

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: STP-2387(4) & CSNHS-0007-00(421) McIntosh **OFFICE:** Engineering Services
P. I. Nos.: 542070 & 0007421
I-95/S.R. 251 Interchange and S.R. 251 Widening/Reconstruction

DATE: May 15, 2008

FROM: Brian Summers, P.E., Project Review Engineer *RCW*

TO: Brent Story, P.E. State Road and Airport Design Engineer

SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES

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

ALT No.	Description	Savings PW & LCC	Implement	Comments
CSNHS-0007-00(421) McIntosh				
BRIDGE (BR)				
BR-1	Use a 10' flush shoulder for bike and pedestrian traffic	\$20,654	No	There would be no continuity from the roadway typical section with sidewalk to the bridge typical section without a sidewalk.
BR-3	Use a 14' center turn lane with no separation	\$816,920	No	Since there would be back to back left turn lanes on the bridge, this would not adequately provide enough storage capacity for the high volumes of trucks during seasonal peak periods around the Outlet Mall. Would only allow for two trucks in the storage portion of the left turn lane and part of a truck in the taper portion of the left turn lane.

ALT No.	Description	Savings PW & LCC	Implement	Comments
BRIDGE (BR) - continued				
BR-4	Reduce distance to end bents to 20' and use pier protection and guardrails	\$259,936	No	This would place the end bents within the clear zone and would require guardrail protection. In addition, this would not match the typical sections on all other bridges crossing over I-95 on this corridor.
BR-5	Use MSE Walled Abutments	\$904,813	No	Based on updated costs for MSE Walls, the revised cost of the MSE Wall along with the re-design costs would result in a \$62,000 savings.
BR-9	Reduce end spans to 40'	\$469,138	No	The 60' end spans proposed are the shortest spans that can be used to keep the 2:1 maximum slope that was recommended in the Soil Survey.
WALLS (WL)				
WL-2	Use modular block walls in lieu of gravity walls	\$148,465	No	The North Wall will probably be eliminated based on another VE Alternative. This particular type wall is not approved for use with a parapet and a sidewalk. Based on an estimate of \$50/SF to modify the wall for a parapet and a sidewalk, the costs would essentially be the same for the Modular Block Wall and the Gravity Wall.
WL-3	Use tree pits in lieu of gravity wall for tree protection	Design Suggestion	No	This is not recommended since the long term survival of the oak trees is the primary goal.
ROADWAY (RD)				
RD-1	Use Asphaltic Concrete in lieu of Concrete Pavement	\$2,393,600	No	Based on recommendations from the Pavement Design Committee, Rigid Concrete Pavement is proposed. Additionally, a Life Cycle Cost Analysis (LCCA) was done that supports the use of Rigid Concrete.

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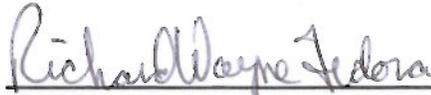
ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD) - continued				
RD-4	Relocate new Mall Entrance	\$7,012,500	No	Based on more accurate Right of Way costs from the GDOT R/W Office the savings would be \$868,000 however, there have been numerous negotiations with the mall owners to come to the design as shown and the current configuration was shown at the PIOH on January 2008.
RD-7	Use a Raised Median section east of I-95	\$128,041	No	The raised median was opposed by McIntosh County officials and citizens and the Department agreed to limit the raised median lengths to just the interchange area and to use a five lane section elsewhere.
RD-9	Use a 12' shoulder in all urban sections	\$687,744 (proposed) \$343,872 (actual)	Yes/partial	A 12' shoulder will be utilized on the North side of S.R. 251 and a 16' shoulder will be utilized on the South side of S.R. 251 to better accommodate McIntosh County's desire for bicycle accommodations.
RD-11	Modify control radii on entrance ramps	Design Suggestion	Yes	This should be done.
RD-12	Reduce GAB thickness for Concrete Pavement	\$157,297	No	The Office of Materials and Research Pavement Design Section recommends 12" GAB be used on this project.
STP-2387(4) McIntosh				
RD-21	Delete the Bike Lanes	\$750,354	No	This does not apply since RD-23 will be implemented.
RD-22	Use Divided Median section west of I-95	\$5,580	No	The Department agreed to limit the raised median lengths to just the interchange area and to use a five lane section elsewhere.
RD-23	Use multi-use trails	\$241,674	Yes	A multi-use trail will be used on the South side of S.R. 251 to U.S. 17.

ALT No.	Description	Savings PW & LCC	Implement	Comments
ROADWAY (RD) - continued				
RD-24	Use 12' shoulders in all urban sections	\$1,465,408 (proposed) \$732,704 (actual)	Yes/partial	A 12' shoulder will be utilized on the North side of S.R. 251 and a 16' shoulder will be utilized on the South side of S.R. 251 to better accommodate McIntosh County's desire for bicycle accommodations.
RD-26	Use a single cell precast CONSPAN in lieu of box culvert at Horse Creek	\$132,483	No	Based on a more detailed cost estimate the CONSPAN structure will actually cost more than extending the existing culvert.

A meeting was held on April 4, 2008 to discuss the above recommendations. Carlos Figueroa with the Federal Highway Administration, Alan Rainer and Brad Gowan with the LPA Group, Brent Story, Jim Simpson, Matt Sanders, and Jack Grant with Road Design and Brian Summers, Ron Wishon and Lisa Myers with Engineering Services were in attendance.

Additional information was provided by the Project Manager on May 15, 2008.

Approved:  Date: 5/17/08
Gerald M. Ross, P. E., Chief Engineer

Approved:  Date: 6/30/2008
for Rodney Barry, P.E., FHWA Division Administrator

BKS/REW

Attachments

c: R. Wayne Fedora
Carlos Figueroa

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Todd Long
James Magnus
Brian Czech
Jim Simpson
Matt Sanders
Jack Grant
Paul Liles
Bill Ingalsbe
Bill Duvall
Jennifer Harris-Dunham
Phillip Alimia
Shonnell Gibbs
Lisa Myers



Preconstruction Status Report By PI Number

Print Date: 05/15/2008

PROJ ID	COUNTY	DESCRIPTION	MGMT. ROW DATE	SCHED DATE	MGMT. LET DATE
542070-	McIntosh	SR 251 FM CR 16/KING SWAMP RD TO SR 25/US 17 (INCL BRS)		Jun-11	

STP00-2387-00(004)	FIELD DIST: 5		Phase	Approved	Proposed	Cost	Fund	Status
TIP #:	TWIN:	US:	PE	2000	2000	1,307,606.74	Q25	AUTHORIZED
MPO: Not Urban		EST DATE: 4/5/2007	ROW	LR	LR	16,329,000.00	L250	PRECST
MODEL YR:			CST	LR	LR	12,571,000.00	L250	PRECST
PROJ MGR: Sanders, Matt	PROJ LENGTH: 3.30							
PROG Reconstruction/Rehabili	TYPE Widening							
TYPE: tation	WORK:							
CONCEPT:	LET RESP: DOT							

SCHED START	SCHED FINISH	ACTIVITY	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
		Define Project Concept	9/4/2002	3/20/2007	100	TAS/PIM held
		Concept Meeting	9/5/2002	9/5/2002	100	1-7-03/3-30-05/Archeo problems;
		Concept Submittal and Review	5/28/2004	5/29/2004	100	local opposition to raised
		Receive Preconstruction Concept Approval	6/1/2004	6/15/2004	100	median/2-12-07/Env doc is tied to
		Management Concept Approval Complete	6/15/2004	7/13/2004	100	SR 251 and I-95 Interchange
		Revise or Re-validate Approved Concept	10/25/2006	4/5/2007	100	project (PI
5/28/2008	6/3/2008	Value Engineering Study	7/13/2007		97	0007421)/2-22-08/PIOH held
		Public Information Open House Held	1/7/2003	1/7/2003	100	1-29-08
5/23/2008	11/6/2008	Environmental Approval	8/4/2004		89	
		Public Hearing Held	1/29/2008	1/29/2008	100	
		Mapping	4/1/2002	4/19/2002	100	
		Field Surveys/SDE	2/15/2006	9/15/2006	100	
5/22/2008	5/22/2008	Preliminary Plans	8/8/2006		100	
5/23/2008	7/24/2008	Preliminary Bridge Design			0	
5/23/2008	6/27/2008	Underground Storage Tanks			0	
8/15/2008	1/1/2009	404 Permit Obtainment			0	
11/28/2008	12/1/2008	PFPR Inspection			0	
1/6/2009	3/30/2009	R/W Plans Preparation			0	
5/26/2009	5/29/2009	R/W Plans Final Approval			0	
1/6/2009	1/8/2009	L & D Report Development and Approval			0	
6/1/2009	4/11/2011	R/W Acquisition			0	
10/22/2009	11/4/2009	Stake R/W			0	
1/6/2009	1/15/2009	Soil Survey			0	
1/6/2009	2/10/2009	Bridge Foundation Investigation			0	
1/9/2009	9/18/2009	Final Design			0	
3/11/2009	5/5/2009	Final Bridge Plans Preparation			0	
10/12/2009	10/13/2009	FFPR Inspection			0	
10/27/2009	11/9/2009	FFPR Response			0	

BIKE PROVISIONS INCLUDED?: Y **MEASUREMENT SYSTEM:** E **CONSULTANT:** C **UT EST:** \$ 0.00

PDD: [01R] HUMPBACK BR OVER I-95. Mall opposes median. 9/30/03. Mall now in inter. 7/27/04.
Bridge: BRIDGE REQUIRED
Design: JRG:LPA Needs ENV APPROVAL (May 2008)
EIS: EA|NotApvd|OnSchedROW|121207|Alimia
LGPA: NOTIFICATION NEEDED
Planning: Proj Terminates @ SBR 95 & Bicycle facilities recommended by US Title 23 Section 17-e (provided federal funds are spent)
Programming: #1 8-05#2 8-06#3 11-07
Traffic Op: >CCB: SEND PLANS FOR REVIEW 12-13-07
Utility: SUE Request received 08/22/02 - OCD
EMG: RECST/REHAB;FULL FIELD SURVEY WITH PI#511110/I-95;S=LONG ENG

R/W INFORMATION:

PREL PARCEL CT: 40 **TOTAL PARCEL CT:** **ACQUIRED BY:** DOT **ACQ MGR:**
UNDER-REVIEW CT: **RELEASED CT:** **OPT-PEND CT:** **DEEDS CT:** **COND-PEND CT:** **COND-FILED CT:**
RWCERT DT: **ACQUIRED CT:** **RELOCATION CT:**



Preconstruction Status Report By PI Number

Print Date: 05/15/2008

PROJ ID	COUNTY	DESCRIPTION	MGMT. ROW DATE	SCHED DATE	MGMT. LET DATE
0007421	McIntosh	I-95 @ SR 251/BRIARDAM ROAD	Aug-09	Nov-10	Aug-10

CSNHS-0007-00(421) **FIELD DIST:** 5
TIP #: **TWIN:** **US:** I-95
MPO: Not Urban **EST DATE:** 11/15/2007
MODEL YR:
PROJ MGR: Sanders, Matt **PROJ LENGTH:** 0.40
PROG: Reconstruction/Rehabili **TYPE:** Interchange
TYPE: tation **WORK:**
CONCEPT: BRIDGE REPLMT **LET RESP:** DOT Congressional 1

SCHED START	SCHED FINISH	ACTIVITY	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
		Define Project Concept	5/15/2004	5/29/2007	100	TAS/9-26-05/15-20 ROW parcels; Archeo & Hist needed/2-13-06/LPA is revising concept/2-12-07/Env doc is tied to SR 251 widening project (PI 542070-y/12-6-07/PFPR 12-11-07; PIOH held 1-29-08
		Concept Meeting	9/5/2002	9/5/2002	100	
		Concept Submittal and Review	5/28/2004	5/29/2004	100	
		Receive Preconstruction Concept Approval	6/1/2004	6/15/2004	100	
		Management Concept Approval Complete	6/15/2004	7/13/2004	100	
		Revise or Re-validate Approved Concept	10/24/2006	4/5/2007	100	
5/28/2008	6/3/2008	Value Engineering Study	7/13/2007		97	
		Public Information Open House Held	1/29/2008	1/29/2008	100	
5/23/2008	11/6/2008	Environmental Approval			0	
		Public Hearing Held	1/29/2008	1/29/2008	100	
		Mapping	4/1/2002	4/19/2002	100	
		Field Surveys/SDE	8/11/2006	9/15/2006	100	
		Preliminary Plans	8/30/2006	11/8/2007	100	
		Preliminary Bridge Design	8/26/2007	9/13/2007	100	
5/23/2008	6/27/2008	Underground Storage Tanks			0	
5/23/2008	8/7/2008	404 Permit Obtainment			0	
		PFPR Inspection	12/11/2007	12/11/2007	100	
6/20/2008	9/11/2008	R/W Plans Preparation			0	
11/7/2008	11/12/2008	R/W Plans Final Approval			0	
		L & D Report Development and Approval	4/5/2007	4/5/2007	100	
11/13/2008	9/15/2010	R/W Acquisition			0	
4/7/2009	4/20/2009	Stake R/W			0	
		Soil Survey	9/27/2007	11/21/2007	100	
6/20/2008	7/25/2008	Bridge Foundation Investigation			0	
6/20/2008	4/23/2009	Final Design			0	
6/18/2008	12/2/2008	Final Bridge Plans Preparation			0	
5/15/2009	5/18/2009	FFPR Inspection			0	
6/1/2009	6/12/2009	FFPR Response			0	

BIKE PROVISIONS INCLUDED?: N **MEASUREMENT SYSTEM:** **CONSULTANT:** C **UT EST:**
Bridge: LAIII 01/02/08 - CONSUL - LPA
Design: JRG:LPA- Waiting on ENV Approval (May 2008)
EIS: CE| NotApvd| OnSchedROW| 04.22.08| Alimia
LGPA: NOTIFICATION LETTER SENT TO MCINTOSH 10-5-05.
Traffic Op: SEND PLNS FOR REVIEW 12-13-07 \$?!PFPR sent 11/26/07 R/W
Utility: Need 2nd submission plans for utility owners 1-14-08
EMG: RECST/REHAB (INTERCHANGE); C=M/S/D

R/W INFORMATION:
PREL PARCEL CT: 20 **TOTAL PARCEL CT:** **ACQUIRED BY:** DOT **ACQ MGR:**
UNDER-REVIEW CT: **RELEASED CT:** **OPT-PEND CT:** **DEEDS CT:** **COND-PEND CT:** **COND-FILED CT:**
RW CERT DT: **ACQUIRED CT:** **RELOCATION CT:**

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA



INTERDEPARTMENT CORRESPONDENCE

FILE STP00-2387-00(0004), CSNHS-0007-00(421)
PI # 542070, 0007421
McIntosh County

OFFICE Road Design

DATE May 15, 2008

FROM 
Brent A. Story, P.E., State Road and Airport Design Engineer

TO Brian Summers, P.E., Project Review Engineer

SUBJECT **Value Engineering Study – Responses to recommendations**

➤ **BR-1 Use 10' flush shoulder for bike and pedestrian traffic**

- This alternative is inconsistent with bridge design procedures and causes drainage and construction problems transitioning from the roadway typical on both ends to a totally different bridge typical. Additionally, roadway water would sheet across a flush shoulder that a pedestrian would have to walk thru and allows for no discontinuity to alert a visually impaired pedestrian that they are veering into traffic. A raised sidewalk allows the visually impaired to discern a “drop-off” therefore keeping them on the sidewalk and also allows a path to cross the bridge that is not carrying roadway water during a rainfall.

○ *Road Design does not recommend implementation of this alternative.*

➤ **BR-3 Use 14' center turn lane with no separation**

- At this interchange there is a truck stop in the northwest quadrant which contributes to a high truck volume at this interchange and a 14-ft center lane does not provide sufficient storage lengths for these longer vehicles or for the increased volumes found during the seasonal peak periods around the outlet mall. A shared lane will accommodate only two trucks in each direction in the storage portion and a partial vehicle in each direction in the deceleration portion of this lane. Additionally, GDOT Design Policy requires that all rural multi-lane roads interchanging with an interstate highway shall have positive separation from opposing traffic for a minimum distance of 1000-ft from the ramp terminal. The raised median reduces conflict points which reduce accidents.

○ *Road Design does not recommend implementation of this alternative.*

➤ **BR-4 Reduce distance to end points to 20' and use pier protection and guard rails**

- The Bridge Office states that the bridge cannot be changed without changing the typical section. The typical section used here is being used on all of the other projects in McIntosh and Glynn County having bridges crossing I-95. It is our desire to be consistent in the typical section that will be used throughout this section of I-95. Road Design agrees and also feels that it is undesirable to reduce the clear zone to 24-ft, reduce the ditch depth to 1-ft, and put columns in the ditch bottom. Road Design also feels that it is undesirable to place columns of a new bridge within the clear zone and then add protection which is technically a hazard as well to protect the columns.

○ *Bridge Design as well as Road Design does not recommend implementation of this alternative.*

➤ **BR-5 Use MSE walled abutments**

- Savings shown to GDOT by using MSE Walls would be negated once the cost paid to the consultant to revise the plans is included in the cost estimate for switching to the MSE walls. Eliminating the ditch and placing a wall at the edge of clear zone will increase span lengths by ±3ft. This will create problems with beam design and drainage. Retaining the ditch and placing wall at back side of ditch will increase span ±8ft, requiring steel or non-standard beam. There is also some question about the cost of additional backfill required with MSE Abutment Walls. Recent bid cost of the additional backfill that is required with MSE Abutment Walls has been as high as \$250.00 per CY. The attached estimate uses \$50.00 per CY.

○ *Bridge Design does not recommend implementation of this alternative.*

➤ **BR-9 'Reduce end spans to 40'**

- 60-ft end spans are required to accommodate endrolls. If end spans were reduced to 40-ft the endroll slope would be 1.5:1. Soil Survey recommends 2:1 as maximum slope.

○ *Bridge Design does not recommend implementation of this alternative.*

➤ **WL-2 Use modular block walls in lieu of gravity walls**

- North wall height assumed is incorrect, actual height is ±3ft. VE Team assumed 15-ft tall wall. Also once 4-ft bike lane is removed and shoulder is reduced to 1-ft the north wall can probably be eliminated.
- South wall - GDOT Bridge office requires that tip-slab be used at top of all MSE type walls adjacent to traffic. This would significantly increase modular block wall costs. The suggested Modular Block Wall is not approved for use with a parapet and sidewalk.
- Additionally, manufacturers estimated wall cost generally not adequate justification for wall type selection. GDOT bridge office estimates that cost of modular block wall built to GDOT standards with tip slab/parapet wall would cost approximately \$50/SF.

○ *Bridge Design does not recommend implementation of this alternative.*

➤ **WL-3 Use tree pits (dry well) in lieu of gravity wall for tree protection**

- GDOT's Landscape Architect Manager stated that if our goal is long term survival of the oak trees, he did not recommend the dry well solution. He stated that the negatives were that the wells would have to be extremely large to cover the root systems, the construction equipment used to build the wells would possibly compact the root system, and a wall constructed for the actual well would cause further damage and the pipes used for air circulation would require regular maintenance. The advantage of the wall he stated is that it is approximately 25-ft away from the tree trunks and would affect only one side of the tree. By restricting the crews from driving heavy equipment over the roots the wall could be constructed with minimal damage to the trees.

○ *Road Design does not recommend implementation of this alternative.*

➤ **RD-1 Use asphaltic concrete in lieu of concrete**

- A rigid pavement design was done for the ramps at this interchange using the latest traffic numbers. Additionally, the lab made the determination that the same pavement structure should be used on the mainline of SR 251 at this interchange as well since the grade was being raised and full depth replacement was necessary. With such extensive work being done in replacing the bridge, the pavement design committee recommends reconstructing between the ramps in concrete to facilitate long term reduction in maintenance cost. Finally, a Life Cycle Cost Analysis was completed on May 13, 2008, that also supports the use of rigid pavement at this interchange (see LCCA attachment).

○ *Road Design does not recommend implementation of this alternative.*

➤ **RD-4 Relocate new mall entrance**

- While this would be the new entrance to the mall it is really a service road to other businesses as well. After looking at the cost in the VE study for acquiring this property the VE report was sent to our Right of Way Office as they were asked to reevaluate this parcel. Using the same percentages used by the VE study our R/W personnel reported a cost of \$868,000 which is significantly less than the unrealistic \$7,000,000 estimate of the VE team. We had worked with previous mall owners to arrive at a compromise for the new mall entrance that everyone was amenable to. At the PIOH in January 2008 we discussed the current entrance with the new mall owners as well as their thought to moving it further down as recommended by the VE team. Their comment was that they were happy where we currently have it but would be adamantly opposed should we attempt to move it further away from the interchange. Additionally, the service road as proposed moves the entrance 300-ft as compared to 1200-ft that the VE study proposes. By moving this longer distance, the department quite possibly will be asked to pay access damages by the businesses depending on access via the service road which could exceed the cost of acquiring the Huddle House business.

○ *Road Design does not recommend implementation of this alternative.*

- **RD-7 Use a raised median section east of I-95**
 - The raised median has been opposed by McIntosh County and its citizens since it was introduced to them. There have been several resolutions sent by the County to the Commissioner asking that the raised medians be removed on this roadway. Mr. Gratton, while Director of Preconstruction at the time, responded to these resolution by reducing the raised median lengths at the interchange to a minimum and directed us to remove the raised median outside of this area and construct a five lane section with a two-way-left-turn-lane.
 - *Road Design does not recommend implementation of this alternative.*

- **RD-9 Use a 12' shoulder in all urban sections**
 - *Road Design recommends partial implementation of this alternative. See alternative RD-23*

- **RD-11 Modify control radii on entrance ramps**
 - Outside radii will be designed using Auto Turn to verify that the radii will accommodate WB 50's design vehicles. The inside radii will be designed using Auto Turn and reduced in radii where the radii is not controlled by the turning vehicles.
 - *Road Design recommends implementation of this alternative.*

- **RD-12 Reduce GAB thickness for concrete pavement**
 - The statement from the VE report that a "generic" pavement design was done for the ramps is incorrect. A rigid pavement design was done for the ramps at this interchange using the latest traffic numbers. Additionally, the lab made the determination that the same pavement structure should be used on the mainline of SR 251 at this interchange as well since the grade was being raised and full depth replacement was necessary. With such extensive work being done in replacing the bridge, the pavement design committee recommends reconstructing between the ramps in concrete to facilitate long term reduction in maintenance cost.
 - *Road Design does not recommend implementation of this alternative.*

- **RD-21 Delete the bike lanes**
 - Bike accommodations were requested by McIntosh County during concept phase and were added to the concept and the plans. Since that time we have held a PIM and a PIOH representing bike lanes on the displays to the public. Road Design recommends adopting VE recommendation RD-23, switching the bike lanes to the joint use trails. This alternative allows the connectivity that the county is seeking between the outlet mall and Bike route #95-Coastal which follows US 17 through the city of Darien.
 - *Road Design does not recommend implementation of this alternative but recommends acceptance of RD-23 in its place.*

- **RD-22 Use divided median section west of I-95**
 - The raised median has been opposed by the McIntosh County and its citizens since it was introduced to them in the concept phase of this project. There have been several resolutions sent by the County to the Commissioner asking that the raised medians be removed on this roadway. Mr. Gratton while Director of Preconstruction, responded June 15, 2005 to these resolutions by reducing the raised median lengths at the interchange to a minimum and directed us to replace the remaining raised median on this project and construct a five lane section with a two-way-left-turn-lane.
 - *Road Design does not recommend implementation of this alternative.*
- **RD-23 Use multi-use trails**
 - Road Design agrees that this recommendation best satisfies McIntosh County's desire for bicycle accommodations and yet reduces the cost by reducing the overall pavement width. A 16-ft shoulder would be used to accommodate the multi-use trail on the south side of SR 251 and a 12-ft shoulder would be utilized on the North side.
 - *Road Design recommends implementation of this alternative.*
- **RD-24 Use 12' shoulders in all urban sections**
 - This is a repeat of alternative **RD-9**.
 - *Road Design recommends partial implementation of this alternative. See Alt. RD-23*
- **RD-26 Use single cell precast CONSPAN in lieu of box culvert at Horse Creek**
 - Researching past bid cost for a CONSPAN structure let in Georgia showed a unit cost of \$142.00 per sq. ft. This translates to an approximate cost of \$755,440.00 for the CONSPAN structure compared to the VE study estimate of \$237,500.00. Additionally, the design consultant has recalculated the cost for removing both wing walls and parapets, extending the culvert on both sides, and adding new wing walls and parapets and comes up with a cost of \$158,000.00 in comparison to the unrealistic VE team cost estimate of \$357,938.83.
 - *Road Design as well as Bridge design does not recommend implementation of this alternative.*

The Implementation Team recommends a combination of partial changes that would address RD-21, RD-22, RD-23 and RD 24 as outlined above. Implementation of these changes would result in a combined savings of \$1,477,841.00 (see attachment).

JJS/MJS/JRG

Attachments

cc: Paul Liles



COST WORKSHEET

PROJECT: Georgia Department of Transportation
 CSNHS-0007-00(421) - P.I. No. 0007421
 I-95 and SR 251 Interchange - McIntosh County

ALTERNATIVE NO.: BR-5

DESCRIPTION: USE MSE WALLED ABUTMENTS

SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Bridge	SF	12770 ¹³¹	\$ 100.00	\$1,277,040.00 ²¹³¹⁹⁰	0	\$ 100.00	\$ -
Raised Median	SY	53	\$ 45.52	\$ 2,427.58 ⁹	0	\$ 45.52	\$ -
Type 7-C Concrete Side Barrier	LF	0	\$ 69.93	\$ -	576	\$ 69.93	\$ 40,279.68
MSE Wall	SF	0	\$ 54.59	\$ -	7632	\$ 54.59	\$ 416,630.88
Additional Bk MSE Bk Fill - C.Y.					1850	50.00	92500
SHORTING TOP WALL EA					2	130,000	260,000
Note: Reduction in Alternative is cost for Original Design							
$\frac{* 106.42 - (136.9)}{\sin 51^\circ} = (10') (18') 2 = 149,397 = (1986)$							
$\frac{1,219,130}{1,364,498}$							
ASSUME GDOT CONSULTANT COST TO CHANGE 35000							
SAVINGS \$ 162,171							
NOT RECOMMENDED							
Sub-total				\$ 1,279,468			\$ 1,159,410
Mark-up at 10.00%				\$ 127,947	121,315	\$ 48,691	
TOTAL				\$ 1,407,414	1,364,498	\$ 502,602	
Estimated Savings:							\$904,813

1275,351

Recommendation: Delete Bike Lane and Use 12' Shoulder on North Side of SR 251
***Exclusive of Bridge**

Cost Increases:

1. None incurred

Cost Savings:

1. Reduction in ASPHALT pavement width from Sta 117+40 to Sta 121+82
 $442 \text{ ft} \times 4 \text{ ft} = 1768 \text{ sf} = 196 \text{ sy}$
2. Reduction in CONCRETE pavement width from Sta 121+82 to Sta 130+27
 $845 \text{ ft} \times 4 \text{ ft} = 3380 \text{ sf} = 376 \text{ sy}$
3. Reduction in CONCRETE pavement width from Sta 134+95 to Sta 143+00
 $805 \text{ ft} \times 4 \text{ ft} = 3320 \text{ sf} = 358 \text{ sy}$
4. Reduction in ASPHALT pavement width from Sta 143+00 to Sta 151+12
 $812 \text{ ft} \times 4 \text{ ft} = 3248 \text{ sf} = 361 \text{ sy}$
5. Reduction in ASPHALT pavement width from Sta 151+12 to Sta 196+00
 $4488 \text{ ft} \times 7 \text{ ft} = 31416 \text{ sf} = 3490 \text{ sy}$
6. Reduction in embankment from Sta 117+40 to Sta 130+27
 $1287 \text{ ft} \times 8 \text{ ft} \times 1.5 \text{ ft} = 15444 \text{ cf} = 572 \text{ cy}$
7. Reduction in earthwork from Sta 134+95 to Sta 151+12
 $1617 \text{ ft} \times 8 \text{ ft} \times 1.5 \text{ ft} = 19404 \text{ cf} = 719 \text{ cy}$
8. Reduction in earthwork from Sta 151+12 to Sta 196+00
 $4488 \text{ ft} \times 11 \text{ ft} \times 1.5 \text{ ft} = 74052 \text{ cf} = 2743 \text{ cy}$
9. Reduction in R/W from Sta. 117+40 to 196+00
 $28074 \text{ sf} = 0.64 \text{ ac}$
10. Elimination of Gravity Walls
 $172 \text{ ft} \times 2 \text{ ft} \times 1 \text{ ft} = 344 \text{ cf} = 13 \text{ cy}$

Total Quantities:

12" GAB = 43000 cf (135 lb/cf)(1ton/2000lb) = 2900 tons x \$22/ton	=	\$63,900
Concrete Pavement = 734 sy x \$100/sy	=	\$73,400
Asphalt Pavement = 4047 sy x \$36/sy	=	\$145,692
Earthwork = 3462 cy x \$3.96/cy	=	\$13,709
R/W = 28704 sf x \$10/sf	=	\$287,000
R/W Scheduling = 55%	=	\$157,850
R/W Admin = 60%	=	\$172,200
R/W Inflation = 40%	=	\$114,800
Gravity Wall = 13 cy x \$408/cy	=	\$5,300

TOTAL SAVINGS = \$1,033,851

Recommendation: Delete Bike Lane and Use 10' Multi-Use Path on South Side of SR 251
***Exclusive of Bridge**

Cost Increases:

1. Increase in concrete sidewalk width from Sta 107+95 to 130+27
 $2232 \text{ ft} \times 5 \text{ ft} = 11160 \text{ sf} = 1240 \text{ sy}$
2. Increase in concrete sidewalk width from Sta 134+95 to 196+00
 $6105 \text{ ft} \times 5 \text{ ft} = 30525 \text{ sf} = 3392 \text{ sy}$

Cost Savings:

1. Reduction in ASPHALT pavement width from Sta 107+95 to Sta 121+82
 $442 \text{ ft} \times 4 \text{ ft} = 5548 \text{ sf} = 616 \text{ sy}$
2. Reduction in CONCRETE pavement width from Sta 121+82 to Sta 130+27
 $845 \text{ ft} \times 4 \text{ ft} = 3380 \text{ sf} = 376 \text{ sy}$
3. Reduction in CONCRETE pavement width from Sta 134+95 to Sta 143+00
 $805 \text{ ft} \times 4 \text{ ft} = 3320 \text{ sf} = 358 \text{ sy}$
4. Reduction in ASPHALT pavement width from Sta 143+00 to Sta 151+12
 $812 \text{ ft} \times 4 \text{ ft} = 3248 \text{ sf} = 361 \text{ sy}$
5. Reduction in ASPHALT pavement width from Sta 151+12 to Sta 196+00
 $4488 \text{ ft} \times 7 \text{ ft} = 31416 \text{ sf} = 3490 \text{ sy}$
6. Reduction in embankment from Sta 107+95 to Sta 130+27
 $2232 \text{ ft} \times 8 \text{ ft} \times 1.5 \text{ ft} = 13392 \text{ cf} = 496 \text{ cy}$
7. Reduction in earthwork from Sta 134+95 to Sta 151+12
 $1617 \text{ ft} \times 4 \text{ ft} \times 1.5 \text{ ft} = 9702 \text{ cf} = 360 \text{ cy}$
8. Reduction in earthwork from Sta 151+12 to Sta 196+00
 $4488 \text{ ft} \times 7 \text{ ft} \times 1.5 \text{ ft} = 31416 \text{ cf} = 1163 \text{ cy}$
9. Reduction in R/W from Sta. 117+40 to 196+00
 $10380 \text{ sf} = 0.24 \text{ ac}$

Total Quantities:

12" GAB = 47000 cf (135 lb/cf)(1ton/2000lb) = 3170 tons x \$22/ton	=	\$69,800
Concrete Pavement = 734 sy x \$100/sy	=	\$73,400
Asphalt Pavement = 4470 sy x \$36/sy	=	\$160,800
Earthwork = 1523 cy x \$3.96/cy	=	\$6,030
R/W = 10380 sf x \$10/sf	=	\$103,800
R/W Scheduling = 55%	=	\$57,090
R/W Admin = 60%	=	\$62,280
R/W Inflation = 40%	=	\$41,520
Concrete Sidewalk = 4632 sy x \$35/sy	=	<u>(\$162,120)</u>

TOTAL SAVINGS = \$412,600

Recommendation: Delete Bike Lanes, Add 10' Multi-Use Path and Concrete Barrier on Bridge

Cost Increases:

1. Aluminum Handrail from Sta 129+00 to Sta 137+00
332 lf
2. Type 7-C concrete side barrier from Sta 130+00 to Sta 136+00
600 lf

Cost Savings:

1. Reduction in overall width of bridge
2 ft x 468 ft = 936 sf

Total Quantities:

Bridge Width = 936 sf x \$100/sf	=	\$93,600
Handrail = 332 lf x 61/lf	=	(\$20,252)
Concrete Side Barrier = 600 lf x \$69.93/lf	=	(\$41,958)

TOTAL SAVINGS = \$31,390

GRAND TOTAL SAVINGS = \$1,477,841