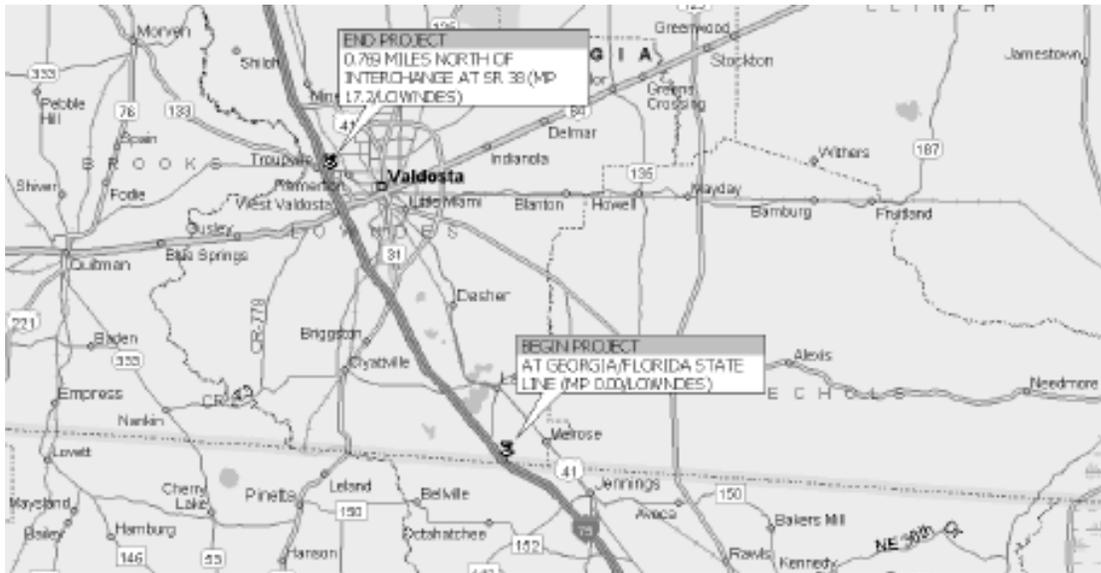


Value Engineering Study Report

**Georgia Department of Transportation
CSNHS-M003-00(998) – P.I. No. M003998
I-75 / SR 401 Resurfacing
Lowndes County**



Value Engineering Team



May 7, 2009

Design Team





May 11, 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 I-75 / SR 401 Resurfacing
Project Nos.: CSNHS-M003-00(998 – P.I. No. M003998
Lowndes County

This Value Engineering Study, which was performed on May 7, 2009, identified **4 alternatives** of which **4 are recommended for implementation**. We believe that these **Ideas** 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, appearing to read 'Alan K. Adalgren', written over a thin horizontal line.

Alan K. Adalgren, P.E., CVS-Life
VE Team Leader

Value Engineering Study Report

Project No. CSNHS-M003-00(998) – P.I. No. M003998

Resurfacing of I-75 / SR 401

Lowndes County

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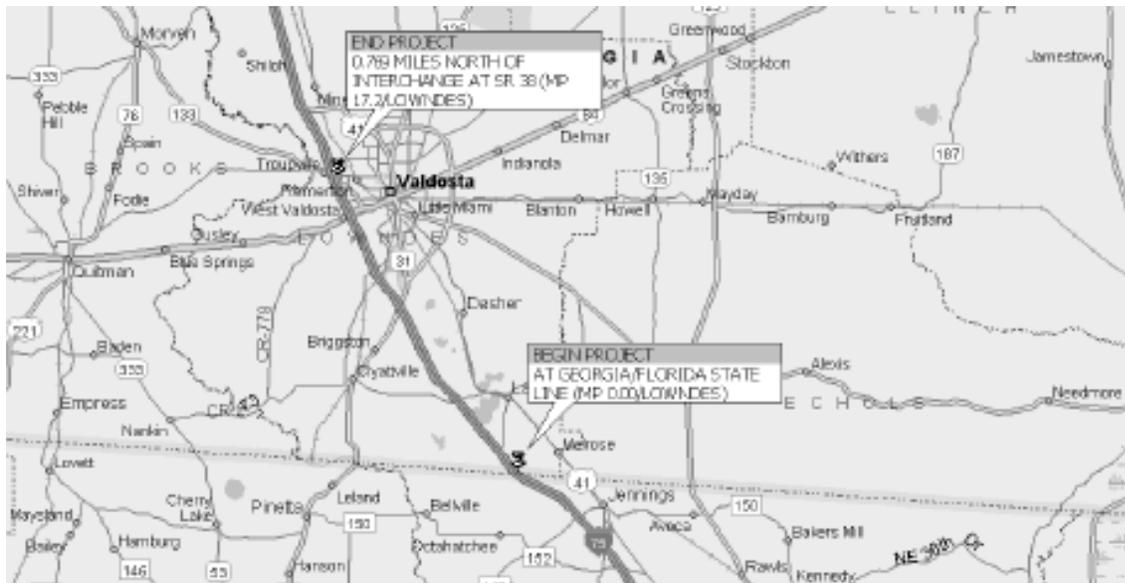
EXECUTIVE SUMMARY

PROJECT OVERVIEW

This report summarizes the analysis, conclusions, and recommendations by the PBS&J Value Engineering workshop team as they performed a Value Engineering Study on May 7, 2009, in Atlanta, at the office of the Georgia Department of Transportation. The subject of the study was Project CSNHS- M003-00(998) - P.I. No. M003998. The project involves the resurfacing of a portion of Interstate-75 / State Route 401 in Lowndes County.

PROJECT DESCRIPTION & LOCATION

Project number CSNHS-M003-00(998) begins at the Georgia/Florida state line (M.P. 0.0) and ends 0.769 miles north of the interchange at SR 38 (M.P. 17.245). This project will also replace all Type 9 and Type 11 Guardrail anchors with Type 12 anchors; additional W-beam guardrail is to be added to the existing guardrail to ensure that the guardrail functions properly. Lowndes County will be retaining approximately 2,000 tons of RAP for reuse on County owned and maintained roads. The project is 17.245 miles in length. The present traffic count is 43,370 vehicles per day.



The estimated construction cost for the project is \$24,103,755.03.

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:

- Comply with Standards
- Need to improve safety
- Re-establish rideability

CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified **4 alternatives** 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, the team had selected **4 of the alternatives for final development**. These recommendations are presented in the **Study Results**.

OBSERVATIONS

The VE Team noted that substantial quantities were setup within the cost estimate for crack repair on the milled surface for openings greater than one-quarter inch (1/4") in width. The VE Team suggests the addition of a nominal quantity of asphalt patching to the estimated quantities to be present if the contractor encounters worse than anticipated conditions on the milled surface.

Value Analysis Project Recommendation



PROJECT: **Georgia Department of Transportation
CSNHS-M003-00(998) – P.I. No. M003998
Lowndes County
I-75 / SR 401 Resurfacing**

ALTERNATIVE NO.:

1

DESCRIPTION: **Use OGFC in lieu of PEM**

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

Original Design:

The original design calls for the use of a 12.5mm PEM drainage surface.

Alternative:

The alternative proposal suggests considering the use of 12.5mm OGFC as the drainage surface.

Opportunities:

- Reduces paving cost
- Would not alter existing profile grade

Risks:

- None identified

Technical Discussion:

The alternative proposes the consideration of OGFC as a drainage course in lieu of the PEM that is currently designed. The OGFC could be placed in thinner lifts (90LB/SY for OGFC, 135LB/SY for PEM) resulting in a reduction of approximately 30% of the estimated quantities of PEM.

Using OGFC would allow tie-in to existing bridge approach slabs and other associated fixtures without adjustments to the existing profile grade line. It is proposed in this project to mill an additional 1/2" for 250' before and after and overhead bridge approach, resulting in greater milling quantities and complicate milling operations.(See General Note 15) The use of OGFC would allow for uniform milling operations, and no adjustments vertically.

According to the GDOT Mean Item Summary, the average let cost per ton for the PEM item is 400-3624, which is \$80.94/ton. The estimated cost for OGFC is 400-3206 is \$72.96/ton, resulting in comparable cost savings even before cost saving realized by utilizing the thinner application.

Value Analysis Project Recommendation



PROJECT: **Georgia Department of Transportation
CSNHS-M0043-00(998) – P.I. No. M003998
Lowndes County
I-75 / SR 401 Resurfacing**

ALTERNATIVE NO.:

2

DESCRIPTION: **Coordinate with FDOT on TCP entrance to project**

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

Original Design:

Special Provision 150 Traffic Control, Section 150.11 Special Conditions does not discuss coordination with Florida Department of Transportation.

Alternative:

Add statements to Special Provision 150 to placing responsibility on the Contractor to coordinate and meet the requirements of FDOT. In addition, indicate that cost for coordination and additional traffic control measures necessary to complete this work to be included in the Price Bid for Traffic Control.

Opportunities:

- Improved coordination with FDOT
- Minimize potential delays or disruptions to the project.

Risks:

- None identified

Technical Discussion:

The southern terminus of the project is located at the Florida state line. Lane closures necessary to perform paving operations will extend into Florida. To improve coordination and minimize potential delays or disruptions in the work, the Team recommends placing the responsibility and cost of additional coordination and accommodating FDOT on the contractor. Cost for this work should be included in the price bid for Traffic Control. The proper place to include this information should be a line item in Section 150, Special Provisions.

Value Analysis Project Recommendation



PROJECT:	Georgia Department of Transportation CSNHS-M0043-00(998) – P.I. No. M003998 Lowndes County I-75 / SR 401 Resurfacing	ALTERNATIVE NO. 3
DESCRIPTION:	Limit contract to 365 days with 180 days to complete the paving once work commences	SHEET NO.: 1 of 1

Original Design:

The original design allows 365 calendar to complete the work with no other restrictions

Alternative:

The alternative would allow 365 calendar days for the completion of the contract but would require the contractor to complete the paving work within 180 days once the milling and paving commences. It is also recommended all general notes (such as Note #7) regarding Prosecution and Progress of work be moved to Special Provision Section-108.

Opportunities:

- Improve safety
- Improve manpower management

Risks:

- None identified

Technical Discussion:

By imposing a shorter duration to complete the paving once work commences it will allow GDOT to better allocate and schedule manpower and resources. It will also provide a margin of improved safety by compelling the travelling public not to become complacent with an inactive work zone. It should also be noted that the engineer's estimate includes 1200 man hours of work zone law enforcement which would allow 100 work days at a 12 hour shift. 100 workdays would be consistent with a time period of 180 calendar days.

Value Analysis Project Recommendation



PROJECT:	Georgia Department of Transportation CSNHS-M0043-00(998) – P.I. No. M003998 Lowndes County I-75 / SR 401 Resurfacing	ALTERNATIVE NO. 4
DESCRIPTION:	Allow daytime work in the vicinity of the ramps	SHEET NO.: 1 of 1

Original Design:

The original design does not allow any daytime lane closures.

Alternative:

The alternative would allow a daytime single lane closure for construction within the immediate vicinity of the ramps. Closures could be limited to a 2000' work zone and restricted to the hours of 9 a.m. to 3 p.m. Monday thru Thursday.

Opportunities:

- Improve project safety
- Reduce construction time

Risks:

- Increased disruption of traffic

Technical Discussion:

The combination of heavy truck traffic, reduced visibility, an increased number of impaired drivers and a complex decision point will create a more hazardous condition during night construction. The ramp and the ramp gore is also an irregular area that requires more attention, more "hand work" and will be more difficult to construct and expose more workers to traffic. By allowing a single lane closure during daylight hours the safety of the work crews and the travelling public could both be increased.

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
- VE Report

VALUE ENGINEERING STUDY AGENDA

For

Georgia Department of Transportation

CSNHS-M003-00(998) – P.I. No. M003998

***Lowndes County
I-75 / SR 401 Resurfacing***

May 7, 2009

Pre-Workshop Activities

VE Team Leader organizes study, coordinates with the Owner and Designer about the project objectives and materials. The VE Team receives and reviews all project documents.

8:30-9:00 Project Overview (Information Phase)

- Introduction of participants
- Presentation of the project by GDOT
 - Current Construction Completion Schedule
 - Project Cost Estimate and Budget Constraints
- Discussion, questions and answers
- Overview of the VE Process and Agenda – Workshop goals & project goals

Value Engineering Study Agenda (continued)

9:00-10:00 VE Team reviews project (Information Phase)

- Review GDOT's presentation
- Review Cost Estimate
- Review plans

10:00-10:30 Function Analysis Phase

- Identify basic and secondary functions
- Complete Function Matrix/FAST Diagram

10:30-11:30 Creative Phase

- Brainstorming of alternative ideas

11:30-12:30 Evaluation Phase

- Establish criteria for evaluation
- Rank ideas
- Identify "best" ideas for development
- Identify a "champion" for each idea to be developed

1:30-5:00 Development Phase

- Develop alternative ideas with assessment of original design and write up new alternatives including:
 - Opportunities & risks
 - Technical Discussion

Post-Workshop Activities

Team Leader prepares and writes report. The team members review report. Then the report is published and delivered to the client.

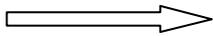
Function Analysis System Technique (FAST DIAGRAM)

Georgia Department of Transportation

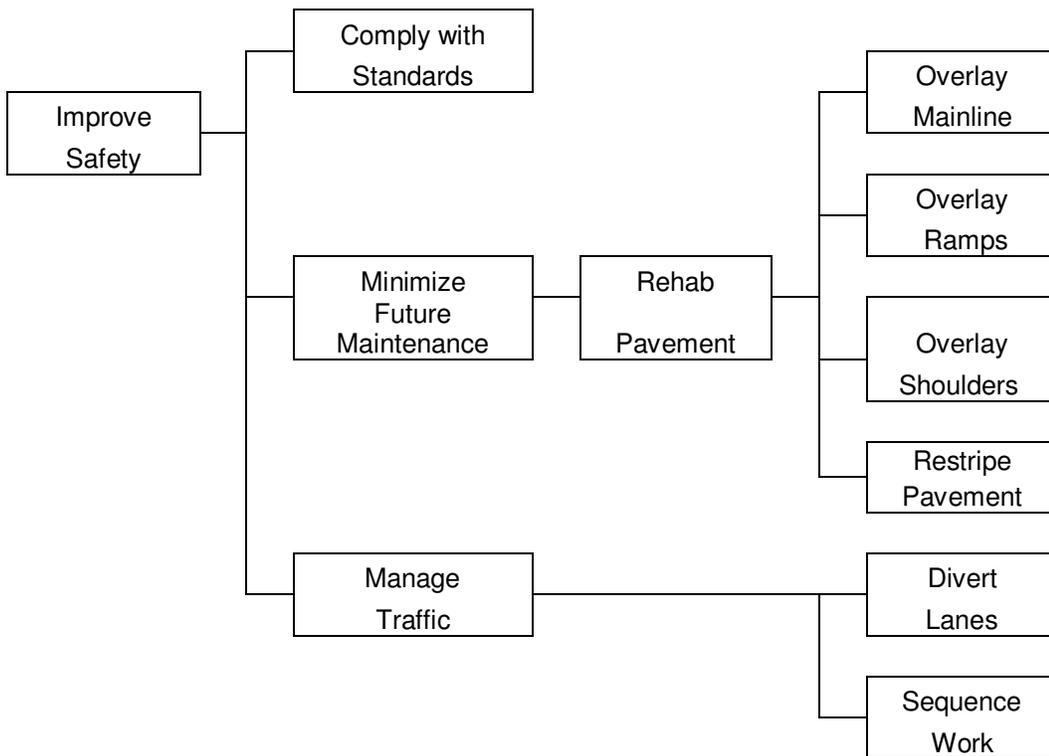
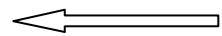
Project No. CSNHS-M003-00(998) - P.I. No. M003998

I-75 / SR 401 Resurfacing
Lowndes County

HOW



WHY



VE Value Engineering Study

MEETING PARTICIPANTS

Georgia Department of Transportation		May 7, 2009		
CSNHS-M003-00(998) -  M003998 - I75 / SR 401 Lowndes County				
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