

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE NH-006-2(55), Dougherty County
SR 3/ Liberty Expressway @ North Jefferson St.
P.I. No. 422550

OFFICE Program Delivery

DATE May 31, 2012

FROM *S.H.*
for Bobby K. Hilliard, P.E., State Program Delivery Engineer

TO Lisa Myers, State Review Engineer

ATTN: Matt Sanders

SUBJECT **Value Engineering Implementation Reversal / Revision Request**

The Office of Program Delivery has received a Value Engineering Implementation Reversal/Revision Request dated May 22, 2012 from the Office of Roadway Design (see attached). This Office concurs with the request. Please process the reversal for signatures.

If there are any questions or concerns, please contact the project manager, Albert Shelby, at 404-631-1758.

S.H.
BKH:SH:avs
Attachment

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

RECEIVED

MAY 29 2012

Office of Program Delivery

INTERDEPARTMENT CORRESPONDENCE

FILE NH000-0006-02(055) **OFFICE** Roadway Design
Dougherty County
SR 3/Liberty Exwy @ SR 91 & **DATE** May 22, 2012
N. Jefferson Interchange Ramps
P.I. 422550-

FROM 
C. Andy Casey, P.E., State Roadway Design Engineer

TO Bobby Hilliard, State Program Delivery Engineer
Attn: Albert Shelby, Project Manager

SUBJECT Value Engineering Implementation Reversal/Revision Request

The Office of Roadway Design requests a Value Engineering (VE) Study Implementation Reversal and Revision for PI 422550-. The VE Implementation letter was issued by the office of Engineering Services on July 22, 2011. This office requests to reverse the implementation of alternative R-10, and revise the implementation of alternatives S-1 and S-2.

Alternative R-10 recommends removing the dedicated bike lanes on both sides of N. Jefferson St. and providing a multi-use trail on one side of the road. The VE implementation letter states that this alternative will be implemented; this office requests to reverse the implementation of this alternative. Subsequent conversations with the State Bicycle & Pedestrian Coordinator have led to a reversal request for this alternative. N. Jefferson St. and some nearby intersecting streets are part of the proposed bike route network in the Dougherty Area Regional Transportation Study (DARTS). Dedicated bike lanes are desirable on bike routes such as this, and will provide continuity and connectivity with the nearby proposed system of bike lanes.

Alternatives S-1 and S-2 recommend reducing the bridge widths on Ramp A (from 34-ft to 30-ft) and Ramp B (from 42-ft to 38-ft) by narrowing the shoulders 2-ft on each side. The VE implementation letter states that these alternatives will be implemented; this office requests to revise the implementation of these alternatives. Recent discussions between Roadway Design and Bridge Design have led to a decision that the bridges should carry the full width of the ramp lane plus the width of the paved shoulders (guidance in AASHTO 2004 Green Book, pg. 506). Applying this guidance results in bridge widths of 28-ft and 40-ft for Ramps A and B respectively.

The bridge on Ramp A will carry a 16-ft travel lane, 4-ft paved inside shoulder, and 8-ft paved outside shoulder, for a total "gutter to gutter" bridge width of 28-ft. This width is 2-ft less than the VE study recommended. Based on the VE study calculations, a bridge width of 28-ft would result in a cost savings of approximately \$116,000 compared to the VE recommendation of 30-ft which showed a cost savings of approximately \$71,000.

The bridge on Ramp B will carry two 12-ft travel lanes, an 8-ft paved inside shoulder, and an 8-ft paved outside shoulder, for a total "gutter to gutter" bridge width of 40-ft. The resulting width is two feet greater than the VE study recommendation. The inside paved shoulder near Ramp B is 8-ft wide to accommodate a concrete barrier on top of a fill wall that will tie to the bridge barrier. The inside shoulder on the ramp bridge is 8-ft wide so the bridge barrier will align with concrete barrier on top of the wall without having to taper as it approaches the bridge. Based on the VE study calculations, a bridge width of 40-ft would result in a cost savings of approximately \$65,000, compared to the VE recommendation of 38-ft, which showed a cost savings of approximately \$130,000. The result of revising the implementation of Alternatives S-1 and S-2 is a total cost savings of \$181,000, compared to the VE cost savings of \$201,000.

If you have any questions about this request or need additional information, please contact the Design Phase Leader, Sam Woods, at 404-631-1628.

Approved: *Lisa L Myers* Date 6/1/12
Lisa Myers, Project Review Engineer

Approved: *Russell R. McMurry* Date 6/6/12
Russell R. McMurry, P.E., Director of Engineering

Approved: *Gerald M. Ross* Date 6/8/12
Gerald M. Ross, P.E., Chief Engineer

Attachments: VE Alternatives S-1 and S-2, VE Implementation Letter,

CAC:CAH:saw

VALUE ENGINEERING ALTERNATIVE



PROJECT: SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION NH000-0006-25(055); PI No. 422550 Dougherty County, Georgia	ALTERNATIVE NO.: S-1
DESCRIPTION: REDUCE THE RAMP A BRIDGE WIDTH FROM 34 FT. TO 30 FT.	SHEET NO.: 1 of 3

ORIGINAL DESIGN: (sketch attached)

The original Ramp A Bridge width is 34 ft. from gutter to gutter including a 16 ft. travel lane, 12 ft. outside shoulder, and 6 ft. inside shoulder

ALTERNATIVE: (sketch attached)

Reduce the bridge width to ~~30 ft.~~ ^{28 ft.} from gutter to gutter including a 16 ft. travel lane, ~~10 ft.~~ ^{8 ft.} outside shoulder, and 4 ft. inside shoulder

ADVANTAGES:

- Reduces bridge deck width and associated material and labor requirements

DISADVANTAGES:

- Requires limited additional design effort since the bridge designs are currently preliminary

DISCUSSION:

Reducing the bridge width by 4 ft. allows it to match the paved shoulder sections and reduces associated labor and material requirements.

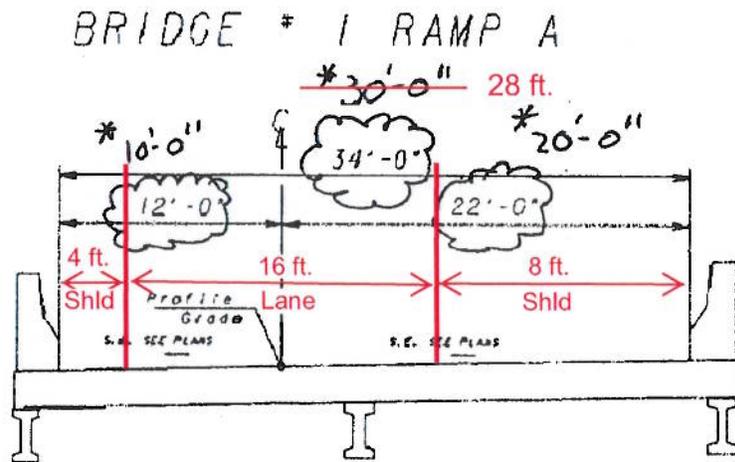
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 658,000	—	\$ 658,000
ALTERNATIVE	\$ 542,000 587,000	—	\$ 542,000 587,000
SAVINGS (Original minus Alternative)	\$ 116,000 71,000	—	\$ 116,000 71,000

PROJECT: **SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION**
Dougherty County, Georgia

ALTERNATIVE NO.:
S-1

ORIGINAL DESIGN ALTERNATIVE DESIGN BOTH

SHEET NO.: **2 of 3**



TYPICAL SECTION NO. 3

SUPER ELEVATION SECTION
 APPLIES TO STA. 213+10.44 TO STA. 214+87.44
 SEE DRAWING #13-01

* Reduced shoulder width by 2'-0" on each side.

VALUE ENGINEERING ALTERNATIVE



PROJECT: SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION
 NH000-0006-25(055); PI No. 422550
 Dougherty County, Georgia

ALTERNATIVE NO.:
S-2

DESCRIPTION: **REDUCE THE RAMP B BRIDGE WIDTH FROM 42 FT. TO 38 FT.**

SHEET NO.: 1 of 3

ORIGINAL DESIGN: (sketch attached)

The original Ramp B Bridge width is 42 ft. from gutter to gutter which includes two, 12 ft. through lanes, a 12 ft. outside shoulder, and a 6 ft. inside shoulder.

ALTERNATIVE: (sketch attached)

Reduce the bridge width to ~~38 ft.~~ **40 ft.** from gutter to gutter including two 12 ft. through lanes, a ~~10 ft.~~ **8 ft.** outside shoulder, and a ~~4 ft.~~ **8 ft.** inside shoulder.

ADVANTAGES:

- Reduces bridge material and labor requirements

DISADVANTAGES:

- Requires limited additional design effort since the bridge designs are preliminary

DISCUSSION:

Reducing the bridge width by 4 ft. allows it to match up with the paved sections and reduces associated labor and material requirements.

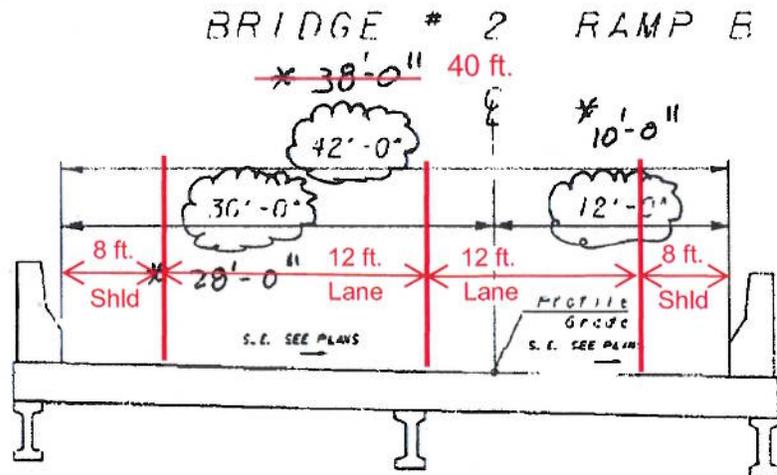
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,465,000	—	\$ 1,465,000
ALTERNATIVE	\$1,400,000 335,000	—	1,400,000 1,335,000
SAVINGS (Original minus Alternative)	\$ 65,000 130,000	—	\$ 65,000 130,000

PROJECT: **SR 133/N. JEFFERSON ST. FROM SR 520/US 82 LIBERTY EXPRESSWAY TO SR 91/PHILEMA RD. INTERCHANGE RECONSTRUCTION**
 NH000-0006-25(055); PI No. 422550
 Dougherty County, Georgia

ALTERNATIVE NO.:
S-2

ORIGINAL DESIGN ALTERNATIVE DESIGN BOTH

SHEET NO.: **2 of 3**



TYPICAL SECTION NO. 4

SUPER ELEVATION SECTION

APPLIES TO STA. 306+66.57 TO STA. 309+91.07
 SEE DRAWING * 11-09

* Reduce shoulder width by 2'-0" on each side.

R-9	Provide a rural shoulder in lieu of an urban shoulder on the left side of N. Jefferson St. from Sta. 123+00 to Sta. 133+20 Lt.	\$84,000	Yes	This will be done.
R-10	Provide a 12 ft wide multi-use trail on the left side of N. Jefferson St and a 5 ft wide sidewalk on the right side in lieu of the 4 ft wide bicycle lanes on both sides and 5 ft wide sidewalk on the left and 8 ft sidewalk on the right	\$128,000	Yes	This will be done.
R-13	Provide 8 ft paved outside shoulders in lieu of 10 ft paved outside shoulders on Ramps A and B	\$148,000	Yes	This will be done.
S-1	Reduce the ramp A bridge width from 34 ft to 30 ft by narrowing the shoulders 2 ft per side	\$71,000	Yes	This will be done.
S-2	Reduce the Ramp B bridge width from 42 ft to 38 ft by narrowing the shoulders 2 ft per side	\$130,000	Yes	This will be done.
S-4	Reduce the length of the Ramp B bridge by 52 ft by providing a retaining wall abutment on the east end	\$172,000	No	A revised estimate indicates this alternative would have a cost increase of \$43,675. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments 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.

S-5	Reduce the Ramp A bridge length by 37 ft	\$109,000	No	A revised estimate indicates this alternative would have a cost increase of \$240. In addition, there are more maintenance issues with MSE walls and the approach roadway than there are with typical spill through abutments. MSE wall abutments 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.
S-7	Provide a GDOT standard concrete side barrier for the wall at Ramp B from Sta. 309+50 to Sta. 313+00	Design Suggestion	Yes	This will be done. If the height of the retaining wall increases, than an MSE wall would be more economical.
C-1	Modify the sequencing of Stage 1 to include removing the raised median first and then shifting traffic on N. Jefferson St. and Philema Rd. during stage 1 of construction	Design Suggestion	Under Review	The stage construction plans will be further investigated to determine the feasibility of this alternative.
C-3	Use the existing WB Liberty Express exit ramp for right and left turns onto N. Jefferson St. during construction to enable earlier closure of the existing SB N. Jefferson St entrance ramp	Design Suggestion	Under Review	The stage construction plans will be further investigated to determine the feasibility of this alternative.
G-1	Reroute the 18 in RCP from the existing pipe through the proposed wingwall at Sta. 698+00	Design Suggestion	Under Review	The drainage will be further investigated to determine the feasibility of this alternative.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved:  Date: 7-22-11
Gerald M. Ross, PE, Chief Engineer

REW/LLM

Attachments

c: Russell McMurry
Bobby Hilliard/Stanley Hill/Albert Shelby
Russell McMurry/Chuck Hasty/Nicoe Alexander/Travis McDonald
Paul Liles/Ben Rabun/Bill Duvail/Bill Ingalsbe
Amber Phillips
Joe Sheffield/Brent Thomas/Scott Chambers/Tony Cravey/Geno Hasty/Van Mason
Ken Werho
Lisa Myers
Matt Sanders