane of traffic to pass another vehicle. Rumble stripes between opposing lanes encourage drivers to remain safely in their lanes.

This innovative design is very fitting with MoDOT's philosophy and use of practical design over the last several years. Route 5 is a critical link to moving people and goods and keeping its surrounding communities economically viable. The existing route had become more and more congested as the volume of traffic continued to grow. The highway averaged 8,000 vehicles a day, which was enough to justify a four-lane road under MoDOT's historical benchmarks.

The Route 5 Shared Four-Lane Highway was an effective design alternative to a four-lane road resulting in a much lower cost. A portion of the project was built on new alignment, while the remainder of the project made use of the existing roadbed to minimize the need for new right of way and extensive construction. The project relocated eight miles of Route 5 from just north of Route 7 near Camdenton to south of the Laclede/Camden County line. Additional passing lanes were added to the remaining 10-mile section of existing Route 5 between the Laclede/Camden County line and the City of Lebanon. The Shared Four-Lane Highway carries nearly the same amount of traffic as a four-lane divided highway but cost 60 percent less to build.

The Route 5 Shared Four-Lane Highway was the first of its kind in the state that included design and construction on new alignment. Initially, local citizens believed a four-lane divided highway was the only option to expanding the corridor. However, as a result of this project, the opinion of Missourians in the Lake of the Ozarks area has changed. They are open to the concept of a shared four-lane and believe the design will satisfy other highway improvement needs. Travelers from all around Missouri who drive this route have an appreciation for the shared four-lane. Most importantly, the shared four-lane design has proven to be very effective at improving safety and reducing crashes.



State of Missouri – 2013 Governor's Award for Quality and Productivity

NOMINATION FORM

I. GENERAL INFORMATION

Department: Missouri Department of Transportation

1. Project or team name: Route 5 Shared Four-Lane Highway

2. List the name of all team members, job titles, state agency department, and/or community

organization: *(Please list alphabetically by last name – 2 to 20 team members maximum.)*

Arounpradith, Anousone - Structural Project Manager, MoDOT; Bevier, Henry - Senior Highway Designer, MoDOT; Brooks, Trent - District Traffic Engineer, MoDOT; Engelbrecht, Steve - District Planning Manager, MoDOT; Franks, Geoff - Senior Highway Designer, MoDOT; Goodwyn, Tyler - Senior Highway Designer, MoDOT; Gordon, Dave - Senior Highway Designer, MoDOT; Hartman, Jim - Project Manager, MoDOT Retiree; Hood, Nicole - District Design Engineer, MoDOT; Hughes, Troy - District Utilities Engineer, MoDOT; Kincaid, Josh - Contractor, APAC; Krenning, Dennis - Resident Engineer, MoDOT; Lemongelli, Patty - District Construction Engineer, MoDOT; Lynch, Bob - Area Engineer, MoDOT; Mais, Mark - Transportation Project Designer, MoDOT; Potts, Randy - Transportation Project Designer, MoDOT; Scheperle, Melissa - Senior Environmental Specialist, MoDOT; Taylor, Llans - Innovations Engineer, MoDOT; Wolfenbarger, Mickie - Senior Maintenance Worker, MoDOT

3. Nomination Category: *(Check only one.)*

☐ INNOVATION

☐ CUSTOMER SERVICE

☒ EFFICIENCY / PROCESS IMPROVEMENT

☐ TECHNOLOGY IN GOVERNMENT

4. Describe why you selected this nomination category:

More than 60 percent of Missouri's rural roads are two-lane highways. On the higher volume two-lane roads, drivers often become frustrated with delays caused by the inability to pass a slower moving vehicle. In this situation, a driver must either contend with a travel delay or risk a potentially dangerous passing maneuver. There is a need to improve the safety and functionality of many two-lane routes. The traveling public often believes a four-lane divided highway is the only option when expanding a corridor to improve safety and traffic flow. Through process improvement and efficiency, MoDOT has designed an attractive alternative between two or four lane roads called a Shared Four-Lane Highway. This unique design provides a cost-effective solution to improve traffic flow, increase safety and reduce driver frustration.

II. BACKGROUND

1. When did the team begin its work?

January 2006

2. What date did the team initiate the implementation phase of the project?

A portion of the new roadway opened in October 2010. The remaining road was opened in May 2011.

3. Is the project:

☐ Time Limited

☒ Completed

☒ Ongoing

III. PROJECT DESCRIPTION

1. Why was the project needed?

Route 5 is a critical link to moving people and goods and keeping its surrounding communities economically viable. The northern section of Route 5 near Camdenton was curvy and hilly with many driveways. One slow-moving vehicle could cause a lengthy backup. The southern section in Laclede County was a two-lane highway

with wide shoulders, but with limited opportunities to pass. The stretch of Route 5 from Camdenton to Lebanon carried 13 percent heavy vehicles and experienced several fatal and disabling injury crashes resulting from head-on, passing and out-of-control collisions. The existing route had become more and more congested as the volume of traffic continued to grow. More than 8,000 vehicles used this section of highway each day - less than a typical four-lane highway, but a high enough volume of traffic to look for an improvement that would allow for a similar benefit.

2. What were the primary goals of the project? (150 words or less.)

MoDOT's goal with this project was to improve traffic flow and safety along the 18-mile stretch of Route 5 in Camden and Laclede counties and do it in a cost-efficient manner.

3. Describe the project: (200 words or less.)

The Route 5 Shared Four-Lane Highway consists of passing lanes along a conventional two-lane highway to better accommodate traffic volumes and improve safety. The passing lane alternates between both sides of the highway about every mile or so to give drivers periodic opportunities to pass. A portion of the Shared Four-Lane was built on a new alignment, while the remainder of the project made use of the existing roadbed to minimize the need for new right of way and extensive construction. The project relocated eight miles of Route 5 from just north of Route 7 near Camdenton to south of the Laclede/Camden County line. Additional passing lanes were added to the remaining 10-mile section of existing Route 5 between the Laclede/Camden County line and the City of Lebanon. The Shared Four-Lane highway features unique striping and signing to guide drivers through the alternating passing zones, as well as 12-foot lane widths and 7-foot shoulders. Amenities also include left-turn lanes at major intersections and a four-foot wide painted median buffer with rumble stripes designed to alert drivers with noise and vibration if they start to cross into oncoming traffic.

4. Explain how the accomplishment of the team exceeds their regular duties and responsibilities. (150 words or less.)

The team coordinated with the Midwest Research Institute to determine if Route 5 was a suitable candidate for the Shared Four-Lane Highway. Studies confirmed the addition of passing lanes on the project would provide close to the same level of service as a four-lane divided highway. The team also had to coordinate with several disciplines within MoDOT to ensure they were incorporating the unique features needed to ensure a safe design for the new roadway. A huge part of this project also included public outreach to educate the public on this new concept.

5. Which of the following describes the intended benefits of the project? (Check all that apply and provide an explanation.)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Cost Reduction | <input checked="" type="checkbox"/> Time Savings | <input checked="" type="checkbox"/> Increased Effectiveness |
| <input checked="" type="checkbox"/> Improved Process | <input checked="" type="checkbox"/> Other: Describe | |

Cost Reduction: The Shared Four-Lane carries nearly the same amount of traffic but cost 60 percent less than a traditional four-lane divided highway.

Time Savings: The traffic flow is very efficient and has resulted in a travel time savings for Missouri travelers.

Increased Effectiveness: This unique design provides a cost-effective solution to improve traffic flow, increase safety and reduce driver frustration. The before/after crash analysis resulted in a reduction of total crashes by 69.6 percent, severe crashes by 68.8 percent, and head-on type crashes by 100 percent.

Improved Process: MoDOT has designed an attractive alternative between two or four lane roads. Travelers from all around Missouri who drive from Jefferson to Branson now have an appreciation for the Shared Four-Lane highway.

Environmental: The highway has less environmental impacts because the footprint is smaller than a four-lane divided highway.

IV. RESULTS / MEASUREMENT

1. Describe how the success of the project was measured and what outcomes were achieved. (Description should not exceed 300-500 words.)

The success of the project was measured by improved safety, feedback we receive from travelers and cost savings.

The northern portion of the Shared Four-Lane highway was open to traffic on October 26, 2010, while the remaining portion was not complete until May 2011. A simple before/after safety study (Five years before and one year after) was performed on this portion of Missouri Route 5 in Camden and Laclede counties and shows that construction of the Route 5 Shared Four-Lane highway:

- Reduced total crashes by 69.6 percent,
- Reduced severe crashes by 68.8 percent, and
- Reduced head-on type (head-on, passing, and sideswipe) crashes by 100 percent. The Shared Four-Lane highway has proven to be very effective at reducing not only the total crashes, but also the head-on crash types. See two attachments included at the end of the entry form.

As a result of this project, the opinion of Missourians in the Lake of the Ozarks area has changed. They are open to the concept of a Shared Four-lane highway and believe the design will satisfy other highway improvement needs. Travelers from all around Missouri who drive this route have an appreciation for the Shared Four-Lane. In addition, the Shared Four-Lane Highway carries nearly the same amount of traffic as a four lane divided highway but for 60 percent less cost.

MoDOT received a letter from the Camden County Commission expressing its appreciation and admiration for MoDOT's construction of the Highway 5 shared four-lane road between Camdenton and Lebanon. The letter expressed that for many years road construction in Camden County had been minimal, while traffic had continued to escalate. MoDOT's proposed construction of the highway was certainly welcome. However, they admitted there were many of them who questioned if this would be the best answer. Now, after construction and many personal travels on the shared four-lane, they acknowledged what a great project it turned out to be. It moves traffic efficiently, effectively and safely. They thanked us for such a great project and indicated it is certainly a valuable asset for Camden County.

MoDOT's Shared Four-Lane Highway continues to be a great investment in the region's transportation infrastructure and an investment in the economic development of Missouri's Lake of the Ozarks, which has grown into a year-round tourism attraction in this part of the country. This innovative highway is another step forward in MoDOT's effort to improve safety and mobility for the traveling public, while being good stewards of the taxpayers' money and providing a practical solution.

2. Are the benefits derived from this project: (Check only one.)



Recurring



One-time

3. If recurring, how will the benefits be sustained? (Explain in 150 words or less.)

The benefits will be sustained as we continue to see fewer crashes occur along this stretch of roadway and travel time saved. We were also able to take our cost savings and apply it towards other much needed transportation improvements.

V. RECOGNITION / AWARDS

1. Has this project previously been nominated for the Governor's Award for Quality and Productivity?

If yes, when?

No

2. If yes, for which category was it nominated?

3. Has this project received any other awards or recognition in the past? If yes, describe.

No

VI. NOMINATOR'S INFORMATION

Nominating Department: Missouri Department of Transportation

Name: Nicole Hood

Signature: *Nicole Hood (signed by Kelly Backues)*

Telephone Number: 573-526-6997

E-Mail Address: nicole.hood@modot.mo.gov

VII. DEPARTMENT COORDINATOR'S INFORMATION

Name: Kelly Backues

Signature: *Kelly Backues*

Telephone Number: 573-751-5985

E-Mail Address: kelly.backues@modot.mo.gov

VIII. DEPARTMENT DIRECTOR APPROVAL

Department Director's Name:

David B. Nichols, P.E.

Signature: *David B. Nichols*

Telephone Number: 573-751-4586

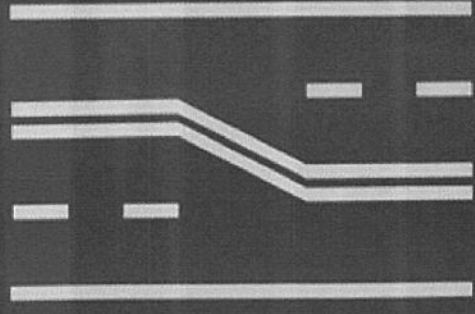
E-Mail Address: david.nichols@modot.mo.gov

Nomination must be signed ONLY by the Department Director to be eligible for consideration. Nominations not signed by the Department Director will be returned to the agency coordinator.



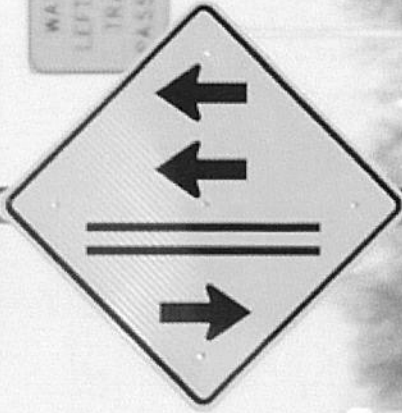
**ALTERNATING
PASSING LANES**

NEXT 7 MILES





PASSING LANE



WATCH FOR
LEFT-TURNING
TRAFFIC IN
PASSING LANE

NEXT
1/2 MILE

