

2007 APPLICATION FORM

(required for each entry)

J2P0482, J3P0409, J3P0409C, J3P0410

Job No. J3P0411B, J3P0412B Route 36 County Marion, Ralls, Monroe, Macon, ^{Shelby}

STIP Description (Scoping or Construction, state which STIP) 05-09 06-10 07-11

Upgrade to 4 lane from Macon to Hannibal

Project Manager (could have both)

MoDOT Rolla Rentz, Brian Haeffner, Richard Consultant

Active core team members as approved by the MoDOT PM (may include consultants)

List attached

Project Contacts (will have both for consultant entry)

District Rolla Rentz, P.E.

Consultant \$

STIP budget \$ 113,138,000

or Award cost \$

Value Engineering study during design? yes no (if yes) Project Stage Conceptual

VE Contact person Glenn Rice, Design (NE District)

Construction-stage VE (VECP)? yes no (if yes) Explain

Total VECP savings \$ _____ VECP Contact Person _____

Why is this entry the "poster" image for MoDOT's practical design philosophy?

(In layman's terms - 100 words or fewer - attach additional sheet if necessary) This project would not be on the STIP except for practical design. The highway would have been designed in a cost-prohibitive manner so that residents in four counties would not have been able to support or pass a 1/2 cent sales tax that would carry 50% of the cost. If the project were built without practical design, it is estimated to cost \$209 million, more than double the current estimate. The other emphasis point in using practical design is it forced teams to

Send entries to: MoDOT Design Division, ATTN: Jay Bestgen
1320 Creek Trail Dr.
Jefferson City, Missouri 65109

(con't)

All entries must be received no later than close of business on February 1, 2007

(Con't) "Poster Image"

Offer public involvement and input in all aspects of the projects – from design to communication – because the public was helping to pay for this project directly.

Core Team Members

District 2

Brian A. Haeffner
John S. Cline
Dennis E. Fessler
Jeffrey L. Gander
Paul H. Hague
Paula Gough
Community Relations staff
Jason M. Blomberg
Dean D. Franke
Amy B. Crawford
Dennis H. Brucks
Sam J. Grimes
Earl E. Keune
Nathan D. Muenks
Lawrence L. Ayres
Daniel H. Skouby
Bret E. Davidson

Central Office

Timothy L. Redmond
Buck H. Brooks
Melinda K. Grace
Billy E. Graham
Jason M. Blomberg
Dean D. Franke
Nathan D. Muenks
Lawrence L. Ayres

District 3

Mark Giessinger
Greg Price
Jerad Noland
Denny Lambert
Anthony H. Wieschhaus
Community Relations Staff
Carol J. Devlin
Christopher S. Knapp
David T. Silvester
Gidget J. Mott
Glenn R. Rice
John F. Cowden
Joseph Ferrante
Joseph T. Ulry
Kimberly M. Trainor
Kirk E. Juranas
Macy J. Rodenbaugh
Michael E. Baxter
Nathan J. Briggs
Richard A. Domzalski
Richard H. Barrett
Robert J. Manzke
Rolla F. Rentz
Stephen M. Dickson
Thomas P. Batenhorst
Kevin C. James
Jason E. Shafer

Practical Design – 2007 Awards for Excellence
Best New Construction Project

Introduction

Making Route 36 a four-lane facility across the state has long been a goal of residents in northeast Missouri. Various renditions of the project had been developed, visualized on paper, revised, redeveloped and discussed throughout the last 15 years. Considering projects under construction or in the STIP, the final gap of 52 miles of two-lane between Macon and Hannibal was all that remained in 2003, but MoDOT funding for the project was not committed. Through public initiation and involvement, the process of moving the project forward and making it a priority for MoDOT began with a value-engineering study in 2003, followed by re-assessment of the environmental documents and development of a Transportation Corporation to provide local assistance with funding of the project.

Scope Comparison

Environmental assessments were completed in the mid to late 1990's on the 52 miles of Route 36 between Hannibal and Macon. Those assessments and preliminary drawings included several design features that would not have been considered under practical design. These included:

1. The facility would have been expressway with freeway right of way;
2. At least one interchange would have been built;
3. Four-lane bypasses would have been built around smaller towns to make room for future interchanges;
4. More outer roads would have been built; and
5. These features would have taken more property and displaced more homeowners

As a result of the re-evaluation of the EA, the initial value engineering study and the implementation of practical design, and, along with other practical design measures, saved an estimated \$100 million.

Purpose and Need

The purpose of the project, making Rte. 36 a four-lane facility, was to complete a four-lane highway across northern Missouri for safety and economic needs. Plans were already underway to make Rte. 36 four lanes from Macon to St. Joseph; the completion of the final 52 miles would also provide economic benefits for communities across northern Missouri besides make it a safer highway.

The current design is the most efficient four-lane design MoDOT can provide at a reasonable cost. By eliminating much of the "over-design," less property is being taken, fewer homeowners are being displaced, and partnerships were formed to share in the cost of the project. The Cardinal Connector, an innovative grade-separated intersection, was added to enhance safety for South Shelby high school students, and the ramps to the Route 151 overpass at Clarence were paid for through a cost-share agreement between the City, County and MoDOT.

The following are among the practical design measures employed on the project:

1. Shoulder thickness changed from full depth to A2;
2. Used existing bridge at the Salt River to save \$1.7 million;
3. Reduced right of way by acquiring only what was absolutely needed for expressway, not freeway; only acquired controlled access on the side of the roadway where new right of way was purchased;
4. Reduced the PCCP pavement thickness from 12" to 9" using the new mechanistic empirical (ME) design which doesn't require subgrade stabilization; mainline pavement 9" slab was also reduced in width from 30' to 26';
5. Reduced the typical median width from 84' to 60'
6. Moved the new lanes from the south side of existing Rte. 36 to the north side west of Monroe City; this required two less temporary connections, shortened the new highway to be built, increased safety during construction and reduces traffic control costs.
7. Used access management guidelines for at-grade median openings for principal arterial of a minimum space of approximately one mile
8. Eliminated acquiring right of way for future interchanges
9. At Lakenan, Lentner and S. Shelby school, amended environmental assessment to allow building additional lanes adjacent to existing lanes rather than new four lane to the north of these locations
10. Eliminated building outer roads, but allowed landowners to have right in, right out entrances to their properties.

New Techniques, Methods and Non-Traditional Design

A new method of construction provides for alternate bids: concrete vs. asphalt on both pavement and shoulders. Our design has been changed from full-depth to A2 shoulders as a result of practical design. The Cardinal Connector, a grade-separated intersection at Route FF to provide safer access to the South Shelby School, is an innovative design that reduces the amount of right of way needed and reduces the amount of four-lane expressway that would have traditionally been built to accommodate the public's desire for a safer method of accessing the school.

Another non-traditional aspect of this project is the development of a wetland "bank" to accommodate wetland mitigation requirements for this project and future projects. Working closely with the environmental and right of way staff, the team was able to mitigate wetland impacts for this project and provide 5+ additional acres of wetland mitigation to be used for future projects in northern Missouri.

Another unique aspect of this project is that because it is 52 miles, MoDOT Districts 2 and 3 have worked together to provide all aspects of project delivery. Both districts worked closely together on core teams, in public involvement, creating and implementing communication plans, design, plan review and many other important issues.

While many aspects of this project are unique, the partnerships formed as a result of this project also lend themselves to further innovation. The City of Clarence is cost sharing the ramps to make Rte. 151 an interchange, and Shelby County and Hunnewell will be paying for resurfacing on segments of their local roads; MoDOT will do the work, and will be reimbursed by these partners. The Transportation Development District formed

by residents of four counties who are supporting this project with a ½ cent sales tax, and decision to build the grade-separated intersection at South Shelby School as a result of public involvement, are just two more examples of the project's uniqueness.

Cost Savings

Using the original environmental assessment from 1996 and the second environmental assessment in 1998, the cost for right of way and construction was estimated to be \$206 million (in today's dollars). The environmental assessment was re-evaluated in 2003 after the value engineering study. Once the VE study and re-evaluation of the EA were completed and practical design was implemented, the estimated cost of the project had dropped from more than \$206 million to \$113 million, a savings of almost \$100 million.

Roadway User Expectations

Because MoDOT performed a VE study, re-evaluated the EA, and implemented practical design on this project, only two lanes are being added, except for a few short areas, to complete the four-lane facility. These lanes are being added primarily north of the existing highway, so, other than three small portions of the road that will be built on the south side of the existing highway, motorists will only see road construction, not necessarily have to experience it, which means it will be a safer work area for both the contractor and motorists. It is also expected the project will be completed more than one year ahead of schedule because there are very little impacts to the traveling public. The project design does provide a consistent roadway, making a four-lane highway all the way across the state – from Hannibal to St. Joseph.

Conclusion

Beside the fact that northern Missouri will finally have a four-lane highway across the state that should help improve the economy and make driving safer, one of the biggest benefits to designing this project the way it was designed is that many relationships were developed along the way. From the core team, to technical reviews, to monthly meetings, involvement in the Transportation Corporation/Transportation Development District, community meetings, public meetings, and numerous internal meetings, the practical design has helped form partnerships along the way that have been crucial to the success of this project.