

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENT CORRESPONDENCE**

**FILE:** EDS-84(23) & BHN-007-3(25) Clinch/Ware **OFFICE:** Engineering Services  
P.I. Nos. 422120 & 422125  
U.S. 84/S.R. 38 Widening/Reconstruction

**DATE:** December 17, 2007

**FROM:** Brian K. Summers, PE, Project Review Engineer *REW*

**TO:** Babs Abubakari, P.E. State Consultant Design and Program Delivery Engineer

**SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES**

Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. Incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
2	Eliminate two intermediate bents at Bridge No. 1 – U.S. 84/S.R. 38 over Woodyard Creek/Darby Creek ( four 45' spans in lieu of six 30' spans)	-\$223,859 (Proposed)  \$7,500 (Revised)	Yes/Partial	One span was eliminated. Three spans would now be 40' instead of 30' as proposed. The other two spans would be 30' as originally proposed. The original cost increase was due to the larger beams required for 45' spans.
3A	Eliminate the flush median in its entirety at the beginning of the project	\$2,672,443 (Proposed)  \$2,055,678 (Revised)	Yes/Partial	Since this is in an area with very limited development, the need for a center turn lane will be minimal; however, as the roadway approaches the first intersection the median should be provided in order to accommodate left turn lanes. Approximately 1000' of the flush median would still need to be provided out of 4333' that was proposed.
3B	Eliminate the flush median at the beginning of the project and grass the area	\$2,661,982	No	Since VE Alternate 3A is being implemented this one is no longer applicable.

## Implementation of Value Engineering Study Alternatives

ALT #	Description	Potential Savings/LCC	Implement	Comments
4	Replace the existing three-span bridges with three CONSPAN® culverts at Bridge No. 2 over Woodyard Creek Overflow	\$452,804	No	Based on a more detailed cost estimate (provided) using a footing, which will more than likely be required, the CONSPAN culvert will cost more than the bridge.
8	Use a One-Way Pair Traffic System around and through Argyle	\$2,840,993	No	This was one of the Concept Alternates that were considered and OEL determined that this Alternate would result in more impacts to the City of Argyle than would a bypass.
9	Replace the existing three-span bridges with three CONSPAN® culverts at Bridge No. 4 over Peters Branch	\$374,321	No	Based on a more detailed cost estimate (provided) using a footing, which will more than likely be required, the CONSPAN culvert will cost more than the bridge.
10	Relocate the beginning of the Argyle West Bypass	\$759,475	No	This Alternate would result in more Environmental and Right of Way impacts to the City of Argyle.
11	Do not bypass Argyle	\$7,923,753	No	This was one of the Concept Alternates that were considered and OEL determined that this Alternate would result in more impacts to the City of Argyle.
12	Eliminate one intermediate bent from each bridge at Bridge No. 5 – U.S. 84/S.R. 38 over Box Creek (four 37.5' spans in lieu of five 30' spans)	\$19,305 (Proposed)  \$8,600 (Revised)	Yes/Partial	One span was eliminated. Three spans would now be 40' instead of 30' as proposed. The other span would be 30' as originally proposed.
13	Replace the existing three-span bridges with three CONSPAN® culverts at Bridge No. 6 over Little Suwanee Creek	\$374,321	No	Based on a more detailed cost estimate (provided) using a footing, which will more than likely be required, the CONSPAN culvert will cost more than the bridge.

ALT #	Description	Potential Savings/LCC	Implement	Comments
14	Eliminate two intermediate bents from each bridge at Bridge No. 7 – U.S. 84/S.R. 38 over Suwanee Creek (five 42' spans instead of seven 30' spans)	- \$247,787 (Proposed)  \$8,500 (Revised)	Yes/Partial	One span was eliminated. Three spans would now be 40' instead of 30' as proposed. The other three spans would be 30' as originally proposed. The original cost increase was due to the larger beams required for 42' spans.
15	Use 14-ft. flush median prior to CR 9/Peagler Crossing	\$188,223	Yes	This should be done.
16	Continue 55 mph zone and 14-ft flush median to Greasy Branch Creek	-\$93,899 (Cost Increase)	Yes	This should be done
17, 18, 19	Eliminate the intersections at CR 24/Cherry Road, CR 26/Mills Street, and CR 517/Hoke Street	Design Suggestion	No	This would limit the connectivity in the City of Manor. These local routes have very low traffic volumes.
21	Provide sidewalks on only one side of mainline in urban sections	\$199,123 (Proposed)  \$45,000 (Revised)	Yes/Partial	The sidewalk will be removed on the south side of U.S. 84 in Homerville adjacent to the railroad.
23	Provide a multi-use path on only one side of mainline throughout the project limits in the urban areas	\$3,034,352	No	Since VE Alternate No. 25 will be implemented this is not applicable.
24	Use 6" x 24" Curb and Gutter instead of 8" x 30"	Design Suggestion	No	The unit cost in the pay item mean is more expensive than the standard size curb and gutter.
25	Provide a multi-use path on one side of the mainline and sidewalks on the other side in the urban area	\$2,835,229 (Proposed)  \$2,790,229 (Revised)	Yes/Partial	This will be done except that the sidewalk will be removed on the south side of U.S. 84 in Homerville adjacent to the railroad. Additional cost savings was included in V.E. Alt. No. 21.
26	Prepare shoulders for sidewalks but do not place the concrete	\$386,760	No	This does not apply since the sidewalk will be deleted on the south side of U.S. 84 in Homerville adjacent to the railroad.

ALT #	Description	Potential Savings/LCC	Implement	Comments
27	Use 14-ft flush median throughout (includes Alternative Nos. 6 & 7)	-\$1,266,409 (Cost Increase)	No	This is typically not used in rural locations. In addition, the paving quantities for the 14' flush median results in additional costs.
28	Minimize right of way width	\$517,256 (Proposed)  \$100,000 (Revised)	Yes/Partial	Right of way will be minimized in the urban areas.
30	Eliminate two intermediate bents at Bridge No. 3 - U.S. 84/S.R. 38 over Cane Creek (six 40' spans instead of eight 30' spans)	-\$288,624 (Proposed)  \$17,256 (Revised)	Yes/Partial	The proposed scenario utilized eight 30' T-Beam spans and the VE Team proposed 6 PSC (Type I Mod.) 30' spans. The Design Consultant is now proposing six 40' T-Beam spans. The original cost increase was due to the more expensive PSC (Type I Mod) Beams.
31	Use 4" thick sidewalks versus 6" thick sidewalks	\$111,812	Yes	This will be implemented.

A meeting was held on December 3, 2007 and Allen Krivsky and Rudolph Frampton with Heath and Lineback, Yun Tang with Consultant Design, and Brian Summers, Ron Wishon and Lisa Myers of Engineering Services were in attendance.

The results above reflect the consensus of those in attendance and those who provided input.

Approved: *GMR* Date: 1/08/07  
Gerald M. Ross, P. E., Chief Engineer

Attachments

c: Gus Shanine, FHWA  
Todd Long  
Yun Tang  
Steve Gaston  
Alexis John  
Russell Daughtry  
Ronnie Hall  
Jerry Hughes  
Brad Saxon  
Ken Werho  
Nabil M. Raad  
Lisa Myers

**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**

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INTERDEPARTMENT CORRESPONDENCE

**FILE** EDS-84(23) & BHN-007-3(25) **OFFICE** Atlanta  
Clinch/Ware Counties  
PI Nos. 422120, 422125  
US 84 / SR 38 Widening **DATE** October 24, 2007

*M. Babs Abubakari*

**FROM** Mohammed (Babs) Abubakari, P.E.  
State Consultant Design & Program Delivery Engineer

**TO** Brian Summers, P.E., Project Review Engineer  
Attention: Lisa Myers

**SUBJECT Responses to VALUE ENGINEERING STUDY**

We have received the Value Engineering Study report dated August 2, 2007 for the above referenced projects. The Engineers from Heath and Lineback Engineers, Inc. and my staff have reviewed and discussed each comment in the report. The following are our responses:

*Value Engineering Alternative No. 2 – Eliminate two intermediate bents at Bridge No. 1 US 84/SR 38 over Woodyard Creek/Darby Creek.*

- This alternative results in increased construction costs.
- The Study states “duration of construction will be reduced”.
- The Study states “contractors prefer Type I modified PSC beams”.
- GDOT Bridge Office guidance is to design T-beam spans at 30 ft or 40 ft and allow the contractors to decide whether T-beams spans or Type I modified PSC beams cost less.
- We recommend five-spans with (3) 40 ft. T-beam spans and (2) 30 ft. T-beam spans instead of the alternate four-span (45 ft. each) PSC beams (Type I modified). This layout eliminates 1 intermediate bent, results in a cost saving from the original design, and allows the contractor to determine lowest cost beam type.

(This alternative will be partially implemented)

*Value Engineering Alternative No. 3A – Eliminate the flush median in its entirety at the beginning of the project.*

- This alternative would compromise safety and functionality by increasing the likelihood of both head-on and rear-end collisions.
- Research has shown that flush medians provide the following benefit vs. undivided highways:
  - Head-on crash rates for divided highways are typically 30% of the rate on undivided highways
  - Increase capacity by 30%
  - Reduce total crashes by 35%

- Reduce pedestrian collisions
- Changing the median would require a design variance.
- The 14 ft. flush median is per the GDOT Design Policy Manual that stipulates for GRIP (Governor's Road Improvement Program) projects with design speed of 45 mph and base year traffic volume less than 18,000 vpd or design year, traffic volume less than 24,000 vpd, a five lane flush median section is required.
- The roadway segment begins at the Homerville existing one-way pairs and extends east beyond the city limits. The 14 ft. flush median is an appropriate transition from the one-way pairs and encourages economic development, which is supported by the environmental document.

(This alternative will not be implemented).

*Value Engineering Alternative No. 3B – Eliminate the flush median at the beginning of the project and grass the area.*

- This alternative replaces the 14 ft. paved median with a 14 ft. grass median.
- The 14 ft. grass median is a non-typical median type and is insufficient for handling storm water.
- The 14 ft. grass median is susceptible to vehicles crossing, which will damage the grassed median, track mud on the travel lanes, and create safety and maintenance issues.
- The 14 ft. flush median is per the GDOT Design Policy Manual that stipulates for GRIP (Governor's Road Improvement Program) projects with design speed of 45 mph and base year traffic volume less than 18,000 vpd or design year, traffic volume less than 24,000 vpd, a five lane flush median section is required.
- The roadway segment begins at the Homerville existing one-way pairs and extends westward beyond the city limits. The 14 ft. flush median is an appropriate transition from the one-way pairs and encourages economic development, which is supported by the environmental document.

(This alternative will not be implemented).

*Value Engineering Alternative No. 4 – Replace the existing three-span bridges with three Con/Span culverts at Bridge No. 2 - over Woodyard Creek Overflow.*

- The Con/Span culvert alternative results in an increase in environmental impacts due to excavating for the strip footings in and around the Creek.
- The increase in environmental impacts will result in additional mitigation cost.
- The Con/Span cost used in the study does not include the costs for the foundation and the roadway section above the culvert.
- A more detailed cost estimate based on reasonable foundation assumptions reveals a three-span bridge costs less than three bottomless culverts. See cost comparison on next page.
- This alternative should be reevaluated after Bridge Foundation Investigations are completed.

(This alternative will not be implemented at this time).

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**Woodyard Creek Overflow Bridge / Con-Span Culvert Cost Comparison**

T-BEAM BRIDGE 90' X 88.42' ) - COST	CON-SPAN CULVERT ( 101' X 108' ) - COST
Bridge Area (ft <sup>2</sup> ) = 7958	<p style="text-align: right;">Culvert Units</p> Con-Span Units Costs (Obtained from VE Study) = \$247,500.00
Unit Cost (per ft <sup>2</sup> ) = \$80.00	<p style="text-align: right;">Foundation Concrete</p> (108' X 3' X 2.5') X 4 = 3240 cf = 120 cy Cubic Yards of Concrete Required = 120 Unit Cost (per yd <sup>3</sup> ) = \$764.00 Cost of Foundation Concrete = \$91,680.00
Cost for Bridge = \$636,640.00	<p style="text-align: right;">Piles</p> Average length of piles required = 50 lf Based on an estimate from Con/Span piles will be spaced at 4 feet. For a culvert 108 feet long with four strip footings 108 piles are required. Total length of piles required = 108 X 50 lf = 5400 lf Total length of piles required (linear feet) = 5400 16" X 16" PSC pile was assumed at a cost of \$52.50 / lf Unit Cost (per linear foot) = \$52.50 Cost of Piles = \$283,500.00
Markup (10%) = \$63,664.00	<p style="text-align: right;">Excavation</p> Volume of removal required (yd <sup>3</sup> ) = 96 Excavation costs per cubic yard = \$29.00 Cost of Excavation = \$2,784.00
<b>Total cost of T-Beam Bridge = \$700,304.00</b>	<p style="text-align: right;">Roadway</p> 1 1/2" Recycled Asph Conc 12.5 mm (66 Tons) \$4,342 2" Recycled Asph Conc 19 mm (88 Tons) \$5,562 3" Recycled Asph Conc 25 mm (133 Tons) \$8,511 8" Graded Aggregate Base Course (853 SY) \$12,650 Curb & Gutter (6 in X 30 in) (202 LF) \$4,181 Sidewalk 4 in (5 ft width) (112 SY) \$3,771 Cost of Roadway = \$39,017.68
	<p style="text-align: right;">Guardrail</p> Linear feet of guardrail required = 202 Unit cost per linear foot = \$17.00 Cost of Guardrail = \$3,434.00
	Basic cost for Con-Span Culvert = \$667,915.68
	<p style="text-align: right;">Mitigation Costs</p> (One footing in stream) Stream Impacts: 108' X \$270/ft= \$29,160.00 (Three footings in wetlands) 108' X 17.5' X 3=5670 SF 5670 SF = 0.13 acres => 0.13 ac X \$28,000/acre= \$3,640.00
	Markup (10%) = \$70,071.57
<b>Total cost of T-Beam Bridge = \$700,304.00</b>	<b>Total Cost of Con-Span Culvert = \$770,787.25</b>

***Value Engineering Alternative No. 8 – Use a one-way pair traffic system around and through Argyle.***

- This alternative was studied by GDOT Office of Environment and Location and resulted in more impacts to environmental resources and the town of Argyle than the proposed bypass.
- The proposed bypass was presented to the public at a PIOH and PHOH and approved by FHWA.
- There are historic resources on both sides of US 84 through Argyle, separated by 60 feet of existing ROW. Utilizing the Department's recommended one-way pair typical section would result in adverse impacts to at least one historic resource
- Most of the businesses in Argyle are along US 84 – utilizing the existing corridor would likely result in commercial displacements
- Splitting traffic into a one-way pair system for such a short distance through Argyle would not meet driver expectancy, increasing the likelihood of accidents
- The presence of the railroad dictates that any additional lanes for a one-way pair system would have to be built to the north of the existing railroad or require two grade-separated railroad crossings
- Building additional lanes to the north of the railroad but south of US 84 would result in several displacements, representing a significant fraction of the structures within Argyle
- Constructing new lanes just north of US 84 (close enough to existing US 84 to function as a one-way pair) would also result in several displacements representing a significant fraction of the structures within Argyle. Additionally, several side roads would have to be improved for connectivity & functionality, which would likely result in additional impacts to structures and historic properties
- Construction of additional lanes further north of US 84 in order to minimize property impacts would not meet driver expectancy. Additionally, several side roads would have to be improved for connectivity & functionality, which would likely result in additional impacts to structures and historic properties

(This alternative will not be implemented).

***Value Engineering Alternative No. 9 – Replace the existing three-span bridges with three Con/Span culverts at Bridge No.4 - over Peters Branch.***

- The Con/Span culvert alternative results in an increase in environmental impacts due to excavating for the strip footings in and around the Creek.
- The increase in environmental impacts will result in additional mitigation cost.
- The Con/Span cost used in the study does not include the costs for the foundation and the roadway section above the culvert.
- A more detailed cost estimate based on reasonable foundation assumptions reveals a three-span bridge costs less than three bottomless culverts. See cost comparison on next page.
- This alternative should be reevaluated after Bridge Foundation Investigations are completed.

(This alternative will not be implemented at this time).

***Value Engineering Alternative No. 10 – Relocate the beginning of the Argyle west bypass.***

- This alternative was studied by GDOT Office of Environment and Location and resulted in more impacts to environmental resources and the town of Argyle than the proposed bypass.

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- The proposed bypass was presented to the public at a PIOH and PHOH and approved by FHWA.
- Relocating the beginning of the Argyle north bypass further east would result in undesirable geometry ("broken back" curve), particularly for a 65 mph designed roadway in this area of the state. There are very few sharp curves on existing state routes in this area; introducing back-to-back sharp curves would not meet driver expectancy.
- Relocating the beginning of the Argyle north bypass further east would also result in additional property impacts and displacements.

(This alternative will not be implemented).

***Value Engineering Alternative No. 11 – Do not bypass Argyle.***

- This alternative was studied by GDOT Office of Environment and Location and resulted in more impacts to environmental resources and the town of Argyle than the proposed bypass.
- The proposed bypass was presented to the public at a PIOH and PHOH and approved by FHWA.
- The draft EA incorrectly documented the history resources along US 84 in Argyle. However, the history report that received SHPO concurrence identifies several historic properties along US 84 in Argyle.
- The Argyle bypass is needed to avoid impacts to historical structures situated along the north and south side of U.S. 84 within the city limits of Argyle.
- There is not enough existing right-of-way (only 60 feet) to widen US 84 through Argyle without adversely affecting historic structures located on both sides of US 84 within Argyle. Adversely affecting historic resources when there are "prudent and feasible" alternatives would jeopardize our ability to utilize federal funding for the project corridor from Homerville to Waycross.

(This alternative will not be implemented).

***Value Engineering Alternative No. 12 – Eliminate one intermediate bent from each bridge at Bridge No. 5 - US 84/SR 38 over Box Creek.***

- This alternative suggests four spans of T-beams at 37.5 ft.
- GDOT Bridge Office guidance is to design T-beam spans at 30 ft or 40 ft.
- We recommend four-spans with (3) 40 ft. T-beam spans and (1) 30 ft. T-beam spans instead of the alternate four-span (37.5 ft. each) T-beams. This layout still eliminates 1 intermediate bent and results in a cost saving from the original design.

(This alternative will be partially implemented)

***Value Engineering Alternative No. 13 – Replace the existing three-span bridges with three Con/Span culverts at Bridge No.6 - over Little Suwanee Creek.***

- The Con/Span culvert alternative results in an increase in environmental impacts due to excavating for the strip footings in and around the Creek.
- The increase in environmental impacts will result in additional mitigation cost.
- The Con/Span cost used in the study does not include the costs for the foundation and the roadway section above the culvert.

- A more detailed cost estimate based on reasonable foundation assumptions reveals a three-span bridge costs less than three bottomless culverts. See cost comparison on page 3.
- This alternative should be reevaluated after Bridge Foundation Investigations are completed.

(This alternative will not be implemented at this time).

***Value Engineering Alternative No. 14 – Eliminate two intermediate bents at Bridge No. 7 - US 84/SR 38 over Suwanee Creek.***

- This alternative results in increased construction costs.
- The Study states “duration of construction will be reduced”.
- The Study states “contractors prefer Type I modified PSC beams”.
- GDOT Bridge Office guidance is to design T-beam spans at 30 ft or 40 ft and allow the contractors to decide whether T-beams spans or Type I modified PSC beams cost less.
- We recommend six-spans with (3) 40 ft. T-beam spans and (3) 30 ft. T-beam spans instead of the alternative 5-span (42 ft. each) PSC beams (Type I modified). This layout eliminates 1 intermediate bent, results in a cost saving from the original design, and allows the contractor to determine lowest cost beam type.

(This alternative will be partially implemented)

***Value Engineering Alternative No. 15 – Use 14-ft flush urban median prior to County Road 9/Peagler Crossing.***

(This alternative will be implemented)

***Value Engineering Alternative No. 16 – Continue 55 mph zone and 14-ft flush median to Greasy Branch Creek.***

- This alternative results in increased construction costs.
- The Study states “The 14 ft. median would provide more accessibility to local residents”.

(This alternative will be implemented)

***Value Engineering Alternative No. 17, 18, & 19 – Eliminate the intersections at CR 24/Cherry Road, CR 26/Mills Street and CR 517/Hoke Street.***

- This alternative is presented as a Design Suggestion and notes initial cost increases.
- This alternative would place additional burdens on the other existing minor roadways in Manor and would reduce accessibility around town.
- The local road intersections have low traffic volumes. Eliminating the intersections would concentrate all traffic to one intersection possibly requiring left and right turn lanes and signalization.
- There is no evidence of safety or traffic flow issues in the town of Manor and there are no anticipated safety or traffic flow issues with the proposed design.

(This alternative will not be implemented).

***Value Engineering Alternative No. 21 – Provide sidewalks on only one side of mainline in urban sections.***

- Implementing this alternative in Homerville is feasible since railroad right of way exists on the south side of US 84 and access is not needed.
- Sidewalks exist on both sides of US 84 in Manor. Homes and businesses exist on both sides of US 84 in Manor. This alternative reduces pedestrian access through town and will adversely affect business and residences in the area.
- Eliminating sidewalks in Manor on the south side would not receive local support. The public has reviewed the proposed project at a PIOH and PHOH.

Implement removal of sidewalk on the south side of US 84 in Homerville only and refer to Value Engineering Alternative No. 25.

(This alternative will be partially implemented) (See Value Engineering Alternative No. 25)

***Value Engineering Alternative No. 23 – Provide multi-use path on only one side of mainline throughout the project limit in the urban areas.***

- The single 10 ft. wide multi-use path in urban areas requires bicycle traffic to cross the mainline at the rural shoulder section, which the VE Study identifies as being a slight reduction in safety.
- Implementing this alternative in Homerville is feasible since railroad right of way exists on the south side of US 84 and access is not needed.
- Sidewalks exist on both sides of US 84 in Manor. Homes and businesses exist on both sides of US 84 in Manor. This alternative reduces pedestrian access through town and will adversely affect business and residences in the area.
- Eliminating sidewalks on the south side would not receive local support. The public has reviewed the proposed project at a PIOH and PHOH.

Implement removal of sidewalk on the south side of US 84 in Homerville, add multi-use path on north side of US 84, and retain proposed sidewalk on the south side of US 84 in Manor. Refer to Value Engineering Alternative No. 25.

(This alternative will be partially implemented) (See Value Engineering Alternative No. 25)

***Value Engineering Alternative No. 24 – Use 6-in x 24-in curb and gutter instead of 6-in x 30-in units.***

- This alternative is presented as a Design Suggestion.
- The Alternative discussion states the 24-in curb and gutter will reduce overall costs.
- The current proposed 30-in curb and gutter is GDOT standard width and is specified in the GDOT Design Policy Manual.

(This alternative will not be implemented)

***Value Engineering Alternative No. 25*** – *Provide a multi-use path on one side of mainline and sidewalks on the other side in the urban areas.*

- The single 10 ft. wide multi-use path in urban areas requires bicycle traffic to cross the mainline at the rural shoulder section, which the VE Study identifies as being a slight reduction in safety.
- Partially implementing this alternative in Homerville is feasible since railroad right of way exists on the south side of US 84 and access is not needed. Sidewalks will not be included on the south side of US 84. Implement this alternative except remove the proposed sidewalk on the south side of US 84 in Homerville.

(This alternative will be partially implemented) (See Value Engineering Alternative No. 21 & 23)

***Value Engineering Alternative No. 26*** – *Prepare shoulders for sidewalks but do not place the concrete.*

- Eliminating pedestrian facilities entirely is contrary to GDOT Policy.
- Not providing sidewalks on urban shoulders is contrary to GDOT Policy.
- Partially implementing this alternative in Homerville is feasible since railroad right of way exists on the south side of US 84 and access is not needed. A Design Variance will be needed.
- In Manor, there are existing sidewalks on both sides of US 84 therefore this alternative reduces pedestrian access through town and could adversely affect business and residences in the area.

(This alternative will partially be implemented).

***Value Engineering Alternative No. 27*** – *Use 14-ft. flush median throughout (includes Alternative Nos. 6 and 7).*

- This alternative results in a cost increase.
- The GDOT Design Policy for GRIP (Governor's Road Improvement Program) corridor projects with design speeds greater than 50 mph stipulate a 44 foot depressed median is required. However due to environmental impacts the 44 foot depressed median is reduced to a 32 foot depressed median. This is based on an agreement that the Department has with the Corps of Engineers that if more than half a mile in any mile has wetlands a 32 foot median shall be used to reduce impacts.

(This alternative will not be implemented).

***Value Engineering Alternative No. 28*** – *Minimize right-of-way.*

- This alternative request that the right of way be minimized by acquiring right of way up to the shoulder break point and acquiring permanent easements for the cut and fill areas.
- The GDOT Design Policy Manual stipulates setting right of way to accommodate construction, utilities, drainage, and highway maintenance. The policy does not allow for use of permanent easement for construction and maintenance of slopes.
- The general rule is to set right of way 7 ft. to 15 ft. beyond construction limits in rural areas.
- The right of way in the urban areas can be reduced and easement for the construction of slopes (temporary) will be used.

(This alternative will be partially implemented).

*Value Engineering Alternative No. 30 – Eliminate two intermediate bents at Bridge No. 3 – US 84/SR 38 over Cane Creek.*

- This alternative results in increased construction costs.
- The Study states “duration of construction will be reduced”.
- The Study states “contractors prefer Type I modified PSC beams”.
- GDOT Bridge Office guidance is to design T-beam spans at 30 ft or 40 ft and allow the contractors to decide whether T-beams spans or Type I modified PSC beams cost less.
- We recommend six 40 ft. T-beam spans instead of the alternate six-spans of (40 ft. each) PSC beams (Type I modified). This layout eliminates 2 intermediate bent. results in a cost saving from the original design, and allows the contractor to determine lowest cost beam type.

(This alternative will be partially implemented)

*Value Engineering Alternative No. 31 – Use 4-in.-thick sidewalks verses 6-in.-sidewalks.*

(This alternative will be implemented)

# Heath & Lineback Engineers

## VALUE ENGINEERS ALTERNATIVE COST SAVINGS SUMMARY

VE Alternative No. 2 (Partial Implementation)	\$ 7,500
VE Alternative No. 12 (Partial Implementation)	\$ 8,600
VE Alternative No. 14 (Partial Implementation)	\$ 8,500
VE Alternative No. 15	\$ 188,223
VE Alternative No. 16	(\$ 93,899)
VE Alternative No. 21 (Partial Implementation)	\$ 45,000
VE Alternative No. 23 (Partial Implementation)	\$ 45,000
VE Alternative No. 25 (Partial Implementation)	\$2,835,229
VE Alternative No. 26 (Partial Implementation)	(incl. above)
VE Alternative No. 28 (Partial Implementation)	\$ 100,000 (ROW)
VE Alternative No. 30 (Partial Implementation)	\$ 17,256
VE Alternative No. 31 (Partial Implementation)	<u>\$ 111,812</u>
	\$3,174,221
Constr Savings	\$3,074,221
ROW Savings	<u>\$ 100,000</u>
Total Savings	\$3,174,221

Savings Represents 5.7% of Constr/ROW