

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0155-01(022) Houston Twiggs **OFFICE:** Engineering Services
P.I. No.: 322460
SR 96 from CR 540 to SR 87 **DATE:** July 30, 2010

FROM: Ronald E. Wishon, State Project Review Engineer *REW*

TO: Bobby K. Hilliard, PE, State Program Delivery Engineer
Attn.: Jeremy Busby

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above project was held May 17-20, 2010. Responses were received on July 27, 2010. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
BR-1	Shorten RR bridge using MSE walled abutments	\$225,838	No	Long term, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. Also, MSE walls greatly limit the possibility of future expansion for both the roadway and the facility beneath the structure.
BR-4	Use Bulb T-74" Beams on bridges over Ocmulgee River instead of Bulb-T 72" beams	Design Suggestion	No	Based on actual cost data, the use of 74" Bulb-T's is higher than the cost of 72" Bulb-T's. The use of 74" Bulb-T's will be considered during the preliminary design stage and the development of final design.
BR-7	Reduce length of WB bridges over Ocmulgee River	\$840,820	Yes	This will be done.
BR-8	Reduce outside shoulder widths to 6 ft on all bridges	\$1,444,288	No	The bridge width for bridges on this project is consistent with Department Policy 4265-10. The shoulder widths were developed through an implemented VE Study.

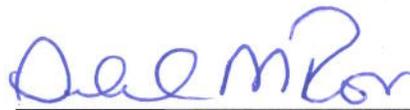
BR-12	Reduce length of WB Ocmulgee River bridges by 2 spans and EB by one span using an MSE wall	\$922,819	No	Due to the potential for scour, there is a high amount of risk when utilizing MSE wall abutments for a river crossing such as this. GDOT has experience with failures of MSE walls due to scour and erosion. Repairs due to failures of MSE walls are extremely costly and would require road closures for an extended period of time.
CH-5	Use page (woven) wire fencing in lieu of chain link fencing	\$1,039,500	No	Chain link fence is preferred because of its strength. Additionally, after further research with Florida DOT and DNR, it was determined that woven wire fencing would require additional items that were not accounted for in the VE Study report. Upgrading the fencing to specifications needed for bear would negate the savings.
CH-12	Eliminate wildlife fencing along railroad	\$464,640	Yes	This will be done.
CH-16	Reduce wildlife fencing height from 10 ft to 8 ft	\$346,500	No	FHWA Best Practices Manual-Wildlife Vehicle Collision Reduction Study (Table 3 page 31) recommends the use of 8 to 9 foot base fence height for black bears. Georgia DNR and Florida DOT recommend burying the fence one foot. A shorter than recommended fence height would result in the potential for more wildlife to breach the fence.
CH-27	Reduce the width of the bear crossings to 20 ft	\$177,412	No	DNR, Fish and Wildlife, and GDOT design had several meetings to establish the minimum opening widths and heights. Based on those meetings, the opening widths should remain as established in the plans.

RD-3	Reduce median width to 32 ft	\$620,316	No	<p>This project has several fill areas including two locations for grade separations. Maintaining traffic on the existing WB roadway while constructing the EB roadway requires the entire 44 ft median width in several locations to facilitate staging. The VE team used improvement and relocation costs when calculating the VE savings; these would not apply to property in the median so the actual cost savings is much lower. Overall VE cost savings associated with narrowing the median did not consider the higher cost of staging (shoring, temporary pavement, additional depth of drainage structures). Wetland impacts and earthwork volumes were also incorrectly calculated in the VE Team's recommendation. Based on Design's calculations, the VE recommendation actually increases the costs by \$214,000.</p>
RD-9	Utilize existing roadway from Sta. 305+00 to Sta. 390+00 and Sta. 570+00 to Sta. 662+00	\$2,651,769	No	<p>From Sta. 305+00 to Sta. 350+00, the widening will be centered over the existing roadway and it is not practical to retain the existing pavement under the raised median. From Sta. 350+00 to Sta. 390+00 the existing pavement is several feet below the minimum roadway elevation recommended by bridge design and not practical to retain. From Sta. 570+00 to Sta. 662+00 significant grade changes to meet speed design and a shift in alignment to avoid a GA Power easement makes it impractical to retain the existing pavement.</p>

RD-18	Signalize CR 87 intersection and delete overpass	\$447,423	No	The CR 87 location was identified by DNR as a crossing location that would benefit from a bear crossing. An at-grade intersection does not allow for a bear crossing at this location, and it allows access points on both sides for bear to access SR 96. A grade separation over CR 87 provides the best alternative for allowing wildlife movement across SR 96 with the least chance of trapping the animals on the ROW.
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The Office of Engineering Services concurs with the Project Manager's responses.

Approved:



Gerald M. Ross, PE, Chief Engineer

Date:

8/3/10

REW/LLM

Attachments

c: Ben Buchan
Bobby Hilliard/Stanley Hill/Jeremy Busby
Russell McMurray/Jason McCook/Brad McManus/Jack Grant
Paul Liles/Bill Duvall/Bill Ingalsbe
Sam Pugh
Lamar Pruitt/Ken Crabtree
Ken Werho
Lisa Myers
Matt Sanders

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE



FILE STP00-0155-01(022), Houston/Twiggs County OFFICE Program Delivery
 PI# 322460
 SR96 from E of Old Hawkinsville Rd. to W of SR87 DATE 7/26/10

FROM *[Signature]* Bobby K. Hilliard, PE, State Program Delivery Engineer

TO Ronald E. Wishon, State Project Review Engineer
 ATTN: Lisa Myers

SUBJECT **RESPONSE TO VALUE ENGINEERING STUDY ALTERNATIVES**

Attached are the responses to the Value Engineering Study. The Office of Program Delivery concurs with the responses.

If there are any questions please contact Jeremy Busby at (404) 631-1154.

BKH: MAH: JTB

Attachments

cc: File

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE STP00-0155-01(022)
PI # 322460
Houston-Twigg Counties

OFFICE Roadway Design

DATE July 26, 2010

Widening and reconstruction of SR 96 from just east of CR 540 /Old Hawkinsville Road to just west of SR 87.

FROM 
Russell R. McMurry, P.E., State Roadway Design Engineer

TO Bobby Hilliard, P.E., State Program Delivery Engineer

Widening and reconstruction of SR 96 from just east of CR 540 /Old Hawkinsville Road to just west of SR 87

SUBJECT: RESPONSE TO VALUE ENGINEERING STUDY ALTERNATIVES

➤ **CH-5 "Use page (woven) wire fencing in lieu of chain link fencing"**

VE Team Savings: \$1,039,500

- No, will not implement this recommendation. In researching this further with FDOT and DNR, using the woven wire fences would require several additional items that weren't accounted for in the price used for cost comparison. Our findings are that once you upgrade the woven wire to the specifications needed for bear, the difference in cost is negligible. The chain link fence is preferred because of its strength.

➤ **CH-12 "Eliminate wildlife fencing along the railroad"**

VE Team Savings: \$464,640

- Yes, will implement this recommendation. Roadway Design agrees that risks are minimal with eliminating the fencing along the railroad right-of-way.

➤ **CH-16 "Reduce wildlife fencing height from 10' to 8'"**

VE Team Savings: \$346,500

- No, will not implement this recommendation. FHWA Best Practices Manual-Wildlife Vehicle Collision Reduction Study (Table 3 page 31) recommends the use of 8'-9' base fence height for black bears. Georgia DNR and other reputable sources (FDOT) recommend burying the fence one foot. Implementation would mean a shorter than allowable height resulting in the potential for more wildlife (bears) breaching the fence.

➤ **CH-27 "Reduce the width of bear crossings to 20'"**

VE Team Savings: \$177,412

- No, will not implement this recommendation. Roadway design had several meetings with DNR and Fish and Wildlife to establish our minimum opening widths and heights. Based on those meetings the opening widths established in the plans best meet the needs.

➤ **RD-3 “Reduce median width to 32”**

VE Team Savings: \$620,316

- No, will not implement this recommendation. This project has several high fill areas including two locations for grade separations. Maintaining traffic on the existing westbound roadway while constructing the eastbound roadway requires the entire 44’ of median width in several places to facilitate staging. Reviewing the VE calculations for wetland impacts and earthwork volumes prompted a more in depth analysis to determine the true costs. From this analysis, rather than the VE begin station - end station linear approach for the impact length, bridge lengths were excluded from the wetland impact calculations and earthwork cut volumes were excluded from the VE earthwork calculations. Also, VE calculations for ROW included improvement and relocation cost for residential property in the per acre cost which is not applicable in the depressed median sections. Overall VE cost savings associated with narrowing the median did not consider the higher cost of staging (i.e., shoring, temporary pavement and additional depth drainage structures necessary as a result of the shallower median ditch). Thus, savings shown by VE calculations do not truly reflect inherent costs necessary to build the 32’ median. The VE recommendation actually increases the costs by \$214,000 rather than saving \$620,000 when allocating for the adjustments for non-applicable costs and additional staging costs.

➤ **RD-9 “Utilize existing roadway from Sta. 305+00 to Sta. 390+00, and from Sta. 570+00 to Sta. 662+00”**

VE Team Savings: \$2,651,769

- No, will not implement this recommendation. The typical section from Sta. 305+00 to 350+00 is for a 24’ raised median. Widening in this area is centered over the existing roadway to lessen right of way impacts and therefore retaining the pavement is not practical as it falls under the raised median portion of the new road. From Station 350+00 to 390+00 the existing pavement is below the minimum roadway elevation recommended by bridge design by several feet and therefore it is not practical to retain. From Sta. 570+00 to 662+00 significant grade changes to meet speed design and a shift in alignment to avoid Ga. Power easements makes it impractical to retain the existing pavement.

➤ **RD-18 “Signalize CR 87 intersection and delete overpass”**

VE Team Savings: \$447,423

- No, will not implement this recommendation. The CR 87 location was identified by DNR as a crossing location that would benefit having a bear crossing. An at-grade intersection does not allow for bear crossing at this location and is problematic in that it allows access points on both sides for bears to access SR 96. A grade separation over CR 87 provides the best alternative for allowing wildlife movement across SR 96 with the least chance of trapping the animals on the right-of-way.

JLM/MBM/JRG

C: Ben Buchan

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE STP00-0155-01(022) HOUSTON-TWIGGS COUNTIES **DATE** June 30, 2010
P.I No. 322460

FROM  Paul V. Liles, Jr., P.E., State Bridge Engineer

TO Bobby Hilliard, P.E., State Program Delivery Engineer
Attn: Jeremy Busby



SUBJECT **BRIDGE DESIGN VALUE ENGINEERING RESPONSE**

The Value Engineering Study for the above referenced project dated June 2, 2010 contained four VE Alternatives and one VE Design Suggestion requiring response from the Bridge Office including BR-1, BR-4 (DS), BR-7, BR-8 and BR-12. Below are our recommendations for these alternatives.

BR-1 VE Alternative – “Shorten Railroad Bridge using MSE Walled Abutments.”

Recommendation: Do Not Implement. Although there are minimal perceived savings based on the analysis in the VE Study, the Bridge Office does not recommend implementation. Long term, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. Also, MSE wall abutments greatly limit the possibility of future expansion for both the road being carried as well as the facility beneath the structure. Due to sequence of construction, coordination with subcontractors and equipment, bridge costs and wall costs are higher than the general bridge and wall costs for separate structures.

BR-4 VE Design Suggestion – “Use 74” Bulb T for the 140’ spans.”

Recommendation: Do Not Implement. Based on actual cost data, the use of 74” Bulb-T’s are higher than the cost of 72” Bulb-T’s. The use of 74” Bulb-T’s are considered during the preliminary design stage and the development of final design.

BR-7 VE Alternative – “Reduce Length of WB Bridge over Ocmulgee River.”

Recommendation: Implement

BR-8 VE Alternative – “Reduce outside shoulder widths to 6’ on all bridges.”

Recommendation: **Do Not Implement.** The bridge width for the bridges on this project is consistent with Department Policy 4265-10. The shoulder widths in the policy were developed through an implemented Value Engineering study and based on factors such as safety, traffic volume, truck traffic, roadway drainage and AASHTO guidelines. The use of 4’-0” inside shoulders and 8’-0” outside shoulders is appropriate for this project.

BR-12 VE Alternative – “Reduce length of westbound river bridge by two spans and eastbound by one span using an MSE wall.”

Recommendation: **Do Not Implement.** Although there appears to be savings based on the analysis in the VE Study, the Bridge Office does not recommend implementation. Due to the potential for scour there is a high amount of risk when utilizing MSE wall abutments for a river crossing such as this. The Department has experience with failures of MSE walls due to scour and erosion. Making repairs due to failures of MSE walls are extremely costly and would certainly require road closures for an extended period of time.

If you have any questions and/or comments, please contact Bill DuVall of the Bridge Design Office at (404) 631-1883 or at email address bduvall@dot.ga.gov.

PVL/WMD

cc: Ron Wishon, Engineering Services
Russell McMurry, Design Office, Attn: Jack Grant
Bill DuVall, Bridge Office

