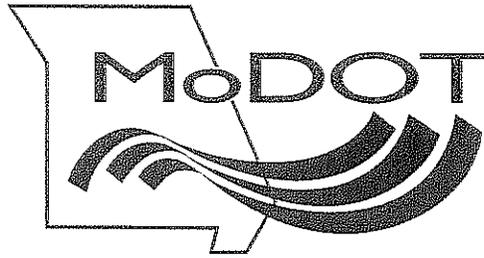


Missouri
Department
of Transportation



Paula Gough, P.E., District Engineer

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December 14, 2007

Mr. Jay Bestgen
MoDOT Design Division
1320 Creek Trail Drive
Jefferson City, MO 65109

Dear Mr. Bestgen:

Upgrading Route 36 to a four-lane divided highway from Hannibal to Macon has long been a desire of the residents of Northeast Missouri; however, the original cost estimate for the 52-mile project of \$227 million was more than MoDOT could afford – even with local communities willing to share in the cost. Through application of Practical Design to all elements of the project, the awarded cost was reduced from \$227 million to only \$89 million, bringing the project into the range of affordability for MoDOT in partnership with the U.S. Highway 36-Interstate 72 Corridor TDD. The TDD, comprised of Macon, Marion, Monroe, and Shelby Counties, has passed a ½-cent sales tax to pay for 50% of the construction cost.

Purpose and Need

The purpose and need for this project was to complete a four-lane facility across Northern Missouri to increase safety and facilitate economic development. Application of practical design resulted in the most efficient and cost-effective four-lane design MoDOT can provide. Less right of way acquisition is required, fewer businesses and homeowners are displaced, and the corridor is finally being completed through partnership with the local communities, and all of this at a fraction of the original cost estimate – a savings of \$138 million – WOW!

Application of Practical Design

Environmental assessments completed in the late 1990's for the 52-mile corridor included a project scope estimated at over \$200 million, with an expressway design that included acquisition of freeway right of way, construction of at least one additional interchange, four-lane relocations around smaller towns to accommodate future interchanges, and construction of outer roads. Application of the Practical Design philosophy to this project scope, both through the Core Team process and through three different Value Engineering studies, reduced the project cost by over 60% and allowed the project to proceed to construction. The following are a few examples of the many practical design measures employed on the corridor:

- Minimized right of way acquisition to only that needed for expressway construction; eliminated acquisition of right of way for future interchanges; only acquired controlled access on the side of roadway where new right of way was needed.
- Eliminated proposed interchange at Route J and avoided relocation of a cellular tower.
- Reduced the PCCP pavement thickness from 12" to 9" by utilizing results from the ME model; reduced mainline pavement slab width from 30' to 26'.
- Reduced shoulder thicknesses from full depth to A2 shoulders.
- Used existing bridge at Salt River to save \$1.7 million; re-designed bridge at Route 151 to reduce bridge length and width.
- Reduced typical median width from 84' to 60'.
- Revised alignment at Monroe City to eliminate two temporary connections increasing safety during construction and reducing traffic control costs.
- Applied access management guidelines to provide minimum spacing of one mile for at-grade median openings.

- Amended environmental assessment at Lakenan, Lentner, and South Shelby School to allow construction adjacent to existing lanes, avoiding construction of four-lane relocations.
- Allowed right-in/right-out access to adjoining landowners and eliminated construction of outer roads.
- Reduced wetland and stream impacts where possible; provided stream mitigation on the project to avoid expensive payments; provided 52.5 acre wetland/stream mitigation site to provide mitigation for entire corridor.
- Encouraged utilities to combine projects into one contract to facilitate the accelerated schedule and reduce coordination costs.
- Used MoDOT staff and demolition contractors to remove Indiana bat habitat during prescribed periods, thereby allowing earlier work by utility contractors and, by extension, the construction contractors to help meet the accelerated schedule

Partnerships and Non-Traditional Design

While many aspects of this project are unique, the partnerships formed as a result of collaboration with local communities allowed the project to further meet the needs of our traveling public. In fact, the project would not have been funded but for the partnership with the TDD, through which the residents of four counties will pay 50% of the project cost. The City of Clarence and Shelby County were instrumental in a cost-share agreement that allowed the addition of ramps at Route 151 to provide an interchange at Clarence. The project will also provide resurfacing of segments of local roads in Shelby County and the city of Hunnewell; the communities will reimburse MoDOT.

The partnerships resulting from the project were not only external. Because of the 52-mile length, District 2 and District 3 worked together on delivery of the project. Both districts worked together closely on core teams, creating and implementing communication plans, the public involvement process, design, plan review, and many other aspects of project delivery.

The Cardinal Connector, an innovative grade-separated intersection, was added to increase safety at the entrance to South Shelby School through partnerships with the School and Shelby County and through the public involvement process. This solution is now included as one of MoDOT's standard intersection designs and increases safety and traffic capacity over traditional intersection designs. The Cardinal Connector accommodated the public's desire for a safer means of accessing the school without the additional roadway and right of way costs that would have been required for a traditional solution providing a full interchange.

Conclusion

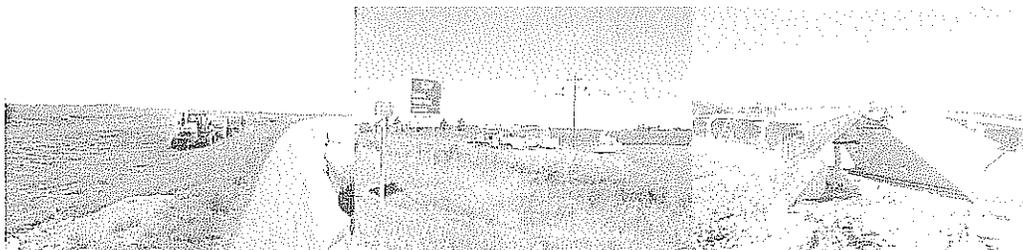
Obviously, the primary benefit provided by the project is that northern Missouri will finally have a four-lane highway across the state that will increase economic development and make driving safer; however, the many relationships developed along the way are another bonus. Those relationships were developed and improved through the application of practical design, allowing costs to be reduced to make the project affordable. All 52 miles of Route 36 will be completed by November 16, 2009, one year earlier than agreed to by the TDD, due to the practical design philosophy employed throughout the design of the project.

Please contact me if you have any further question regarding the Route 36 corridor project.

Sincerely,



Rolla Rentz, P.E.
Transportation Project Manager



**MoDOT PROJECTS
2008 APPLICATION FORM**

Job No. J2P0482, J3P0409, J3P0409C, J3P0410, J3P0411B, J3P0412B **Route 36 County** Marion, Monroe, Ralls, Shelby, Macon

STIP Description (Scoping or Construction, state which STIP)

2007 - 2011 STIP J3P0412B Grading and paving for dual divided pavement from .2 mile east of Ralls County line to .9 mile west of Rte. 24/36 interchange. 3P0412 combined into this project. Project involves bridges A4405, A6885 and G0975. J3P0411B Grading and paving for dual divided from .4 mile west of Rte. Z to .2 mile east of Marion County. 3P0411 combined into this project. 2008-2012 STIP J3P0410 Grading and paving to add lanes from Shelby County to .4 mile west of Ralls County. J3P0409C Grading and paving to add lanes from .6 mile west of Rte. 15 east to .1 mile east of Marion County line. J2P0482 Earthwork and paving for dual lanes from end of divided lanes east of Macon to Shelbina.

Is the submittal for the entire project or just a portion of the project? Please explain: This submittal is for the entire 52-mile project composed originally of J2P0482, J3P0409, J3P0409C, J3P0410, J3P0411B, J3P0412B

Project Managers: MoDOT Rolla Rentz, P.E., Brian Haeffner, P.E., Rick Domzalski, P.E.

Key core team members as approved by the MoDOT PM (may include consultants) (limit of 9 – since this was more than one project and the largest cost-share in Missouri history at the time, several dozen key people from MoDOT were involved in the design and implementation of this project.)

<u>Dennis Fessler</u>	<u>Earl Kuene</u>	<u>Nathan Briggs</u>
<u>Glenn Rice</u>	<u>Michael Baxter</u>	<u>Mark Giessinger, P.E.</u>
<u>Timothy Redmond</u>	<u>Buck Brooks</u>	<u>Dean Franke</u>

Project Contacts: District Rolla Rentz, Rick Domzalski, Brian Haeffner Consultant

Project Budget (construction and right of way):

Conceptual budget \$227,000,000 **Initial STIP Budget** \$ 113,138,000

Final STIP budget \$117,699,000 **Award amount** \$ 89,000,000

Value Engineering study during design? yes no (if yes) **Project Stage** 3 VE Studies in conceptual, preliminary and final design.

Total VE savings implemented \$ 27,225,000 **VE Contact Person** Tom Allen

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

What would make this entry stand out from the rest of the entries when considering MoDOT's practical design philosophy? This project would not be on the STIP except for practical design. The four-lane 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 ½ cent sales tax that would carry 50% of the construction cost. If the project were built without practical design, it is estimated to have cost \$227,000,000 two and a half times the award amount. The other emphasis point in using practical design is it forced teams to proactively seek public input in all aspects of the project because they were helping to pay for the project directly.







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Asphalt separating from deck