

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

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**INTERDEPARTMENT CORRESPONDENCE**

**FILE:** P.I. No.: 0009542 DeKalb **OFFICE:** Engineering Services  
I-20 EB from I-285 to Panola Road  
CD System **DATE:** May 24, 2010

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

**TO:** Darryl D. VanMeter, PE, State Innovative Program Delivery Engineer  
Attn.: Marlow Clowers

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

The VE Study for the above project was held February 9-12, 2010. Responses were received on April 6, 2010. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

After reviewing the VE Study responses, FHWA had the following comment: Alternate AC-2 really impacts the resurfacing project, not this one. At this time, we cannot fully agree with the implementation because construction of this CD lane project is not on the TIP. If this project were to be added to the TIP, then we would support the implementation of this recommendation.

Please note that the response below satisfactorily addressed FHWA's comment.

ALT #	Description	Potential Savings/LCC	Implement	Comments
<b>ASPHALTIC CONCRETE (AC)</b>				
AC-1	Utilize a 10 ft outside shoulder in lieu of a 12 ft outside shoulder on collector distributor (CD) lanes	\$150,938	Yes	This will be done.
AC-2	Coordinate with planned maintenance resurfacing project (PI No. M003234)	\$1,219,988	Yes	This has been done. PEM will be included in this project and the maintenance project. The maintenance project contractor will be instructed not to place the PEM until the CD project has been included in the TIP. If the CD project is not included in the TIP in September as planned, then the Project Manager should reverse the implementation of this recommendation.

AC-3	Utilize 4% cross slope on outside shoulders in tangent sections	Proposed = \$144,973  Actual = \$178,550	Yes	This will be done not only on the tangent sections but also the superelevated sections. 8% maximum algebraic breakovers will be maintained on the high side edge of pavement/outside shoulder transition.
<b>MISCELLANEOUS (MS)</b>				
MS-3	Use double sided guardrail in lieu of barrier rail to separate CD and general purpose lanes	\$1,093,397	No	Double sided guardrail is meant to be used in areas where sufficient deflection can be provided behind guardrail in the event of an impact. The proposed inside shoulder of the CD lanes is 4 feet which will not provide sufficient deflection area. The concrete median barrier is preferred over the guardrail because the original design has a zero or near zero deflection.
MS-4	Use corrugated metal pipe for CD drainage	\$74,360	No	The planned lifespan of this project is 10 to 20 years, until the future managed lane project is constructed. Current economic trends and funding constraints present a possibility that the proposed configuration will remain in place for much longer than the planned lifespan.
<b>RETAINING WALLS (RW)</b>				
RW-1	Use MSE walls in lieu of cast-in-place concrete retaining walls	\$1,931,439	No	The Wall Foundation Investigation and the Soil Survey have revealed that the soils present in the areas in which MSE walls are suggested are not stable enough to provide sufficient strength against overturning and sliding; therefore cast in place wall will remain under consideration. It may be possible to move several walls to the base of the embankment so that MSE walls remain a viable option. The most economical wall type will be selected for the project once the soil survey is approved and design progresses.

RW-9	Affix sound walls to retaining walls where appropriate	\$505,230	No	Placing sound barriers on top of the proposed retaining walls will require stronger walls to resist overturning forces which will increase the cost of the walls and effectively eliminate any cost savings in the sound wall. The placement of the sound walls is largely attributed to topography, i.e., if the road is above or below the receptor, and the walls are currently placed where the most benefit is achieved via the shortest wall possible.
RW-10	Use sheet piles in lieu of concrete retaining walls	\$1,161,210	No	This recommendation is not practical based on the soil conditions discussed in RW-1 and the sheet pilings susceptibility to corrosion and oxidation. It has also been determined that the embankment required for the proposed wall heights would be much greater than what was stated in the VE report calculations, thereby increasing cost and difficulty of construction. Additionally, the soils in the existing embankment throughout the project contain a large amount of boulders, many of which are very shallow. This would make installation of sheet piling impractical.
<b>SOUND BARRIERS (SB)</b>				
SB-3	Defer sound barrier walls on WB roadway	\$1,511,840	No	Several discussions have been held with FHWA to validate the independent utility of this project, and the resulting conclusion is that any sound barriers associated with this project that are the result of a public hearing input specific to this project should remain. Comments were made at the PIOH in support of placing sound barriers on the WB side of the roadway. Exclusion of the sound walls in the WB direction could jeopardize federal funding.

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

Approved:  Date: 5/27/10  
Gerald M. Ross, PE, Chief Engineer

Approved:  Date: 6/17/10  
Rodney Barry, PE, FHWA Division Administrator

REW/LLM

Attachments

c: R. Wayne Fedora/Aric Mance/Mindy Roberson/Jennifer Giersch - FHWA  
Ben Buchan  
Darryl VanMeter/Mike Dover/Marlow Clowers  
Paul Liles/Bill Duvall/Bill Ingalsbe  
Melanie Nable  
Mickey McGee  
Ken Werho  
Lisa Myers  
Matt Sanders

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA



INTERDEPARTMENT CORRESPONDENCE

FILE P.I. # 0009542, Dekalb County  
I-20 Eastbound from I-285  
to CR 5150/Panola Road - CD System

OFFICE Innovative Program Delivery

DATE April 1, 2010

FROM  Darryl D. VanMeter, P.E., State Innovative Program Delivery Engineer

TO Ronald E. Wishon, Project Review Engineer

SUBJECT Value Engineering Study - Response to Final Report

The final report for the Value Engineering Study conducted on February 9 - 12, 2010 for the above listed project has been reviewed by this Office in cooperation with the Offices of Bridge and Structural Design, Environmental Services and Federal Highway Administration. Responses to each of the value engineering recommendations are included in the attachment.

The Office of Innovative Program Delivery is in agreement with the responses listed in the attached report for the above listed project. If you have any questions or require additional information, please contact Marlo Clowers at (404) 631-1713 or email.

DVM:MLC

cc: Ben Buchan



ARCADIS  
2849 Paces Ferry Road  
Suite 400  
Atlanta  
Georgia 30339  
Tel 770 431 8556  
Fax 770 435 2666

**Responses to VE Findings**

Subject  
Responses to VE Findings  
I-20 Eastbound from I-285 to CR 5150/  
Panola Road – CD System  
P.I. No. 0009542  
Contract UD0501HOV089ID

Department:  
Transportation

ARCADIS Project No.:  
GADT0102

Place/Date of Meeting:  
Georgia DOT  
Office of Innovative Program Delivery  
600 West Peachtree Street  
Atlanta, GA 30308

Report No.  
N/A

February 12, 2010

Responses by  
Tyler Denning

Issue Date  
March 19, 2010

Distribute to:  
R. Wayne Fedora, FHWA  
Aric Mance, FHWA  
Jennifer Giersch, FHWA  
Mindy Roberson, FHWA  
Marlo Clowers, GDOT IPD  
Darryl VanMeter, GDOT IPD  
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Lisa Myers, GDOT Engineering Services  
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Copies:  
Steve Callis, ARCADIS  
Keith Kunst, ARCADIS  
Robin Stevens, ARCADIS  
Prasoon Sinha, ARCADIS

## ARCADIS

A Value Engineering Study was held from February 9 to February 12, 2010, for PI 0009542, I-20 Eastbound from I-285 to Panola Road CD System. The following report contains the responses to the VE findings.

**Alternate AC-1: Utilize a 10' in-lieu of a 12' outside shoulder on collector distributor (CD) lanes for an estimated cost savings of \$150,938.**

**Response:** Yes, we will implement the recommendation to use 10' outside shoulders on the CD section from I-285 to Wesley Chapel Road.

**Alternate AC-2: Coordinate with planned maintenance resurfacing project (P.I No. M003234) for an estimated cost savings of \$1,219,988.**

**Response:** Yes, we will implement the recommendation. Coordination has been initiated and modifications are being made to the maintenance project to exclude the final PEM surface to facilitate future temporary and final striping for the I-20 EB CD project.

**Alternate AC-3: Utilize a 4% cross-slope on outside shoulders in tangent sections for an estimated cost savings of \$144,973.**

**Response:** Yes, we will implement the recommendation to utilize a 4% cross-slope on the outside shoulders. We propose to implement this on not only the tangent sections but also the superelevated sections for the sake of continuity. 8% maximum algebraic breakovers will be maintained on the high side edge of pavement / outside shoulder transition. Based on the VE team calculations, this will provide an additional savings of \$33,577.

NOTE: The additional savings are smaller than would be expected because of an error in the VE Team calculations. The VE Team stated that approximately half of the project's length was in tangent (2.25 miles), but the cost savings was calculated for a distance of 3.67 miles.

**Alternate MS-3: Use double-sided guardrail in-lieu of barrier rail to separate CD and general purpose lanes for an estimated cost savings of \$1,093,397.**

**Response:** No, we will not implement the recommendation. Double sided guardrail is meant to be used in areas where sufficient deflection can be provided behind the guardrail in the event of an impact. The proposed inside shoulder of the CD lanes is 4 feet which will not provide a sufficient deflection area. The concrete median barrier is preferred over the VE recommendation because the original design has a zero or near-zero deflection toward the CD lanes.

**Alternate MS-4: Use corrugated metal pipe for CD drainage for an estimated cost savings of \$74,360.**

**Response:** No, we will not implement the recommendation. The planned lifespan of this project is projected at 10 to 20 years; until the future managed lane project is constructed. However, current economic trends and funding constraints present a possibility that the proposed configuration will remain in place for much longer than the planned lifespan.

## ARCADIS

**Alternate RW-1: Use MSE walls in-lieu of cast-in-place concrete retaining walls for an estimated cost savings of \$1,931,439.**

**Response:** No, we will not implement the recommendation. For this Design-Build project, the WFI has not been completed. Therefore selection of the most economical wall design at this point is not practical. Based on the cost provided in the VE Study, all walls are estimated at \$70/LF. The cross-sections at the time of the VE Study indicated that the retaining walls would be no more than 7 feet in height. Historically, cast-in-place walls cost less to construct than MSE walls of this height. Utilizing an MSE wall for this location would require a moment resisting barrier which was not included in the VE estimate. Equating the wall cost to \$70/LF and including the barrier would make this alternative cost an additional \$1,178,000.

**Alternate RW-9: Affix sound walls to retaining walls where appropriate for an estimated cost savings of \$505,230.**

**Response:** No, we will not implement the recommendation. Placing sound barriers on top of the proposed retaining walls will require stronger walls to resist overturning forces which will increase the cost of the walls and effectively eliminate much of the perceived cost savings cost in the sound wall. The Type 7R side barriers shown in the plans are not suitable for attaching sound walls. Ground mounted foundations would be substantially cheaper than providing an unnecessary retaining wall to support sound walls.

It is also important to note that the placement of the sound walls is largely attributable to topography, i.e. if the road is above or below the receptor. The sound walls are currently placed where the most benefit is achieved via the smallest wall possible.

**Alternate RW-10: Use Sheet piles in-lieu of concrete retaining walls for an estimated cost savings of \$1,161,210.**

**Response:** No, we will not implement this recommendation. It has been determined that the embedment required for the proposed wall heights would be much greater than was estimated in the VE report calculations. Additionally, the soils in the existing embankments throughout the project contain a large amount of boulders, many of which are very shallow, making installation of sheet piling impractical.

By utilizing the proper embedment and including a moment resisting barrier system, this VE alternative would have an additional cost to the project of \$1,502,496.

**Alternate SB-3: Defer sound barrier walls on westbound roadway (north of I-20) for an estimated cost savings of \$1,511,840.**

**Response:** No, we will not implement this recommendation. Several discussions have been held with FHWA to validate the independent utility of this project, and the resulting conclusion has been that any sound barriers associated with this project that are a result of public input specific to this project should remain. Comments were made at the Public Information Open House in support of placing sound barriers on the westbound side of the roadway as shown on the displays. Exclusion of the sound walls in the westbound direction could jeopardize federal funding.





**PRECONSTRUCTION STATUS REPORT FOR PI:0009542**

**PROJ ID :** 0009542      **I-20 EB FROM I-285 TO CR 5150/PANOLA ROAD - CD SYSTEM**  
**COUNTY :** Dekalb      **MPO:** Atlanta TMA  
**LENGTH (MI):** 4.24      **TIP #:**  
**PROJ NO.:**      **MODEL YR :** 2020  
**PROJ MGR:** Clowers, Marlo      **TYPE WORK:** Widening  
**AOHD Initials:** MD      **CONCEPT:** C-D SYSTEM  
**OFFICE :** Innovative Prog. Delivery      **PROG TYPE:** Reconstruction/Rehabilitation  
**CONSULTANT:** Consultant Design (DOT contract)  
**SPONSOR :** GDOT      **Prov. for ITS:** N  
**DESIGN FIRM:** ARCADIS U.S., Inc.      **BOND PROJ. :**

BASE START	BASE FINISH	LATE START	LATE FINISH	TASKS	ACTUAL START	ACTUAL FINISH	%
12/2/2009	11/4/2009	6/17/2010	6/17/2010	Concept Development	2/12/2009	9/29/2009	60
11/18/2009	11/18/2009	6/17/2010	6/17/2010	Concept Meeting	9/29/2009	10/16/2009	100
11/19/2009	12/2/2009	6/4/2010	6/17/2010	PM Submit Concept Report	10/16/2009	10/16/2009	100
12/2/2009	12/2/2009	6/17/2010	6/17/2010	Receive Preconstruction Concept Approval			0
10/9/2009	11/3/2009	10/9/2009	6/15/2010	Management Concept Approval Complete	10/14/2009	11/17/2009	83
	10/9/2009	1/29/2010	8/13/2010	Value Engineering Study	11/17/2009	10/11/2009	100
	10/1/2009	6/3/2010	6/3/2010	Public Information Open House Held	3/9/2009	8/14/2009	13
	3/23/2010	6/9/2010	11/23/2010	Environmental Approval	9/11/2009	10/11/2009	90
10/7/2009	11/17/2009	6/9/2010	7/20/2010	Mapping	8/14/2009		67
10/7/2009	11/17/2009	6/9/2010	7/20/2010	Field Surveys/SDE			0
9/25/2009	12/10/2009	6/4/2010	8/19/2010	Preliminary Plans			0
4/14/2010	4/15/2010	12/15/2010	12/16/2010	Preliminary Bridge Design			0
				404 Permit Obtainment			0
				PEPR Inspection			0

Activity	Approved	Proposed	Cost	Fund	Status	Date Auth
CST	LR	2011	72,800,000.00	1.050	PRECS	
<b>STIP AMOUNTS</b>						
CST Cost Est. Amt.			70,000,000.00		Date	8/1/2009
					Activity	CST
					Cost	0.00
					Fund	1.050

**Bridge:** BRIDGE REQUIRED

**Design:** Need Cpt approval [MLC 2-10]

**EIS:** CE Not Apprd On Schedule for Dec 10 LET [4 6 10]

**LGPA:** NOTIFICATION LETTER SENT TO DEKALB 11-20-09.

**Planning:** TIGER candidate

**Programming:** OTH FUNDS = TIGER FUNDS

**Utility:** SUE WW: 7 U's are out. 05--2010 (Design Build)

**EMG:** RECONSTRUCTION/REHABILITATION: WIDENING

**Conceptual Design IPD:** Approved Design-Build

**Prel. Parcel CT:** Total Parcel in ROW System:

**Under Review:** Options - Pending:

**Released:** Condemnations- Pend:

**Acquired by:** N/R

**Acquisition MGR:**

**R/W Cert Date:**

**DEEDS CT:**

**District Comments:**  
This project has been approved for design-build implementation and has an accelerated schedule. [MLC 2-10]