

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: STP00-0021-01(024) Carroll Co. **OFFICE:** Engineering Services
 STP00-0021-01(025)
 P.I. No.: 631300- & 631310-
 SR 166 Bypass **DATE:** June 27, 2013

FROM: Lisa L. Myers, State Project Review Engineer *llm*

TO: Genetha Rice-Singleton, State Program Delivery Engineer
 Attn.: Chandria Brown

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

The VE Study for the above projects was held April 29 – May 2, 2013. Responses were received on 6/26/13. 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 these projects. Please note, if the implementation of a VE recommendation requires a Design Exception and/or Design Variance, the DE or DV must be requested separately.

ALT #	Description	Potential Savings/ LCC	Implement	Comments
STP00-0021-01(024) PI No. 631300- Carroll Co.				
B-4	Lower the design speed to 45 mph; incorporate design criteria with a 20 ft. raised median.	\$862,000	No	The District performed a speed test at five locations on 5/22/13. The 85 th percentile speed ranged from 57 mph to 62 mph and based on the nature and geometrics of this corridor it is not recommended to lower the speed design to implement this idea.
B-6	Reduce the width of the paved shoulders from 6.5 ft. to 4 ft.	\$930,000	Yes	This will be done.
B-16	Reduce pavement thickness for the median openings and left turn lanes.	\$550,000	No	The recommendation from GDOT Office of Materials was that turning lanes constructed concurrently with the mainline should have the same pavement thickness. Since the staging of the mainline will be reconstructed at the same time, this VE idea will not be implemented.

E-3a	Retain the existing culvert for the eastbound roadway and only build a bridge for the westbound at Station 578+00.	\$813,000	No	E-3b was chosen as the preferred alternative to be implemented.
E-3b	Remove the existing culvert completely and construct a new culvert along the skew.	Proposed = \$925,000 Actual = \$798,000	Yes, with modifications	After further review of the hydraulics, a slightly deeper box culvert will be required than what the VE Team suggested. (See attached calculations)
E-3c	Retain and extend the existing culvert, re-align the upstream opening with the current stream.	\$1,141,000	No	E-3b was chosen as the preferred alternative to be implemented.
E-4a	Eliminate the median opening at Simonton Mill Road to reduce bridge construction at the Little Tallapoosa River crossing.	\$1,080,000	No	E-4b was chosen as the preferred alternative to be implemented.
E-4b	Restrict the median opening to the east only at Simonton Mill Road and eliminate the western access.	\$929,000	Yes	This will be done.

STP00-0021-01(025) PI No. 631310- Carroll Co.

A-7	Use curb & gutter and an urban shoulder without RRM sidewalk for the 5-lane section in lieu of ditches.	\$640,000 \$522,000	Yes	This will be done. (WITH MODIFICATIONS) SEE AECOM'S CALCULATIONS.
A-8	Eliminate three proposed displacements at Adalee Road by using V-gutter and retaining walls.	\$59,000	No	From west to east, the three houses are 29 feet, 32 feet, and 12 feet from the proposed edge of pavement. A seed test was done at this location; milepost 8.27. The average speed was 56 mph and the 85 th percentile was traveling 59 mph. Based upon a design speed of 55 mph the clear zone requirement is 26 feet. The clear zone for 65 mph is 32 feet which places all three houses within or very near the clear zone. All three houses have access facing the roadway which will be reduced when the driveways and parking areas are condensed with the proposed widening. Therefore, it is not practical to accept this idea.

B-3	Increase maximum grades for the bypass profile from 5% to 6% and lower the design speed to 45 mph.	\$374,000	No	According to the AASHTO Green Book the required design speed for a rural minor arterial is 50 to 60 mph and the maximum grade is 5%. A design exception could be sought for either a reduction in design speed or an increase in the maximum grade. However, steeper grades affect vehicle speeds, particularly large trucks. The proposed road anticipates 13% trucks in the AM and 9% in the PM. Drivers of heavy trucks have a higher potential to lose control as they descend steep grades and this risk is increased when a horizontal curve is at the bottom of a steep grade as in this situation for westbound traffic.
B-4	Lower the design speed to 45 mph; incorporate design criteria with a 20 ft. raised median.	\$1,499,000	No	The District performed a speed test at five locations on 5/22/13. The 85 th percentile speed ranged from 57 mph to 62 mph and based on the nature and geometrics of this corridor it is not recommended to lower the speed design to implement this idea.
B-5	Review/shorten the passing lane lengths.	Proposed = \$184,000 Actual = \$125,000	Yes, with modifications	The truck passing lanes in the westbound direction will be incorporated as suggested. However, the eastbound would have the lane taper extending to the Lovvorn Road intersection. Instead, the passing lane will be extended past the intersection which provides more value over the original design. (See calculations)
B-6	Reduce the width of the paved shoulders from 6.5 ft. to 4 ft. in designated areas.	\$128,000	Yes	This will be done.
B-8	Shift proposed roundabout to the northeast for ease of construction.	\$28,000	Yes	This will be done.
B-9	Extend raised concrete island to prohibit left turns into the gas station at the roundabout.	Cost Increase = (\$4,000)	Yes	This will be done to improve operations of the roundabout.
B-16	Reduce pavement thickness for the median openings and left turn lanes.	\$217,000	No	The recommendation from GDOT Office of Materials was that turning lanes constructed concurrently with the mainline should have the same pavement thickness. Since the staging of the mainline will be reconstructed at the same time, this VE idea will not be implemented.

E-1	Reduce the depth of the main span of Bridge #1 to lower the profile.	\$21,000	No	The Office of Bridge Design maintains that shortened span lengths will be considered during design development, but the beam type, span length and overall structure length will be finalized once the field survey and the hydraulic study have been completed. Therefore, the Office of Bridge Design will not commit to the approval of this recommendation at this time.
H-3a	Review ability to use Alternate #2 for Bypass Route alignment.	Cost Increase = (\$376,000)	No	The implementation of this alternative would cost more and the impacts to the historic property are more significant. This alternative is also near a known archaeological site which might lead to preservation measures and require additional right-of-way. It is a goal of NEPA to avoid, minimize, and mitigate impacts to environmental resources and the currently preferred alignment better meets that goal.
H-3b	Use a variation of Alternate #2 for Bypass Route alignment.	Cost Increase = (\$188,000)	No	The implementation of this alternative increases the overall cost of this project and even though this variation of the alignment would avoid a historic resource, it has been determined that it would require the displacement of at least three residences. Therefore, this alternative will not be revisited.

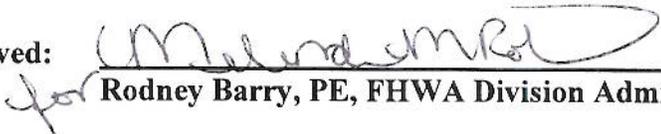
The Office of Engineering Services concurs with the Project Manager's responses.

Approved:


 Russell McMurry, PE, Chief Engineer
 w/change as noted to A-7

Date:

8/9/13

Approved:  Date: 8/19/13
for Rodney Barry, PE, FHWA Division Administrator

LLM/RLR/MJS

Attachments

- c: Melinda Roberson/Victor Dang - FHWA
- Joe Carpenter/Paul Liles
- Genetha Rice-Singleton/Albert Shelby
- Ben Rabun/Bill Duvall
- Carla Benton Hooks/Sam Pugh/Anthony Tate/Sean Diehl/Iris Hernandez
- Marc Mastronardi
- Bill Dungan
- Ken Werho/Nabil Raad
- Robert Reid Jr/Matt Sanders

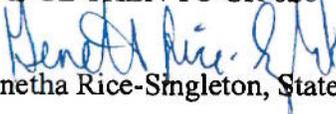
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP00-0021-01(024), Carroll County OFFICE Program Delivery
P.I. No. 631300
SR166 FM CR 828/141 TO 4-LN/CARROLLTON

STP00-0021-01(025), Carroll County
P.I. No. 631310
SR 166 FM E OF BIG INDIAN CK NEW LOC
TO E CL THEN TO CR 828

DATE June 18, 2013

FROM  Genetha Rice-Singleton, State Program Delivery Engineer

TO Lisa Myers, Project Review Engineer
Attn: Matt Sanders

SUBJECT **Value Engineering Study - Responses**

Please reference the recommendations that were contained in the Value Engineering Study (VE) Final Report dated May 15, 2013 for the above referenced projects. The Department's Consultant Design Team for the two subject projects is AECOM. Please find attached the Consultant Design Team's VE responses and supporting concurrence documentation for PI 631300 and PI 631310.

If there are any questions, please contact Chandria L. Brown of this Office at (404) 631-1580.

GRS:AVS:CLB
Attachments

cc: Dan Bodycomb, P.E. AECOM





AECOM 404 965 9600 tel
1360 Peachtree Street NE, 404 965 9605 fax
One Midtown Plaza, Suite 500
Atlanta, GA 30309
www.aecom.com

June 17, 2013

Ms. Chandria Brown, P.E.
Office of Program Delivery
Georgia Department of Transportation
600 West Peachtree Street, 25th Floor
Atlanta, GA 30308

RE: Response to Value Engineering Recommendations
SR166
Project No. STP00-0021-01(024), Carroll County GA
P.I. No. 631300

Dear Ms. Brown,

A Value Engineering (VE) study for the SR166 Widening, PI 631300, was performed on April 29 to May 2, 2013. The VE study was conducted jointly with the adjoining SR166 Bypass, PI 631310, project. The results of the study were included in the Value Engineering Training Study Report dated May 15, 2013.

The VE Study Team generated a total of forty-eight (48) ideas of which thirty-eight (38) were evaluated as possible recommendations. The result of the evaluation resulted in a total of sixteen (16) independent recommendations with four (4) alternative recommendations. Eight (8) recommendations were made for PI 631300.

Idea No.	Creative Idea Description	Original Initial Cost	Proposed Initial Cost	VE Cost Savings
B-4	Use 20 ft. raised median; lower design speed to 45mph	\$1,862,000	\$1,000,000	\$862,000
B-6	Shorten areas of 6 ½ foot bike-shoulder paving	\$973,000	\$43,000	\$930,000
B-16	Use thinner pavement thickness at median openings	\$550,000	\$0	\$550,000
E-3a	Retain the existing culvert; construct only WB Bridge	\$813,000	\$0	\$813,000
E-3b	Remove the existing culvert; construct a new culvert	\$1,626,000	\$701,000	\$925,000
E-3c	Retain existing culvert; construct skewed culvert	\$1,626,000	\$485,000	\$1,141,000
E-4a	Eliminate the median opening; construct single bridge	\$3,382,000	\$2,302,000	\$1,080,000
E-4b	Use only one-way median opening; construct single bridge	\$3,231,000	\$2,302,000	\$929,000

Outlined below are responses to the recommendations.

VE ALTERNATIVE #B-4**Use 20 ft. raised median; lower design speed** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. The district performed a speed test at five locations on 5/22/2013. The 85th Percentile Speed ranged from 57.08 mph to 62.61 mph, with an average of 59.94 mph. Based upon the nature of this corridor, we do not recommend lowering the speed limit from 55mph to 45mph to accommodate this VE recommendation.

VE ALTERNATIVE #B-6**Shorten areas of 6 ½ foot bike-shoulder paving** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. The paved shoulder along the corridor will be reduced to 4 foot in width.

VE ALTERNATIVE #B-16**Use thinner pavement thickness at median openings and left-turn lanes** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. Reducing the pavement thickness at median openings and left turn lanes was discussed with GDOT Office of Materials. The recommendation from GDOT Office of Materials was that turn lanes that are constructed concurrently with the mainline should be the same thickness. Since the staging of this project will be to construct the turn lanes at the same time as the mainline, VE Alternative B-16 will not be implemented.

VE ALTERNATIVE #E-3a**Retain the existing culvert; construct only WB Bridge** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement – Because we are implementing E-3b. Only one of the recommendations can be implemented.

VE ALTERNATIVE #E-3b**Remove the existing culvert; construct a new, properly aligned culvert** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. After further review of the hydraulics, an opening equivalent to a triple 10'x10' box culvert is required. Since 20% is required to be buried, we are proposing a triple 10'x12' box culvert. The length of the culvert will be approximately 162 feet. This is a slight variation from the VE recommendation of a quadruple 10'x10' culvert at 140 feet long.

Revised savings: \$798,000. See attached calculations.

VE ALTERNATIVE #E-3c

Retain the existing culvert; construct a skewed extension for WB lanes

AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement – Because we are implementing E-3b. Only one of the recommendations can be implemented.

VE ALTERNATIVE #E-4a

Eliminate the median opening; construct single bridge

AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement – Because we are implementing E-4b. Only one of the recommendations can be implemented.

VE ALTERNATIVE #E-4b

Use only one-way median opening; construct single bridge

AGREE AGREE, WITH MODIFICATIONS DISAGREE

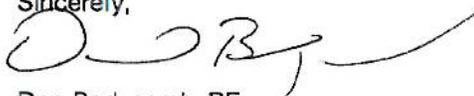
Yes, will implement. Before proceeding with design, a request will be made to the Bridge Maintenance Engineer for a determination on whether to retain the existing bridge and, if so, any recommended improvements. The recommendations from the Bridge Maintenance Engineer will be incorporated in the design plans.

In summary, our recommendation is to implement three (3) of the eight (8) VE Study ideas for a total project savings of \$2,657,000.

Idea No.	Creative Idea Description	Recommend Implementation	VE Cost Savings
B-4	Use 20 ft. raised median; lower design speed to 45mph	No	-
B-6	Shorten areas of 6 ½ foot bike-shoulder paving	Yes	\$930,000
B-16	Use thinner pavement thickness at median openings	No	-
E-3a	Retain the existing culvert; construct only WB Bridge	No	-
E-3b	Remove the existing culvert; construct a new culvert	Yes	\$798,000
E-3c	Retain existing culvert; construct skewed culvert	No	-
E-4a	Eliminate the median opening; construct single bridge	No	-
E-4b	Use only one-way median opening; construct single bridge	Yes	\$929,000
Total Savings			\$2,657,000

Please feel free to contact me at 404.965.9629 with any questions or concerns.

Sincerely,



Dan Bodycomb, PE
Project Manager

Attachments

CC: File 60018447.401

**Project: SR166 Widening and Reconstruction
STP00-0021-01(024); PI No. 0631300**

VE Comment: E-3b

Revised Design

Preliminary hydro information shows that an opening of 10'x10' with three barrels would be sufficient. Since 20% will be buried, the assumption is that a 10'x12' triple box culvert will work hydraulically. Based upon concept level cross sections, the culvert would be 162' long @ skew of 60 degrees.

Concrete

Wings & Parapets (each side)	75.50 yd3	Standard 2331
Apron	23.40 yd3	Standard 2332
Barrel per foot	4.534 yd3/ lin ft	Standard 2327
Barrel @ 162'	734.50 yd3	

Steel

Wings & Parapets (each side)	5,606 lbs	Standard 2331
Apron	1,716 lbs	Standard 2332
Barrel	586.4 lbs / lin ft	Standard 2327
Barrel @ 162'	94,996.8 lbs	

Total Concrete

$$(75.50 + 23.40) \times 2 + 734.50 = 932.30 \text{ yd}^3$$

Total Steel

$$(5,606 + 1,716) \times 2 + 94,996.8 = 109,640.8 \text{ lbs}$$

Costs

Concrete	932.30 yd3 x \$529.67 / yd3 =	\$493,811.34
Steel	109,640.8 lbs x \$0.82 / lb =	\$ 89,905.46
Asphalt*	700 SY x \$55.00 / SY =	\$ 38,500.00
Earthwork*	1 x \$20,000=	\$ 20,000.00

\$642,217

Markup @ 28.82%* \$185,087

TOTAL \$827,304

*Based upon VE calculations (E-3b)

Original proposal (Dual Bridges) \$1,626,000

Savings **\$798,696**



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June 17, 2013

Ms. Chandria Brown, P.E.
Office of Program Delivery
Georgia Department of Transportation
600 West Peachtree Street, 25th Floor
Atlanta, GA 30308

RE: Response to Value Engineering Recommendations
SR166
Project No. STP00-0021-01(025), Carroll County GA
P.I. No. 631310

Dear Ms. Brown,

A Value Engineering (VE) study for the SR166 Bypass, PI 631310, was performed on April 29 to May 2, 2013. The VE study was conducted jointly with the adjoining SR166 Widening, PI 631300, project. The results of the study were included in the Value Engineering Training Study Report dated May 15, 2013.

The VE Study Team generated a total of forty-eight (48) ideas of which thirty-eight (38) were evaluated as possible recommendations. The result of the evaluation resulted in a total of sixteen (16) independent recommendations with four (4) alternative recommendations. Twelve (12) recommendations were made for PI 631310.

Idea No.	Creative Idea Description	Original Initial Cost	Proposed Initial Cost	VE Cost Savings
A-7	Use urban shoulders in commercial area	\$1,419,000	\$779,000	\$640,000
A-8	Review displacements at Adalee Road	\$197,000	\$138,000	\$59,000
B-3	Modify profile along bypass; use 6% max	\$374,000	\$0	\$374,000
B-4	Use 20 ft. raised median; lower design speed to 45mph	\$1,923,000	\$424,000	\$1,499,000
B-5	Reduce climbing/passing lane lengths	\$423,000	\$239,000	\$184,000
B-6	Shorten areas of 6 ½ foot bike-shoulder paving	\$133,000	\$5,000	\$128,000
B-8	Shift the roundabout to improve constructability	\$28,000	\$0	\$28,000
B-9	Incorporate raised median at gas station	\$6,000	\$10,000	(\$4,000)
B-16	Use thinner pavement thickness at median openings	\$217,000	\$0	\$217,000
E-1	Reduce depth and length of main span, Bridge No. 1	\$21,000	\$0	\$21,000
H-3a	Use alternate alignment for bypass; use No. 2	\$5,418,000	\$5,794,000	(\$376,000)
H-3b	Use alternate alignment for bypass	\$5,418,000	\$5,606,000	(\$188,000)

Outlined below are responses to the recommendations.

VE ALTERNATIVE #A-7**Use urban shoulders in the commercial area** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. Will include sidewalk installation as part of this project.

Revised savings: \$522,000. See attached calculations (AS PER CHIEF'S REQUEST)

VE ALTERNATIVE #A-8**Review displacements at Adalee Road** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. In an effort to avoid three displacements next to Adalee Road, the VE team recommended the use of valley gutter to minimize the right-of-way impacts in front of the houses. From west to east, the three houses are 29 feet, 32 feet, and 12 feet from the proposed edge of pavement, respectively. A speed test was performed at this location; milepost 8.27. The average speed was 56.19 mph and the 85th percentile speed was 59.77. Based upon a design speed of 55 mph, the clear zone requirement is 26 feet. The clear zone requirement for 65 mph is 32 feet. This would place all three houses within the clear zone. All three houses have access facing the roadway. With the proposed roadway being widened towards the houses, it reduces the area needed for driveways and parking. Thus, with only a potential savings of \$59,000, we recommend keeping the proposed typical sections and displacing the houses because they will be in or near the clear.

VE ALTERNATIVE #B-3**Increase maximum grades for bypass profile** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. The roadway classification for the new location bypass will be a Rural Minor Arterial. The terrain in the area is considered rolling terrain. The required design speed, based upon Chapter 7 of the AASHTO Policy on Geometric Design of Highways and Streets is 50 to 60 mph. Table 7.2 specifies a maximum grade of 5% based upon a speed design of 50 or 55 mph. A design exception could be sought for either a reduction in design speed or an increase in the maximum grade. However, steeper grades affect vehicle speeds and vehicle control, particularly for large trucks. The proposed road is anticipated to have 13% percent trucks in the AM and 9% in the PM. Drivers of heavy trucks have a higher potential to lose control as they descend steep grades. This risk is increased when a horizontal curve lies at the bottom of a steep grade as in our situation in the westbound direction. As such, we disagree with the recommendation to increase the profile grade.

VE ALTERNATIVE #B-4**Use 20 ft. raised median; lower design speed** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. The district performed a speed test at five locations on 5/22/2013. The 85th Percentile Speed ranged from 57.08 mph to 62.61 mph, with an average of 59.94 mph. Based upon the nature of this corridor, we do not recommend lowering the speed limit from 55mph to 45mph to accommodate this VE recommendation.

VE ALTERNATIVE #B-5**Reduce climbing/passing lane lengths** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. The VE recommendation for the truck passing lane in the westbound direction will be incorporated as suggested. However, the recommendation for the eastbound truck passing lane would have the lane taper extending thru the Lovvorn Mill Road intersection. Instead, the passing lane will be extended past the Intersection which provides a savings over the original design.

Revised savings: \$125,000. See attached calculations

VE ALTERNATIVE #B-6**Shorten areas of 6 ½ foot bike-shoulder paving** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. The paved shoulder between STA 315+50 at Antioch Church Road and STA 355+00 at Farmers High Road will be reduced to 4 foot in width.

VE ALTERNATIVE #B-8**Shift the roundabout to improve constructability and reduce R/W** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement

VE ALTERNATIVE #B-9**Incorporate raised median at gas station** AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement.

VE ALTERNATIVE #B-16**Use thinner pavement thickness at median openings and left-turn lanes** AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. Reducing the pavement thickness at median openings and left turn lanes was discussed with GDOT Office of Materials. The recommendation from GDOT Office of Materials was that turn lanes that are constructed concurrently with the mainline should be the same thickness. Since the staging of this project will be to construct the turn lanes at the same time as the mainline, VE Alternative B-16 will not be implemented.

VE ALTERNATIVE #E-1**Reduce depth and length of main span, bridge No. 1** **AGREE** **AGREE, WITH MODIFICATIONS** **DISAGREE**

No, will not implement. The beam type, span length and overall structure length will be finalized once the field survey and the hydraulic study have been completed. Shortened span lengths, as requested, will be considered during further design development as this additional information becomes available. At this time, we are not able to commit to this suggestion to minimize the main span as not enough field data has been collected.

VE ALTERNATIVE #H-3a**Use alternate alignment for bypass segment; use No. 2** **AGREE** **AGREE, WITH MODIFICATIONS** **DISAGREE**

No, will not implement. The implementation of this alternative would be a cost increase to the project. The ecological impacts are similar to the proposed alignment; however, the impacts to a historically eligible property are more significant. While it is anticipated that the impact would result in a No Adverse Effect (de minimis) determination, there are no historic impacts with the proposed alignment. This alternative is also near a known archaeological site which might lead to potential preservation measures. This alternative requires the acquisition of additional right-of-way, which results in an overall cost increase to the project. It is a goal of NEPA to avoid, minimize and mitigate impacts to environmental resources. The proposed alignment better meets this goal.

VE ALTERNATIVE #H-3b**Use alternate alignment for bypass segment** **AGREE** **AGREE, WITH MODIFICATIONS** **DISAGREE**

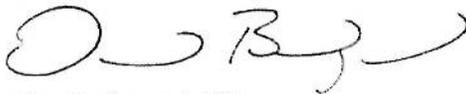
No, will not implement. The implementation of this alternative would be a cost increase to the project. A new alignment, located in between the proposed alignment and the alignment mentioned in VE Alternative H-3a would avoid the historic resource but would require the displacement of at least three residences.

In summary, our recommendation is to implement five (5) of the twelve (12) VE Study ideas for a total project savings of \$799,000.

Idea No.	Creative Idea Description	Recommend Implementation	VE Cost Savings
A-7	Use urban shoulders in commercial area	Yes	\$522,000
A-8	Review displacements at Adelee Road	No	-
B-3	Modify profile along bypass; use 6% max	No	-
B-4	Use 20 ft. raised median; lower design speed to 45mph	No	-
B-5	Reduce climbing/passing lane lengths	Yes, Partial	\$125,000
B-6	Shorten areas of 6 ½ foot bike-shoulder paving	Yes	\$128,000
B-8	Shift the roundabout to improve constructability	Yes	\$28,000
B-9	Incorporate raised median at gas station	Yes	(\$4,000)
B-16	Use thinner pavement thickness at median openings	No	-
E-1	Reduce depth and length of main span, Bridge No. 1	No	-
H-3a	Use alternate alignment for bypass; use No. 2	No	-
H-3b	Use alternate alignment for bypass	No	-
Total Savings			\$799,000

Please feel free to contact me at 404.965.9629 with any questions or concerns.

Sincerely,



Dan Bodycomb, PE
Project Manager

Attachments

CC: File 60018447.401

Project: SR166 Widening and Reconstruction
STP00-0021-01(025); PI No. 0631310

VE Comment: A-7

Revised Design

Original VE Idea A-7 included the addition of curb and gutter to minimize the amount of required right of way. The original calculation did not include sidewalk. However, sidewalk will be installed as part of this VE Comment.

Concrete

441-0101 CONC SIDEWALK, 4 IN SY \$20.24

Length

STA 211+25 to STA 257+00 = 4,575 feet
4,575 x 2 sides = 9,150 feet
9,150 feet / 3 feet per yard = 3,050 yards

Areas not requiring sidewalk include side roads and driveways

31 Driveways between 211+25 and 257+00 that are a mix between commercial and residential

Driveways

Residential – 16 feet average
Commercial – 30 feet average
Average driveway width of 23 feet
31 driveways x 23 feet avg. = 713 feet
713 feet / 3 feet per yard = 237 yards

Side roads

3 side roads with widths of 80 feet, 50 feet, and 50 feet
80+50+50 = 180 feet
180 feet / 3 feet per yard = 60 yards

LENGTH

3,050 – 237 – 60 = **2,753 yards**

WIDTH

Standard 5 feet wide sidewalk
5 feet / 3 feet per yard = **1.67 yards**

AREA

2,753 x 1.67 = **4,598 square yards**

Project: SR166 Widening and Reconstruction
STP00-0021-01(025); PI No. 0631310

VE Comment: A-7

Costs

Concrete 4,598 yd2 x \$20.24 / yd2 = \$ 93,063.52

Markup @ 27.28%* \$ 25,387.73

TOTAL \$ 118,451.25 (118,000 rounded)

*Based upon VE calculations (A-7)

VE Cost Savings \$ 640,000

Additional Cost of Sidewalk \$ 118,000

Savings **\$ 522,000**

**Project: SR166 Bypass New Location and Reconstruction
STP00-0021-01(025); PI No. 0631310**

VE Comment: B-5

Design

Original Design: truck passing lanes with full pavement width extents as follows:

Eastbound: STA 47+00 to 66+00 (1900 LF)

Westbound: STA 54+00 to 66+00 (1200 LF)

VE Recommendation

Eastbound: STA 47+00 to 58+55 (1155 LF)

Westbound: STA 58+55 to 66+00 (745 LF)

AECOM agrees with the changes to the westbound lane. However, the VE recommendation in the eastbound direction causes the taper to occur thru the intersection of Lovvorn Mill Road. Our recommendation is to carry the truck passing lane past the intersection and then start the taper.

VE Agreement, with modifications

Eastbound: STA 47+00 to 63+00 (1600 LF)

Westbound: STA 58+55 to 66+00 (745 LF)

Calculations

Proposed Roadway:

$$(1600 \text{ LF} + 745 \text{ LF}) \times 12 \text{ FT} \times \text{SY}/9 \text{ SF} \times \$55/\text{SY} = \$171,967$$

Proposed R/W: All residential

$$(1600 \text{ LF} + 745 \text{ LF}) \times 12 \text{ FT} \times \$2.72 \text{ per SF} = \$76,540$$

Earthwork Reduction

$$\text{Excavation} - (1600 \text{ LF} \times 12 \text{ FT} \times \text{avg } 3 \text{ FT cut depth}) \times \text{CY}/27 \text{ CF} \times \$3.53 \text{ per CY} = \$7,530$$

$$\text{Borrow} - (745 \text{ LF} \times 12 \text{ FT} \times \text{avg } 15 \text{ FT fill depth}) \times \text{CY}/27 \text{ CF} \times \$3.17 \text{ per CY} = \$21,450$$

Cost

Original design:	Pavement	\$227,333
	Excavation	\$7,530
	Borrow	<u>\$15,744</u>
	Subtotal	\$250,607
	Markup (27.28%)	\$68,366
	Right of Way	<u>\$101,184</u>
TOTAL		\$420,157

Revised design:	Pavement	\$171,967
	Markup (27.28%)	\$46,913
	Right of Way	<u>\$76,540</u>
TOTAL		\$295,420

Original Design	\$420,157
Revised Design	\$295,420
Savings	<u>\$124,737</u>

Bodycomb, Dan

From: DuVall, Bill <bduvall@dot.ga.gov>
Sent: Monday, June 17, 2013 9:36 AM
To: Bodycomb, Dan
Cc: Brown, Chandria; Sanders, Matt
Subject: Re: Project Nos. STP00-0021-01(024) & STP00-0021-01(025), SR 166, Carroll County, GA

Dan,

The responses are acceptable, please include them in the formal response to Engineering Services.

Thanks,
Bill

From: Bodycomb, Dan [mailto:Dan.Bodycomb@aecom.com]
Sent: Monday, June 17, 2013 09:32 AM
To: DuVall, Bill
Cc: Brown, Chandria; Sanders, Matt
Subject: RE: Project Nos. STP00-0021-01(024) & STP00-0021-01(025), SR 166, Carroll County, GA

Bill,

Below please find the modifications to the VE study ideas that you reviewed for the SR166 projects. I believe that you were to review the revisions prior to finalizing the VE Response Letter.

VE ALTERNATIVE #E-1

Reduce depth and length of main span, bridge No. 1

AGREE AGREE, WITH MODIFICATIONS DISAGREE

No, will not implement. The beam type, span length and overall structure length will be finalized once the field survey and the hydraulic study have been completed. Shortened span lengths, as requested, will be considered during further design development as this additional information becomes available. At this time, we are not able to commit to this suggestion to minimize the main span as not enough field data has been collected.

VE ALTERNATIVE #E-4b

Use only one-way median opening; construct single bridge

AGREE AGREE, WITH MODIFICATIONS DISAGREE

Yes, will implement. Before proceeding with design, a request will be made to the Bridge Maintenance Engineer for a determination on whether to retain the existing bridge and, if so, any recommended improvements. The recommendations from the Bridge Maintenance Engineer will be incorporated in the design plans.

Thanks,

Dan Bodycomb, PE