

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE: MLP00-0307-00(008), Chatham County **OFFICE:** Engineering Services
P.I. No.: 562165
SR 307 / Dean Forest Road **DATE:** April 28, 2009

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

TO: James B. Buchan, P.E., State Urban Design Engineer
Attention: Albert Welch

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
ROADWAY				
C-3	Use only Asphaltic Concrete pavement instead of the combination of ACP, PPC Concrete Pavement and HES Concrete Pavement.	\$298,310	No	The twenty four hour truck percentage for this project is 62%. This high truck percentage causes a higher predicted design period load, which requires a stronger pavement design to support it. The ACP pavement design proposed by the VE team meets design criteria, however it will require more maintenance over time (see attached 30-yeay Life Cycle Cost Analysis). PCC's life cycle cost is \$34,000 while ACP's is \$624,000. This difference results in a total savings of \$1,053,000 for construction and maintenance by using PCC over the 30-year period.

ROADWAY Continued				
G-1	Do not construct sidewalk along the corridor, but only at the intersections with Commerce/Export Blvd. and SR 21, to provide for ramps. Sidewalk at these intersections is recommended to be 4" thick.	\$458,986	Yes	No sidewalks currently exist along any section of SR 307. This project is in an industrial / commercial area with very little pedestrian traffic as noted by the lack of pathways along the shoulder. The closest residential area is one half mile south of the SR 307/SR 21 intersection at Doyle Street.
K-1	Reduce the lane widths from 12-feet to 11-feet. Maintain the 14-foot median width in lieu of the proposed 20-foot from STA. 18+60 to 72+64.	\$859,858	No	The project's base year (2010) ADT is 18,900 and design year (2030) ADT is 27,600, thus the traffic volumes warrant the raised median. Although the corridor does not currently have a raised median, the proposed typical section matches two nearby project along SR 307. SR 307 over the new Port Authority Rail Line, located 0.34 mile to the east, proposes a 20-foot raised median and is currently in final design. Jimmy Deloach Parkway extension proposes to be a limited access facility with a 24-foot raised median with ramp termini at the intersection of SR 307 and is in the concept phase. The recommendation for narrowing the lane widths from 12-feet to 11-feet requires a design variance. AASHTO 2004 for urban collectors states, "In industrial areas, lanes should be 12-feet wide" and "turning lanes at intersections should range from 10 to 12-feet depending on the percentage of trucks." (Page 433). This project is in a heavy industrial area with a truck percentage of 62%. Changes to the typical section will incur significant redesign costs and will delay the project schedule.

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VE Study Implementation
Page 3.

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

Approved:  Date: 5/6/09
Gerald M. Ross, P. E., Chief Engineer

REW/DMF

Attachments

c: Genetha Rice-Singleton
Ben Buchan
Darrell Richardson
Butch Welch
Paul Liles
Bill Ingalsbe
Bill DuVall
Will Murphy
Ken Werho
Lisa Myers
Douglas Fadool
General Files

VE Team: Chuck Hasty
Jeremy Busby
Clay Bastian
Cynthia Burney
Doug Franks

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENTAL CORRESPONDENCE

FILE	MLP00-0307-00(008), Chatham County SR307/Dean Forest Road From Robert B. Miller Rd to SR 21 P. I. No. 562165	OFFICE	Urban Design
		DATE	April 22, 2009
FROM	James B. Buchan, P.E., State Urban Design Engineer		
TO	Ron Wishon, State Project Review Engineer Attention: Lisa Myers		
SUBJECT	Value Engineering Study - Responses		

Reference is made to the recommendations that were contained in the Value Engineering Study – Final Report dated March 11, 2009 for the above referenced project. Responses and recommendations are as follows:

1. Value Engineering Alternative C-3: Use only Asphaltic Concrete Pavement (ACP) instead of the combination of ACP, Portland Cement Concrete (PCC) and High Early Strength (HES) Concrete Pavement - *Not Recommended*

This alternative is not recommended for implementation due to the following reasons:

- The twenty-four hour truck percentage for this project is 62%. This high truck percentage causes a higher predicted design period load, which requires a stronger pavement design to support it.
- The ACP pavement design proposed by the VE team meets design criteria, however it will require more maintenance over time (see attached 30-year Life Cycle Cost Analysis). PCC's life cycle cost is \$34,000 while ACP's is \$624,000. This difference results in a total savings of \$1,053,000 for construction and maintenance by using PCC over the 30 year period.

2. Value Engineering Alternative G-1: It is recommended that sidewalk is not constructed along the corridor, but only at the intersections with Commerce/Export Blvd and SR21, to provide for ramps – *Recommended*

This alternative is recommended for implementation due to the following reasons:

- No sidewalks currently exist along any section of SR307.

- This project is an industrial/ commercial area with very little pedestrian traffic as noted by the lack of pathways along the roadway shoulder. The closest residential area is ½ mile south of the SR307/ SR21 intersection at Doyle Street.

3. Value Engineering Alternative K-1: Flush Median – *Not Recommended*

This alternative is not recommended for implementation due to the following reasons:

- The VE Team proposes to replace the 20-ft raised median with a 14-ft flush median. GDOT's Design Manual specifies using a 20-ft raised median for base year Average Daily Traffic (ADT) over 18,000 and design year ADTs over 24,000. The project's base year (2010) ADT is 18,900 and design year (2030) ADT is 27,600. Thus the traffic volumes warrant the raised median. The twenty-four hour truck percentage for this project is 62%.
- Although the corridor does not currently have a raised median, the proposed typical section matches the proposed typical section of two nearby projects along SR307. P.I. No. 0000345, SR307 over the new Ports Authority Rail Line, located 0.34 mile to the east, proposes a 20-ft raised median and is currently in the final design stage. P.I. No. 0008690, Jimmy Deloach Pkwy extension, proposes to be a limited access facility with a 24-ft raised median with ramp termini at the intersection of SR307 and is currently in concept phase.
- The recommendation for narrowing the lane widths from 12-ft to 11-ft requires a design variance. The AASHTO Policy on Geometric Design of Highways and Streets (2004) for urban collectors states, "In industrial areas, lanes should be 12-ft wide" and "turning lanes at intersections should range from 10 to 12-ft depending on percentage of trucks." (Page 433). This project is in a heavy industrial area with a truck percentage of 62%.
- Changes to the typical section will incur significant redesign costs and will delay the project schedule.

JBB:ASW:amr



Attachments

Life Cycle Cost Analysis (LCCA)
Cost Worksheet

Life Cycle Cost Analysis - Present Value Discount Factor: Single future Payment
Future Cost Calculation

Project: 562165

Creative Idea No. C-3

Discount Rate: 4%

Analysis Period: 30 years

Cost Component Activity	Years	PVF	Original Design / PCC Only		Alternate Design / ACP Only	
			Initial Cost	PV	Initial Cost	PV
Rehabilitation #1	10	0.6756			\$134,750.00	\$91,037.10
Rehabilitation #2	20	0.4564	\$73,857.00	\$33,708.33	\$1,077,440.00	\$491,743.62
Rehabilitation #3	30	0.3083			\$134,750.00	\$41,543.43
Salvage Value						
Total				\$33,708.33		\$624,324.14
Initial Pavement Cost for the PCC area (14,000 sy)				\$615,475.00		\$1,077,440.00
Total Pavement Cost for the PCC area (14,000 sy)				\$649,183.33		\$1,701,764.14
Total Savings in 30 years						\$1,052,580.81

Cost Component Activity	Original Design / PCC Only	Alternate Design / ACP Only
Rehabilitation #1	N/A	Replace 12.5mm only, overlay
Rehabilitation #2	Assumed 12% of construction for repair	Replace 12.5mm, 19mm, 25mm, GAB, and add tack
Rehabilitation #3	N/A	Replace 12.5mm only, overlay

COST WORKSHEET

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
310-5080 8" GAB	SY	14000	18.5	259,000.00			
310-5120 12" GAB	SY				14000	21	294,000.00
400-3605 19mm Superpave	TN				1540	90	138,600.00
402-3121 25mm Superpave	TN				6930	73	505,890.00
402-4510 12.5mm Superpave	TN				1540	87.5	134,750.00
413-1000 Tack	GAL				2100	2	4,200.00
430-0620 HES Conc. 12"	SY	3400	80	272,000.00			
439-0026 PCC Conc. 12"	SY	1090	77.5	84,475.00			
TOTAL				615,475.00			1,077,440.00

PRECONSTRUCTION STATUS REPORT FOR PI:562165-

SR 307/DEAN FOREST ROAD FM R.B. MILLER RD TO SR 21

562165-Chatham
 COUNTY : 1.11
 LENGTH (MI) : MLP00-0307-00(008)
 ROJ NO. : Welch, Albert
 ROJ MGR : Urban Design
 OFFICE : No Consultant, GDOT In-House Design
 CONSULTANT: GDOT
 PONSOR : GDOT Urban Design Office
 DESIGN FIRM: GDOT Urban Design Office

MGMT LET DATE : 09/18/2009
 MGMT ROW DATE :
 DOT DIST: 5
 CONG. DIST: 12
 BIKE: N
 MEASURE: E
 NEEDS SCORE: 13
 BRIDGE SUFF:
 SCHED LET DATE : 7/7/2009
 WHO LETS?: Prepare Plans for Shelf
 LET WITH :

ACTUAL START	ACTIVITY	ACTUAL FINISH	%
2/19/2001	Concept Development	2/25/2002	100
6/11/2001	Concept Meeting	6/11/2001	100
12/24/2001	PM Submit Concept Report	1/25/2002	100
1/28/2002	Receive Preconstruction Concept Approval	2/10/2002	100
2/25/2002	Management Concept Approval Complete	2/25/2002	100
10/21/2008	Value Engineering Study	2/15/2002	82
2/15/2002	Public Information Open House Held	3/21/2002	100
3/21/2002	Environmental Approval	2/27/2002	100
2/27/2002	Field Surveys/SDE	3/15/2004	100
12/19/2002	Preliminary Plans	7/15/2003	100
7/27/2004	Underground Storage Tanks	12/8/2004	100
4/29/2004	404 Permit Obtainment	4/29/2004	100
5/14/2004	FFPR Inspection	8/23/2004	100
9/13/2004	R/W Plans Preparation	4/4/2005	100
6/15/2004	R/W Plans Final Approval	7/13/2004	100
1/15/2003	L & D Approval	5/7/2008	100
3/15/2003	R/W Acquisition	5/15/2003	100
8/23/2002	Stake R/W	12/12/2003	100
5/4/2004	Soil Survey	1/4/2008	100
2/7/2008	Final Design	2/7/2008	100
12/23/2008	FFPR Inspection	12/23/2008	100
	Submit FFPR Responses (OES)		

3 at-grade Xings, 9/30/03, State Funds, 10/5/04, "Gap" project. Get ready for shelf, 1/11/05.
 CULVERT - EJC -03/02/09 (FINAL PLANS SENT 02/09/09)
 UD-Hoenig: Detour Route meeting scheduled for May 14/cah
 TypeBIApvd3-21-02IRevalApvd5-6-08(OnSched)Sep09I.etLB4.3.09
 REQ CHATHAM DO UTILITIES 7-24-02/RESCISSON LETTER SENT TO CHATHAM 7-22-05.
 CHATHAM CO. SPONSOR REQUEST TO GDOT, 1997, CAPACITY & SAFETY
 New cost est on 10/04 removed \$180,400 and put on 0007086
 1625 11-03
 Pre-Acq Ct: Ronnie Lewis, Coord. K. Hall, Appeal-Lewis
 CSX reviewing plans; Condemned offLine three vac parcels
 >PA/TIF fpnls sbmid 4/08 +
 One UST not being acquired
 2nd sub. plans to dgn 7 of 7: 3/3/2008
 RECST/REHAB (WIDENING)

CHANGED START	SCHED FINISH	ACTUAL START	ACTUAL FINISH	%	Cond. Filed:	Relocations:	Acquired:
		2/19/2001	2/25/2002	100	24	0	0
		6/11/2001	6/11/2001	100	0	0	0
		12/24/2001	1/25/2002	100	0	0	0
		1/28/2002	2/10/2002	100	0	0	0
		2/25/2002	2/25/2002	100	0	0	0
		10/21/2008	2/15/2002	82	0	0	0
		2/15/2002	3/21/2002	100	0	0	0
		3/21/2002	2/27/2002	100	0	0	0
		2/27/2002	3/15/2004	100	0	0	0
		12/19/2002	7/15/2003	100	0	0	0
		7/27/2004	12/8/2004	100	0	0	0
		4/29/2004	4/29/2004	100	0	0	0
		5/14/2004	8/23/2004	100	0	0	0
		9/13/2004	4/4/2005	100	0	0	0
		6/15/2004	7/13/2004	100	0	0	0
		1/15/2003	5/7/2008	100	0	0	0
		3/15/2003	5/15/2003	100	0	0	0
		8/23/2002	12/12/2003	100	0	0	0
		5/4/2004	1/4/2008	100	0	0	0
		2/7/2008	2/7/2008	100	0	0	0
		12/23/2008	12/23/2008	100	0	0	0

Phase	Approved	Proposed	Cost	Fund	Status	Date Auth
ROW	2004	2004	1,357,000.00	42220	AUTHORIZED	11/6/2003
CST	2009	2018	17,118,033.63	MLP	PRECST	

Phase	ROW Cost Est Amt:	CST Cost Est Amt:	Date:	Cost	Fund
ROW	10,509,000.00	3/26/2008	7/7/2005	5,263,000.00	42220
CST					MLP

STIP AMOUNTS

Acquired by: DOT
 Acquisition MGR: O'Quinn, Andy
 R/W Cert Date: 5/7/08

District Comments

TAS/3-30-05/Utilities office needs 2nd submission plans; ROW revision needed: need FFPR August 06/1-23-06/need revised drainage plans 2-13-06/working on final plans 11-15-06/no grade separation at RR included in project; project certified 4/25/08/4-20-09/Detour PIOH scheduled for May 14th

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

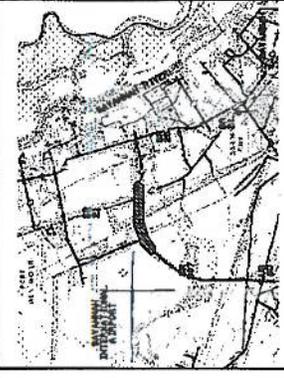
PLAN AND PROFILE OF PROPOSED SR 307/DEAN FOREST ROAD /BOURNE AVE FROM RB MILLER, JR RD TO SR 2/ AUGUSTA RD



NOTE 1: ALL REFERENCES IN THIS DOCUMENT WHICH REQUIRE ALL APPROPRIATE DOCUMENTATION OR INFORMATION SHOULD BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE GEORGIA DEPARTMENT OF TRANSPORTATION. THE GEORGIA DEPARTMENT OF TRANSPORTATION, UNDER THE COMPTROLLER GENERAL'S AUTHORITY, IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION OR DATA PROVIDED BY ANY OTHER AGENCY OR INDIVIDUAL WHOSE SERVICES ARE USED IN THE PREPARATION OF THIS DOCUMENT.

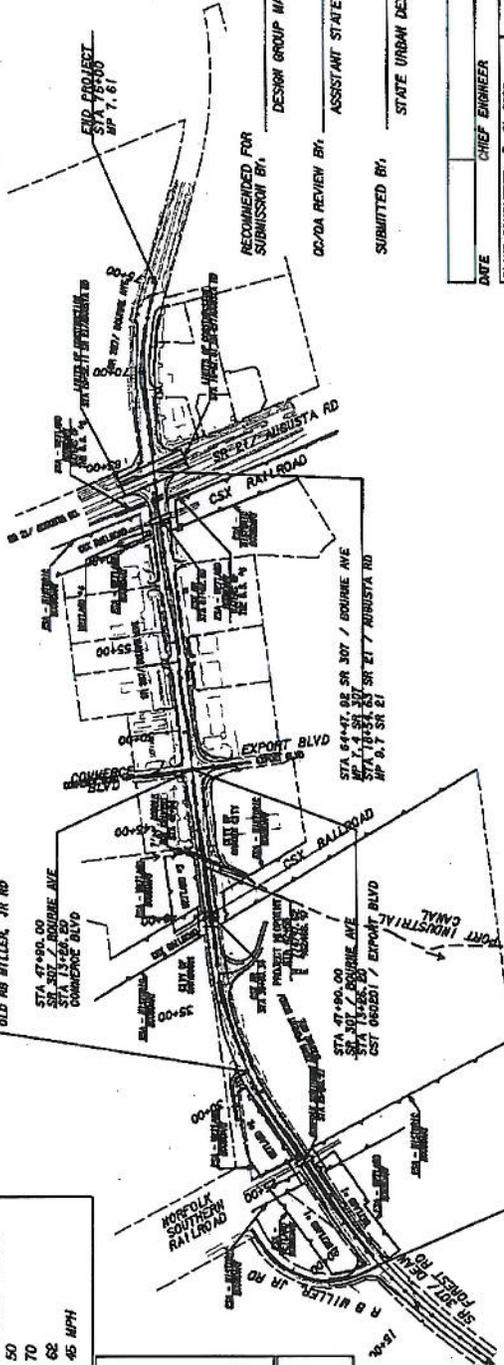
NOTE 2: THESE ARE PRELIMINARY PLANS AND THE PROJECT IS LOCATED WITHIN THE RIGHT-OF-WAY OF TRANSPORTATION.

FEDERAL ROUTE • N/A
 STATE ROUTE • 307
 P.I. NO. 562165



LOCATION SKETCH	
DESIGN DATA	18500
TRAFFIC ADT	87600 (ED09)
TRAFFIC ADT	1370 EACH (ED09)
TRAFFIC DIV.	50
DIRECTIONAL DIST.	70
X TRUCKS	68
SPEED DESIGN	45 MPH

LOCATION & DESIGN APPROVAL DATE: 07-15-008
 FUNCTIONAL CLASS: URBAN MINOR ARTERIAL
 THIS PROJECT IS CLASSIFIED AS CLASS II IN CHATHAM COUNTY AND IS CLASSIFIED AS CLASS II IN CONGRESS.
 PROJECT DESIGNATION: EXEMPT DESCRIBED IN ENGLISH UNITS.
 THIS PROJECT HAS BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE GEORGIA DEPARTMENT OF TRANSPORTATION AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.



LENGTH OF PROJECT	
NET LENGTH OF ROADWAY	1250
NET LENGTH OF BRIDGES	0.000
NET LENGTH OF PROJECT	1250
NET LENGTH OF EXCEPTIONS	0.000
GROSS LENGTH OF PROJECT	1250

BEULIN PROJECT
 STA 16+00.00 TO SR 307 / RB MILLER, JR. RD
 STA 16+00.00 TO SR 2 / AUGUSTA RD
 STA 16+00.00 TO SR 2 / AUGUSTA RD

SCALE IN FEET
 0 300 600 1200

DATE	CHIEF ENGINEER
PLANS COMPLETED	5-01-0009
REVISIONS	

DESIGN GROUP MANAGER
 ASSISTANT STATE URBAN DESIGN ENGINEER
 STATE URBAN DESIGN ENGINEER