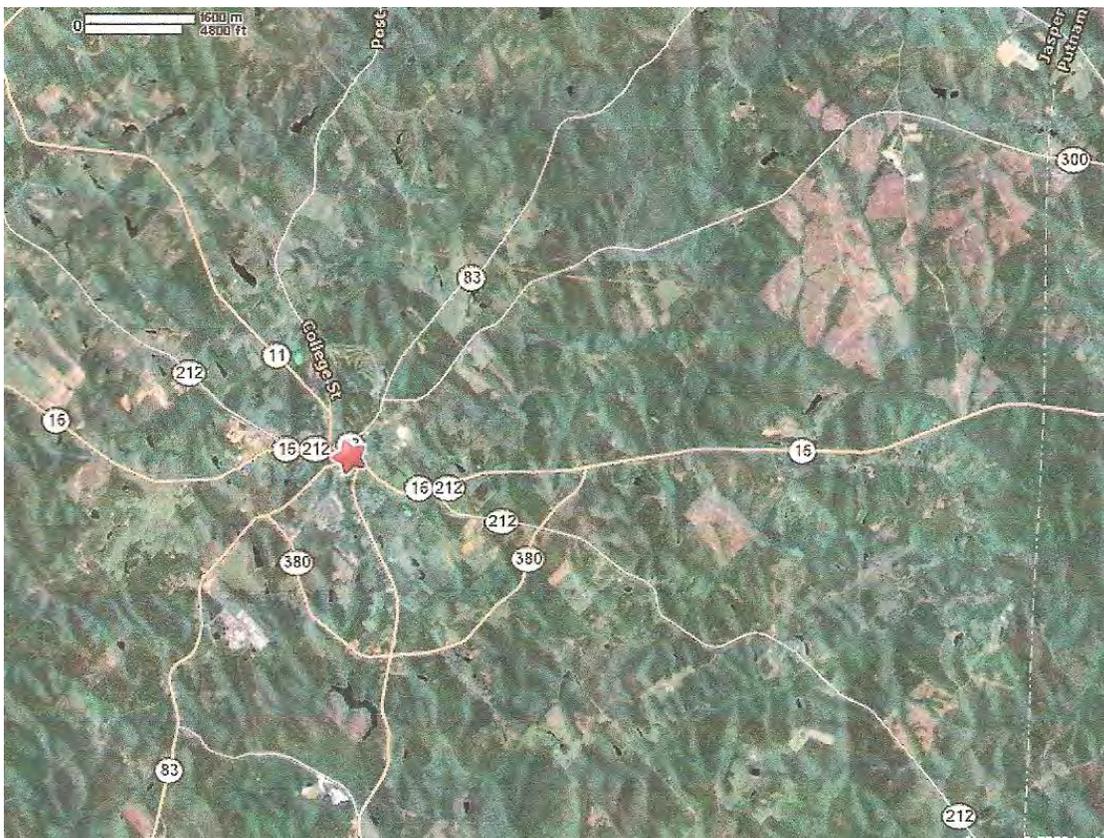


Value Engineering Study Report

**Georgia Department of Transportation
STP00-0001-00(939) - P.I. No. 0001939
Monticello NE Bypass from SR 16 to SR 83
Jasper County**



Value Engineering Team



Design Team



April 9, 2009



April 9, 2009

Ms. Lisa Myers
Design Review Engineer Manager/VE Coordinator
Georgia Department of Transportation-Engineering Services
One Georgia Center
600 W. Peachtree Street NW
Atlanta, GA 30308

RE: Submittal of the final Value Engineering Report
Project No.: STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County

Dear Ms. Myers:

Please find enclosed two (2) hard copies and one (1) CD of our final Value Engineering Report for the Monticello NE Bypass from SR 16 to SR 83.

This Value Engineering Study, which was performed during the period March 24 through March 27, 2009, identified **20 Alternative Ideas** of which **8 Alternative Ideas are recommended for implementation**. In addition, the team is recommending **2 Design Suggestions** for your consideration. We believe that the **Alternative Ideas** recommended may have a significant positive affect on the project.

We trust that you will find this report to be in proper order. It should be noted that the results of this workshop are volatile in that they can be overcome by the events that accompany the expeditious continuance of the design process. Accordingly, we encourage an equally expeditious implementation meeting to design the disposition of the contents of this report.

On behalf of our VE Team, we thank you very much for this opportunity to work with you and the hard working staff of the Georgia Department of Transportation.

Yours truly,

PBS&J

A handwritten signature in black ink that reads "Les M. Thomas".

Les M. Thomas, P.E., CVS-Life
VE Team Leader

A handwritten signature in black ink that reads "Randy S. Thomas".

Randy S. Thomas, CVS
Assistant Team Leader

Value Engineering Study Report

**Project No. STP00-0001-00(939)
P.I. No. 0001939
Monticello NE Bypass from SR 16 to SR 83
Jasper County**

Table of Contents

Executive Summary

- Introduction
- Project Description
- Value Engineering Process
- The Study Results
- Summary of Alternatives and Design Suggestions

Study Results

- Introduction
- Summary of Alternatives and Design Suggestions
- Documentation of Alternatives and Design Suggestions

Project Description

- Introduction of the Project
- Representative Documents

Value Engineering Process

- Introduction and Job Plan
- Agenda
- Function Analysis and Cost–Worth Worksheets
- Pareto Cost Model and Graph
- Attendance Sheet for Designers and VE Team Presentations
- Creative Idea Listing and Evaluation Worksheet

EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the analysis and conclusions by the PBS&J Value Engineering workshop team as they performed a Value Engineering study during the period of March 24 through March 27 2009 in Atlanta, at the office of the Georgia Department of Transportation. The subject of the Value Engineering study was Project STP00-0001-00(939) - P.I. No. 0001939, the Monticello NE Bypass in Jasper County.

The design for the project has been prepared by Georgia Department of Transportation District 6. At the time of the workshop, the plans had advanced to the preliminary design level.

PROJECT DESCRIPTION

The Bypass project starts at the intersection of SR 380 and SR 16, continuing northeasterly, on a new location, to an intersection with SR 83. The length of the proposed bypass is 3.279 miles.

The need for the project is to divert truck traffic from downtown Monticello which is built around a town square. Four state routes (SR16, SR 212, SR 11, and SR 83) culminate at the county square. On street parking is located all around the square area adding to the truck turning problem. At the present time, trucks have to negotiate a minimum of two -ninety degree turns going around the square.

State Route 380 is currently classified as a Major Collector and operates on a Level of Service "A". It will operate at the same Level of Service in the build year of 2010 and is anticipated to function on a level of Service "B" for the design year 2030. Traffic projections for 2030 are very low with an estimate of only 50 trucks per day or about 7%. Train traffic is also very minimal with only two trains a day at the present time. This indicates that a two lane facility will accommodate the existing traffic as well as traffic volumes into the year 2030.

Currently SR 380 consists of one 12-ft travel lane in each direction with rural shoulders. It begins on SR 83 southwest of the town square and continues around the southeast side of Monticello. The major source of truck traffic is the logging trucks bound for the Georgia Pacific Corporation plant located to the south of Monticello.

The proposed bypass will be two 12-ft travel lanes, 10' rural shoulders with 6'-6" paved. Bridges will be constructed over White Oak Creek and over the Norfolk Southern Railroad crossing. There are no known historical impacts. The only structure that needs to be avoided is a church located in the southwest corner of the project. There are significant grade changes in the property and numerous small streams.

The design and posted speed for the bypass is 55 mph.

The estimated construction costs are \$11,573,388 with additional Right-of-Way costs of \$2,728,300. Jasper County will be requested to fund all reimbursable utility costs. The projected total project cost is \$14,300,688.

This project is more fully described in the documentation that is located in the Tabbed section of this report, entitled ***Project Description***.

PROJECT CONCERNS AND OBJECTIVES

Some of the information from the concept report and the designer's presentation indicated the following important points about the project:

- Need to divert truck traffic from downtown Monticello
- Need to improve safety
- Need to create a safe railroad crossing

VALUE ENGINEERING PROCESS

The Value Engineering team followed the seven step Value Engineering job plan as promulgated by SAVE International. This seven step job plan includes the following:

- Investigative
- Analysis
- Speculation
- Evaluation
- Development
- Recommendation
- Presentation

This report is a component of the Presentation Phase. As part of the VE workshop in Atlanta, the team made an informal presentation of their results on the last morning of the workshop. This report is intended to formalize the workshop results and set the stage for a formal implementation meeting in which alternatives and design suggestions will typically be accepted, accepted with modifications, or rejected for cause. The worksheet that follows, along with the formally developed alternatives and design suggestions can be used as a "score sheet" for the implementation meeting. It is also included in this report to identify, on a summary basis, the results of the workshop. The reader is encouraged to visit the third tabbed section of this report entitled ***Study Results*** for a review of the details of the developed alternatives. The tabbed section ***Project Description*** includes information about the project itself and the tabbed section ***Value Engineering Process*** presents the detailed process of the Value Engineering Study.

CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified **20 *Alternative Ideas*** that appeared to hold potential for reducing the construction cost, improving the end product, and/or reducing the difficulty and time of project construction.

After the evaluation phase was completed, **8 *Alternative Ideas*** remained for further consideration. In addition, the team developed **2 *Design Suggestions***. These Alternative Ideas may be found, in their documented form, in the section of this report entitled ***Study Results***.

The following ***Summary of Alternatives and Design Suggestions*** coupled with the documentation of the developed alternatives should provide the reader with the information required to fully evaluate the merits of each of the alternatives.

STUDY RESULTS

INTRODUCTION

This section includes the study results presented in the form of fully developed value engineering alternatives that include descriptions of the original design, description of the alternative design configurations, comments on the technical justifications, opportunities and risks associated with the alternatives, sketches, calculations and technical justification for these alternatives. For the most part, these fully developed alternatives represent an array of choices that clearly could have an impact on the eventual cost and performance of the finished project.

This introductory sheet is followed by a *Summary of Alternatives and Design Suggestions*. It should be noted that the alternatives that are included, which have cost estimates attached are not necessarily representative of the final cost outcome for each alternative. Some of these alternatives have components that are mutually exclusive so they may not be added together.

The users of this report are asked to consider these alternatives and design suggestions as a smorgasbord of choices for selection and use as the project moves forward. The enclosed *Summary of Alternatives & Design Suggestions* may also be used as a “score sheet” within the bounds of an implementation meeting.

COST CALCULATIONS

The cost calculations are intended only as a guide to the approximate results that might be expected from implementation of the alternatives. They should be helpful in making clear choices as to the pursuit of individual alternatives.

The composite mark-up of 10% for the construction cost comparisons was derived from the cost estimate for the project. This estimate can be found in the section of this report entitled *Project Description*.

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-1

DESCRIPTION: **Use 4'-0" paved shoulder in-lieu of 6'-6"**

SHEET NO.: **1** of **4**

Original Design:

The original design calls for 6'-6" paved shoulder.

Alternative:

The proposed alternative would provide 4'-0" paved shoulder.

Opportunities:

- Reduction in pavement cost

Risks:

- Minimal increase in design effort
- Minimal reduction in utility

Technical Discussion:

The original design calls for a 6.5' foot paved shoulder, however AASHTO allows a 4.0' foot paved shoulder (AASHTO, A Policy on Geometric Design of Highways and Streets, page 314) based on the project criteria. A 4'-0" shoulder would provide sufficient width to accommodate pedestrian and bicycle traffic, but this type of traffic should be discouraged or restricted from this facility.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 760,616	\$ 0	\$ 760,616
ALTERNATIVE	\$ 468,089	\$ 0	\$ 468,089
SAVINGS	\$ 292,527	\$ 0	\$ 292,527

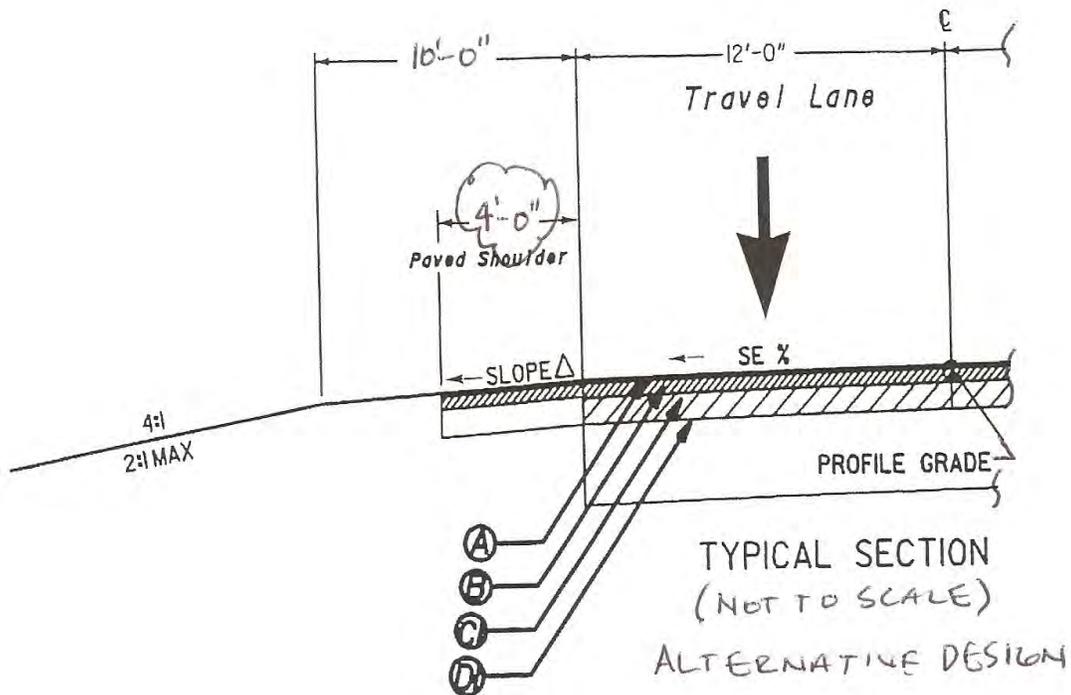
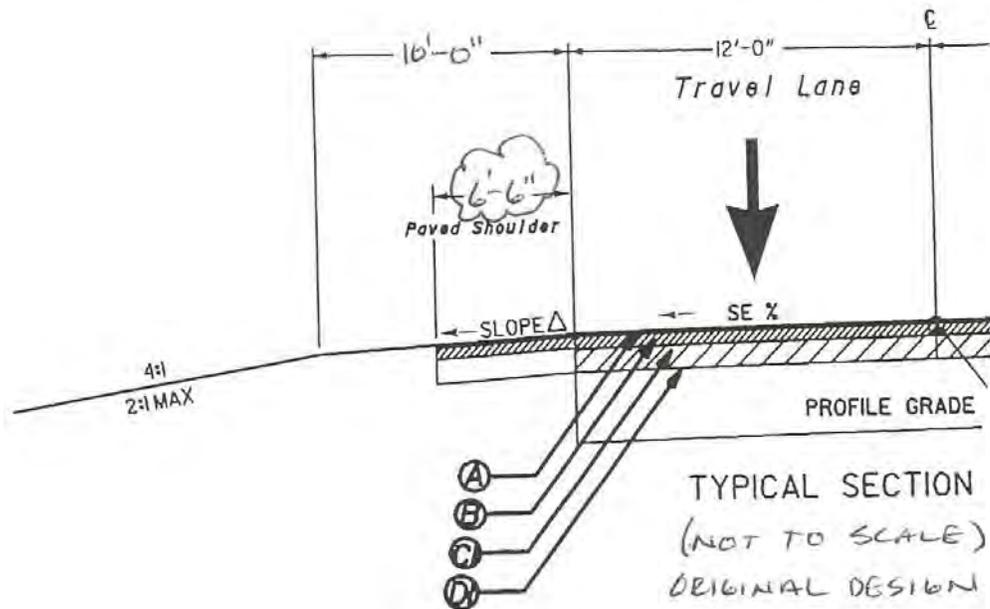
Illustration

PROJECT: Georgia Department of Transportation
NHS00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County

ALTERNATIVE NO.:
RD-1

DESCRIPTION: Use 4'-0" paved shoulder in-lieu of 6'-6"

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-1

DESCRIPTION: **Use 4'-0" paved shoulder in-lieu of 6'-6"**

SHEET NO.: **3** of **4**

~Station 504+50 to ~Station 686+75

Original Design:

Length of the roadway = 18,225, Width of the Paved Shoulders = (2 x 6.5') 13 LF

Total Area of Paved Shoulder = (18,225 LF x 13 LF) / (9 SF / SY) = 26,325 SY

Superpave 12.5mm = (26,325 SY * 165/2000) => 2,172 TN

Superpave 19.0mm = (26,325 SY * 220/2000) => 2,896 TN

6" GAB = 26,325 SY

Alternative:

Length of the roadway = 18,225 LF, Width of the Paved Shoulders = (2 x 4.0') 8 LF

Total Area of Paved Shoulder = (18,225 LF x 8 LF) / (9 SF / SY) = 16,200 SY

Superpave 12.5mm = (16,200 SY * 165/2000) => 1,337 TN

Superpave 19.0mm = (16,200 SY * 220/2000) => 1,782 TN

6" GAB = 16,200 SY

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-1
DESCRIPTION:	Use 4'-0" paved shoulder in-lieu of 6'-6"	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
12.5mm Superpave	TN	2,172	\$ 72.24	\$ 156,905	1,337	\$ 72.24	\$ 96,585
19.0 mm Superpave	TN	2,896	\$ 74.96	\$ 217,084	1,782	\$ 74.96	\$ 133,579
6" G.A.B.	SY	26,325	\$ 12.06	\$ 317,480	16,200	\$ 12.06	\$ 195,372
Sub-total				\$ 691,469			\$ 425,536
Mark-up at 10.00%				\$ 69,147			\$ 42,554
TOTAL				\$ 760,616			\$ 468,089
Estimated Savings:							\$292,527

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-2

DESCRIPTION: **Eliminate potential sight distance discrepancy on SR-380 at the SR-16 intersection** SHEET NO.: **1 of 1**

Original Design:

The original design calls for constructing a vertical grade break of 4% at Station 512+03.

Alternative:

The alternative would propose modifying the grade to eliminate the grade break and construct a profile that meets the proposed design speed for the project.

Opportunities:

- Eliminate potential substandard sight distance for SR-380

Risks:

- Reduction in cut for a project in a borrow condition
- Minimal design impact

Technical Discussion:

Although the proposed project has the SR-380 traffic in a stop condition at the SR-380 / SR-16 intersection, future development may dictate signalization. The proposed design creates a potential for a significant sight distance problem which would require major modifications to correct.

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-6

DESCRIPTION: **Redesign grade to minimize offsite borrow**

SHEET NO.: **1** of **6**

Original Design:

The original design sets a preliminary grade that results in 351,400 cubic yards of unclassified excavation and 323,388 cubic yards of borrow excavation.

Alternative:

The proposed alternative would be to modify the profile grade to reduce the amount of offsite borrow and required fill heights to construct the job.

Opportunities:

- Reduction in earthwork cost
- Reduction in fill heights
- Reduction in drainage costs

Risks:

- Minimal increase in design effort

Technical Discussion:

Further refinement of the profile grade should result in a substantial reduction in offsite borrow. It should also result in the reduction of some significant fills that approach 40 feet in height. Significant Right-of-Way savings may not result due to the fact that the areas reduced by lowering the fill heights will be offset by additional Right-of-Way in the areas of increased cut. Drainage costs will be reduced by shortening the required length of pipe, reducing the class of pipe and also the requirement for Type II backfill.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,052,563	\$ 0	\$ 3,052,563
ALTERNATIVE	\$ 2,663,818	\$ 0	\$ 2,663,818
SAVINGS	\$ 388,744	\$ 0	\$ 388,744

Illustration



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) – P.I. No. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.:
		RD-6
DESCRIPTION:	Redesign grade to minimize offsite borrow	SHEET NO.: 2 of 6

	STATION	ELEVATION
Vertical Alignment Name: SR 380 Revised		
Element: Linear		
POB	505+00.00	586.950
Tangent Grade	5.000	
Element: Parabola		
PVI	513+00.00	626.950
LC	690.000	
Entrance Grade	5.000	
Exit Grade	-1.000	
K=	115.000	
Element: Parabola		
PVI	518+75.00	621.200
LC	460.000	
Entrance Grade	-1.000	
Exit Grade	-5.000	
K=	115.000	
Element: Parabola		
PVI	530+00.00	564.950
LC	350.000	
Entrance Grade	-5.000	
Exit Grade	-1.987	
K=	116.157	
Element: Parabola		
PVI	549+00.00	527.200
LC	260.000	
Entrance Grade	-1.987	
Exit Grade	-4.186	
K=	118.202	
Element: Parabola		
PVI	553+00.00	510.454
LC	380.000	
Entrance Grade	- 4. 186	
Exit Grade	-0.998	
K=	119.164	
Element: Parabola		
PVI	561+65.00	501.825
LC	200.000	
Entrance Grade	0.998	
Exit Grade	0.500	
K=	133.548	
Element: Parabola		
PVI	579+50.00	520.750
LC	400.000	
Entrance Grade	0.500	
Exit Grade	3.912	
K=	117.241	

Illustration



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) – P.I. No. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.: RD-6
DESCRIPTION:	Redesign grade to minimize offsite borrow	SHEET NO.: 3 of 6

Vertical Alignment Name:	SR 380 Revised	STATION	ELEVATION
Element: Parabola	PVI	588+00.00	544.000
	LC	920.000	
	Entrance Grade	3.912	
	Exit Grade	-4.071	
	K=	115.242	
Element: Parabola	PVI	602+00.00	487.000
	LC	740.000	
	Entrance Grade	-4.071	
	Exit Grade	2.300	
	K=	116.143	
Element: Parabola	PVI	631+50.00	554.850
	LC	200.000	
	Entrance Grade	2.300	
	Exit Grade	1.209	
	K=	183.394	
Element: Parabola	PVI	639+00.00	563.921
	LC	220.000	
	Entrance Grade	1.209	
	Exit Grade	3.055	
	K=	119.196	
Element: Parabola	PVI	649+50.00	596.000
	LC	510.000	
	Entrance Grade	3.055	
	Exit Grade	-1.379	
	K=	115.008	
Element: Parabola	PVI	664+00.00	576.000
	LC	200.000	
	Entrance Grade	- 1.379	
	Exit Grade	-1.250	
	K=	1546.667	
Element: Parabola	PVI	668+00.00	571.000
	LC	200.000	
	Entrance Grade	-1.250	
	Exit Grade	-1.880	
	K=	317.460	

Illustration



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) – P.I. No. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.:
		RD-6
DESCRIPTION:	Redesign grade to minimize offsite borrow	SHEET NO.: 4 of 6

	STATION	ELEVATION
Vertical Alignment Name: SR 380 Revised		
Element: Parabola		
PVI	671+00.00	565.360
LC	200.000	
Entrance Grade	-1.880	
Exit Grade	-3.160	
K=	156.253	
Element: Parabola		
PVI	678+00.00	543.240
LC	420.000	
Entrance Grade	-3.160	
Exit Grade	0.389	
K=	118.339	
Element: Linear		
POE	686+76.25	546.650
LC	220.000	
Entrance Grade	1.209	
Exit Grade	3.055	
K=	119.196	
Element: Parabola		
PVI	649+50.00	
Tangent Grade	0.389	

Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-6

DESCRIPTION: **Redesign grade to minimize offsite borrow**

SHEET NO.: **5** of **6**

Assume a 20% increase in cut / unclassified excavation which will reduce the required borrow by a corresponding amount. Assume an additional 10% reduction in borrow from the grade modification.

Original Design:

Unclassified Excavation – 351,400 CY
Borrow Excavation – 323,388 CY

Alternative Design:

Unclassified Excavation – 351,400 CY + (351,400 CY x 0.20) => 421,680 CY
Borrow Excavation – (323,388 CY x 0.90) - (351,400 CY x 0.20) => 220,770 CY

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) - P.I. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-6
DESCRIPTION:	Redesign grade to minimize offsite borrow	SHEET NO.:	6 of 6

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
UNCLASSIFIED EXCAVATION	CY	351,400	\$ 2.90	\$ 1,019,060	421,680	\$ 2.90	\$ 1,222,872
BORROW EXCAV.,INCL MATL	CY	323,388	\$ 5.43	\$ 1,755,997	220,770	\$ 5.43	\$ 1,198,781
Sub-total				\$ 2,775,057			\$ 2,421,653
Mark-up at 10.00%				\$ 277,506			\$ 242,165
TOTAL				\$ 3,052,563			\$ 2,663,818
Estimated Savings:							\$388,744

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-8

DESCRIPTION: **Use 2'-0" paved shoulder in-lieu of 6'-6"**

SHEET NO.: **1 of 4**

Original Design:

The original design calls for 6'-6" paved shoulder.

Alternative:

The proposed alternative would provide 2'-0" paved shoulder.

Opportunities:

- Reduction in pavement cost

Risks:

- Minimal increase in design effort
- Minimal reduction in utility

Technical Discussion:

The original design calls for a 6'-6" paved shoulder, however AASHTO allows a little as a 2'-0" paved shoulder (AASHTO, A Policy on Geometric Design of Highways and Streets, page 314) based on the project criteria. A 2'-0" shoulder will not provide sufficient width to accommodate pedestrian and bicycle traffic, but this type of traffic should be discouraged or restricted from this facility

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 760,616	\$ 0	\$ 760,616
ALTERNATIVE	\$ 234,005	\$ 0	\$ 234,005
SAVINGS	\$ 526,611	\$ 0	\$ 526,611

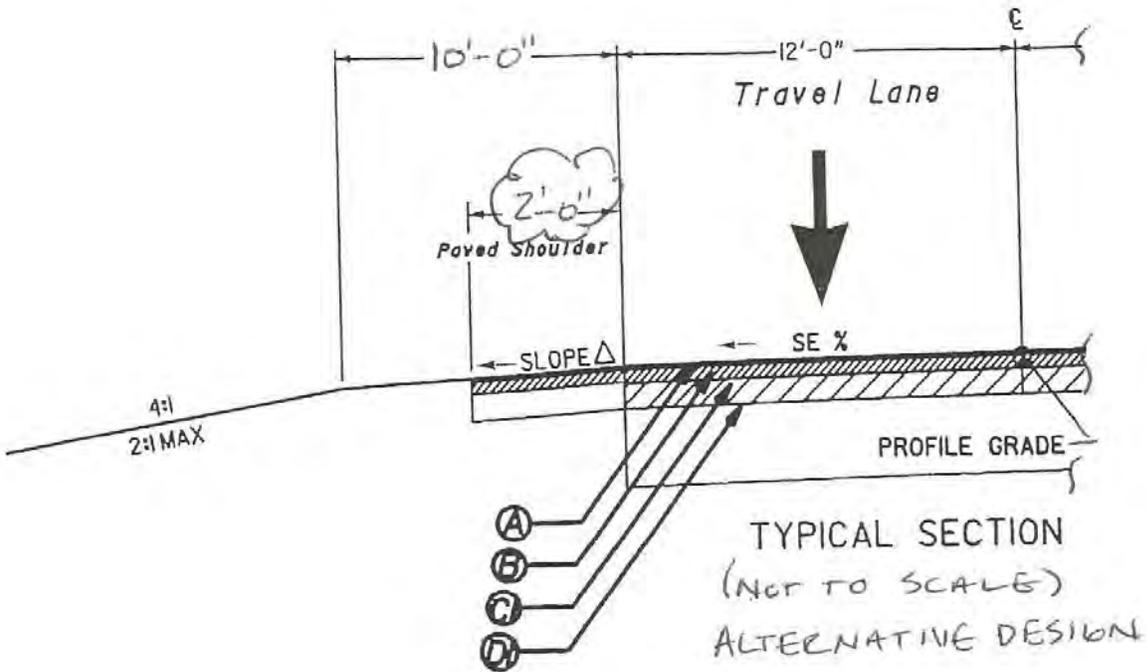
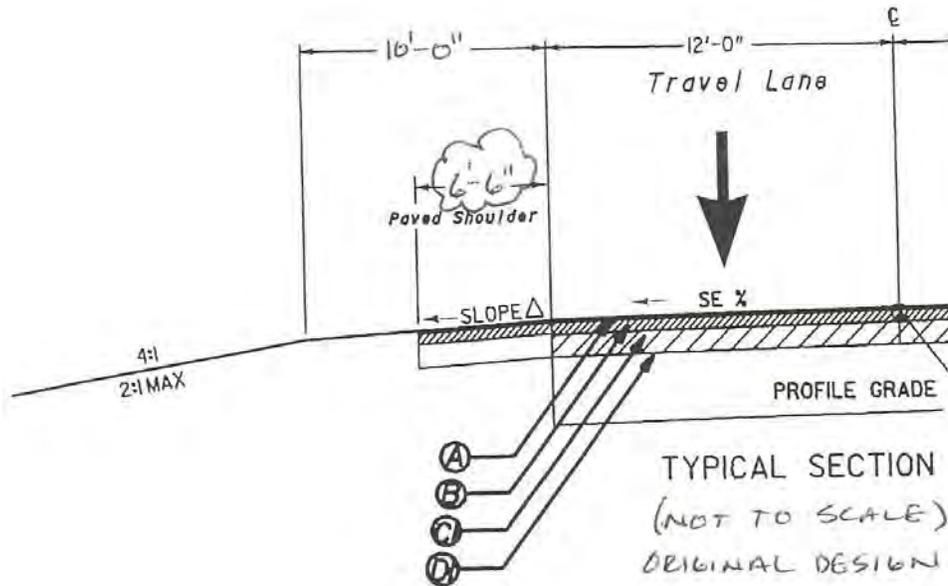
Illustration

PROJECT: Georgia Department of Transportation
NHS00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County

ALTERNATIVE NO.:
RD-8

DESCRIPTION: Use 2'-0" paved shoulder in-lieu of 6'-6"

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-8

DESCRIPTION: **Use 2'-0" paved shoulder in-lieu of 6'-6"**

SHEET NO.: **3** of **4**

~Station 504+50 to ~Station 686+75

Original Design:

Length of the roadway = 18,225, Width of the Paved Shoulders = (2 x 6.5') 13 LF

Total Area of Paved Shoulder = (18,225 LF x 13 LF) / (9 SF / SY) = 26,325 SY

Superpave 12.5mm = (26,325 SY * 165/2000) => 2,172 TN

Superpave 19.0mm = (26,325 SY * 220/2000) => 2,896 TN

6" GAB = 26,325 SY

Alternative:

Length of the roadway = 18,225 LF, Width of the Paved Shoulders = (2 x 2.0') 4 LF

Total Area of Paved Shoulder = (18,225 LF x 4 LF) / (9 SF / SY) = 8,100 SY

Superpave 12.5mm = (8,100 SY * 165/2000) => 668 TN

Superpave 19.0mm = (8,100 SY * 220/2000) => 891 TN

6" GAB = 8,100 SY

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-8
DESCRIPTION:	Use 2'-0" paved shoulder in-lieu of 6'-6"	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
12.5mm Superpave	TN	2,172	\$ 72.24	\$ 156,905	668	\$ 72.24	\$ 48,256
19.0 mm Superpave	TN	2,896	\$ 74.96	\$ 217,084	891	\$ 74.96	\$ 66,789
6" G.A.B.	SY	26,325	\$ 12.06	\$ 317,480	8,100	\$ 12.06	\$ 97,686
Sub-total				\$ 691,469			\$ 212,732
Mark-up at 10.00%				\$ 69,147			\$ 21,273
TOTAL				\$ 760,616			\$ 234,005
Estimated Savings:							\$526,611

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-9

DESCRIPTION: **Lengthen vertical curve at Station 588+00 to meet design criteria** SHEET NO.: **1 of 1**

Original Design:

The original design calls for a crest vertical curve of 1000' in length at Station 588+00. The approach grade is +4.7500% and the departure grade is -4.3571 % resulting in a 'K' value of 109.80.

Alternative:

The alternative would propose lengthening this crest vertical curve to 1050'.

Opportunities:

- Meet project design criteria

Risks:

- Minimal design effort

Technical Discussion:

A 55 mph design speed requires a 'K' value of 114 for a crest vertical curve (AASHTO A Policy on Geometric Design of Highways and Streets 2004, page 271, Exhibit 3-71 Design Controls for Crest Vertical Curves). By lengthening the vertical curve from 1000' to 1050' it will increase the 'K' value from 109.8 to 115.3. It appears that the current profile could accommodate a 1050' curve.

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-10

DESCRIPTION: **Use an 8'-0" shoulder in-lieu of 10'-0"**

SHEET NO.: **1** of **4**

Original Design:

The original design calls for a 10'-0" improved shoulder

Alternative:

The proposed alternative would provide a 8'-0" improved shoulder

Opportunities:

- Reduction in pavement cost (at guardrail locations)
- Reduction in earthwork
- Consistency with bridge typical section

Risks:

- Minimal increase in design effort
- Minimal reduction in utility

Technical Discussion:

AASHTO would recommend an 8'-0" improved shoulder (AASHTO, A Policy on Geometric Design of Highways and Streets, page 448) based on the project criteria. An 8 foot shoulder would also be consistent with GDOT Policies and Procedures (Subject 4265-10 / Geometric Design Guide for Bridges on Highways Having State Route Numbers). An 8 '-0" shoulder would also match the width of the preliminary bridge layout developed by the GDOT Bridge Design Section.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,081,396	\$ 0	\$ 3,081,396
ALTERNATIVE	\$ 2,983,056	\$ 0	\$ 2,983,056
SAVINGS	\$ 99,340	\$ 0	\$ 99,340

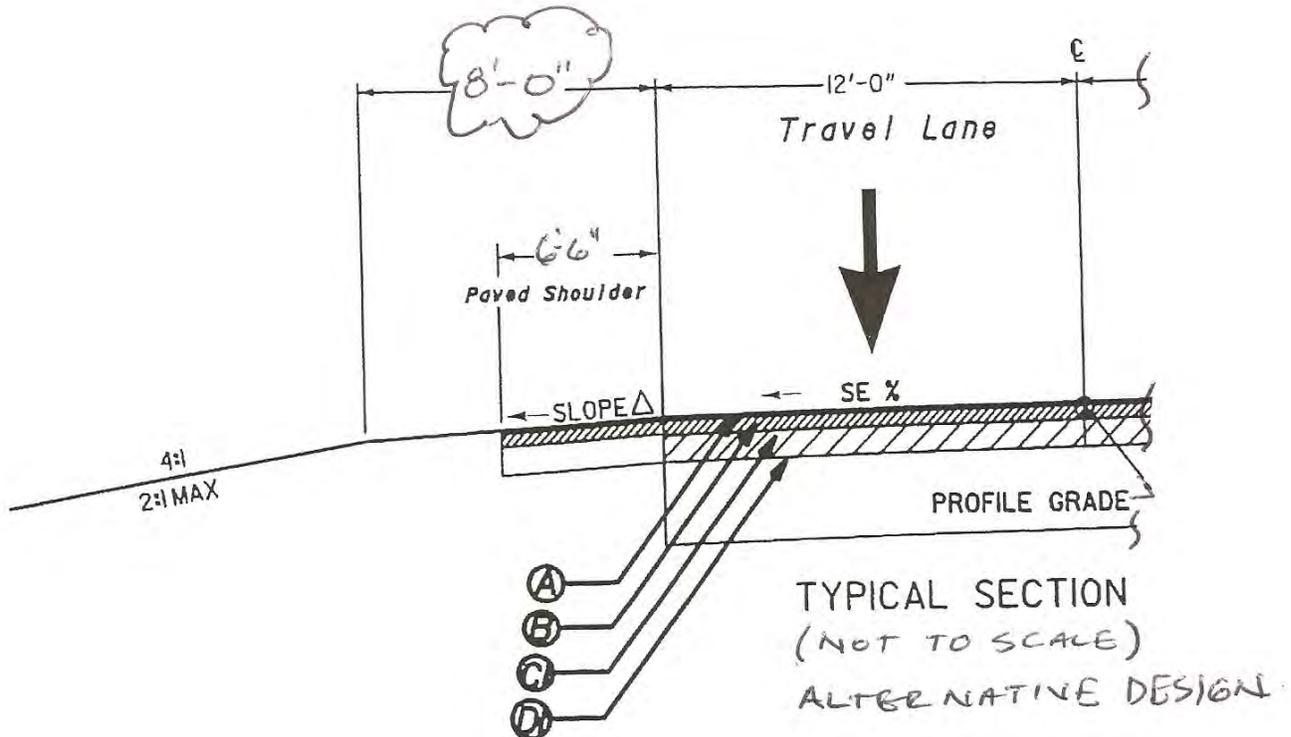
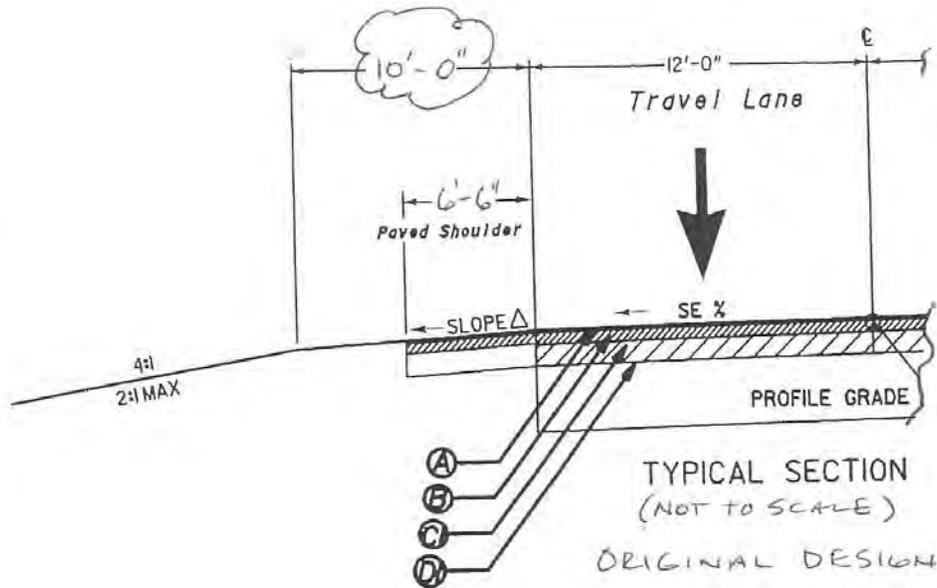
Illustration

PROJECT: Georgia Department of Transportation
NHS00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County

ALTERNATIVE NO.:
RD-10

DESCRIPTION: Use an 8'-0" shoulder in-lieu of 10'-0"

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-10

DESCRIPTION: **Use an 8'-0" shoulder in-lieu of 10'-0"**

SHEET NO.: **3** of **4**

Reduction of Right of Way:

$(18,225' \times 2 \text{ sides} \times 2' \text{ width avg.}) / (43,560 \text{ sf / acre}) \Rightarrow 1.7 \text{ ac}$

Land: 1.7 acres x \$4,000 \Rightarrow \$6,800

Scheduling @ 55%	=	\$3,740
Admin/Court cost @ 60%	=	\$4,080
Inflation @ 40%	=	\$2,720
Total	=	\$17,340

Alternative Estimate = Original - Reduction = \$2,728,300 - \$17,340 = \$2,710,960

Reduction in shoulder paving – Assume 3,000 LF for areas adjacent to guardrail.

Length of the roadway = 3,000 LF, Width of the reduction of Paved Shoulders = 2.0 LF

Total Area of Paved Shoulder = $(3,000 \text{ LF} \times 2 \text{ LF}) / (9 \text{ SF} / \text{SY}) \Rightarrow 667 \text{ SY}$

Superpave 12.5mm = $(667 \text{ SY} * 165/2000) \Rightarrow 55 \text{ TN}$

Superpave 19.0mm = $(667 \text{ SY} * 220/2000) \Rightarrow 73 \text{ TN}$

6" GAB = 667 SY

Reduction in unclassified excavation - Assume 6.0 foot average cut/fill height.

~Station 504+50 to ~Station 686+75 Length of the roadway = 18,225 LF

$(6.0' \text{ avg. depth} \times 4' \text{ width} \times 18,225 \text{ LF}) / 27 \text{ CF} / \text{CY} = 16,200 \text{ CY}$

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-10
DESCRIPTION:	Use an 8'-0" shoulder in-lieu of 10'-0'	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	
12.5mm Superpave	TN	55	\$ 72.24	\$ 3,973	0	\$ 72.24	\$ -	
19.0 mm Superpave	TN	73	\$ 74.96	\$ 5,472	0	\$ 74.96	\$ -	
6" G.A.B.	SY	667	\$ 12.06	\$ 8,044	0	\$ 12.06	\$ -	
Right of Way	LS	1	\$2,728,300.00	\$2,728,300	1	\$2,710,960.00	\$ 2,710,960	
Unclassified Excavation	CY	16,200	\$ 2.90	\$ 46,980	0	\$ 2.90	\$ -	
Clearing and Grubbing	AC	1.7	\$ 5,000.00	\$ 8,500	0	\$ 5,000.00	\$ -	
Sub-total				\$ 2,801,269				\$ 2,710,960
Mark-up at 10.00%				\$ 280,127				\$ 271,096
TOTAL				\$ 3,081,396				\$ 2,982,056
Estimated Savings:							\$99,340	

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-11

DESCRIPTION: **Eliminate Control of Access (COA) fencing**

SHEET NO.: **1 of 3**

Original Design:

The original design designated this roadway as a limited access facility and proposed installation of fence along both sides of the roadway.

Alternative:

The alternative is to eliminate the COA fencing.

Opportunities:

- Reduction of initial project construction costs
- Reduction of maintenance costs

Risks:

- Animals may enter the highway

Technical Discussion:

Although the AASHTO Green Book acknowledged that highway agencies use fencing extensively to delineate the acquired control of access for a highway, the Green Book also pointed out that provision of fencing is not an obligation. As the subject roadway is functionally classified as a collector, not an interstate, elimination of fencing could be considered.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$230,683	\$ 0	\$ 230,683
ALTERNATIVE	\$0	\$ 0	\$ 0
SAVINGS	\$230,683	\$ 0	\$ 230,683

Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-11

DESCRIPTION: **Eliminate Control of Access (COA) fencing**

SHEET NO.: **2** of **3**

Project area:

From Sta 512+00 to Sta 686+76 = 17,476 ft

Fencing on both sides of SR 380 = $2 \times 17,476 \text{ ft} = 34,952 \text{ ft}$

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
NHS00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-14

DESCRIPTION: **Reduce length of White Oak Creek Bridge (Bridge No. 1)** SHEET NO.: **1** of **4**

Original Design:

The original concept calls for a new three span 260'-0" (60-100-100) long curved bridge over White Oak Creek. The new bridge will be 43'-3" wide (Out-to-Out) and will carry two 12'-0" travel lanes and two 8'-0" shoulders. Rip-rap will protect the end bents.

Alternative:

The alternative proposes reducing the length of Span No. 1 from 60'-0" to 40'-0".

Opportunities:

- Potential savings in construction costs due to reduced bridge length (deck concrete, reduced bent width, etc)
- Reduced dead loads
- Use of Type I Mod PSC Beams

Risks:

- Minimal redesign effort (as the design is in the preliminary phase)

Technical Discussion:

The reduction in the overall bridge length of the proposed bridge will be accomplished by shortening Span No. 1 by 20'-0". This reduction in length will not affect the proposed location of the interior piers therefore little or no effect will be done to the current estimated scour line. Additionally, the reduction in channel opening will not affect the estimated vertical clearance between the design water level and the proposed low member elevation. The channel bank will not be encroached by the relocation of the proposed rip-rap 20'-0" east from the proposed location. The reduction in span length will allow the use of Type I Mod PSC beams.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,236,950	\$ 0	\$ 1,236,950
ALTERNATIVE	\$ 1,141,800	\$ 0	\$ 1,141,800
SAVINGS	\$ 95,150	\$ 0	\$ 95,150

Calculations



PROJECT: **Georgia Department of Transportation
NHS00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-14

DESCRIPTION: **Reduce length of White Oak Creek Bridge (Bridge No. 1)**

SHEET NO.: **3** of **4**

Note:

- 1) Reduction from current design = savings for alternative
- 2) Preliminary Bridge Plans were made available to the VE Team at the time of the study

Alternative Design: Reduce length of Span No. 1 from 60'-0" to 40'-0".

Reduction in bridge length = 20'-0"

Reduction in deck area = $[20' + 43.25'] = 865$ SF

Other treatments (assumed same for current design & alternative, therefore, not considered).

NOTE:

**A more detailed cost analysis may be performed on sufficiently developed alternative bridge plans to be able to itemize major components and realize greater cost savings than that shown in this study.
Example: One Girder line can be eliminated, concrete grooving reduced, etc.**

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) – P.I. No. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-17
DESCRIPTION:	Reduce the minimum Right-of-Way width from 200' to 150'	SHEET NO.:	1 of 3

Original Design:

The original design calls for a minimum Right-of-Way width of 200'.

Alternative:

The proposed alternative would provide a minimum Right-of-Way width of 150'.

Opportunities:

- Reduction in Right-of-Way cost

Risks:

- Minimal increase in design effort

Technical Discussion:

The “backbone” of the roadway template (including the clear zone) is only 76'. A 200' Right of Way width is excessive in several areas. Some sections have as much as a 50' or 60' buffer for in excess of 1000'. By reducing the Right-of-Way to a 150' minimum and providing additional width of Right-of-Way or slope maintenance easements in selected areas. A significant savings can be realized while still providing a 10' to 20' buffer for back slope construction, maintenance and installation of erosion control measures during construction. An example of an area of excess Right-of-Way would be on the east side of SR-83 from Station 581+00 to Station 592+00.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,070,430	\$ 0	\$ 3,070,430
ALTERNATIVE	\$ 2,845,898	\$ 0	\$ 2,845,898
SAVINGS	\$ 224,532	\$ 0	\$ 224,532

Calculations



PROJECT: **Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

ALTERNATIVE NO.:
RD-17

DESCRIPTION: **Reduce the minimum Right-of-Way width from 200' to
150'**

SHEET NO.: **2** of **3**

Assume that the Right-of Way can be reduced for 60% of the project length by an average of 25' on each side.

Reduction of Right of Way:

$$(18,225' \times 0.60 \times 2 \text{ sides} \times 25' \text{ width avg.}) / (43,560 \text{ sf / acre}) \Rightarrow 12.6 \text{ ac}$$

$$\text{Land: } 12.6 \text{ ac} \times \$4,000 \quad \Rightarrow \quad \$50,400$$

Scheduling @ 55%	=	\$27,720
Admin/Court cost @ 60%	=	\$30,240
Inflation @ 65%	=	<u>\$32,760</u>
Total	=	\$141,120

$$\text{Alternative Estimate} = \text{Original} - \text{Reduction} = \$2,728,300 - \$141,120 = \$2,587,180$$

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) Monticello NE Bypass Jasper County	ALTERNATIVE NO.: RD-17
DESCRIPTION:	Reduce the minimum Right of Way width from 200' to 150'	SHEET NO.: 3 of 3

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Right-of-Way	LS	1	2,728,300	\$ 2,728,300	1	2,587,180	\$ 2,587,180
Clearing and Grubbing	AC	12.6	\$ 5,000.00	\$ 63,000	0	\$ 5,000.00	\$ -
Sub-total				\$ 2,791,300			\$ 2,587,180
Mark-up at 10.00%				\$ 279,130			\$ 258,718
TOTAL				\$ 3,070,430			\$ 2,845,898
Estimated Savings:							\$ 224,532

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) – P.I. No. 0001939 Monticello NE Bypass Jasper County	ALTERNATIVE NO.:	RD-20
DESCRIPTION:	Improve the SR 380 / CR 363 intersection to include left turn bays on SR 380	SHEET NO.:	1 of 4

Original Design:

The original design calls for a thru and left turn shared lane and a right turn bay on SR 380 at the intersection with CR 363.

Alternative:

The alternative is to add a left turn bay on SR 380 at this intersection.

Opportunities:

- Enhance safety by reducing the possibility of rear-end collisions

Risks:

- Increase construction costs

Technical Discussion:

Under the current design, vehicles intending to turn left from SR 380 onto CR 363 might have to stop on the thru lane on SR 380 while awaiting gaps in the opposing traffic streams before turning. This temporary stoppage of a vehicle on a thru lane with a 55 mph speed limit might cause a rear-end collision by a following vehicle that intends to go straight. Provision of a left turn bay to allow the left turning vehicles to move out of the thru lane would substantially enhance the safety of the highway.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 0	\$ 0	\$ 0
ALTERNATIVE	\$ 99,901	\$ 0	\$ 99,901
SAVINGS	\$ (99,901)	\$ 0	\$ (99,901)

Illustration



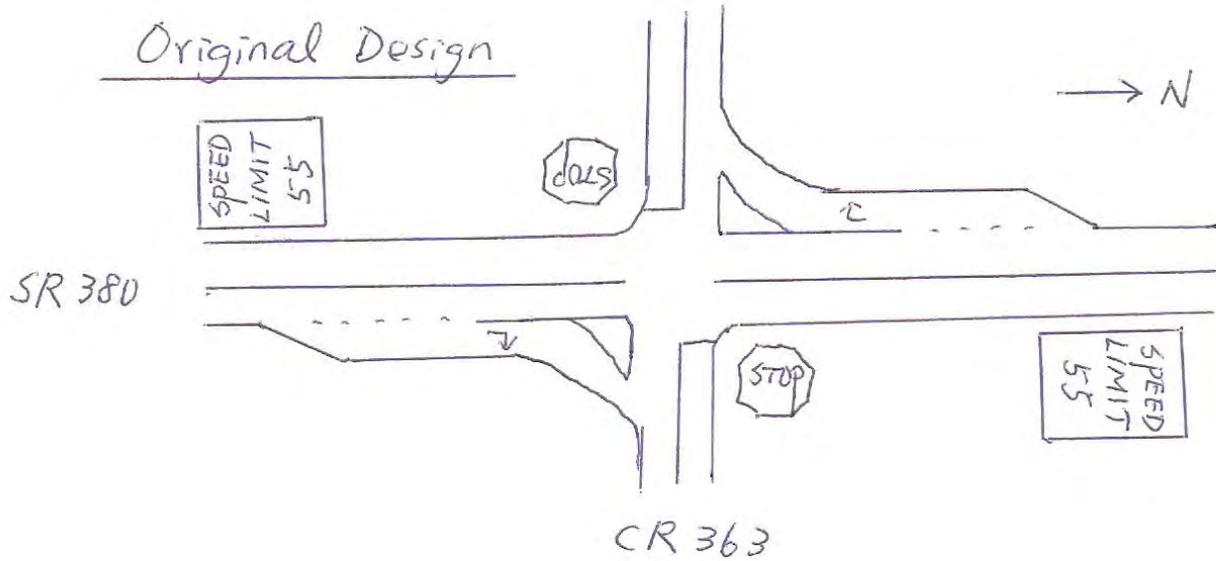
PROJECT: Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County

ALTERNATIVE NO.:
RD-20

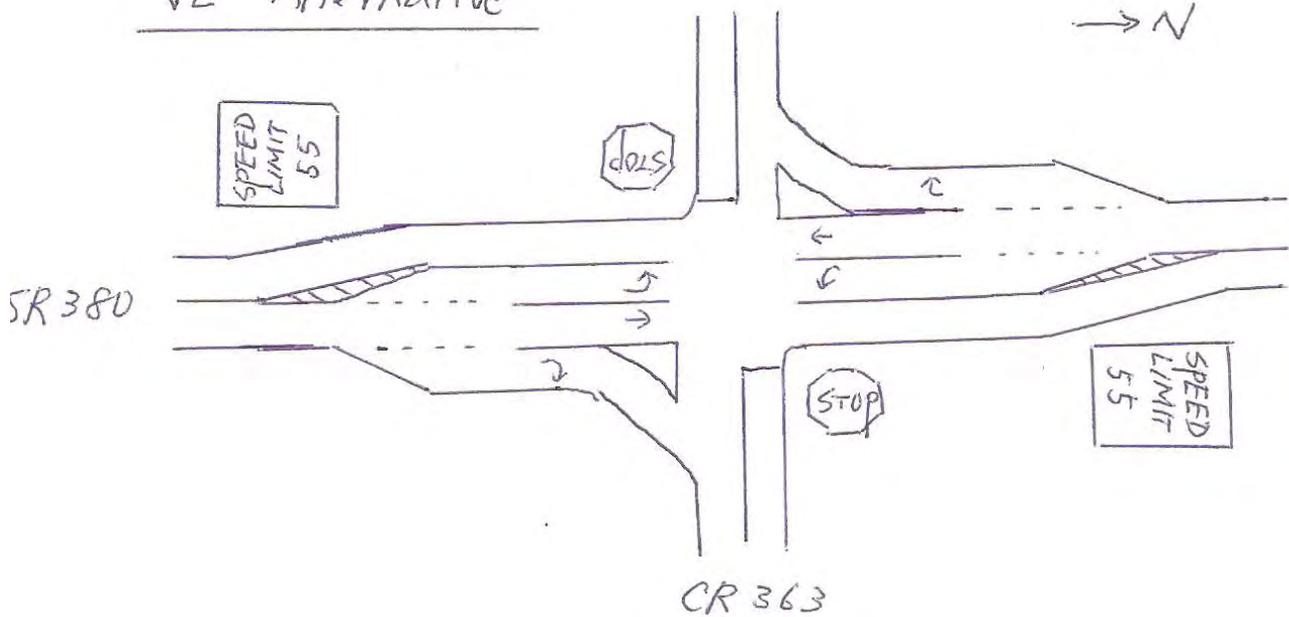
DESCRIPTION: Improve the SR 380/CR 363 intersection to include left
turn bays on SR 380

SHEET NO.: 2 of 4

Original Design



VE Alternative



Calculations



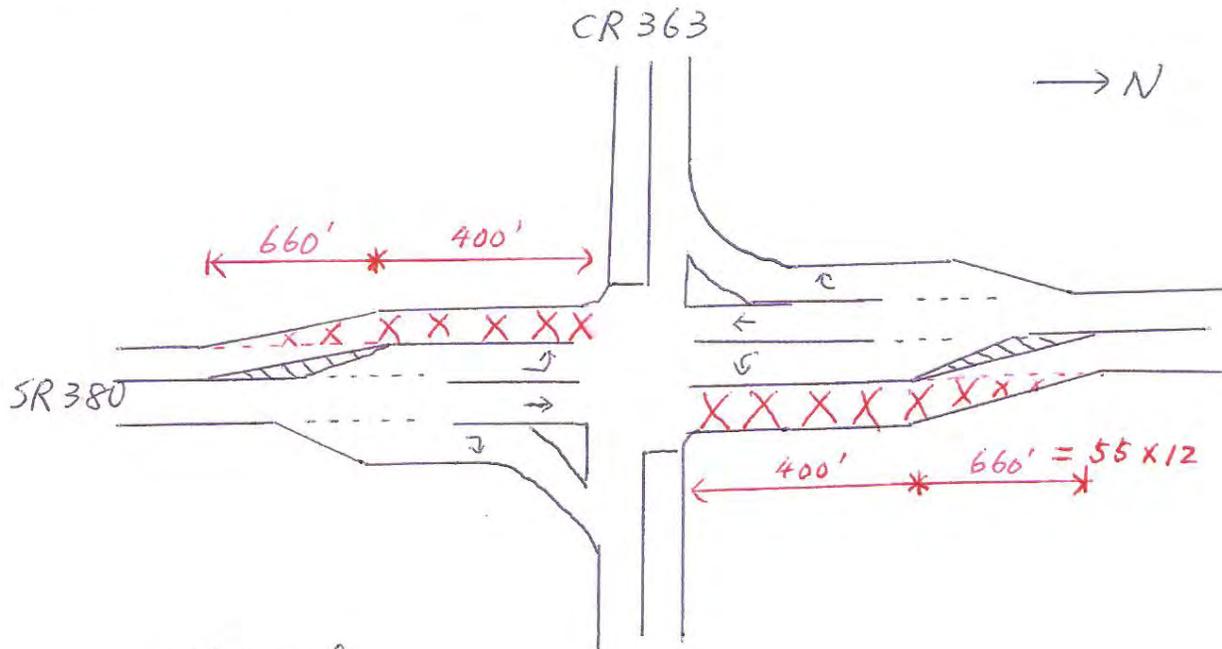
PROJECT: Georgia Department of Transportation
 STP00-0001-00(939) – P.I. No. 0001939
 Monticello NE Bypass
 Jasper County

ALTERNATIVE NO.:
RD-20

DESCRIPTION: Improve the SR 380/CR 363 intersection to include left
 turn bays on SR 380

SHEET NO.: 3 of 4

Additional Pavement in VE Alternative



Additional
 pavement area = $(400' \times 12' + 660' \times 12' \times \frac{1}{2}) \times 2 = 17,520 \text{sf}$

Legend:
 Additional
 Pavement

Cost Worksheet



PROJECT:	Georgia Department of Transportation STP00-0001-00(939) Monticello NE Bypass Jasper County Improve the SR 380 / CR 363	ALTERNATIVE NO.:	RD-20
DESCRIPTION:	intersection to include left turn bays on SR 380	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
310-5100- Aggr 10", Incl Matl	SY	0	\$ 16.44	\$ -	1,947	\$ 16.44	\$ 32,009
402-3121- 25mm Superpave	TN	0	\$ 72.00	\$ -	428	\$ 72.00	\$ 30,816
402-3190- 19mm Superpave	TN	0	\$ 74.96	\$ -	214	\$ 74.96	\$ 16,041
402-3141- 12.5mm Superpave	TN	0	\$ 74.24	\$ -	161	\$ 74.24	\$ 11,953
Sub-total				\$ -			\$ 90,819
Mark-up at 10.00%				\$ -			\$ 9,082
TOTAL				\$ -			\$ 99,901

Estimated Savings: (\$99,901)

PROJECT DESCRIPTION

INTRODUCTION

The project for this Value Engineering Study is project No. STP-0001-00(939) - P.I. No. 0001939 the extension of SR 380, the Monticello north and south bound traffic bypass in Jasper County. The Bypass project starts at the intersection of SR 380 and SR 16, continuing northeasterly, on a new location, to an intersection with SR 83. The length of the proposed bypass is 3.279 miles. The design is in the preliminary stage. The designer is District II - Georgia Department of Transportation.

The Bypass project starts at the intersection of SR 380 and SR 16, continuing northeasterly, on a new location, to an intersection with SR 83. The length of the proposed bypass is 3.279 miles.

The need for the project is to divert truck traffic from downtown Monticello which is built around a town square. Four state routes (SR16, SR 212, SR 11, and SR 83) culminate at the county square. On street parking is located all around the square area adding to the truck turning problem. At the present time, trucks have to negotiate a minimum of two -ninety degree turns going around the square.

State Route 380 is currently classified as a Major Collector and operates on a Level of Service of "A". It will operate at the same Level of Service in the build year of 2010 and is anticipated to function on a level of Service "B" for the design year 2030. Traffic projections for 2030 are very low with an estimate of only 50 trucks per day or about 7%. Train traffic is also very minimal with only two trains a day at the present time. This indicates that a two lane facility will accommodate the existing traffic as well as traffic volumes into the year 2030.

Currently SR 380 consists of one 12-ft travel lane in each direction with rural shoulders. It begins on SR 83 southwest of the town square and continues around the southeast side of Monticello. The major source of truck traffic is the logging trucks bound for the Georgia Pacific Corporation plant located to the south of Monticello

The proposed bypass will be two 12-ft travel lanes, 10' rural shoulders with 6-6" paved. Bridges will be constructed over White Oak Creek and over the Norfolk Southern Railroad crossing. There are no known historical impacts. The only structure that needs to be avoided is a church located in the southwest corner of the project. There are significant grade changes in the property and numerous small streams.

The design and posted speed for the bypass is 55 mph.

The estimated construction costs are \$11,573,388 with additional Right-of-Way costs of \$2,728,300. Jasper County will be requested to fund all reimbursable utility costs. The projected total project cost of \$14,300,688.

REPRESENTATIVE DOCUMENTS

- Georgia Department of Transportation
 - Construction Cost Estimates
 - Preliminary Right-of-Way Cost Estimate
 - Concept Report
 - Project Location Map
 - Pavement Analysis
 - Accident Data
 - Construction plans and specifications

The VE Team utilized the supplied project materials noted above.

Estimate Report for file "STPOO-0001-00(939) Jasper County_2008-02-12"

Section ROADWAY

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	Lump	LS	100000.00	TRAFFIC CONTROL - STP-0001-00(939)	100000.00
201-1500	Lump	LS	425000.00	CLEARING & GRUBBING - STP-0001-00(939)	425000.00
205-0001	351400	CY	6.00	UNCLASS EXCAV	2108400.00
206-0002	323388	CY	7.00	BORROW EXCAV, INCL MATL	2263716.00
207-0203	419	CY	54.58	FOUND BKFILL MATL, TP II	22869.02
318-3000	43971	TN	25.89	AGGR SURF CRS	1138409.19
402-3121	5522	TN	72.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	397584.00
402-3141	5522	TN	74.24	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL	409953.28
402-3190	8834	TN	74.96	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	662196.64
413-1000	9638	GL	1.93	BITUM TACK COAT	18601.34
441-0600	30	CY	950.93	CONC HEADWALLS, 48 IN	28527.90
500-3101	31	CY	694.00	CLASS A CONCRETE	21514.00
500-3800	46	CY	1081.00	CLASS A CONCRETE, INCL REINF STEEL	49726.00
550-1180	716	LF	50.30	STORM DRAIN PIPE, 18 IN, H 1-10	36014.80
550-1240	394	LF	61.02	STORM DRAIN PIPE, 24 IN, H 1-10	24041.88
550-1360	187	LF	89.90	STORM DRAIN PIPE, 36 IN, H 1-10	16811.30
550-1480	441	LF	128.65	STORM DRAIN PIPE, 48 IN, H 1-10	56734.65
550-3618	2	EA	718.61	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE (CONCRETE)	1437.22
550-4218	8	EA	664.67	FLARED END SECTION 18 IN, STORM DRAIN	5317.36
550-4224	4	EA	776.31	FLARED END SECTION 24 IN, STORM DRAIN	3105.24
550-4236	2	EA	1241.13	FLARED END SECTION 36 IN, STORM DRAIN	2482.26
634-1200	128	EA	102.52	RIGHT OF WAY MARKERS	13122.56
641-1100	2865	LF	92.25	GUARDRAIL, TP T	264296.25
641-1200	100	LF	26.67	GUARDRAIL, TP W	2667.00
641-5001	10	EA	631.99	GUARDRAIL ANCHORAGE, TP 1	6319.90
641-5012	10	EA	1881.82	GUARDRAIL ANCHORAGE, TP 12	18818.20
Section Sub Total:					\$8,097,665.99

Section EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
603-2181	1600	SY	43.52	STN DUMPED RIP RAP, TP 3, 18 IN	69632.00
700-6910	77	AC	1078.44	PERMANENT GRASSING	83471.26
700-7000	155	TN	59.99	AGRICULTURAL LIME	9298.45
700-7010	194	GL	21.55	LIQUID LIME	4180.70
700-8000	150	TN	294.72	FERTILIZER MIXED GRADE	44208.00
700-8100	3870	LB	2.50	FERTILIZER NITROGEN CONTENT	9675.00
Section Sub Total:					\$220,465.41

Section TEMPORARY EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	232	AC	734.02	TEMPORARY GRASSING	170292.64
163-0240	1500	TN	184.73	MULCH	277095.00
163-0300	8	EA	1687.20	CONSTRUCTION EXIT	13497.60
163-0502	4	EA	760.71	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 2	3042.84

163-0520	2297	LF	17.43	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	40036.71
163-0530	6561	LF	4.28	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	28083.99
163-0531	6	EA	8250.39	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	49502.34
165-0010	1970	LF	0.80	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	1576.00
165-0030	985	LF	1.60	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	1576.00
165-0060	6	EA	1356.29	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO -	8137.74
165-0101	8	EA	557.45	MAINTENANCE OF CONSTRUCTION EXIT	4459.60
171-0010	3937	LF	1.72	TEMPORARY SILT FENCE, TYPE A	6771.64
171-0030	1970	LF	3.92	TEMPORARY SILT FENCE, TYPE C	7722.40
Section Sub Total:					\$611,794.50

Section HIGHWAY SIGNS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1033	2153	SF	19.09	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	41100.77
636-1041	44	SF	42.82	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	1884.08
636-2070	123	LF	8.05	GALV STEEL POSTS, TP 7	990.15
636-2080	421	LF	8.95	GALV STEEL POSTS, TP 8	3767.95
636-2090	364	LF	9.33	GALV STEEL POSTS, TP 9	3396.12
653-0120	50	EA	73.99	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	3699.50
653-1501	6890	LF	0.53	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	3651.70
653-1502	6562	LF	0.53	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	3477.86
653-3502	5910	GLF	0.36	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	2127.60
653-6004	1706	SY	2.93	THERMOPLASTIC TRAF STRIPING, WHITE	4998.58
654-1001	430	EA	3.10	RAISED PVMT MARKERS TP 1	1333.00
Section Sub Total:					\$70,427.31

Section BRIDGE # 1

Item Number	Quantity	Units	Unit Price	Item Description	Cost
543-1001	Lump	Lump Sum	988000.00	CONSTR OF BRIDGE - COMPLETE (\$100/SF X 9880 SF)	988000.00
Section Sub Total:					\$988,000.00

Section BRIDGE # 2

Item Number	Quantity	Units	Unit Price	Item Description	Cost
543-1001	Lump	Lump Sum	532000.00	CONSTR OF BRIDGE - COMPLETE (\$100/SF X 5320 SF)	532000.00
Section Sub Total:					\$532,000.00

Total Estimated Cost: \$10,520,353.21

Subtotal Construction Cost \$10,520,353.21

E&C Rate 10.0 % \$1,052,035.32

Inflation Rate 0.0 % @ 0 Years \$0.00

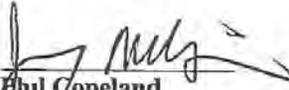
Total Construction Cost \$11,572,388.53

Right Of Way \$0.00

ReImb. Utilities \$0.00

Grand Total Project Cost \$11,572,388.53

Preliminary Right of Way Cost Estimate


Phil Copeland
 Right of Way Administrator
 By Jerry Milligan

Date February 13, 2008
 Project STP-0001-00(939)Jasper UPDATE
 Existing/Required R/W Varies/Varies
 Project Termini Monticello NE Bypass from SR 16 to SR 83
 Project Description Monticello Bypass

PI Number 0001939
 No Parcels n/a

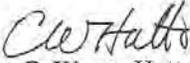
Land Residential R/W 62.7 acres @ \$4,000/acre	\$	250,800	
Commercial R/W 3.3 acres / acre		<u>495,000</u>	\$ 745,800
Improvements Fencing, misc site improvements			40,000
Relocation None			0
Damage None			<u>0</u>
		Net Cost	\$ 785,800
		Net Cost	\$ 785,800
		Scheduling Contingency 55 %	432,190
		Adm/Court Cost 60 %	730,794
		Market Appreciation 40 %	<u>779,514</u>
			\$ 2,728,298

Total Cost \$2,728,300

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE STP-0001-00(939) Jasper County **OFFICE** Preconstruction
P.I. No. 0001939 **DATE** May 14, 2001

FROM 
C. Wayne Hutto, P.E., Assistant Director of Preconstruction

TO Frank L. Danchetz, P.E., Chief Engineer

SUBJECT PROJECT CONCEPT REPORT

This project comprises the Northeast Monticello Bypass (SR 380 Extension) from the intersection of SR 380 with SR 16 continuing northeasterly on new location to SR 83. The length of the proposed bypass is 3.279 miles. The major concern in downtown Monticello is the presence of trucks. One of the major sources of truck traffic in Monticello is the logging trucks bound for the Georgia Pacific Corporation plant located south of Monticello. Trucks traveling on SR 11, SR 16, SR 83, and SR 212 must now negotiate a minimum of two ninety degree turns going through downtown Monticello and continue on their route. This project, in conjunction with the existing SR 380 from SR 83 to SR 16, will provide an east bypass of Monticello. Base year traffic (2004) is 880 VPD and the design year (2024) traffic is 1,540 VPD.

The construction proposes two, 12' lanes with 8' rural shoulders (4' paved) on a variable 120' to 200' of proposed right-of-way. Bridges will be constructed over White Oak Creek, Unnamed Creek, and Norfolk Southern Railroad. Access will be by permit and the proposed speed design is 55 MPH. Traffic will be maintained on existing roads during construction.

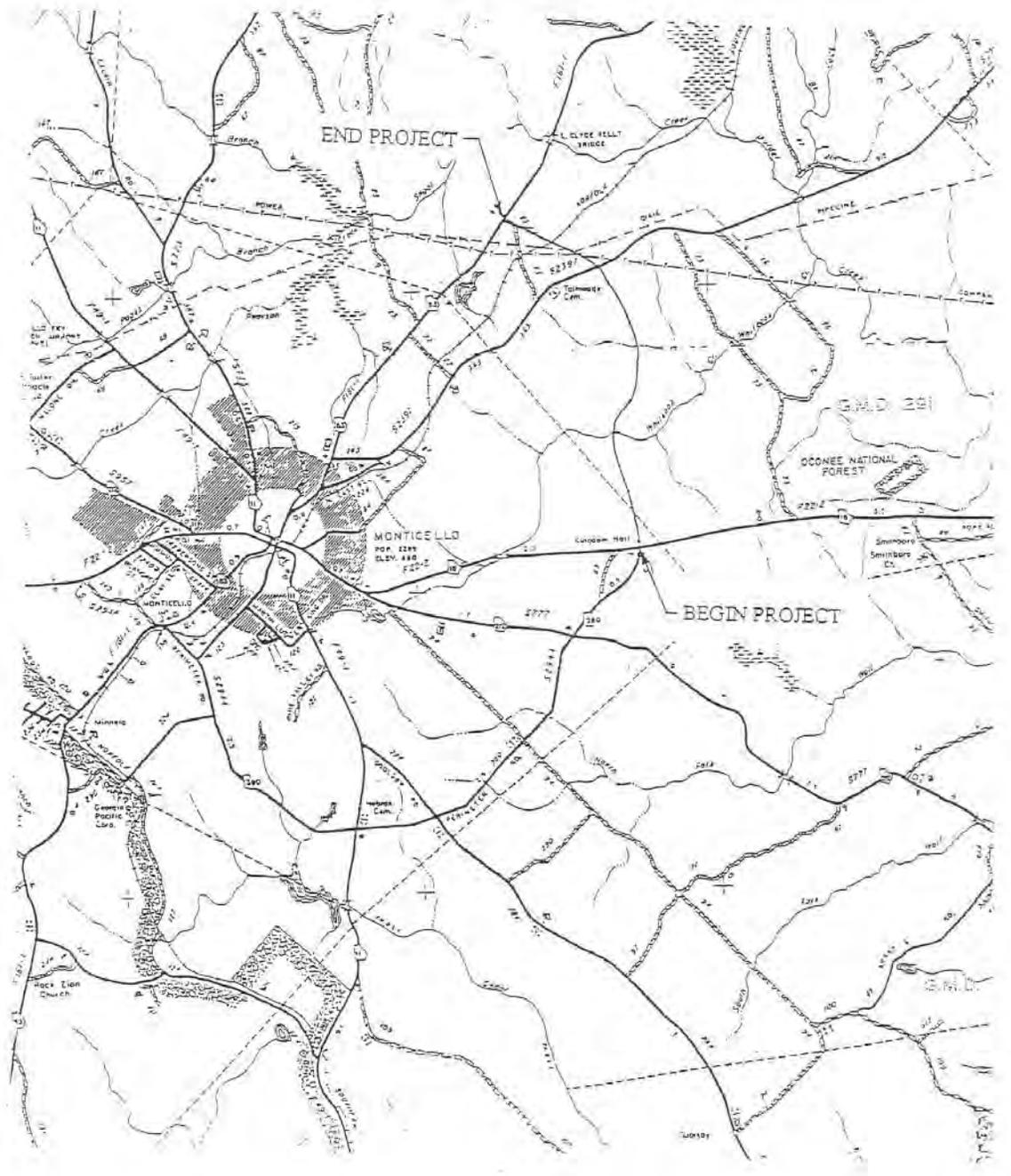
Environmental concerns include requiring a COE 404 Permit; a Categorical Exclusion will be prepared; a public hearing will be held; time saving procedures are not appropriate.

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>PROG DATE</u>	<u>LET DATE</u>
Construction (includes E&C and inflation)	\$5,514,000	\$4,500,000	2008	FY-08
Right-of-Way	\$ 229,000	\$1,000,000		
Utilities*	\$ 55,000	---		

*LGPA to be sent.

STP-0001-00(939)



PROJECT CONCEPT REPORT

PROJECT NUMBER: STP-0001-00(939) Jasper County

PROJECT LOCATION AND DESCRIPTION

This project consists of the construction of the Monticello Bypass in Jasper County. The bypass begins at the intersection of SR 380 with SR 16 and extends to the north and then east to SR 83. There are three proposed bridges on the project. The total project length is 3.279 miles.

TRAFFIC

	CURRENT		PROJECTED	
	YEAR	AADT	YEAR	AADT
SR 83 Bypass	2004	880	2024	1540

PDP CLASSIFICATION	FUNCTIONAL CLASSIFICATION
Minor Minor on new alignment	Rural Minor Arterial
FOS ()	EXEMPT (X) N/A ()

NEED AND PURPOSE

This project proposes to construct a connector road from the intersection of SR 16 and SR 380 northwesterly on new location to intersect SR 83. The total distance would be 3.279 miles. This proposed roadway construction would be an extension of SR 380.

The proposed construction would include a bridge over White Oak Creek and a bridge over a small tributary to White Oak Creek. Also, a grade separation structure will be required at the crossing of the Norfolk Southern Railroad.

Extending the current bypass (SR 380) from the SR 16/SR380 intersection to intersect with SR 83 north of Monticello will provide for a true bypass for north and south bound traffic.

NEED & PURPOSE REVISED 5-14-2001 - SEE ATTACHMENT "A"

EXISTING ROADWAY

TYPICAL SECTION:	none	RIGHT-OF-WAY WIDTH: none
POSTED SPEED	MAXIMUM DEGREE OF CURVE	MAX. GRADE
N/A	N/A	N/A

MAJOR STRUCTURES

FEATURES INTERSECTED/TYPE	WIDTH	HEIGHT	SUFF. RATING
None			

HAZARD INDEX: There existing hazard index is 0.0.

PROPOSED ROADWAY

TYPICAL SECTION:
2-12' lanes with 8' shoulders (4' paved)

DESIGN SPEED	MAXIMUM DEGREE OF CURVE		MAX. GRADE	
	55 mph	ALLOWABLE	6°	ALLOWABLE
PROPOSED		3°	PROPOSED	6.5%

PROPOSED MAJOR STRUCTURES

FEATURES INTERSECTED/TYPE	LENGTH	WIDTH
Bridge over White Oak Creek	180'	38'
Bridge over Unnamed Creek	315'	38'
Bridge over Norfolk Southern Railroad	250'	38'

PROPOSED RIGHT-OF-WAY

RIGHT-OF-WAY WIDTH	PARCELS IMPACTED	DISPLACEMENTS
Varies 120' to 200'	8	0

TYPE OF ACCESS CONTROL: Permit

COORDINATION AND SCHEDULING

CONCEPT TEAM MEETING DATE:	January 3, 2001
CONFORMS TO TIP/STIP?	Y <u>X</u> N ___
MEETS LOGICAL TERMINI REQUIREMENTS?	Y <u>X</u> N ___
P.A.R. MEETING:	Not required
PERMITS REQUIRED:	404
LEVEL OF PUBLIC INVOLVEMENT:	Public Hearing
TIME SAVING PROCEDURES APPROPRIATE:	Yes
SCHEDULING CONSIDERATIONS:	
TIME TO COMPLETE ENVIRONMENTAL:	12 months
TIME TO COMPLETE PRELIM. RD/RW PLANS:	12 months
TIME TO COMPLETE 404 PERMIT:	12 months
TIME TO COMPLETE FINAL CONSTR. PLANS:	9 months
TIME TO BUY RIGHTS-OF-WAY:	18 months
OTHER PROJECTS IN THE AREA:	STP-0000-00(423) Jasper
LOCAL GOVERNMENT COMMITMENTS:	Jasper County will be requested to fund all reimbursable utility relocations.

 MISCELLANEOUS

TRAFFIC CONTROL DURING CONSTRUCTION: N/A
 LEVEL OF ENVIRONMENTAL ANALYSIS: Categorical Exclusion
 UNDERGROUND STORAGE TANKS: None
 HAZARDOUS WASTE SITES: None

DESIGN VARIATIONS REQUESTED

	YES	NO	UNDETERMINED
SUBST HORIZ ALIGNMENT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST ROADWAY WIDTH	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST SHOULDER WIDTH	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST VERTICAL GRADES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST CROSS SLOPES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST STOPPING SIGHT DIST	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST SUPERELEV RATES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST HORIZONTAL CLEARANCE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST SPEED DESIGN	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST VERTICAL CLEARANCE	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST BRIDGE WIDTH	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
SUBST BR STRUCT CAPACITY	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

ALTERNATIVES CONSIDERED

A. Construct the bypass beginning at the intersection of SR 380 and SR 16 and extending to the north on new location to the intersection of SR 83. Construct bridges over White Oak Creek, an unnamed stream, and Norfolk Southern Railroad.

B. No build.

ESTIMATED COST

CONSTRUCTION:	\$4,560,715	RIGHT-OF-WAY:	\$228,965
E & C (10%):	590,000	ACQUIRED BY:	DOT
INFLATION: (3 yrs @ 5% per yr)	<u>475,000</u>	UTILITIES:	* LGPA to be submitted
TOTAL CONS'T COST:	\$5,625,715		

* The estimated total cost for reimbursable utilities is \$54,500. See attached utility cost estimate.

COMMENTS

The district recommends Alternate "A".

ATTACHMENTS: Cost Estimates, Typical Sections, Traffic Data, Pavement Design, Team Meeting Minutes, Right of Way Cost Breakdown Sheet, Utility Cost Estimate

PREPARED BY: George Brewer, District Design Engineer

Need and Purpose Statement
STP-0001-00(939), Jasper County
Monticello Bypass
P.I. No. 0001939
May 1, 2001

The proposed improvement would construct the S.R. 83 Connector, as a two-lane facility, from the intersection with SR 16 northwesterly to SR 83 for a distance of 3.279 miles. SR 380 currently bypasses the city of Monticello on the southern side of town, from SR 83 to SR 16, west to east. Extending the bypass to SR 83 on the northside of Monticello would provide a true bypass for north and south bound traffic.

Four state routes serve the city of Monticello: SR 11, SR 16, SR 83 and SR 212. All four of the state routes converge in downtown Monticello, which is built around a square. The four state routes skirt the square area, where the county courthouse is located. The major concern in downtown Monticello is the presence of trucks, especially the large number of logging trucks. Traffic traveling on SR 11, SR 16, SR 83, and SR 212 must now negotiate a minimum of two ninety degree turns going through downtown Monticello to continue on their route. On-street parking is located all around the square area, further aggravating the truck turning problem.

The 1999 traffic volumes along the four state routes around Monticello range from: 2,072 Average Annual Daily Traffic (AADT) on SR 11 south of town to 2462 on SR 11 north of town; 3,967 AADT on SR 16 west of town to 3,154 AADT on SR 16 east of town; 2,983 AADT on SR 212 west of town to 1,655 AADT on SR 212 east of town; and, 4,080 AADT on SR 83 south of town to 2,704 AADT north of town on SR 83. The current traffic volumes in downtown Monticello range from 3,300 AADT to 8,000 AADT. The 1999 AADT on SR 83 where it runs concurrent with SR 11, SR 16, and SR 212 is 8,000.

The four roadways, outside of town, are all currently operating with an acceptable Level of Service between "A" and "B". The projected (2018) volumes outside of town range from a low of 1,600 to a high of 3,300 with a continued acceptable LOS.

One of the major sources of truck traffic in Monticello is the logging trucks bound for the Georgia Pacific Corporation plant located south of Monticello. The plant can be accessed from SR 83, SR 11 or SR 380. Trucks traveling south, bound for the Georgia Pacific mill on SR 83, would be able to avoid the downtown area by utilizing the bypass. Georgia Pacific is the largest employer in Jasper County with plywood and panel divisions. Once the manufacturing process is complete, the trucks travel in all directions. The number of outbound trucks varies from day to day but average approximately 20 trucks per day.

The traffic projections for the SR 83 Connector for 2004 range from 800 Average Annual Daily Traffic (AADT) to 880 AADT. The 2024 projections range from 1,420 AADT to 1,440 AADT with seven- percent trucks.

Georgia Power owns a transmission line North of C.R. 363 that is composed of three high voltage lines and steel towers. This line is approximately 17.6 m above existing ground. The proposed concept is to raise this grade. Once this is done, the vertical clearance will be reduced to approx. 7.6 m, which should provide adequate vertical clearance. If the grade changes and encroaches on this crossing, the utility estimate will have to be revised.

There is also a privately owned water line that serves a cow pasture in this area. This should be handled through the Right of Way department.

The following provided additional information:

Chris Robertson – Dixie Pipeline - 404-379-0405

Below is a breakdown of facilities eligible for reimbursement:

Central Georgia EMC

Relocate 3 - distribution poles @ 1,500 ea.	\$4,500.00
---	------------

Dixie Pipeline

200 Lf – Steel 8" propane line & valve adjustment	\$50,000.00
---	-------------

Actual conflicts will be determined as plans develop. Should you have any questions or need any additional information, please contact Alan Smith in the Utilities Office at 478-552-4637.

JFH:DAS
cc: Jeff Baker

FLEXIBLE PAVEMENT DESIGN ANALYSIS

Project: MLP-943(1) County: JASPER
 P.I. no.: 245040
 Description: MONTICELLO BYPASS

Traffic Data (NOTE: AADTs are one-way)
 24-hour Truck Percentage: 7.00%
 AADT initial year of design period: 440 vpd (2004)
 AADT final year of design period: 770 vpd (2024)
 Mean AADT (one-way): 605 vpd

Design Loading
 Mean AADT LDF Trucks 18-K ESAL Total Daily Loads
 605 * 1.00 * 0.070 * 0.95 = 41

Total predicted design period loading = 41 * 20 * 365 = 299,300

Design Data
 Terminal Serviceability Index: 2.50
 Soil Support: 3.00
 Regional Factor: 1.60

PROPOSED FLEXIBLE PAVEMENT STRUCTURE

Material	Thickness		Structural Coefficient	Structural Value
	mm	(in.)		
9.5 mm Superpave	35	(1.38)	0.0173	0.61
19 mm Superpave	50	(1.97)	0.0173	0.86
25 mm Superpave	29	(1.14)	0.0173	0.50
	71	(2.80)	0.0118	0.84
Graded Aggregate Base	250	(9.84)	0.0063	1.58
Required SN = 3.51			Proposed SN = 4.39	

>>> Proposed pavement is 25.0% Overdesign <<<

Remarks:

Prepared by George M. Brewer, District Design Engineer
September 11, 2000
Date

Recommended _____
State Materials & Research Engineer Date

Approved _____
District Engineer Date

NEED AND PURPOSE STATEMENT

STP-0001-01(939), PI # 0001939

Jasper County

Monticello East By-Pass

Project History and Planning Background:

This project originated from the local government as a request for a possible Monticello Truck Route to relieve congestion in the downtown square of the City of Monticello. The City of Monticello has a short term Regional Transportation Plan which includes the extension of SR 380 / Monticello By-Pass to SR 83.

Project Setting:

The City of Monticello is the County Seat for Jasper County, Georgia. Monticello was named the county seat in 1808. The Monticello National Register Historic District encompasses much of the community. The central commercial area and surrounding residential neighborhoods include a wide variety of historic styles, including Greek revival, Gothic Revival, Italianate, Queen Anne, Second Empire, Colonial, Neoclassical, English Tudor, and Craftsman.

The downtown area of the City of Monticello is a typical town square with roadside parking around a center beautification area of trees and shrubbery. There are local businesses, government buildings, and restaurants scattered around the square. Four state routes culminate at the county square. They are SR 16, SR 212, SR 11, and SR 83. The traffic flow is one-way around the square. The turning radii located at the street intersections are no greater than 20-ft. because of the close proximity to historic buildings to the streets. There is on-street parking on both sides of the roadways to the middle on the beautification area as well as the outside of the square near the rows of buildings. The intersections of SR 16 – SR 212 and SR 83 are signalized on the northeast and southwest quadrants of the town square. The speed limit around the square is 25 MPH. The vertical grades are flat (1-2%) around the town square.

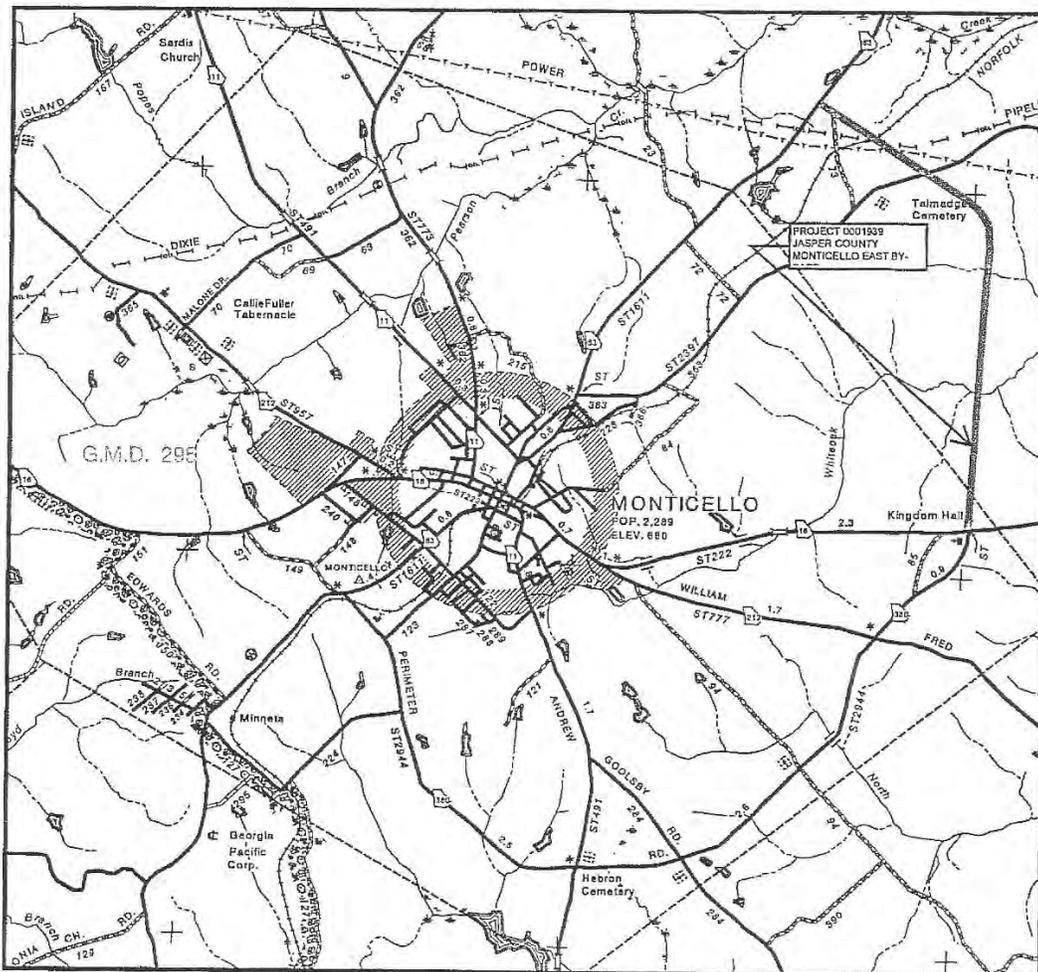
SR 212 is functionally classified as a Minor Arterial. It is comprised of one 12-ft. travel lane in each direction with rural shoulders that become urban shoulders inside the city. It enters the town square from the southwest quadrant of the square and leaves the square on the northeast quadrant. This causes large trucks and lightweight vehicles to maneuver through the square with a minimum of three turns to pass through town.

SR 16 is functionally classified as a Minor Arterial and is common with SR 212 through the square. It is comprised of one 12-ft. travel lane in each direction with rural shoulders that become urban shoulders inside the city. It enters the town square the southwest quadrant of the square and leaves the square on the northeast quadrant. This causes large trucks and lightweight vehicles to maneuver through the square with a minimum of three turns to pass through town.

SR 11 is functionally classified as a Minor Arterial. It is comprised of one 12-ft. travel lane in each direction with rural shoulders that become urban shoulders inside the city. It enters the town square from the northwest quadrant of the square and leaves the square on the southeast quadrant. This causes large trucks and lightweight vehicles to maneuver through the square with a minimum of two turns to pass through town.

SR 83 is functionally classified as a Major Collector changing to a Minor Arterial inside the city square. It is comprised of one 12-ft. travel lane in each direction with rural shoulders that become urban shoulders inside the city. It enters the town square from the west on the northwest quadrant of the square and leaves the square on the southeast quadrant. This causes large trucks and lightweight vehicles to maneuver through the square with a minimum of two turns to pass through town.

SR 380 is functionally classified as a Major Collector. It is comprised of one 12-ft. travel lane in each direction with rural shoulders. It begins on SR 83 southwest of the town square and continues around the southeast side of the City of Monticello. It was constructed in order to provide a truck route for the tractor-trailers entering and leaving the Georgia Pacific plywood plant. The Speed Limit on this road is 55 MPH. The vertical and horizontal alignments are adequate for this type of roadway.



Traffic studies have been conducted along the proposed by-pass extension at SR 16, SR 83 and SR 380. Chart A below summarizes those traffic studies.

State Route #	83	16	380
ADT (Current Year)	2600 (2007)	2000 (2007)	987 (2007)
ADT (Build Year)	3000 (2010)	2400 (2010)	1100 (2010)
ADT (Design Year)	5300 (2030)	4100 (2030)	2000 (2030)
Functional Class	Minor Arterial	Minor Arterial	Major Collector
% Trucks	5%		
% 24 Hr. Trucks	8%		
Speed Design	55 MPH		

Chart A

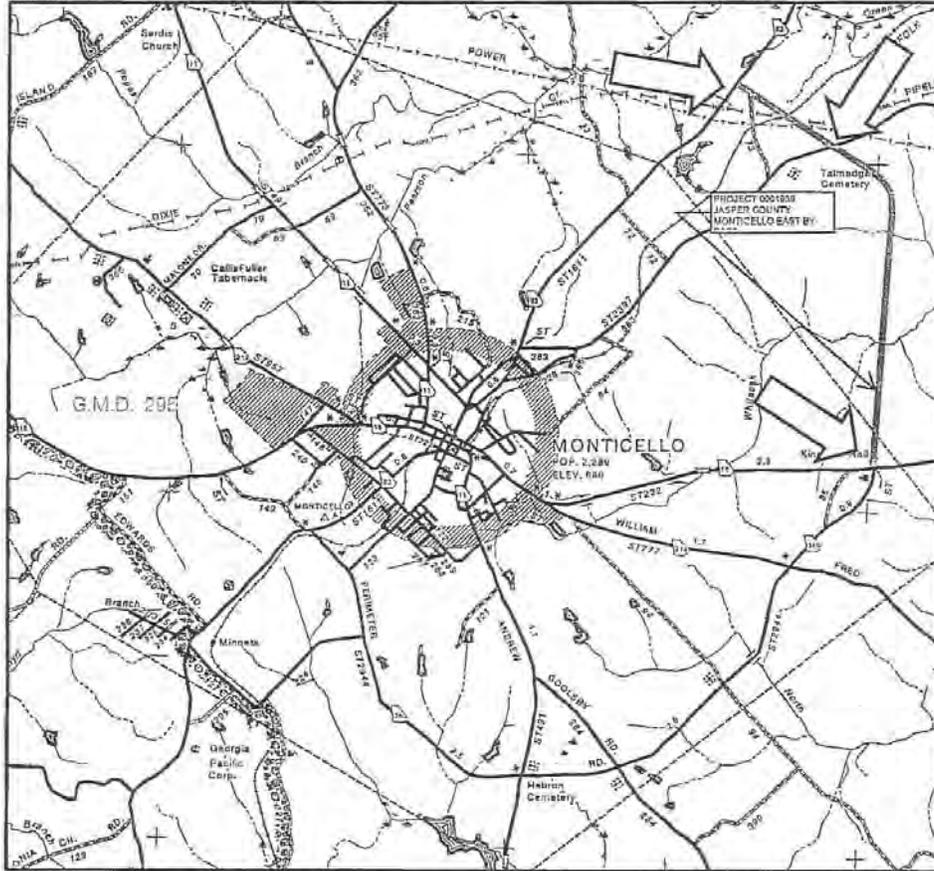
Capacity:

A Capacity Analysis has been conducted to determine the existing Level of Service for State Route 380 as well as what the preferred alternative Level of Service will be. State Route 380 is currently classified as a Major Collector and operates on a Level of Service of "A". For the Build Year (2010), State Route 380 is anticipated to operate on a Level of Service of "A" and for the Design Year (2030), State Route 380 is anticipated to operate on a Level of Service of "B". This indicates that a two lane facility will accommodate the existing traffic as well as predicted traffic volumes into the year 2030.

Safety:

Since the entire project is on new alignment, an accident report has been generated for the intersections along the proposed alignment with existing roads. These include (1) SR 16 at the existing intersection of SR 380, (2) Proposed SR 380 at CR 363 / Rock Eagle Rd. and (3) Proposed SR 380 at the new intersection with SR 83 north of the City of Monticello where the new by-pass will end.

TRAFFIC ACCIDENT DATA LOCATIONS



Crash Data was used for the years 2004 through 2006 for each of the locations. The charts below summarize the frequency of crashes which occurred at each of the locations.

SR 16 at Intersection of SR 16 and SR 380, Jasper County (milepost ? – ?)

	2004	2005	2006
Total Accidents	0	0	0
Accidents Per 100 MVMT	0	0	0
Statewide Accidents Per 100 MVMT	258	Not Available	Not Available
Accident % Higher/Lower Than Statewide Average	-100%	NA	NA

Proposed SR 380 at CR 363 / Rock Eagle RD, Jasper County (milepost ? – ?)

	2004	2005	2006
Total Accidents	0	0	0
Accidents Per 100 MVMT	0	0	0
Statewide Accidents Per 100 MVMT	273	Not Available	Not Available
Accident % Higher/Lower Than Statewide Average	-100%	NA	NA

SR 83 at intersection with proposed SR 380, Jasper County (milepost ? – ?)

	2004	2005	2006
Total Accidents	0	0	0
Accidents Per 100 MVMT	0	0	0
Statewide Accidents Per 100 MVMT	258	Not Available	Not Available
Accident % Higher/Lower Than Statewide Average	-100	NA	NA

As the charts above indicate, no Head-On, Sideswipe, Angle-Intersecting or Rear End crashes occurred for the years 2004 through 2006. Therefore, the locations of each of these proposed intersections indicate that no accident problems are present at these locations and that the route's accident rates are well below statewide average for these types of roadways.

Community Concerns:

As of the 2000 census, there were 2428 people, 927 households, and 609 families. There were 1006 housing units. The racial make-up of the city was 44.77% White, 54.50% African Americans, 0.12% Native Americans, 0.37% Asian, 0.70% from other races, and 0.54% from two or more races. Hispanic or Latino of any race compiled 3.17% of the population. Of the 927 households, 33.9% had children under the age of 18 living with them, 40% were married couples living together, 22% were single mother households, and 31.1% were individuals living alone who were 65 years or older. The average household size was 2.56 and the average family size was 3.21. The proposed extension of SR 380 to be used as a truck route will not affect any of the ethnic groups located in the City of Monticello. It should not cause any increase or decrease in the housing market nor will it displace any particular group of people or families.

There may be some concern from local business owners that the construction of a truck route may decrease sales due to the reduction in traffic volume in the downtown area. Given the reduction of the truck traffic flow through the downtown area, local lightweight vehicle traffic should be able to negotiate through the area easier, thereby increasing circulation of shoppers. This project should not have significant impacts to the local economy.

Transportation Planning Coordination:

This project is currently part of the Georgia Department of Transportation's State Transportation Improvement Plan and also in the City of Monticello's Local Transportation Plan. There are several other projects that currently located within the City of Monticello.

- (1) GDOT Project 0000423 Jasper County consists of the widening of SR 16 near the western city limits of Monticello.*
- (2) GDOT Project M000355 Jasper County consists of Drainage improvements on Sr 83 at Church Street*
- (3) GDOT Project 0004912 Jasper County consists of an extension of the SR 83 By-Pass to SR 11 to provide connectivity for that route as well.*

Summary:

In Summary, The need exist to provide an alternative truck route for the large percentage of trucks that currently enter and exit the downtown area of Monticello. Since the City of Monticello is so rich in historical resources, improvement to the downtown square is very limited. The only other feasible correction to the congestion problem downtown is a truck route.

The purpose of this project is to extend the existing truck route (SR 380) to SR 83 north in order to provide connectivity of SR 83 providing trucks with a by-pass route along SR 83 instead of going through the downtown Monticello area. This will in turn reduce congestion and eliminate some trucks from the downtown area.

VALUE ENGINEERING PROCESS

This report summarizes the analysis and conclusions by the PBS&J Value Engineering team as they performed a VE Study during the period of March 24 through March 27, 2009 in Atlanta, Georgia, for the Georgia Department of Transportation.

INTRODUCTION

The Value Engineering Study team and its leadership were provided by PBS&J. This VE Team consisted of the following:

Les M. Thomas, P.E., CVS-Life	Certified Value Specialist
Luke Clarke, P.E, AVS	Senior Highway Design Engineer
John Luh, PhD, PE, AVS	Senior Highway Design Engineer
Fabricio Quinanez, PE	Senior Structural Engineer
Randy S. Thomas, CVS	Assistant Team Leader

The Value Engineering Team followed the Seven Step Value Engineering job plan as promulgated by SAVE International. This Seven Step job plan includes the following:

- **Investigation/Information Phase** – during this phase of the VE Team’s work, the team received a briefing from the Georgia Department of Transportation (GDOT) staff and Parsons Engineering. This briefing included discussions of the design intent behind the project, the cost concerns, and the physical project limitations. In the working session that followed, the VE Team developed cost models from the cost data provided by the designers and familiarized themselves with the construction drawings and other data that was available to the team. Some of the representative project information (concept report, cost estimate, and special provisions) may be found in the tabbed section of this report entitled **Project Description**. Following this current narrative the reader will also find a cost model done in the Pareto fashion, i.e., identifying the highest costs down to the lowest costs for the larger construction cost elements. This cost model, developed by the VE Team, was used by the VE Team to help focus their week of work. The headings on the Pareto Chart also were used as headings for creative phase activities.
- **Analysis Phase** – during this phase the VE Team determined the “**Functions**” of the project. This was accomplished by reviewing the project from the simplest format in asking the questions of “What is the project supposed to do?”, and “How is it supposed to accomplish this purpose? In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns.

These verb/noun pairs form the basis of the function analysis which distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise.

- The important functions of the project were identified as follows:
 - **Project Objective/Goals**
 - **Improve safety**
 - **Improve traffic operations**
 - **Divert truck traffic**
 - **Create safe railroad crossing**
 - **Project Basic Functions**
 - **Divert truck traffic**
 - **Reduce conflicts**
 - **Create Bypass**
- **Speculation Phase** - The VE team performed a brainstorming session to identify ideas that might help meet the project objectives:
 - **Reduce Right-of-Way taking**
 - **Reduce paved shoulder**
 - **Redesign grade**
 - **Remove COA fencing**
 - **Add left turn bays at SR 380 and CR 363**
 - **Minimize off site borrow**

This brainstorming session initially identified numerous ideas that were then evaluated in the Judgment phase. The reader will find the creative worksheets enclosed. These same work sheets were also used to record the results of the Judgment/Evaluation Phase.

- **Evaluation Phase** – Once the VE Team identified the creative ideas, it was necessary to decide which alternatives should be carried forward. This is the work of the Evaluation or Judgment Phase. The VE Team reflected back on the project constraints and objectives shared with the team by the owner’s representatives, in the kick-off meeting on the first day of the workshop. From that guidance, the team selected ideas that they believed would improve the project by a vote process.

- Following that selection process, the VE Team used the following values as measures of whether or not an alternative had enough merit to be carried forward in the VE process:
 - Construction cost savings
 - Improve value
 - Maintainability
 - Ability to implement the idea
 - General acceptability of the alternatives
 - Constructability
 - Scheduling delays

Based on these criteria, the VE Team evaluated the alternatives and graded them from 5 (Excellent) down to 1 (Poor). Other notes about the alternatives are annotated at the bottom of the enclosed creative and evaluation sheets.

- **Development Phase** – During this phase, the VE Team developed each of the selected design alternatives whose rating was “4” or “5” because of time constraints. If time permitted, the team will develop additional recommendations. This effort included a detailed explanation of the idea with sketches as appropriate to clarify the idea from the original concept, advantages and disadvantages, a technical explanation and an estimation of the cost and resultant savings if implemented. (see the tabbed section – Study Results)
- **Recommendation Phase** – During this phase the VE Team reviews the alternative ideas to confirm which ones are appropriate for the project, have an opportunity for success and which will improve the value of the project if implemented.
- **Presentation Phase** – As noted earlier, the team made an informal “out-briefing” on the last day of the workshop, designed to inform the Owners and the Designers of the initial findings of the VE Study. This written report is intended to formalize those findings.

The following **Function – Worth - Cost** Analysis, was utilized to focus the team and stimulate brainstorming; a copy of the **Attendance Sheets** is also attached so that the reader can be informed about who participated in the Study proceedings.

VALUE ENGINEERING STUDY AGENDA

for

Georgia Department of Transportation

STP00-001-00(939))- P.I. No. 0001939

Monticello NE Bypass

Jasper County

March 24-27, 2009

Pre-Workshop Activities

VE Team Leader organizes study, coordinates with the Owner and Designer the project objectives and materials necessary. The VE Team receives and reviews all project documents. The team develops a Pareto Chart and/or Cost Model for the project.

Day One

9:00-10:30 Design Team Presentation (Information Phase)

- Introduction of participants, owner, designer, and VE team members
- Presentation of the project by the design engineer including:
 - History and background
 - Design Criteria and Constraints
 - Special “U” turn requirements
 - Special needs (schools, businesses, etc.)
 - Sidewalks, bicycle lanes, and or multi-use trails
 - Historical Property protection
 - Current Construction Completion Schedule
 - Project Cost Estimate and Budget Constraints
- Owner Presentation – special requirements, definition of life cycle period and interest rate for life cycle costs
- Review VE Pareto Chart/Cost Model
- Discussion, questions and answers
- Overview of the VE Process and Agenda – Workshop goals & project goals

10:30-12:00 VE Team reviews project (Information Phase)

- Review design team’s presentation
- Review agenda and goals of the study

1:00-2:30 Function Analysis Phase

- Analyze Cost Model – Pareto
- Identify basic and secondary functions
- Complete Function Matrix/FAST Diagram

2:30-5:00 Creative Phase

- Brainstorming of alternative ideas

Day Two

8:00-10:00 Evaluation Phase

- Establish criteria for evaluation
- Rank ideas
- Identify “best” ideas for development
- Identify those ideas that will become Design Suggestions
- Develop a cost/worth analysis
- Identify a “champion” for each idea to be developed

10:00-5:00 Development Phase

- Develop alternative ideas design suggestions with assessment of original design and write up new alternatives including:
 - Opportunities & risks
 - Illustrations
 - Calculations
 - Cost worksheets
 - Life cycle cost analysis

Day Three

8:00-5:00 Development Phase

- Continue developing Alternative Ideas
- Continue developing Design Suggestions
- Prepare for presentation to Owners and Designers

Day Four

8:00-9:00 Prepare Presentation

9:00-10:00 VE Team Presentation

FUNCTION ANALYSIS AND COST-WORTH



Georgia Department of Transportation
 STP00-0001-00(939) – P.I. No. 0001939
 Monticello NE Bypass
 Jasper County

SHEET NO.: 1 of 2

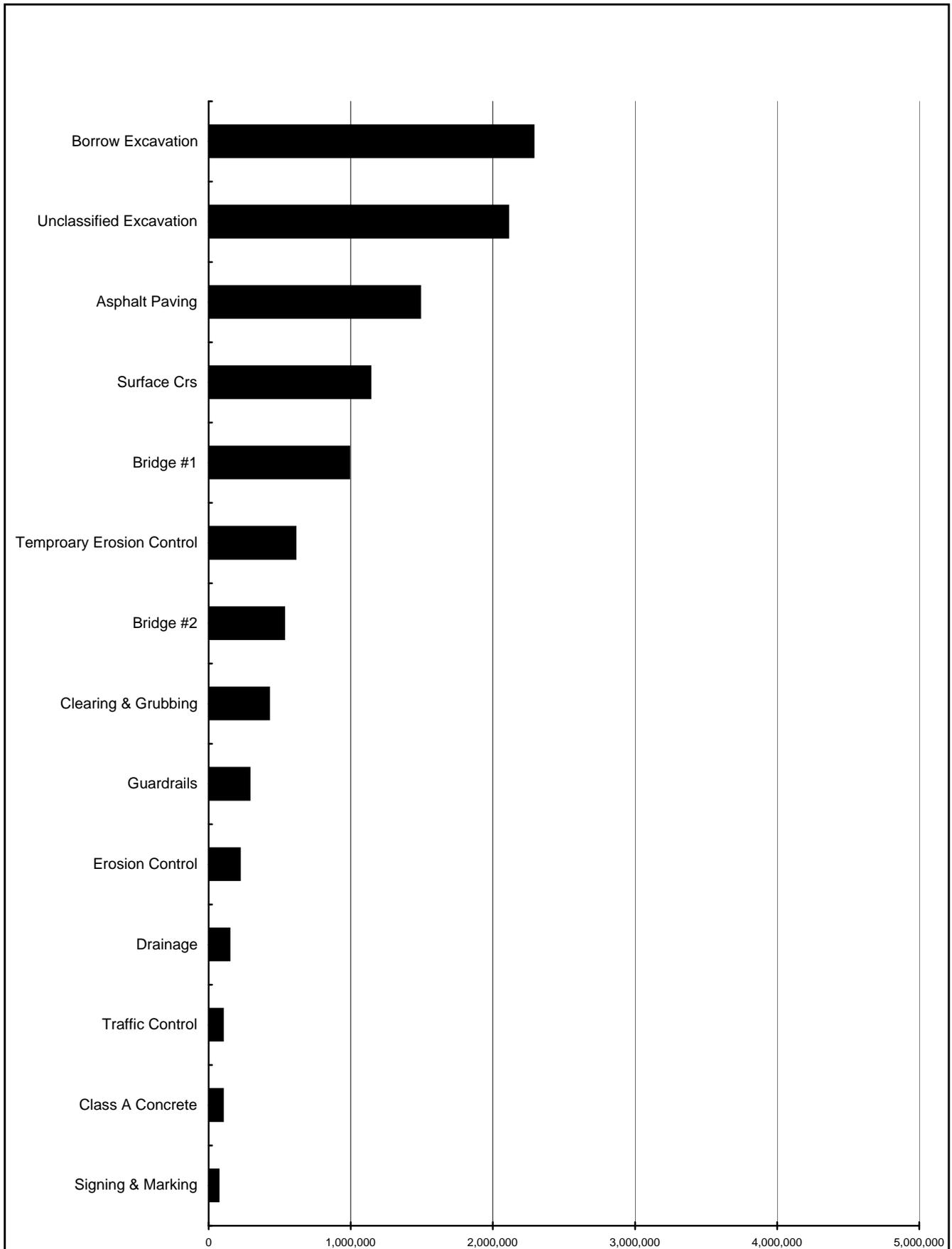
NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Enhance	Safety	B	11,554	10.000	C/W=1.15
		Improve	Traffic Operations	B			
2	<u>EARTHWORK</u>	Prepare	Roadway	B	4,394	3,500	C/W=1.25
		Facilitate	Utilities	RS			
3	ASPHALT PAVING	Create	Lanes	B	1,488	1,395	C/W=1.06
		Increase	Capacity	B			
4	BRIDGE #1	Cross	Creek	B	988	889	C/W=1.18
5	EROSION CONTROL			S	832	832	C/W=1.0
4	BRIDGE #2	Cross	Railroad	B	532	532	C/W=1.0
6	CLEARING & GRUBBING	Prepare	Roadway	B	425	425	C/W=1.0
16	GUARDRAILS	Increase	Safety	S	288	288	C/W=1.0

Function defined as: Action Verb
 Measurable Noun

Kind: B = Basic
 S = Secondary
 RS = Required Secondary
 HO = Higher Order
 LO = Lower Order

Cost/Worth Ratio =
 (Total Cost ÷ Basic Worth)

Project: STP00-0001-000(939)
P.I. No. 0001939
Jasper County



DESIGNER PRESENTATION



MEETING PARTICIPANTS

Geogia Department of Transportation		March 24, 2009	
STP00-0001-00(939) - P. I No. 0001939 - Jasper County			
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers	 GDOT - Engineering Services	lm Myers@dot.ga.gov	404-631-1770
James K. Magnus	 GDOT-Construction	jmagnus@dot.ga.gov	404-631-1971
Douglas Fadool	 GDOT-Engineering Services	dfadool@dot.ga.gov	404-631-1764
Ron Wishon	 GDOT-Engineering Services	rwishon@dot.ga.gov	404-631-1753
Jennifer Harris-Dunham	 GDOT-Bridge Design	jharris-dunham@dot.ga.gov	404-631-1897
Nabil Raad	 GDOT-Traffic Operations	nraad@dot.gga.gov	404-635-8126
Les Thomas, PE, CVS	 PBS&J	lmthomas@pbsj.com	678-677-6420
Luke Clarke, PE, AVS	 PBS&J	lwclarke@pbsj.com	205-969-3776
Randy Thomas, CVS	 PBS&J	rsthomas@pbsj.com	770-883-1545
John Luh, PE	 PBS&J	jluh@pbsj.com	678-677-6420
Fabricio Quinanez, PE	 Civil Services, Inc.	fabricio@civilservicesinc.com	404-685-8001
Foster Grimes	 Dist 2 - Design Squad Leader	fgrimes@dot.ga.gov	478-552-4643
Robin Tanner	 Dist 2 - CADD Operator II	rtanner@dot.ga.gov	478-552-4694
Rusty Merritt	 Dist 2- Construction Engineer	rmerritt@dot.ga.gov	478-552-1784

VE TEAM PRESENTATION



MEETING PARTICIPANTS

Georgia Department of Transportation			March 27, 2009	
STP00-0001-00(939) - P. I No. 0001939 - Jasper County				
NAME	ORGANIZATION & TITLE		E-MAIL	PHONE
Lisa Myers		GDOT - Engineering Services	lmyers@dot.ga.gov	404-631-1770
Ron Wishon		GDOT - Engineering Services	rwishon@dot.ga.gov	404-631-1575
Douglas Fadool		GDOT-Engineering Services	dfadool@dot.ga.gov	404-631-1764
Jennifer Harris-Dunham		GDOT-Bridge Design	jharris-dunham@dot.ga.gov	404-631-1897
Les Thomas, PE, CVS		PBS&J	lmthomas@pbsj.com	678-677-6420
Luke Clarke, PE, AVS		PBS&J	lwclarke@pbsj.com	205-969-3776
John Luh, PE		PBS&J	jzluh@pbsj.com	678-677-6420
Fabricio Quinanez, PE		Civil Services, Inc.	fabricio@civilservicesinc.com	404-685-8001
Foster Grimes		Dist 2 - Design Squad Leader	fgrimes@dot.ga.gov	478-552-4643
Robin Tanner		Dist 2 - CADD Operator II	rtanner@dot.ga.gov	478-552-4694
Rusty Merritt		Dist 2- Construction Engineer	rmerritt@dot.ga.gov	478-552-1784
Alan Smith				

CREATIVE IDEA LISTING



**PROJECT: Georgia Department of Transportation
STP00-0001-00(939) – P.I. No. 0001939
Monticello NE Bypass
Jasper County**

SHEET NO.: 1 of 1

NO.	IDEA DESCRIPTION	RATING
	ROADWAY (RD)	
RD-1	Use 4'0" paved shoulder in-lieu of 6'6"	5
RD-2	Eliminate substandard sight distance on SR 380 at the SR 16 Intersection	DS
RD-3	At SR 16 intersection, delete left and right turns on SR 380	3
RD-4	At SR 83 combine turn lanes and SR 380 into one lane	3
RD-5	Construct an at grade railroad crossing	2
RD-6	Redesign grade to minimize off site borrow	4
RD-7	Reduce right-of-way to 100'	2
RD-8	Use a 2' paved shoulder in-lieu of 6'6" paved shoulder	4
RD-9	Lengthen vertical curve at Station 588+00 to meet design criteria	DS
RD-10	Use 8'0" shoulder in-lieu of 10'0" shoulder	5
RD-11	Eliminate Control Access fencing	4
RD-12	Use box culvert in-lieu of Creek Bridge	2
RD-13	Use 6'0" shoulders in-lieu of 10'0" shoulders on bridges	1
RD-14	Reduce length of White Oak Creek Bridge (Bridge #1)	5
RD-15	Reduce length of Norfolk Southern Railroad Bridge	5
RD-16	At Railroad Bridge route storm water under the end span; delete 18" pipe	4
RD-17	Reduce the minimum right-of-way width from 200' to 150'	4
RD-18	Use 11' travel lanes	3
RD-19	At SR 16, reduce approach lanes from 3 to 2	2
RD-20	Improve the SR 380 / CR 363 intersection to include left turn bays on SR 380	4

**Rating: 1→2 = Not to be Developed; 3 = Varying Degrees of Development Potential;
4→5 = Most likely to be Developed; DS = Design Suggestion; ABD = Already Being Done; OB= Observation**