Value Engineering Study Report

Project No.: STP00-0957(009) P.I. No.: 245190

Widening and Reconstruction of SR 212

Newton County

Value Management Team

PBS&J

Design Team

GDOT Keeping Georgia on the Move

December 3, 2008

December 3, 2008

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.: STP00-0957(009)
County: Newton
P.I. No.: 245190
Widening and Reconstruction of SR 212
PBS&J Project Task Order No. 33

Dear Ms. Myers:

Please find enclosed two (2) hard copies and one (1) CD of our final Value Engineering Report for the widening and reconstruction of SR 212 from Bethany Rd. to Oak Hill Rd. in Newton County, as referenced above.

This Value Engineering Study, which was performed during the period November 18 through November 21, 2008, identified ***16 Alternative Ideas*** of which ***10 are recommended for implementation***. In addition, the VE team identified ***1 Design Suggestion*** which is recommended for the engineer to consider in his final design. 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

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

Randy S. Thomas, CVS
Assistant Team Leader

Value Engineering Study Report

Project No. - STP00-0957(009)
P.I. No. 245190
Widening and Reconstruction of SR 212 from Bethany Rd. to Oak Hill Rd.
Newton County

Table of Contents

Executive Summary

Introduction
Project Description & Project Photos
Value Engineering Process
The Study Results
Summary of Alternative and Design Suggestions

Study Results

Introduction
Summary of Alternatives & Design Suggestions
Documentation of Alternative & 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

EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the analysis and conclusions by the PBS&J Value Engineering workshop team as they performed a VE study during the period of November18 through November 21, 2008 in Atlanta, at the offices of the Georgia Department of Transportation. The subject of the Value Engineering study:

Project No.: STP00-0957(009)
County: Newton
P.I. No.: 245190
Widening and Reconstruction of SR 212

The concept design for the projects has been prepared by the Georgia Department of Transportation. At the time of the workshop the plans are ready for final field review.

PROJECT DESCRIPTION – Widening and Reconstruction of SR 212, from just south (MP 3.23) of Bethany Rd. to just north (MP 0.98) of Oak Hill Rd**.** The proposed typical section will consist of 1-12' lane in each direction separated by a 14' flush median with rural shoulders.
At the intersection of SR 212 and Oak Hill Road/CR 19, the sub-standard intersection alignment, resulting in poor sight distance in both directions will be addressed. A traffic signal will be provided and dedicated left hand turn lanes will be constructed in all directions. At SR 212 at Butler Bridge Road/Bethany Road/CR8 intersection, SR 212 will be realigned slightly to the North to meet current design criteria and a traffic signal will also be provided. Traffic will be maintained on the existing roadway during construction.

This project is rather fully described in the documentation that is located in 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:

- The project speed limit has been recently reduced to 45 mph changing the design criteria
- There is a school and fire station which need to have safety maintained
- The roadway is classified as a rural minor arterial
- The roadway is a school bus route

VALUE ENGINEERING PROCESS

The Value Engineering team followed the seven step Value Engineering job plan as promulgated by the Georgia Department of Transportation. 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 detail process of the Value Engineering Study.

VALUE ENGINEERING TEAM OBSERVATIONS

After reviewing the Revised Project Concept Report, the VE team would like to bring the following observations to the Project Manager's attention:

1. The year 2026 Average Annual Daily Traffic (AADT) forecast appears to be out of range.

   The Revised Project Concept Report showed the AADT for the following years:

   Year 2006: 10,300 vpd
   Year 2008: 13,000 vpd
   Year 2026: 15,400 vpd
   Year 2028: 23,000 vpd

   Based on the 2006 and 2008 AADT, there was an 8% annual growth from 10,300 vpd (vehicles per day) to 13,000 vpd. With an 8% annual growth, the 13,000 vpd for 2008 would grow to 23,400 vpd in 20 years (or the year of 2028). A 23,000 vpd forecast for the year 2028 appears to be reasonable.

The 15,400 vpd forecast for the year of 2026, however, appears to be out of range as it represents a 1% annual growth from 2008.

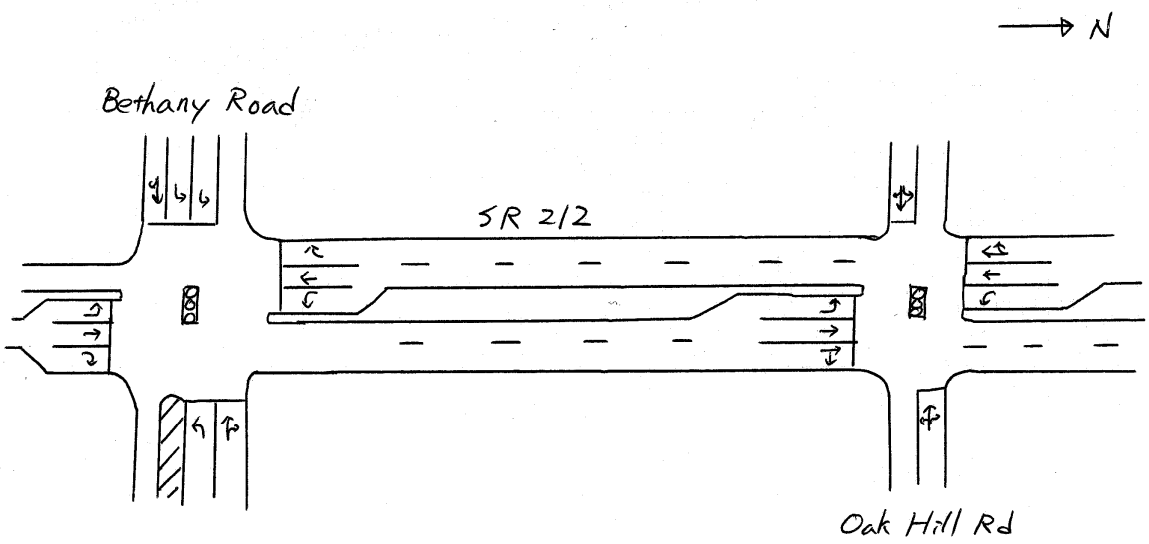
2. The section of SR 212 from Bethany Road to Oak Hill Road would require two lanes in each direction. The proposed two-lane with a center two-way left turn lane cross-section would result in LOS E in the design year.

   A capacity analysis using the Highway Capacity Software (HCS) for a two-lane highway with 100% no passing (a two-way left turn lane would prohibit passing) resulted in LOS E using the 2031 Design Hour Volumes (DHV) provided to the VE team,

3. The SR 212 and Bethany Road intersection would require two left turn lanes in the eastbound direction.

   Based on the 2031 Design Hour Volumes (DHV) provided to the VE team, the eastbound left turn movement would carry 410 vph (vehicles per hour) in the AM peak hour and 200 vph in the PM peak hour. A capacity analysis using the Synchro software indicated that this eastbound left turn movement would require two lanes. The proposed single left turn lane would fail to accommodate the DHV at acceptable LOS.

   A sketch showing the required laneage for the subject section of SR 212 is shown below.



CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified ***16 Alternative Ideas*** and ***1 Design Suggestion*** 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, ***10 Alternative Ideas*** remained for further consideration. These Alternative Ideas and the ***1 Design Suggestion*** 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.

Summary of Alternatives & Design Suggestions

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

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

ALTERNATIVE NUMBER	DESCRIPTION OF ALTERNATIVE	INITIAL COST SAVINGS
RD-1	Delete two-way left turn; provide left-turn lanes for school and fire station	$443,623
RD-2	Delete two-way turn lane north of school.	$270,850
RD-4	Reduce side road work.	$28,419
RD-5	Reduce 14' two-way left turn lane to a 12' two-way turn lane.	$69,186
RD-9	Do not realign Bethany Road	$183,907
RD-10	Delete cross hatched islands at Bethany Road and CR 8 intersection	DS
RD-11	Delete northbound right turn lane at Bethany Road intersection	$26,026
RD-12	Reduce northbound left turn bay at Bethany Road intersection	$45,379
RD-14	Increase side slopes to 2:1 where possible	$27,500
RD-15	Delete paved shoulders in areas of no new work	$335,321
RD-16	Delete right turn lane on Bethany Road onto SR 212	$26,026

Study Results

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.

Also included here are photographs of the project site taken by the VE Team.

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.***

Summary of Alternatives & Design Suggestions

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Realignment of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

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

ALTERNATIVE NUMBER	DESCRIPTION OF ALTERNATIVE	INITIAL COST SAVINGS
RD-1	Delete two-way left turn; provide left-turn lanes for school and fire station.	$443,623
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RD-10	Delete cross hatched islands at Bethany Road and CR 8 intersection	DS
RD-11	Delete northbound right turn lane at Bethany Road intersection	$26,026
RD-12	Reduce northbound left turn bay at Bethany Road intersection	$45,379
RD-13	Provide a signal at the fire house entrance	DS
RD-14	Increase side slopes to 2:1 where possible	$27,500
RD-15	Delete paved shoulders in areas of no new work	$335,321
RD-16	Delete right turn lane on Bethany Road onto SR 212	$26,026

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-1**

DESCRIPTION: **Delete two-way left turn; provide left-turn lanes for school and fire station.**

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

Original Design:

The original design calls for a 14’ wide two-way left turn lane to be constructed throughout the project.

Alternative:

The alternative would delete the 14’ two-way left turn lane throughout the project, with the exception of 1,500 LF of two-way left turn lane constructed from STA 240+00 to STA 255+00, to provide protected turn access for the school and fire station in that area. Shoulders would be widened only from STA 240+00 to STA 255+00.

Opportunities:

- Reduced construction time
- Reduction in full build-up pavement costs
- Provide protected turn access to most critical areas of project.

Risks:

- Major design impacts

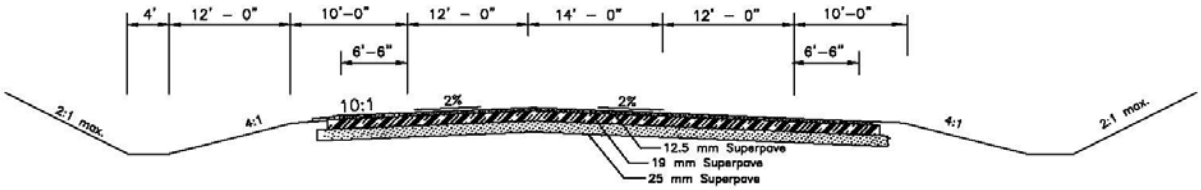
Technical Discussion:

The alternative proposes deleting the 14’ two-way left turn throughout the project, with the exception of 1,500 LF to be constructed in the vicinity of the school and fire station from STA 240+00 to STA 255+00. Shoulder widening would be completed only in the aforementioned area, and the remainder would be deleted.

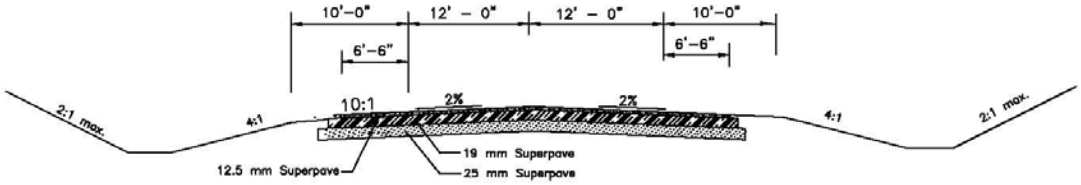
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,652,013	$ 0	$ 1,652,013
ALTERNATIVE	$ 1,208,391	$ 0	$ 1,208,391
SAVINGS	$ 443,623	$ 0	$ 443,623

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-1**
DESCRIPTION:	**Delete two way turn lane; provide left turn lanes for school and fire station**	SHEET NO.:	**2** of **4**



Original Design
NTS



Alternate Design
NTS

Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-1**
DESCRIPTION:	**Delete two-way left turn; provide left-turn lanes for school and fire station.**	SHEET NO.:	**3** of **4**

ASSUMPTIONS:

-Delete construction of 14' wide two-way left turn lane throughout the project, with the exception of STA 240+00 to STA 255+00.

-Turn lanes at intersections of SR 212/Bethany Road and SR 212/Oak Hill Road will not be omitted in this alternative.

-14' wide two-way left turn lane is proposed from STA 226+00 to STA 285+00= 5,900 LF

-5,900 LF – 1,500LF exception from STA 240+00 to STA 255+00= 4,400LF

-Grading would be reduced by an estimated 75% by drastically reducing the widening required to complete a three lane section.

Calculations:

-4,400LF x 14'w/9=6,844.44 SY reduction

-GAB- 6,844 SY saved -6844SY x 1200lb/SY/2000=**4106.40 tons saved**

-25.0mm Superpave= 6844SY x 550lb/sy/2000=**1,882 tons saved**

-19.0mm Superpave=6844SY x 220lb/sy/2000=**753 tons saved**

-12.5mm Superpave=6844SY x 165lb/sy/2000=**565 tons saved**

Grading=lump sum @ $100,000

$100,000 x 0.75= **$75,000 savings for grading**

Cost Worksheet

PBS&J

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-1**

DESCRIPTION: **Delete two-way left turn lanes; provide left turn lanes for school and fire station.**

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
318-3000- GAB	SY	15,953	$ 22.70	$ 362,133	11,847	$ 22.70	$ 268,927
402-3121-25mm Superpave	TN	6,860	$ 71.61	$ 491,245	4,978	$ 71.61	$ 356,475
402-3190-19.0mm Superpave	TN	2,622	$ 74.48	$ 195,287	1,869	$ 74.48	$ 139,203
402-3130-12.5mm Superpave	TN	4,511	$ 78.29	$ 353,166	3,946	$ 78.29	$ 308,932
210-0100-Grading Complete	LS	1	$ 100,000.00	$ 100,000	0.25	$ 100,000	$ 25,000
Sub-total				$ 1,501,830			$ 1,098,537
Mark-up at 10.00%				$ 150,183			$ 109,854
TOTAL				**$ 1,652,013**			**$ 1,208,391**
Estimated Savings:							$443,623

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-2**

DESCRIPTION: **Delete two-way turn lane north of school.**

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

Original Design:

The original design calls for construction of a two-way left turn lane from STA 226+00+/- to STA 285+00+/-.

Alternative:

The alternative proposes deleting the two-way left turn lanes from immediately north of the school at STA 252+00+/- to the northern end of the project at STA 285+00+/-, where the turn lanes for Oak Hill Road tie-in.

Opportunities:

- Reduction in project costs.
- Reduction in construction time.

Risks:

- Moderate design impacts.
- Restricts left turn movements.

Technical Discussion:

The alternative proposes deleting the two-way left turn lane from immediately north of the school to the tie at Oak Hill Road. According to the information provided, there are few turn outs in the area on the west side of the area in question. On the east side of SR 212, there appears to be one residence and one asphalt side street connection. Immediately south of the SR 212/Oak Hill Road (CR19) intersection, there are a number of turnouts/residences that would be covered by the construction of turn lanes from SR 212 onto Oak Hill Road (CR19).

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,542,013	$ 0	$ 1,542,013
ALTERNATIVE	$ 1,271,064	$ 0	$ 1,271,064
SAVINGS	$ 270,850	$ 0	$ 270,850

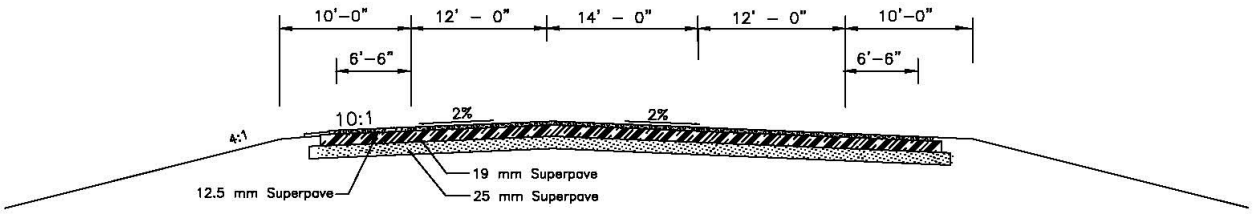
Illustration

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Realignment of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

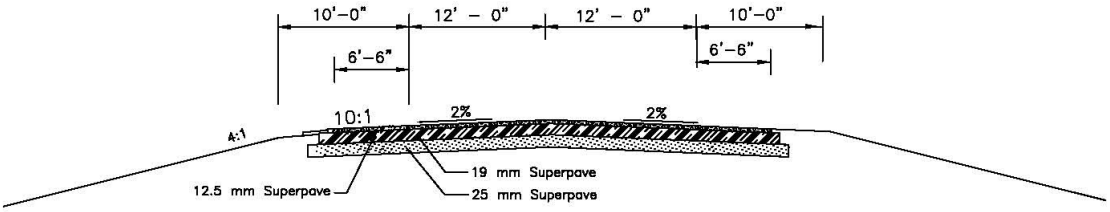
ALTERNATIVE NO.: **RD-2**

DESCRIPTION: **Delete two-way turn lane north of school**

SHEET NO.: **2** of **4**



Original Design Sta. 252+00 to Sta. 285+00
NTS



Alternative Design Sta. 252+00 to Sta. 285+00
NTS

Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-2**
DESCRIPTION:	**Delete two-way turn lane north of school.**	SHEET NO.:	**3** of **4**

ASSUMPTIONS:

- Remove 14' two-way left turn lane from STA 252+00 to STA 285+00.
- Full pavement build-up quantities are estimated using application rates shown in typical sections of plan assembly provided.

Calculations:

285+00-252+00= 3,300LF x 14'w/9= 5,133.33 SY

Quantities:

-GAB= 5,133 SY x 1200LB/SY/2000=**3080 tons saved**.

-25.0mm Superpave= 550# x 5,133 SY/2,000= **1,412 tons saved.**

-19.0mm Superpave= 220# x 5,133 SY/2,000= **565 tons saved.**

- 12.5mm Superpave= 165# x 5,133 SY/2,000= **423 tons saved**

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-2**

DESCRIPTION: **Delete two-way turn lane north of school.**

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
318-3000- GAB	SY	15,953	$ 22.70	$ 362,133	12,873	$ 22.70	$ 292,217
402-3121-25mm Superpave	TN	6,860	$ 71.61	$ 491,245	5,448	$ 71.61	$ 390,131
402-3190-19.0mm Superpave	TN	2,622	$ 74.48	$ 195,287	2,057	$ 74.48	$ 153,205
402-3130-12.5mm Superpave	TN	4,511	$ 78.29	$ 353,166	4,088	$ 78.29	$ 320,050
Sub-total				$ 1,401,830			$ 1,155,603
Mark-up at 10.00%				$ 140,183			$ 115,560
TOTAL				**$ 1,542,013**			**$ 1,271,164**
Estimated Savings:							$270,850

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-4**

DESCRIPTION: **Reduce side road work.**

SHEET NO.: **1** of **5**

Original Design:

The original design calls for improvements on Oak Hill Road from STA 65+00 to STA 54+50(1050LF), and improvements on Bethany Road from STA 163+00 to STA 140+00(2300LF)

Alternative:

The alternative proposes limiting improvements on Oak Hill Road from STA 54+50 to STA 58+00, and limit improvements on Bethany Road from STA 145+00 to STA 160+00.

Opportunities:

- Reduction in pavement costs
- Reduction in construction time
- Possibility of ROW savings

Risks:

- Moderate design impacts

Technical Discussion:

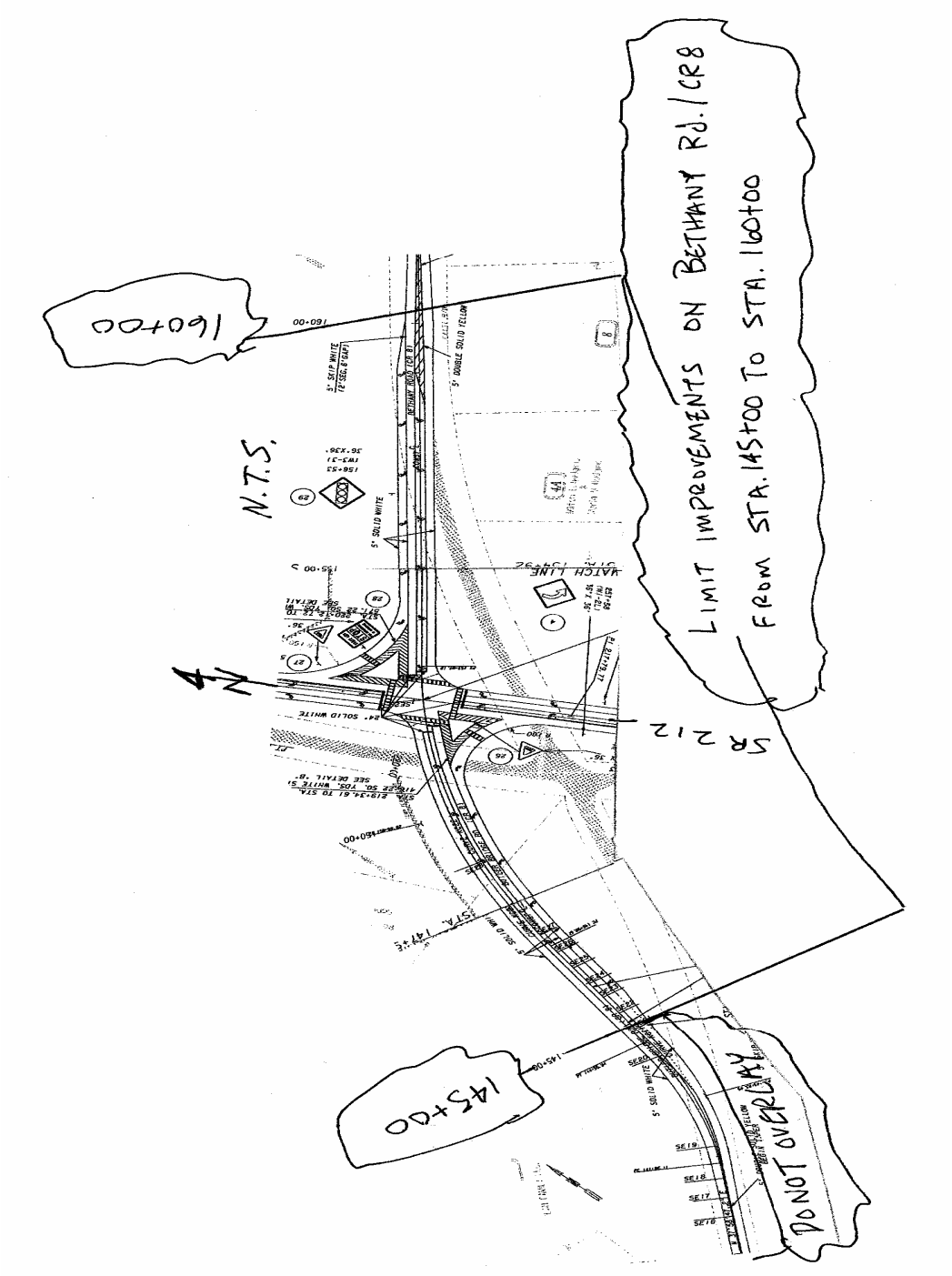
The alternative proposes limiting side road improvements to the limits of widening for required turn lanes on Bethany Road, while limiting improvements as close as possible to the radius return on the east and west sides of Oak Hill Road. The current design does not change the intersection of Oak Hill Road vertically or horizontally, so overlay with 12.5mm Superpave should be the extent of the improvement saved. Bethany Road has a proposed realignment, but the alternative proposal appears to be outside of the proposed realignment limits. Reducing the scope of improvements may also have the effect of reducing ROW required, notably on Bethany Road.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 388,483	$ 0	$ 388,483
ALTERNATIVE	$ 360,064	$ 0	$ 360,064
SAVINGS	$ 28,419	$ 0	$ 28,419

Illustration

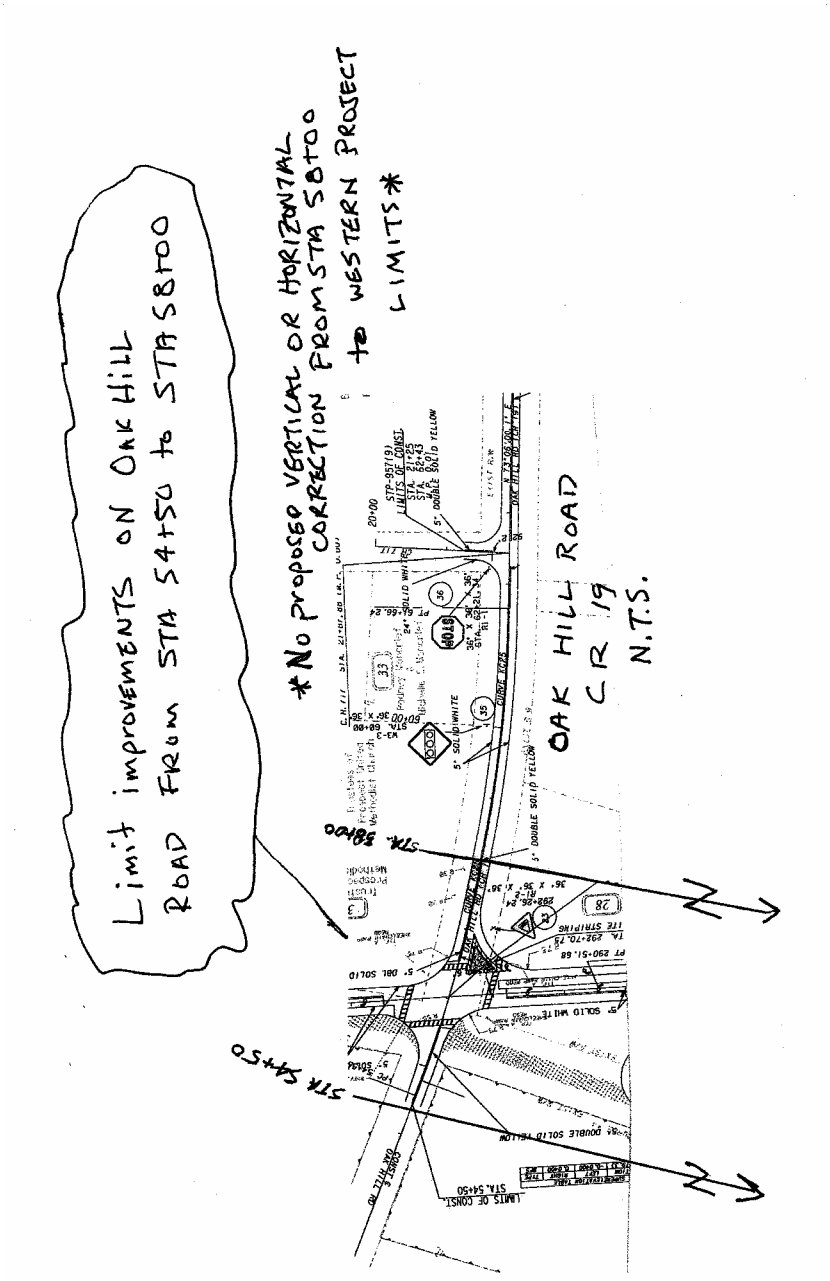
PBS&J

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.: **RD-4**
DESCRIPTION:	**Reduce side road work.**	SHEET NO.: **2** of **5**



Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-4**
DESCRIPTION:	**Reduce side road work.**	SHEET NO.:	**3** of **5**



Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-4**
DESCRIPTION:	**Reduce side road work.**	SHEET NO.:	**4** of **5**

ASSUMPTIONS:

-Reduction in work on side roads does not impact proposed addition of turn lanes.

-Cost savings represent eliminating overlay with 165 lbs/SY of 12.5mm Superpave.

Calculations:

-Oak Hill Road- confine improvements to STA 54+50 to STA 58+00= 350LF

-Bethany Road-confine improvements to STA 145+00 to STA 160+00=1500LF

Oak Hill-eliminate overlay from STA 58+00 to STA 65+00= 700LF

Bethany Road-eliminate overlay from STA 140+00 to STA 145+00, STA 160+00 to STA 163+00= 800 total LF

Total overlay eliminated= 1500LF x 24'w/9=4000SY

4000SY x 165LB/SY/2000=**330 tons 12.5mm Superpave saved.**

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-4**

DESCRIPTION: **Reduce side road work.**

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

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
402-3130-12.5mm Superpave	TN	4,511	$ 78.29	$ 353,166	4,181	$ 78.29	$ 327,330
Sub-total				$ 353,166			$ 327,330
Mark-up at 10.00%				$ 35,317			$ 32,733
TOTAL				**$ 388,483**			**$ 360,064**
Estimated Savings:							$28,419

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-5**

DESCRIPTION: **Reduce 14' two-way left turn lane to a 12' two-way turn lane.**

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

Original Design:

The original design calls for a 14' wide two-way left turn lane from STA+/- 226+00 to STA+/- 285+00.

Alternative:

The alternative proposes narrowing the two-way left turn lane from 14' to 12' throughout the project.

Opportunities:

- Reduction in pavement costs.
- Reduction in required ROW.
- Reduction in construction time.

Risks:

- Moderate design impacts.

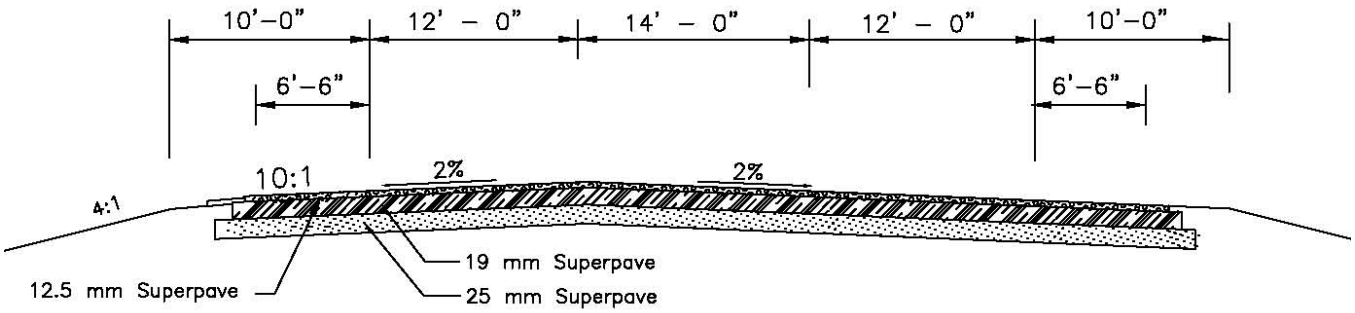
Technical Discussion:

The alternative proposes narrowing the 14' two-way left turn lane to 12' throughout the project. The resulting savings would be calculated based on reduction in full build-up pavement costs. The 12' two-way left turn lane would be operationally sufficient in a 45 mph design speed.

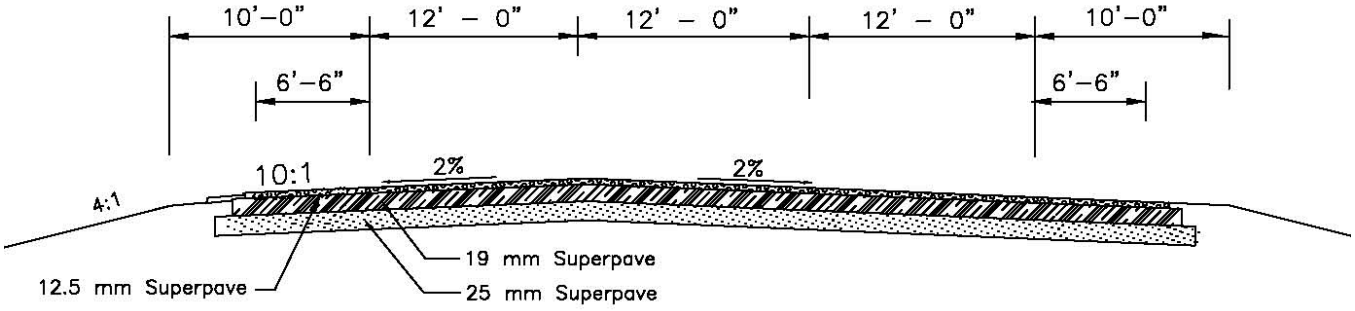
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,542,013	$ 0	$ 1,542,013
ALTERNATIVE	$ 1,472,827	$ 0	$ 1,472,827
SAVINGS	$ 69,186	$ 0	$ 69,186

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.: **RD-5**
DESCRIPTION:	**Reduce 14’ two-way left turn lane to a 12’ two-way turn lane.**	SHEET NO.: **2** of **4**



Original Design
NTS



Alternative Design
NTS

Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-5**
DESCRIPTION:	**Reduce 14' two-way left turn lane to a 12' two-way turn lane.**	SHEET NO.:	**3** of **4**

ASSUMPTIONS:

-Reduce 14'two-way turn lane to a 12' two-way turn lane from STA 226+00 to STA 285+00.

-No interference with turn lanes provided at intersections of SR 212/Bethany Road and SR 212/Oak Hill Road.

-Pavement build-up shown in typical section of plans provided by designer.

Calculations:

-STA 285+00 to STA 226+00= 5,900 LF x 2'w= 11,800SF/9=1311.11 SY

-GAB= 1311 SY saved- 1311SY x 1200LB/SY/2000=**787 tons saved**

-25mm Superpave= 550# x 1311/2000=**361 tons saved**

-19.0mm Superpave=220# x 1311/2000=**144 tons saved**

-12.5mm Superpave=165# x 1311/2000=**108 tons saved**

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-5**

DESCRIPTION: **Reduce 14' two-way left turn lane to a 12' two-way left turn lane.**

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
318-3000- GAB	TN	15,953	$ 22.70	$ 362,133	15,166	$ 22.70	$ 344,268
402-3121-25mm Superpave	TN	6,860	$ 71.61	$ 491,245	6,499	$ 71.61	$ 465,393
402-3190-19.0mm Superpave	TN	2,622	$ 74.48	$ 195,287	2,478	$ 74.48	$ 184,561
402-3130-12.5mm Superpave	TN	4,511	$ 78.29	$ 353,166	4,403	$ 78.29	$ 344,711
Sub-total				$ 1,401,830			$ 1,338,934
Mark-up at 10.00%				$ 140,183			$ 133,893
TOTAL				**$ 1,542,013**			**$ 1,472,827**
Estimated Savings:							$69,186

Value Analysis Design Alternative

PBS&J

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-9**

DESCRIPTION: **Do not realign Bethany Road**

SHEET NO.: **1** of **7**

Original Design:

The original design calls for re-aligning Bethany Road by moving its intersection with SR 212 to approximately 50-ft to the north.

Alternative:

The alternative is to keep the intersection at its current location.

Opportunities:

- Reduce right-of-way acquisition
- Reduce construction costs
- Reduce removing and regarding existing pavement

Risks:

- Require re-design of the intersection
- Slightly increase the intersection angle

See next page for Technical Discussion

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$301,441	$ 0	$301,441
ALTERNATIVE	$117,534	$ 0	$117,534
SAVINGS	$183,907	$ 0	$183,907

Value Analysis Design Alternative

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-9**
DESCRIPTION:	**Do not realign Bethany Road**	SHEET NO.:	**2** of **7**

Technical Discussion:

Bethany Road currently intersects SR 212 at a skewed angle approximately 60 degrees. The Bethany Road and SR 212 intersection currently consists of one approaching lane in each direction and is controlled by stop signs facing Bethany Road. The intersection is located near a horizontal curve south of the intersection on SR 212. The intersection is also located near a crest point of a vertical curve south of the intersection on SR 212. The skewed intersection angle requires vehicles to make sharp turns between Bethany Road and SR 212. The adjacent horizontal and vertical curves also restrict sight distance.

The original design calls for adding left turn and right turn lanes in all directions and signalizing the intersection, in addition to re-aligning Bethany Road to approximately 50-ft to the north. The re-alignment of Bethany Road will improve the skewed angle to approximately 70 degrees, which would help vehicles turning between Bethany Road and SR 212. The relocation of the intersection away from the horizontal and vertical curves would also help improve sight distance.

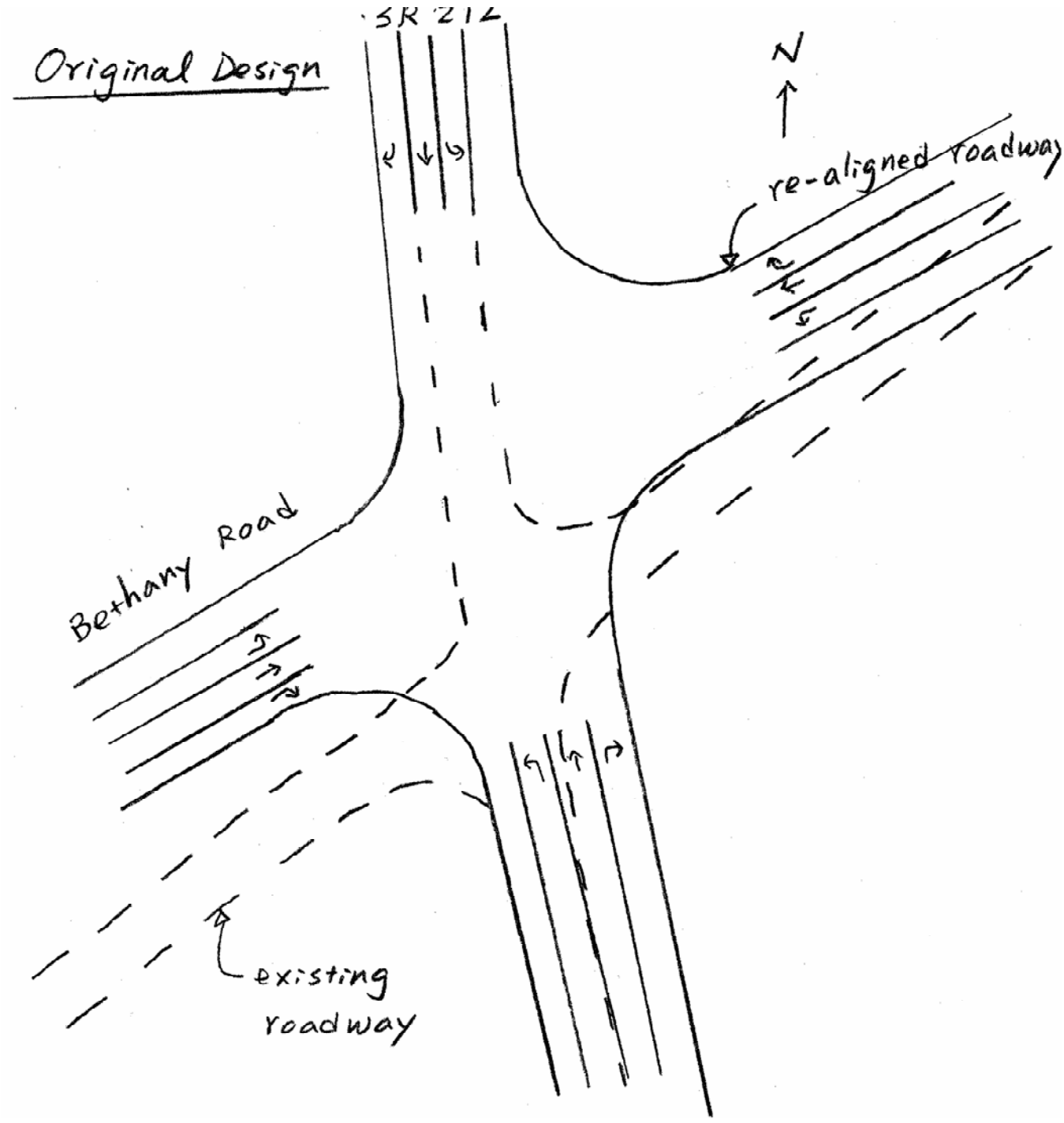
However, the restricted sight distance problem could be alleviated by the installation of a traffic signal, even though the intersection were kept at its current location. For example, vehicles exiting Bethany Road, either turning onto or crossing SR 212, would no longer be in conflict with vehicles travelling on SR 212. Similarly, vehicles turning left from SR 212 to Bethany Road would not be in conflict with the opposing vehicles if a protected left turn phase were used.

The sharp turn problem could be alleviated by the provision of additional lanes at the intersection even though the intersection were kept at its current location, as the additional lanes would enlarge the intersection area which would in turn result in larger turning radii.

Based on the above reasons, the VE team felt that the current problems at this intersection could be alleviated by the proposed improvements of adding lanes and signalizing the intersection, without having to re-align Bethany Road.

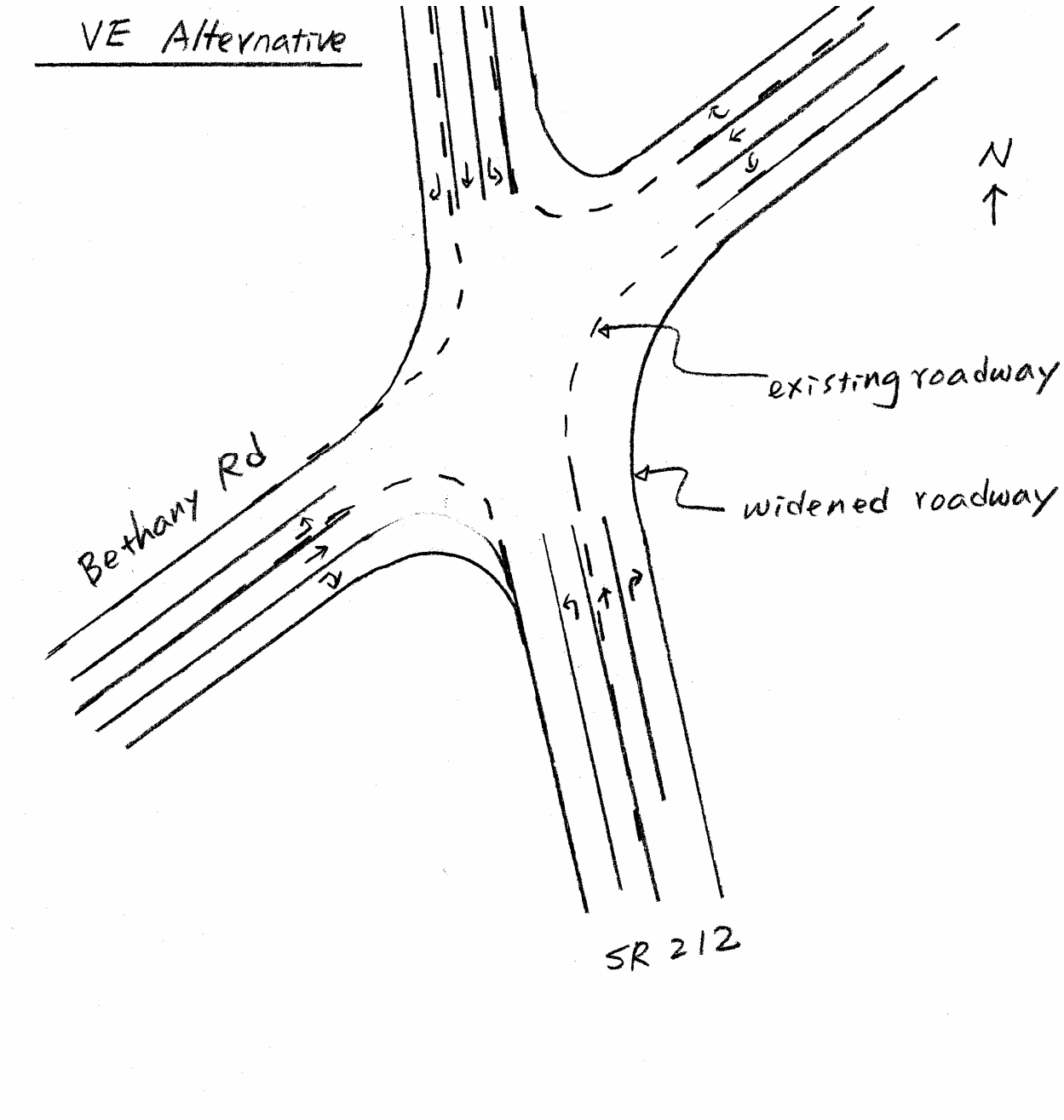
Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-9**
DESCRIPTION:	**Do not realign Bethany Road**	SHEET NO.:	**3** of **7**



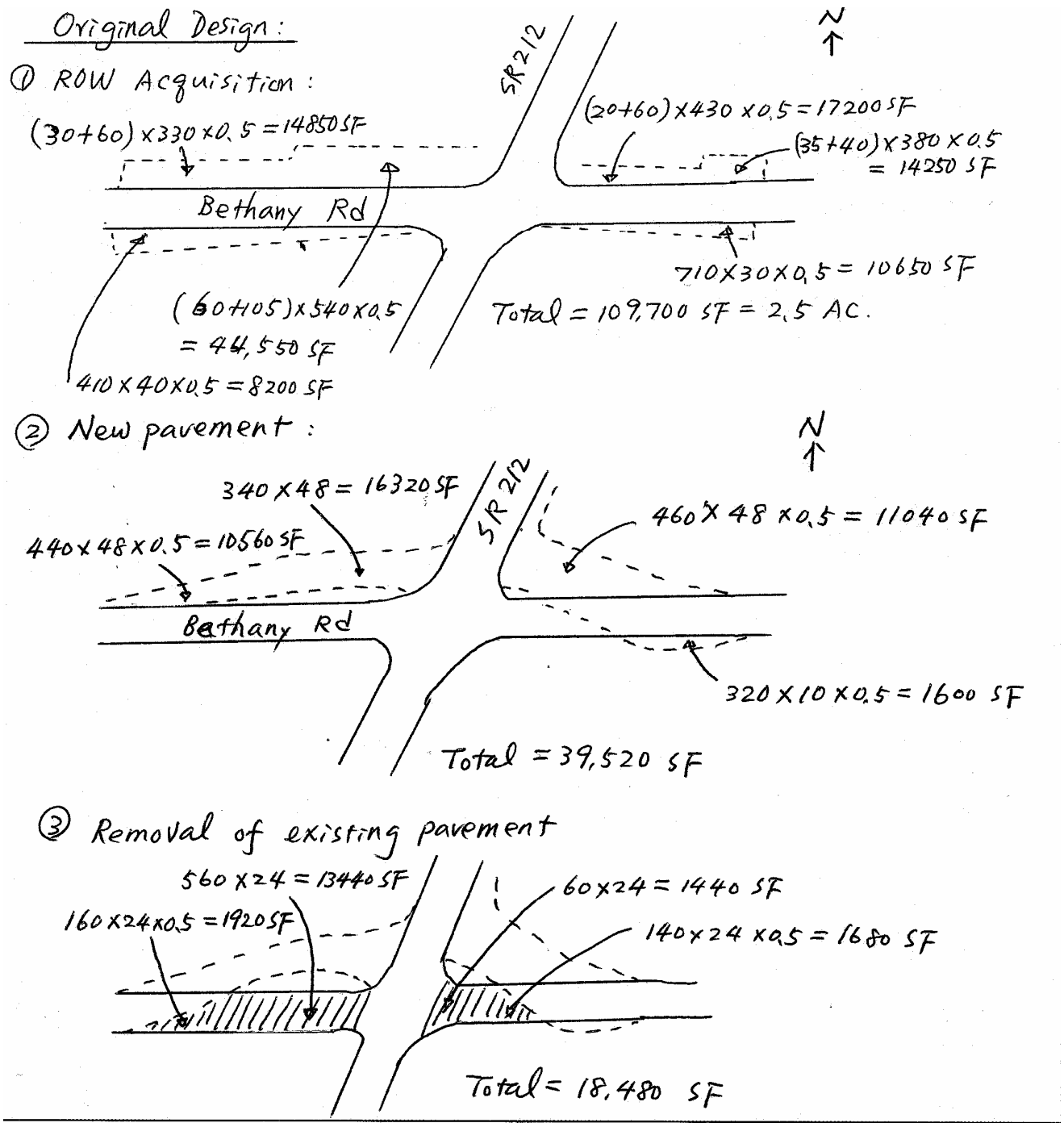
Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-9**
DESCRIPTION:	**Do not realign Bethany Road**	SHEET NO.:	**4** of **7**



Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-9**
DESCRIPTION:	**Do not realign Bethany Road**	SHEET NO.:	**5** of **7**



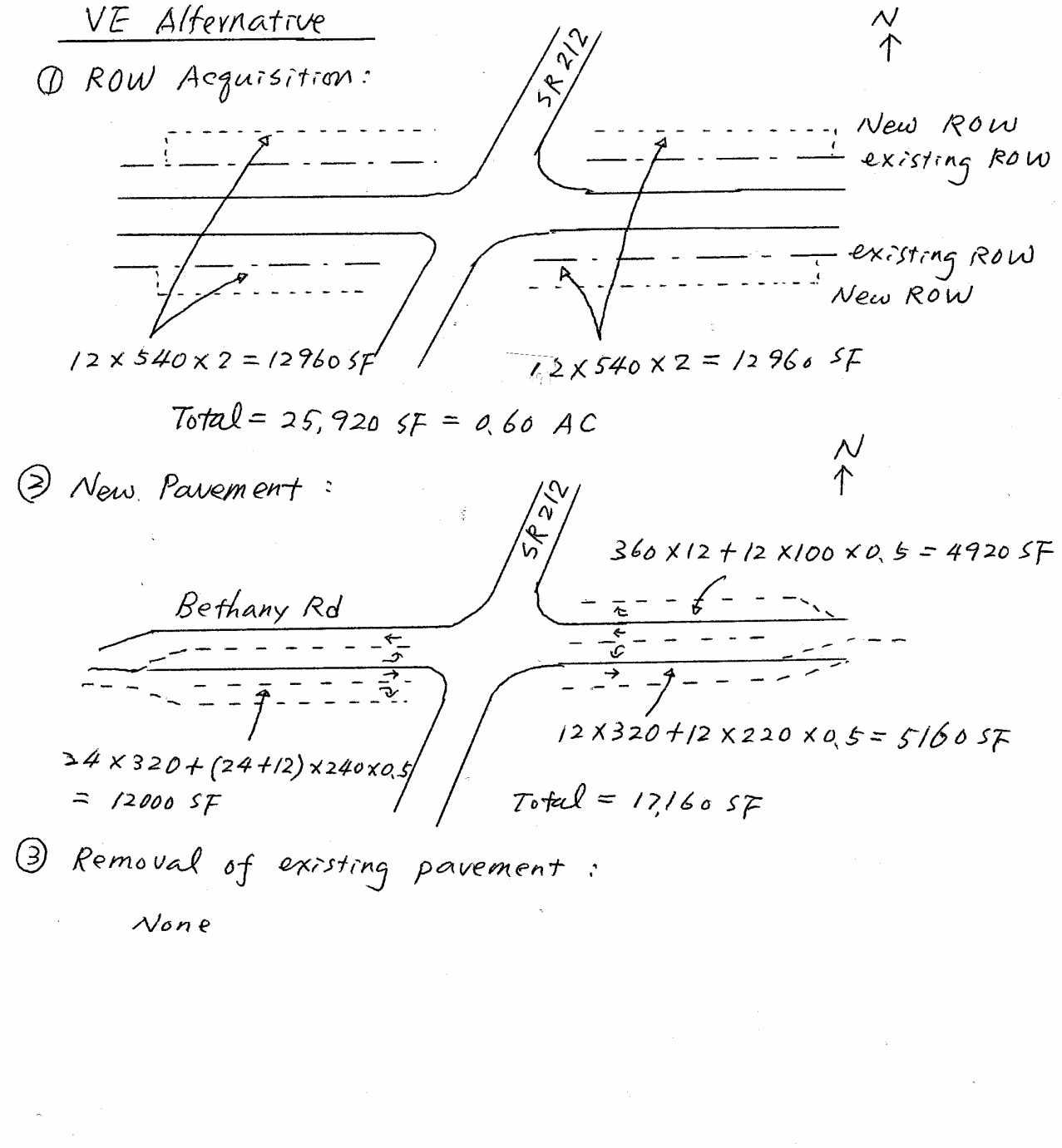
Illustration

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-9**

DESCRIPTION: **Do not realign Bethany Road**

SHEET NO.: **6** of **7**



Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-9**

DESCRIPTION: **Do not realign Bethany Road**

SHEET NO.: **7** of **7**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
ROW Acquisition	AC	2.5	$ 25,000	$ 62,500	0.6	$ 25,000	$ 15,000
GR AGGR Base	TN	2,635	$23	$ 60,596	1,144	$23	$ 26,312
12.5mm Superpave	TN	362	$78	$ 28,259	157	$78	$ 12,269
19.mm Superpave	TN	483	$74	$ 35,742	210	$74	$ 15,518
25.0mm Superpave	TN	1,208	$72	$ 86,940	524	$72	$ 37,750
Note 1: Assume residential properties for ROW acquisition to be conservative							
Note 2: Didn't take credit for removal and regrading of the existing pavement							
Sub-total				$ 274,037			$ 106,849
Mark-up at 10.00%				$ 27,404			$ 10,685
TOTAL				**$ 301,441**			**$ 117,534**
Estimated Savings:							$183,907

Design Suggestion

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-10**
DESCRIPTION:	**Delete cross hatched islands at Bethany and CR 8 intersection**	SHEET NO.:	**1** of **2**

Original Design:

The original design calls for providing cross hatched islands at the Bethany and CR 8 intersection.

Design Suggestion:

The suggestion is to delete the islands or reconfigure them.

Opportunities:

- Reduce potential traffic confusion

Risks:

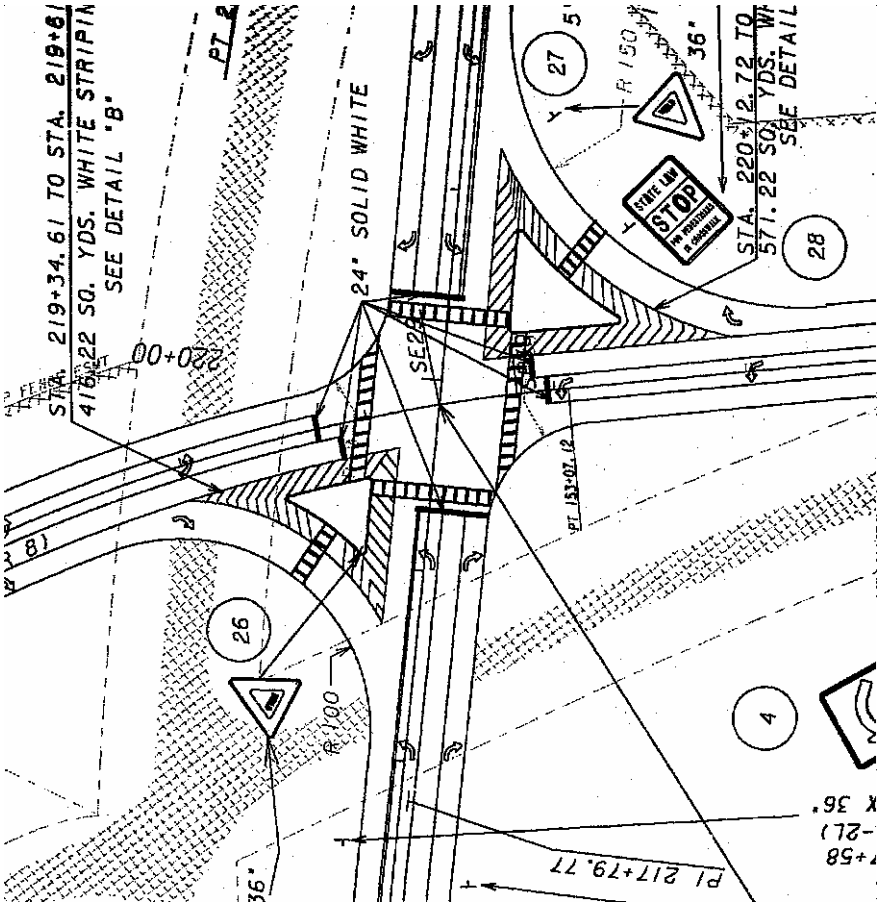
- none

Technical Discussion:

The current design proposes to construct traffic direction islands to better route the traffic. However, it appears that where they are shown, they may actually interfere with the left turning traffic.

Design Suggestion

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-10**
DESCRIPTION:	**Delete cross hatched islands at Bethany and CR 8 intersection**	SHEET NO.:	**2** of **2**



Value Analysis Design Alternative

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-11**
DESCRIPTION:	**Delete the northbound right turn lane at Bethany Road**	SHEET NO.:	**1** of **4**

Original Design:

The original design calls for adding a northbound right turn lane on SR 212 at the Bethany Road intersection.

Alternative:

The alternative is to delete the northbound right turn lane.

Opportunities:

- Reduce construction costs

Risks:

- Slightly reduce capacity

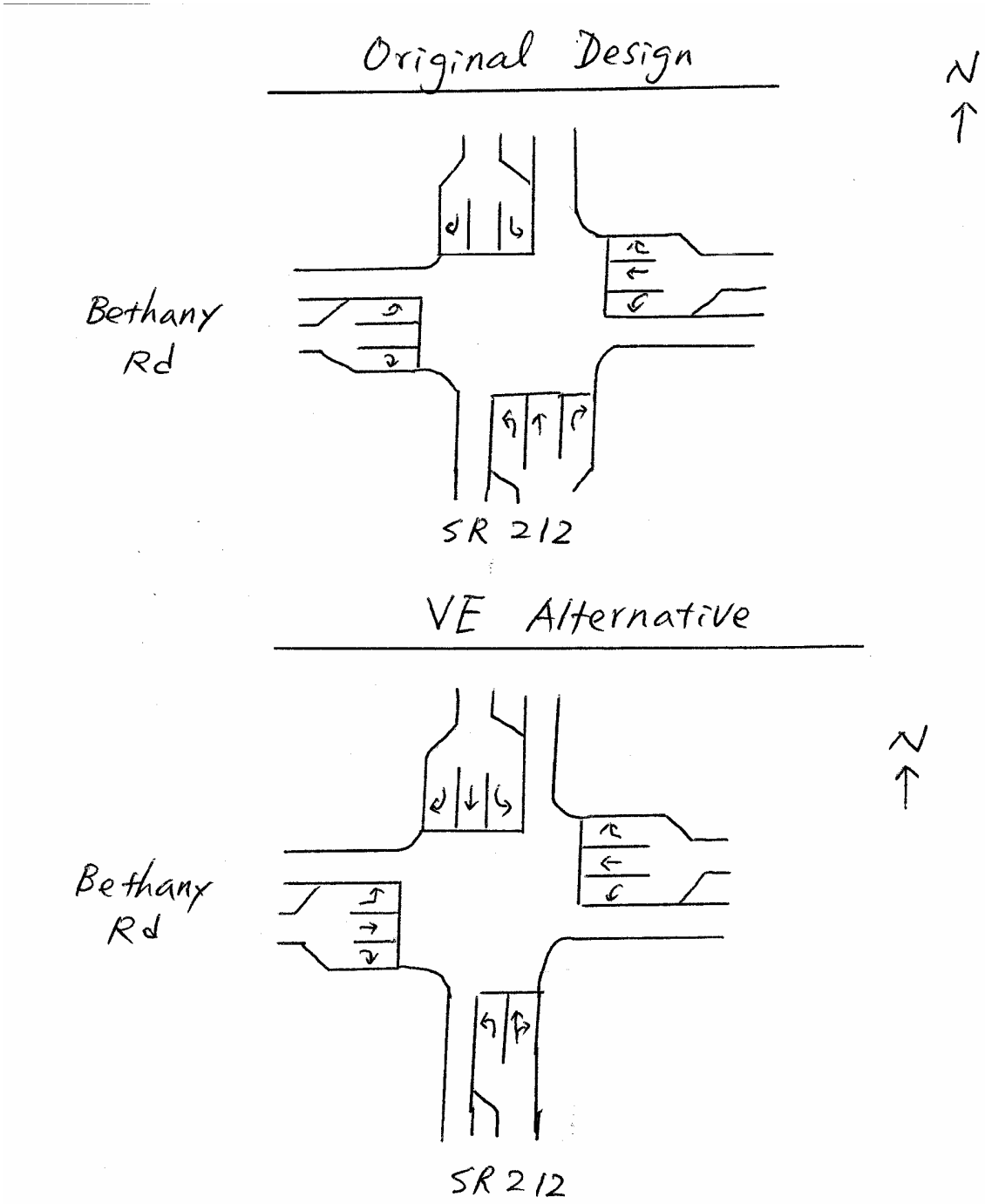
Technical Discussion:

Based on the traffic forecast, this northbound right turn lane will carry 25 vehicles per hour (vph) in the AM peak and 15 vph in the PM peak in the design year of 2031. The traffic volume is too low to warrant a right turn lane.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$23,660	$ 0	$23,660
ALTERNATIVE	$0	$ 0	$0
SAVINGS	$23,660	$ 0	$23,660

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-11**
DESCRIPTION:	**Delete the northbound right turn lane at Bethany Road**	SHEET NO.:	**2** of **4**



Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-11**
DESCRIPTION:	**Delete the northbound right turn lane at Bethany Road**	SHEET NO.:	**3** of **4**

Original Design

Paved area: full width area: 12-ft wide x 320-ft = 3,840 SF

Taper area: 12-ft wide x 100-ft long x 0.5 = 600 SF

Total paved area: 4,440 SF

VE Alternative

A reduction of paved area: 4,440 SF

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-11**

DESCRIPTION: **Delete the northbound right turn lane at Bethany Road**

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
GR AGGR Base	TN	296	$ 23	$ 6,719	0	$ 23	$ -
12.5mm Superpave	TN	41	$ 78	$ 3,186	0	$ 78	$ -
19.mm Superpave	TN	54	$ 74	$ 4,044	0	$ 74	$ -
25.0mm Superpave	TN	136	$ 72	$ 9,710	0	$ 72	$ -
Sub-total				$ 23,660			$ -
Mark-up at 10.00%				$ 2,366			$ -
TOTAL				**$ 26,026**			**$ -**
Estimated Savings:							$26,026

Value Analysis Design Alternative

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-12**
DESCRIPTION:	**Reduce the northbound left turn lane at Bethany Road**	SHEET NO.:	**1** of **4**

Original Design:

The original design calls for adding a northbound left turn lane approximately 880-ft long on SR 212 at the Bethany Road intersection.

Alternative:

The alternative is to reduce the northbound left turn lane to 235-ft long.

Opportunities:

- Reduce construction costs

Risks:

- Require change of intersection design

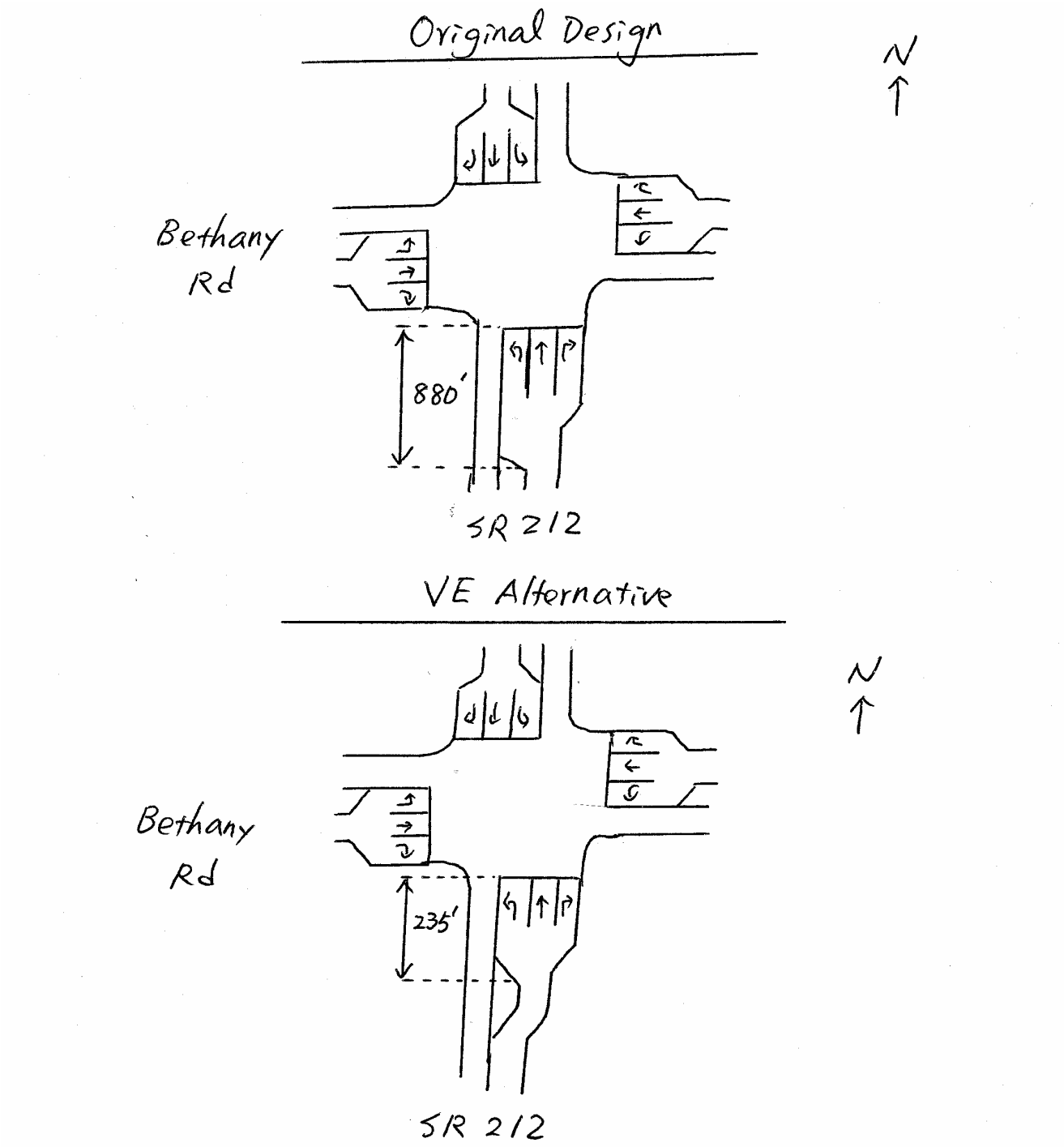
Technical Discussion:

Based on the traffic forecast, this northbound left turn lane will carry 20 vehicles per hour (vph) in the AM peak and 25 vph in the PM peak in the design year of 2031. Further based on a capacity analysis using Synchro, the 95 percentile queue length on this left turn lane will be one (1) car only during both the AM and PM peak hours. With the provision of a 50-ft space for queues and a 185-ft space for deceleration, this left turn lane can be reduced to 235-ft long.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$58,383	$ 0	$58,383
ALTERNATIVE	$13,005	$ 0	$13,005
SAVINGS	$45,379	$ 0	$45,379

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.: **RD-12**
DESCRIPTION:	**Reduce the northbound left turn lane at Bethany Road**	SHEET NO.: **2** of **4**



Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-12**
DESCRIPTION:	**Reduce the northbound left turn lane at Bethany Road**	SHEET NO.:	**3** of **4**

Original Design

Paved area: full width area: 12-ft wide x 780-ft = 9,360 SF

Taper area: 12-ft wide x 100-ft long x 0.5 = 600 SF

Total paved area: 9,960 SF

VE Alternative

Paved area: full width area: 12-ft wide x 135-ft = 1,620 SF

Taper area: 12-ft wide x 100-ft long x 0.5 = 600 SF

Total paved area: 2,220 SF

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-12**

DESCRIPTION: **Reduce the northbound left turn lane at Bethany Road**

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
GR AGGR Base	TN	664	$ 23	$ 15,073	148	$ 23	$ 3,360
12.5mm Superpave	TN	91	$ 78	$ 7,148	20	$ 78	$ 1,589
19.mm Superpave	TN	122	$ 74	$ 9,064	27	$ 74	$ 2,018
25.0mm Superpave	TN	304	$ 72	$ 21,791	68	$ 72	$ 4,855
Sub-total				$ 53,076			$ 11,822
Mark-up at 10.00%				$ 5,308			$ 1,182
TOTAL				**$ 58,383**			**$ 13,005**
Estimated Savings:							$45,379

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Realignment of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-14**

DESCRIPTION: **Steepen front slopes where possible.**

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

Original Design:

The original design calls for 4:1 front slopes for 12' past the 10' shoulder break.

Alternative:

The alternative would construct slopes steeper than a 4:1 to a maximum 2:1 on the front slopes past the 10' shoulder break.

Opportunities:

- Savings in earthwork/grading
- May require less ROW
- Reduction in construction time

Risks:

- Minor design impacts
- Loss of width of traversable shoulder

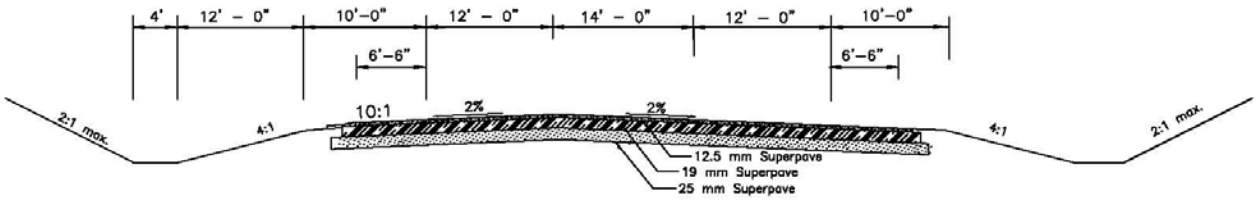
Technical Discussion:

The alternative proposes steepening the front slopes to a maximum 2:1 past the 10' shoulder break to minimize cuts/fills required to construct a 4:1 front slope. This could result in cost savings for grading/earthwork, and reduce construction time. Steepening the front slope past 3:1 may result in loss of traversable shoulder, create extra quantities for erosion control items to stabilize the steeper slope, and may be less than desirable for future maintenance/mowing.

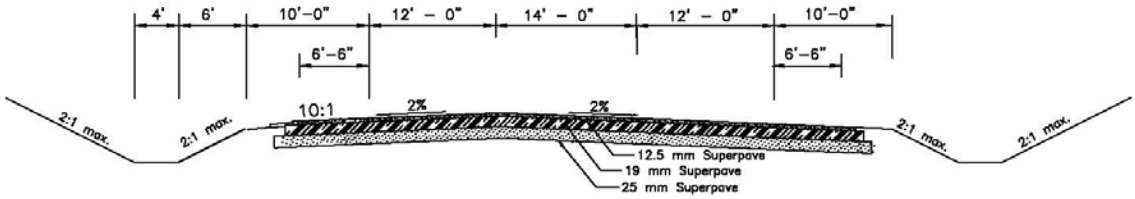
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 110,000	$ 0	$ 110,000
ALTERNATIVE	$ 82,500	$ 0	$ 82,500
SAVINGS	$ 27,500	$ 0	$ 27,500

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-14**
DESCRIPTION:	**Increase side slopes to 2:1 where possible**	SHEET NO.:	**2** of **4**



Original Design
NTS



Alternative Design
NTS

Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.: **RD-14**
DESCRIPTION:	**Steepen front slopes where possible.**	SHEET NO.: **3** of **4**

ASSUMPTIONS:

-Steepening of front slopes from an existing 4:1 to a proposed 2:1 max steepness, averaging a 3:1 would result in savings of approximately 25%(4:1 vs 3:1).

-Steepening of slopes will reduce ROW, however no additional ROW is required for much of the project, no cost savings calculated.

-Earthwork items are lump sum for the project under Item 210-0100 Grading Complete @ $100,000.

- 25% estimated savings = $100,000 x 0.25= $25,000 plus markup.

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-14**

DESCRIPTION: **Steepen front slopes where possible.**

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
210-0100- Grading Complete	LS	1	$ 100,000.0	$ 100,000	0.75	$100,000.0	$ 75,000
Sub-total				$ 100,000			$ 75,000
Mark-up at 10.00%				$ 10,000			$ 7,500
TOTAL				**$ 110,000**			**$ 82,500**
Estimated Savings:							$27,500

Value Analysis Design Alternative

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-15**

DESCRIPTION: **Delete paved shoulders in areas of no new work**

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

Original Design:

The original design calls for adding a 6.5-ft paved shoulder on both sides of SR 212.

Alternative:

The alternative is to delete the paved shoulders in areas of no new work.

Opportunities:

- Reduce construction costs

Risks:

- Negatively impact vehicles stopped on the shoulder

Technical Discussion:

SR 212 currently has no paved shoulders in the proximity of the project area. As the GDOT design standards require the placement of a 6.5-ft paved shoulder when roadways are reconstructed, the original design calls for placement of a 6.5-ft paved shoulder on both sides of SR 212.

VE Alternative RD-1 suggests deleting the two-way left turn lane throughout the project area and keeping the existing two-lane roadway. VE Alternative RD-2 suggests deleting the two-way left turn lane on the northern section of SR 212 north of the school. In conjunction with either VE alternative that keeps the roadway in its present state, the proposed 6.5-ft paved shoulder could also be deleted in the areas where the two-way left turn lane is deleted. The subsequent analysis reflects the savings of the VE Alternative RD-1 if the entire two-lane left turn lane were deleted.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,542,013	$ 0	$ 1,542,013
ALTERNATIVE	$ 1,206,692	$ 0	$ 1,206,692
SAVINGS	$ 335,321	$ 0	$ 335,321

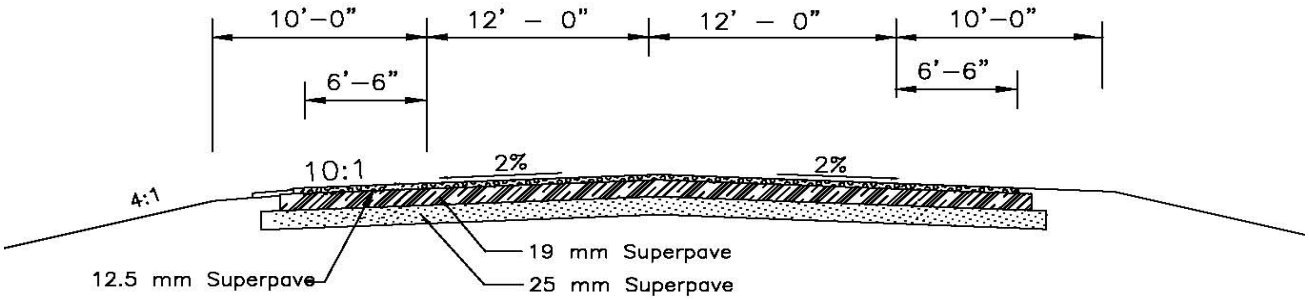
Illustration

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

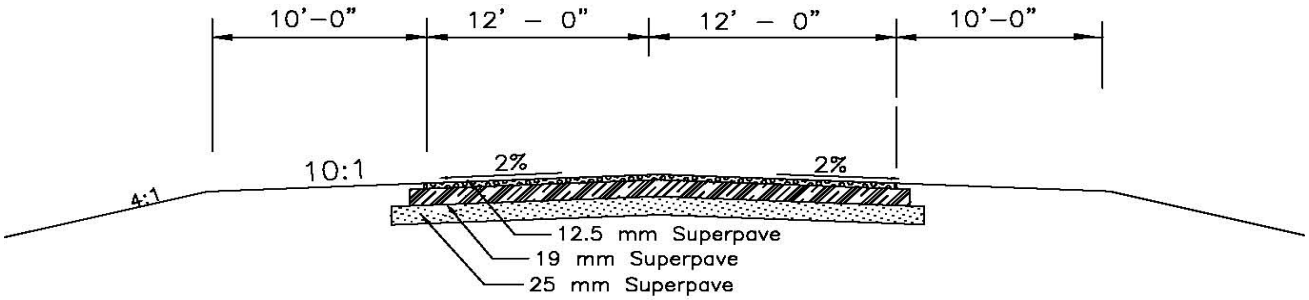
ALTERNATIVE NO.: **RD-15**

DESCRIPTION: **Delete paved shoulders in areas of no new work**

SHEET NO.: **2** of **4**



Original Design
NTS



Alternative Design
NTS

Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-15**
DESCRIPTION:	**Delete paved shoulders in areas of no new work.**	SHEET NO.:	**3** of **4**

ASSUMPTIONS:

-This alternative may be used in conjunction with Alternative RD-1.

-Delete construction of 6.5’ shoulders on each side of SR 212 where no new work is being performed.

-Will reduce ROW required to construct, no cost savings shown since designer is utilizing existing footprint.

-Turn lanes at intersections of SR 212/Bethany Road and SR 212/Oak Hill Road will not be omitted in this alternative.

-14’ wide two-way left turn lane with full depth shoulders is proposed from STA 226+00 to STA 285+00= 5,900 LF.

-Two-way left turn lanes will be constructed from STA 240+00 to STA 245+00, 6.5’ paved shoulders should be constructed in this area. (1,500LF).

-Pavement thicknesses determined from typical sections provided by designer.

Calculations:

-STA 285+00-STA 226+00=5,900 LF-1,500LF shoulder to be constructed in conjunction with turn lane=4400LF.

-4400LF x 6.5 x 2=57200SF/9=6356SY

-GAB=6356SY x 1200lb/sy/2000=**3814 tons saved.**

-25.0mm Superpave=6356SY x 550#/SY/2000=**1748 tons saved**.

-19mm Superpave=6356SY x 220LB/SY/2000=**699 tons saved**.

-12.5mm Superpave=6356SY x 165LB/SY/2000=**524 tons saved**.

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-15**

DESCRIPTION: **Delete paved shoulders in areas of no new work.**

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
318-3000- GAB	TN	15,953	$ 22.70	$ 362,133	12,139	$ 22.70	$ 275,555
402-3121-25mm Superpave	TN	6,860	$ 71.61	$ 491,245	5,112	$ 71.61	$ 366,070
402-3190-19.0mm Superpave	TN	2,622	$ 74.48	$ 195,287	1,923	$ 74.48	$ 143,225
402-3130-12.5mm Superpave	TN	4,511	$ 78.29	$ 353,166	3,987	$ 78.29	$ 312,142
Sub-total				$ 1,401,830			$ 1,096,993
Mark-up at 10.00%				$ 140,183			$ 109,699
TOTAL				**$ 1,542,013**			**$ 1,206,692**
Estimated Savings:							$335,321

Value Analysis Design Alternative

PBS&J

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-16**
DESCRIPTION:	**Delete the eastbound right turn lane on Bethany Road onto SR 212**	SHEET NO.:	**1** of **4**

Original Design:

The original design calls for adding an eastbound right turn lane on Bethany Road at the SR 212 intersection.

Alternative:

The alternative is to delete the eastbound right turn lane.

Opportunities:

- Reduce construction costs

Risks:

- Slightly reduce capacity

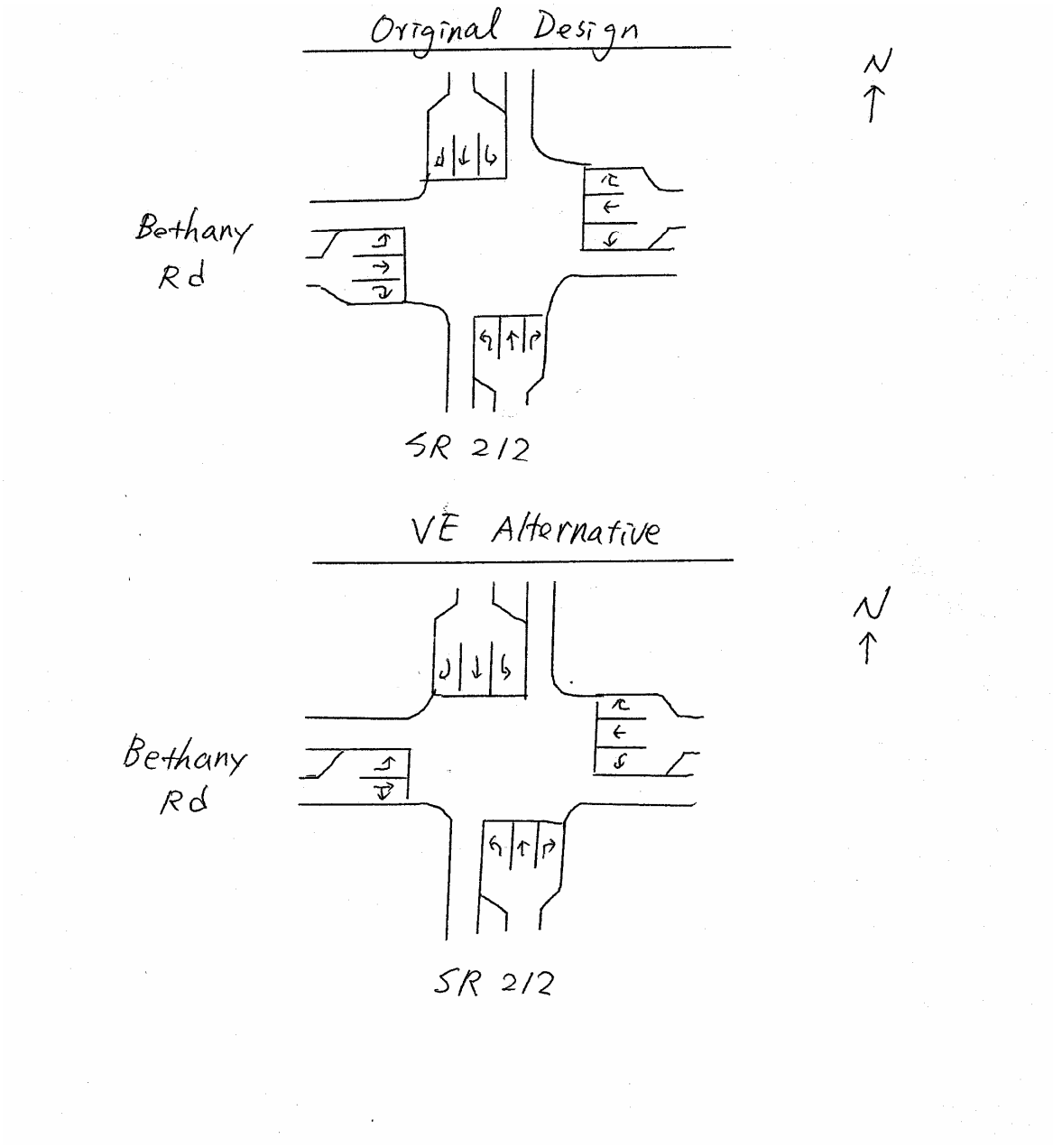
Technical Discussion:

Based on the traffic forecast, this eastbound right turn lane will carry 25 vehicles per hour (vph) in the AM peak and 20 vph in the PM peak in the design year of 2031. The traffic volume is too low to warrant a right turn lane.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$26,026	$ 0	$26,026
ALTERNATIVE	$0	$ 0	$0
SAVINGS	$26,026	$ 0	$26,026

Illustration

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-16**
DESCRIPTION:	**Delete the eastbound right turn lane on Bethany Road onto SR 212**	SHEET NO.:	**2** of **4**



Calculations

PROJECT:	**Georgia Department of Transportation** **STP00-0957(009) – P.I. 245190** **Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd** **Newton County**	ALTERNATIVE NO.:	**RD-16**
DESCRIPTION:	**Delete the eastbound right turn lane on Bethany Road onto SR 212**	SHEET NO.:	**3** of **4**

Original Design

Paved area: full width area: 12-ft wide x 320-ft = 3,840 SF

Taper area: 12-ft wide x 100-ft long x 0.5 = 600 SF

Total paved area: 4,440 SF

VE Alternative

A reduction of paved area: 4,440 SF

Cost Worksheet

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

ALTERNATIVE NO.: **RD-16**

DESCRIPTION: **Delete the eastbound right turn lane on Bethany Road onto SR 212**

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
GR AGGR Base	TN	296	$ 23	$ 6,719	0	$ 23	$ -
12.5mm Superpave	TN	41	$ 78	$ 3,186	0	$ 78	$ -
19.mm Superpave	TN	54	$ 74	$ 4,044	0	$ 74	$ -
25.0mm Superpave	TN	136	$ 72	$ 9,710	0	$ 72	$ -
Sub-total				$ 23,660			$ -
Mark-up at 10.00%				$ 2,366			$ -
TOTAL				**$ 26,026**			**$ -**
Estimated Savings:							$26,026

Project Description

PROJECT INTRODUCTION

The subject of the Value Engineering study is Project No.: STP00-0957(009) P.I. No.: 245190, the Widening and Reconstruction of SR 212 in Newton County.

The concept design for the projects has been prepared by the Georgia Department of Transportation. At the time of the workshop the plans are ready for final field review.

PROJECT DESCRIPTION

This project is to widening and reconstruct SR 212, from just south (MP 3.23) of Bethany Rd. to just north (MP 0.98) of Oak Hill Rd to improve its level of service and safety**.**

The proposed typical section will consist of 1-12' lane in each direction separated by a 14' flush median with rural shoulders. At the intersection of SR 212 and Oak Hill Road/CR 19, the sub-standard intersection alignment, resulting in poor sight distance in both directions will be addressed. A traffic signal will be provided and dedicated left hand turn lanes will be constructed in all directions. At SR 212 at Butler Bridge Road/Bethany Road/CR8 intersection, SR 212 will be realigned slightly to the North to meet current design criteria and a traffic signal will also be provided. Traffic will be maintained on the existing roadway during construction.

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

REPRESENTATIVE DOCUMENTS

- Georgia Department of Transportation
- GDOT Engineering Documents
    - The Concept Validation Report and Plans
    - Construction Cost Estimates
    - Preliminary Right-of-Way Cost Estimate

The VE Team utilized the supplied project materials noted above and the current standard drawings, details and specifications provided by GDOT.

ORIGINAL TO GENERAL FILES

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE	P. I. No. 245190-, Newton County STP-957(9) SR 212 Widening and Reconstruction	**OFFICE**	Preconstruction
		DATE	May 17, 2006

FROM Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

TO SEE DISTRIBUTION

SUBJECT **APPROVED REVISED PROJECT CONCEPT REPORT**

Attached for your files is the approval for subject project.

MBP/cj

Attachment

DISTRIBUTION:

Brian Summers
Harvey Keepler
Ken Thompson
Jamie Simpson
Michael Henry
Keith Golden
Joe Palladi (file copy)
Babs Abubakari
Mike Thomas
BOARD MEMBER

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

DATE 5-9-2006

FROM Alan Smith, District Design Engineer

TO Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

SUBJECT **STP-957(9) Newton County**
P.I. No. 245190
State Route 212 Widening

Revised Project Concept Report

Attached is the original copy of the Revised Project Concept Report for your further handling for approval in accordance with the Plan Development Process (PDP).

The above mentioned project consists of Widening and Reconstruction of State Route 212 from just south of Bethany Road (MP 2.90) to just north of Oak Hill Road (MP 0.98).

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Improvement Program (RTP) and/or the State Transportation Improvement Program (STIP).

DATE 5/10/06

State Transportation Planning Administrator

Distribution:

Brian Sumners
Harvey Keepler
Keith Golden
Joe Palladi
Jamie Simpson

REVISED PROJECT CONCEPT REPORT

Need and Purpose: *See attached sheets.*

Project Location: *The project is located on SR 212 southeast of Porterdale in Newton County. The project begins at MP 3.23 and extends to MP 1.12. The total length of the project is 2.11 miles.*

Description of the approved concept:

This project consist of the widening and reconstruction of State Route 212 from just south of Bethany Road (MP 3.23) to just north of Oak Hill Road (MP 1.12). The proposed typical section will consist of 1-12' lane in each direction separated by a 14' flush median with rural shoulders. Traffic will be maintained on the existing roadway during construction.

PDP Classification: Major ☐ Minor ☒

Federal Oversight: Full Oversight ☐ Exempt ☒ State Funded ☐ Other ☐

Functional Classification: *Rural Minor Arterial*

U.S. Route Number(s): *None* **State Route Number(s):** *212*

Traffic (AADT) as shown in the approved concept:
Current Year: *10,300(2006)* Design Year: *15,400(2026)*

Proposed features to be revised:

Project Length

Describe the revised feature(s) to be approved:

The project length is now revised from 2.11 miles to 2.80 miles with the new limits extending from just south of Bethany Road (MP 2.90) to just north of Oak Hill Road (MP 0.98).

Updated traffic data (AADT):
Current Year: *13,000(2008)* Design Year: *23,000(2028)*

Programmed Schedule:
P.E. *Authorized* R/W: *2007* Construction: *2008*

Revised Cost Estimates:
1. Construction costs including inflation and E&C: *$3,409,000*

2. Right of Way Cost: *$1,151,000*
3. Utility Costs: *$265,600*

Is the project in a Non-Attainment area? ☐ Yes ☒ No

Recommendation:

The District recommends that this proposed revision to the concept be approved for implementation.

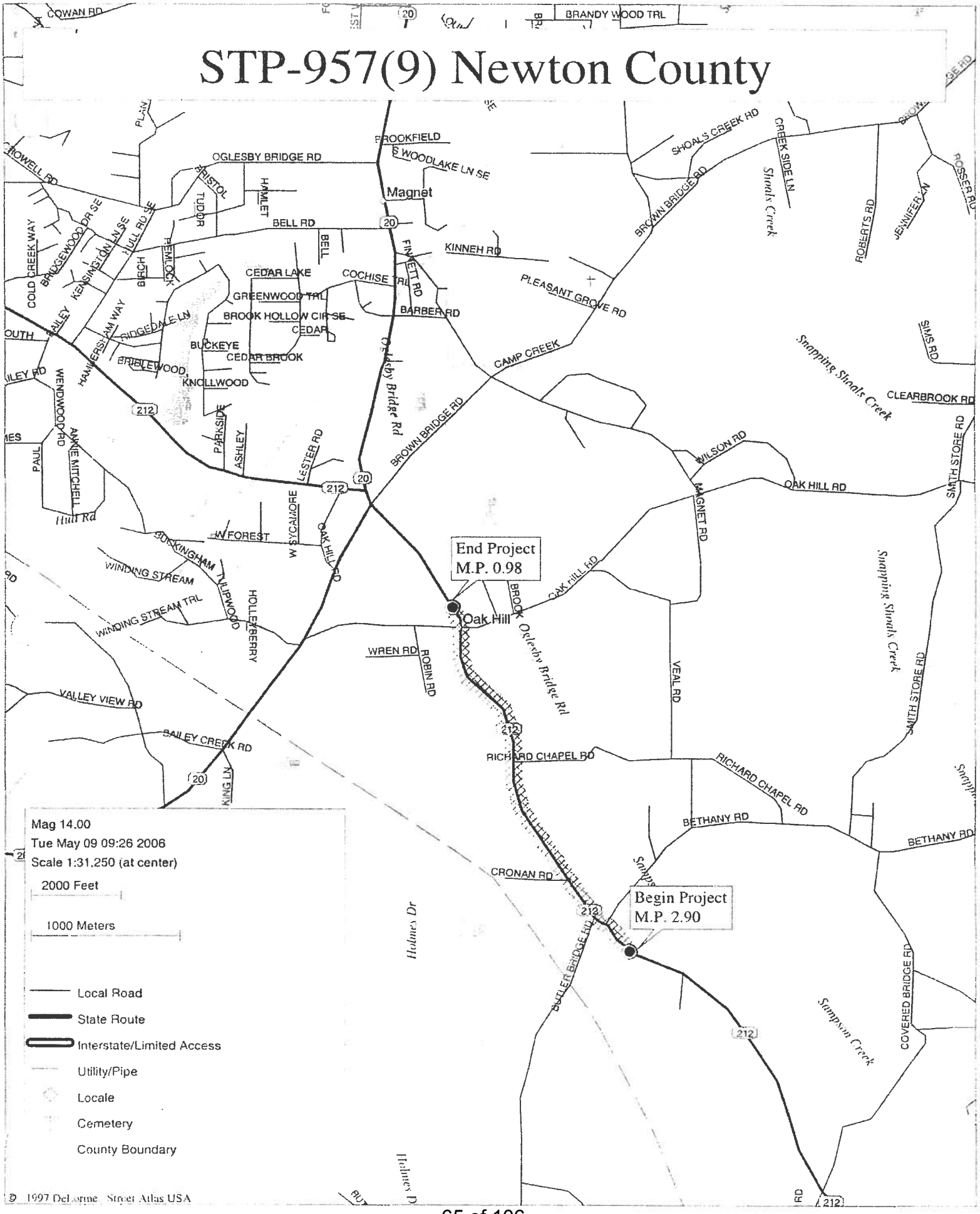
Attachments:

Sketch Map
Cost Estimate
Need and Purpose Statement

Concur: _____
Director of Preconstruction

Approved: _____
Chief Engineer

STP-957(9) Newton County



Estimate Report for file "245190 STP-957(9)"

Section ROADWAY

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	Lump Sum	60000.00	TRAFFIC CONTROL	60000.00
210-0100	1	Lump Sum	250000.00	GRADING COMPLETE	250000.00
310-1201	41570	TN	14.00	GR AGGR SUBBASE CRS, INCL MATL	581980.00
318-3000	1000	TN	13.00	AGGR SURF CRS	13000.00
402-1812	2000	TN	34.00	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	68000.00
402-3112	6885	TN	44.46	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	306107.10
402-3121	21355	TN	35.03	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	748065.65
402-3130	5160	TN	36.23	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM	186946.80
413-1000	5000	GL	1.00	BITUM TACK COAT	5000.00
441-0016	50	SY	25.00	DRIVEWAY CONCRETE, 6 IN TK	1250.00
441-0018	50	SY	30.00	DRIVEWAY CONCRETE, 8 IN TK	1500.00
441-4030	300	SY	30.00	CONC VALLEY GUTTER, 8 IN	9000.00
446-1100	6500	LF	2.62	PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	17030.00
500-3200	50	CY	360.00	CLASS B CONCRETE	18000.00
500-3800	3	CY	520.00	CLASS A CONCRETE, INCL REINF STEEL	1560.00
550-1180	200	LF	25.00	STORM DRAIN PIPE, 18 IN, H 1-10	5000.00
550-2180	840	LF	24.00	SIDE DRAIN PIPE, 18 IN, H 1-10	20160.00
550-2240	66	LF	28.93	SIDE DRAIN PIPE, 24 IN, H 1-10	1909.38
550-3324	2	EA	914.17	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	1828.34
550-3518	38	EA	550.00	SAFETY END SECTION, 18" 6:1 SLOPE	20900.00
550-4218	2	EA	342.00	FLARED END SECTION 18 IN, STORM DRAIN	684.00
573-2006	500	LF	10.00	UNDDR PIPE INCL DRAINAGE AGGR, 6 IN	5000.00
634-1200	75	EA	65.00	RIGHT OF WAY MARKERS	4875.00
668-1100	4	EA	1500.00	CATCH BASIN, GP 1	6000.00
668-2100	3	EA	1400.00	DROP INLET, GP 1	4200.00
				Section Sub Total:	**$2,337,996.27**

Section EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0240	540	TN	212.17	MULCH	114571.80
700-6910	60	AC	736.02	PERMANENT GRASSING	44161.20
700-7000	120	TN	53.88	AGRICULTURAL LIME	6465.60
700-7010	150	GL	17.58	LIQUID LIME	2637.00
700-8000	54	TN	236.35	FERTILIZER MIXED GRADE	12762.90
700-8100	3000	LB	1.38	FERTILIZER NITROGEN CONTENT	4140.00
				Section Sub Total:	**$184,738.50**

Section TEMPORARY EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	180	AC	450.77	TEMPORARY GRASSING	81138.60
163-0240	540	TN	212.17	MULCH	114571.80
163-0300	6	EA	1032.94	CONSTRUCTION EXIT	6197.64
165-0010	1400	LF	1.02	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	1428.00
165-0030	3652	LF	1.20	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	4382.40
165-0101	6	EA	339.66	MAINTENANCE OF CONSTRUCTION EXIT	2037.96
167-1000	2	EA	2903.25	WATER QUALITY MONITORING AND SAMPLING	5806.50
167-1500	18	MO	744.65	WATER QUALITY INSPECTIONS	13403.70
171-0010	2800	LF	1.88	TEMPORARY SILT FENCE, TYPE A	5264.00
171-0030	7305	LF	3.23	TEMPORARY SILT FENCE, TYPE C	23595.15
700-8000	36	TN	236.35	FERTILIZER MIXED GRADE	8508.60
				Section Sub Total:	**$266,334.35**

Section TRAFFIC SIGNS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
636-1020	6	SF	13.31	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	79.86
636-1031	30	SF	16.72	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING TP 6	501.60
636-2070	30	LF	6.46	GALV STEEL POSTS, TP 7	193.80
636-2080	12	LF	8.58	GALV STEEL POSTS, TP 8	102.96
636-3010	12	EA	288.98	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	3467.76
639-4004	8	EA	3000.00	STRAIN POLE, TP IV	24000.00
647-1000	1	Lump Sum	50000.00	TRAFFIC SIGNAL INSTALLATION NO.1	50000.00
647-1000	1	Lump Sum	50000.00	TRAFFIC SIGNAL INSTALLATION NO.2	50000.00
653-0120	107	EA	56.33	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	6027.31
653-1501	37000	LF	0.25	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	9250.00
653-1502	28500	LF	0.24	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	6840.00
653-3501	1000	GLF	0.14	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	140.00
653-3502	12000	GLF	0.15	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	1800.00
653-6004	800	SY	2.42	THERMOPLASTIC TRAF STRIPING, WHITE	1936.00
653-6006	3000	SY	2.56	THERMOPLASTIC TRAF STRIPING, YELLOW	7680.00
				Section Sub Total:	**$162,019.29**

Total Estimated Cost: $2,951,088.41

Subtotal Construction Cost	**$2,951,088.41**
E&C Rate 10.0 %	$295,108.84
Inflation Rate 5.0 % @ 1.0 Years	$162,309.86
Total Construction Cost	**$3,408,507.11**
Right Of Way	$1,151,000.00
ReImb. Utilities	$265,600.00
Grand Total Project Cost	**$4,825,107.11**

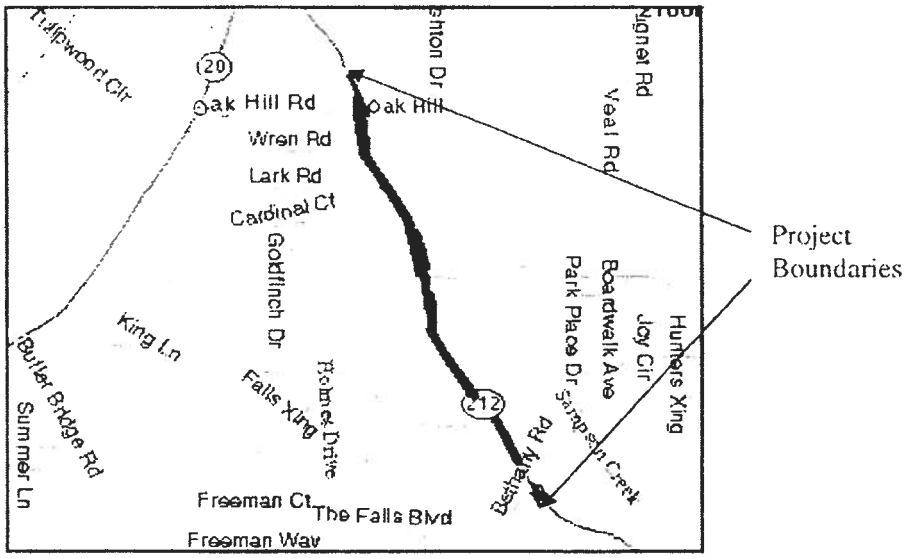
- NEED AND PURPOSE –

PROJECT STP-957(9) Newton County
P. I. NO 245190

SR 212 Intersection and Roadway Improvements Project

Background

Project STP-957(9), PI No. 245190 was addressed in the August 2002 Needs Assessment Report for Newton County, and is one of ten projects identified by citizens of Newton County as having high priority. First observed and documented in 1996, the resulting project concept and scope focuses on specific facility problems at the intersections with SR 212 at Butler Bridge Road/Bethany Road/CR 8 and the intersection of SR 212 at Oak Hill Road/CR 19. It also addresses roadway safety features on SR 212 beginning at MP 1.12 just north of Oak Hill Road/CR 19 and ending at MP 3.23 which is just south of Butler Bridge Road/Bethany Road/CR 8. The construction date in the CWP is scheduled for 2006.



Facility Overview and Operational Characteristics

SR 212 serves regional needs as a growing rural corridor beginning at the east end of the Metro-Atlanta area, traversing southeasterly through the county to the City of Monticello. It is not designated as a part of the National Highway System of Roads nor a state or county designated bicycle route, however it is a local school bus route, with a posted speed of 55 MPH throughout the corridor. Just north of the project's northern boundary, MP 1.12, SR 212 intersects with SR 20 which is another growing rural corridor which traverses southwesterly through Newton County. Just south of the project boundary SR 81 intersects with SR 212.

SR 212 is functionally classified as a Rural Minor Arterial. The truck traffic constitutes an estimated 10% of the total vehicles traveling the corridor, with most of the trucks traveling to more commercially developed areas north and south of the project boundaries. The facility

consists of two 12' lanes with variable width rural shoulders, over generally gently rolling terrain. The project boundaries are near the extreme eastern edge of Newton County. Recent development within the project boundaries includes Oak Hill Elementary School and a Newton County Fire Station. In the area of SR 212 and Oak Hill Road/CR 19, where there is sub-standard intersection alignment, there are several county historic resources.

Proposed Improvements

Project improvements including new turn lanes, additional turn lane storage at some locations, and corrections of other turn lane deficiencies at various points and throughout the entire length of the project will be addressed. At the intersection of SR 212 and Oak Hill Road/CR 19, the sub-standard intersection alignment resulting in poor sight distance in both directions will be addressed, the traffic signal will be upgraded, and dedicated left hand turn lanes will be constructed in all directions. At the SR 212 at Butler Bridge Road/Bethany Road/CR 8 intersection, SR 212 will be realigned slightly to the North to meet current design criteria, a stop and go traffic signal will be constructed, and turn lanes will be constructed on CR 8. The entire length of the roadway in the project area will be upgraded to include two (2) 12' lanes with 10' shoulder construction which includes 4' paved shoulders to provide additional safety for traffic traveling the corridor. Dedicated turn lanes will be constructed at the Newton County Firehouse and Oak Hill Elementary School. These improvements will enhance the safety and serviceability of the facility.

Operational Analysis Data

Traffic Count and Projections

TC Station 107 (Mile log 2.59 to 3.23)	2001 AADT	2006 AADT	2026 AADT
	4500	5100	7500

TC Station 109 (Mile log 1.12 to 2.59)	2001 AADT	2006 AADT	2026 AADT
	7300	8200	12,200

Level-of-Service

Level-of-Service is defined as a qualitative measure describing operational conditions within a traffic stream. There are six identified Levels-of-Service a roadway can operate under. A designated letter, A through F, identifies each of the six. Level-of-Service A representing the best operating conditions and Level-of-Service F the worst. For example, Level-of-Service A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. The general level of comfort and convenience provided to the motorist is excellent. Level-of-Service C marks the beginning of a range of flow in which the operation of the individual users becomes significantly affected by interactions with others in the traffic stream. The general level of comfort declines noticeably at this level. Level-of-Service E represents operating conditions at or near capacity. All speeds are reduced to a low, but relatively uniform value. Comfort and convenience levels are extremely poor. Level-of-Service F represents heavily congested flow with traffic demands exceeding capacity. Volumes are lower than capacity and speeds are below capacity speed.

Based on existing AADT traffic counts, the LOS on this facility in the project area is Level "C." The Level of Service remains at Level "C" by the construction year 2006. The Level of Service is estimated to be Level "D" in the year 2026 based on existing AADT figures and subsequent projections.

1996, 1997, & 1998
Accident Data and Statewide Comparisons

SR212 Accident Data – Beginning at MP 1.12 to MP 3.23

TYPE	Angle/ Intersect	Rear End	Side Swipe	Head on	Collisions not with a Vehicle	Total
1996	2	1	0	1	4	8
1997	5	2	0	1	10	18
1998	4	1	0	0	2	7
TOTAL	11	4	0	2	16	33

Number of Injuries: 26	Number of Fatalities: 0

Comparisons with Statewide Averages for: Rural Minor Arterial Non-NHS
Comparisons with Statewide Averages for similar Facilities Years 1999, 2000, 2001 NOT Available.

	1996	1997	1998
SR 212 Accidents per 100 MVMT	**96**	**191**	**30**
Comparisons with Statewide Averages for similar Facilities 100 MVMT	**144**	**166**	**172**
% Higher/Less than Statewide Average for Rural Principal Arterial Non-NHS	**33% Less**	**15% Higher**	**83% Less**

1998, 2000, & 2001 Accident Data
(Accident data not available for 1999 or 2002)

SR212 Accident Data - Beginning at Mp 1.12 to MP 3.23

TYPE	Angle/ Intersect	Rear End	Side Swipe	Head on	Collisions not with a Vehicle	Total
1998	4	1	0	0	2	7
2000	4	1	1	0	9	15
2001	0	0	0	1	2	3
TOTAL	8	2	1	1	13	25

Number of Injuries: 17	Number of Fatalities: 1

The statistics indicate that this facility does not operate at an unsafe level. However, the proposed improvements will bring this facility up to current AASHTO design standards and will provide for an enhanced level of comfort through recommended safety features.

Programmed Projects in the Area

Project	Description	Expected Beginning or Completion Date
PI 742980 Rockdale County	Bridge Replacement at SR 212 and Honey Creek	Approved for 2006
PI 730907 Rockdale County	Widening to 4 lanes SR 20 from SR 212 to Honey Creek Road	Approved for 2007

Community Characteristics

The census demographic characteristics along the SR212 project corridor in Newton County indicate a population of 4925 people of which 4088 are white, 681 African American, 9 American Indian, 39 Asian, 28 of two races or more, and 80 of Hispanic or Latino origin. Income by race is shown in the following table:

Project Area Economic Indicators	White	African American	American Indian	Asian	Two or More Races	Hispanic or Latino
Less than $10,000	115	34	0	0	0	0
$10,000 to $24,999	366	99	0	0	0	16
$25,000 to $44,999	1106	251	0	27	28	25
$45,000 to $74,999	1549	169	9	0	0	30
	793	91	0	0	0	0
	127	26	0	12	0	0
	32	11	0	0	0	9

This statistical information indicates these factors would not influence the proposed project.

Newton County, as one of Georgia's fasting growing counties, is becoming increasingly more urbanized as is indicated in the 2000 Census survey. In comparison to 1990, 2000 documentation shows a 48% percent increase in area population, with an increase of 83% in the number of families with 2 or more vehicles available.

Statement of Need and Purpose

This facility does not operate at an unsafe level. The need for the proposed project improvements comes from a variety of substandard design issues which collectively affect the overall performance of the facility and intersections. Upgrades will address the sub-standard intersection alignment on SR 212 at Oak Hill Road/CR 19 to correct the poor sight distance. Construction of turn lanes at the two intersections and intersection signal improvements will promote better

traffic flow at the intersection of SR 212 at Butler Bridge Road/Bethany Road/CR 8 and at the intersection of SR 212 at Oak Hill Road/CR 19. Turn lane construction at the new fire station and new elementary school will provide additional safety measures for area residents and through traffic. The purpose of the proposed improvements is to provide better mobility through this section of SR 212 roadway and an overall safer driving environment for thru and local traffic. The proposed improvements and safety upgrades will bring this facility up to current AASHTO design standards and provide an enhanced driving experience. The above defined improvements are necessary and recommended, to improve the operating serviceability and provide a facility that will adequately and safely serve current and future travel demand on this portion of State Route 212.

ORIGINAL TO GENERAL FILES

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

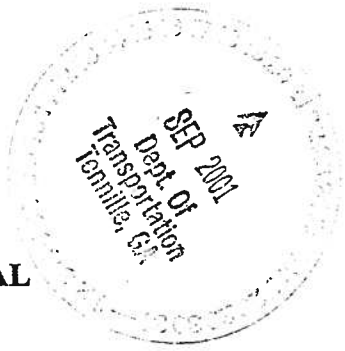
FILE STP-957(9) Newton County
P. I. No. 245190

OFFICE Preconstruction

DATE September 18, 2001

FROM C. Wayne Hutto, Assistant Director of Preconstruction

TO SEE DISTRIBUTION



SUBJECT **REVISED PROJECT CONCEPT REPORT APPROVAL**

Attached for your files is the approval for subject project.

CWH/cj

Attachment

DISTRIBUTION:

Tom Turner
David Mulling
Harvey Keepler
Jerry Hobbs
Herman Griffin
Michael Henry
Phillip Allen
Marta Rosen
Jimmy Chambers
Mike Thomas
BOARD MEMBER

D.O.T. 16

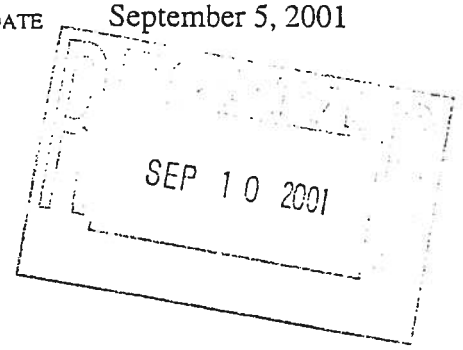
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-957(9) Newton County
P.I. No. 245190

OFFICE Tennille

DATE September 5, 2001



FROM George M. Brewer, District Design Engineer

TO Wayne Hutto, Assistant Director of Preconstruction

SUBJECT **REVISED PROJECT CONCEPT REPORT**

Attached is the original copy of the revised Concept Report for your further handling for approval in accordance with the Plan Development Process (PDP).

The project length was revised from 0.58 miles to 2.11 miles with the limits extending from just south of Bethany Road to just north of Oak Hill Road. The project was extended to accommodate the newly constructed Newton County Fire Station and Oak Hill Elemantary School.

The revised concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Improvement Plan (RTP) and/or the State Transportation Improvement Program (STIP).

Date 9-10-01

Marta V. Rosen
State Transportation Planning Administrator

GMB

Cc: David Mulling
Harvey Keepler
Marion Waters
Marta Rosen
Herman Griffin

REVISED PROJECT CONCEPT REPORT

Need and Purpose: *This project proposes to realign SR 212 from just south of Bethany Road to just north of Oak Hill Road and to construct turn lanes to accommodate the recently constructed Newton County Fire Station and Oak Hill Elementary School.*

Project location: *The project is located on SR 212 southeast of Porterdale in Newton County. The project begins at MP 3.23 and extends to MP 1.12. The total length of the project is 2.11 miles.*

Description of the approved concept: *The original concept proposed to realign SR 212 at the intersection of Oak Hill Road to provide for better sight distance on all approaches. The original project length was 0.58 miles.*

PDP Classification:

Full Oversight ( ), Exempt(X), SF( ), Other ( )

Functional Classification: *Rural Minor Arterial*

U. S. Route Number(s): *None* **State Route Number(s):** *212*

Traffic (AADT) as shown in the approved concept:

Current Year: *10,300 (2006)* Design Year: *15,400 (2026)*

Proposed features to be revised: *The project length is revised from 0.58 miles to 2.11 miles with the new limits extending from just south of Bethany Road (MP 3.23) to just north of Oak Hill Road (MP 1.12). The proposed typical section will consist of 1-12' lane in each direction separated by a 14' flush median with rural shoulders. The revision is in accordance with recommendations from the Office of Traffic Operations. (See attached letter and Traffic Engineering Study)*

Programmed/Schedule:

P.E.: *Authorized* R/W: *FY 2003* Construction: *FY 2004*

Revised cost estimates:

1. Construction cost including inflation and E&C: $2,348,000
2. Right-of-way: *$870,000*
3. Utilities: *$265,600*

Is the project located in a Non-attainment area? .....**Yes** ...X...**No.**

Recommendation: *The District recommends that the proposed revision to the concept be approved for implementation.*

Attachments:

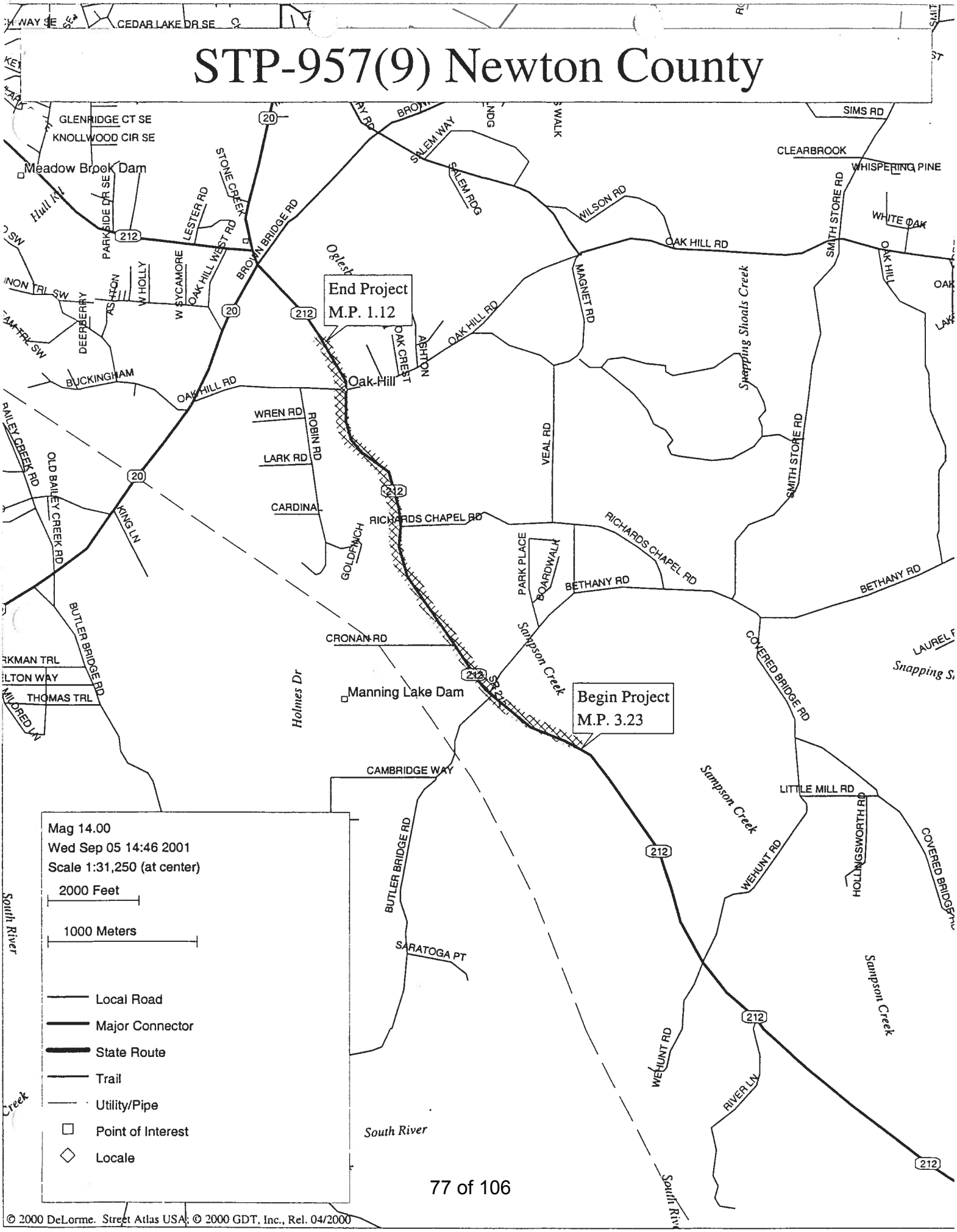
1. Sketch Map,
2. Cost Estimates,
3. Recommendation letter and TE Study from Traffic Operations

- **Exempt projects**

Concur: _____
Director of Preconstruction

Approve: _____
Chief Engineer

STP-957(9) Newton County



ITEM	DESCRIPTION	UNITS	WT. AVG.	QUANTITY	COST
	UDO1 NEWTON SR 212 FROM BETHANY ROAD TO OAK HILL ROA				
	***** FILE NAME SR212.217 *****				
	***** PROJECT LENGTH 2.11 MILES *****				
	***** PROPOSED INTERSECTION IMPROVEMENTS WITH NEW LOCATION *****				
150-1000	TRAFFIC CONTROL	LS	60000	1	$60000.00
210-0100	GRADING COMPLETE	LS	250000	1	$250000.00
310-1201	GR AGGR SUBBASE CRS, INCL MATL	TN	14	30000	$420000.00
318-3000	AGGR SURF CRS	TN	13	1000	$13000.00
402-0111	RECYCLED ASPH CONC B, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	37	5000	$185000.00
402-0120	RECYCLED ASPH CONC BASE, GP 1 OR 2, INCL BITUM MATL & H	TN	36	10000	$360000.00
402-0130	RECYCLED ASPH CONC E, GP 2 ONLY, INCL BITUM MATL & H LIME	TN	39	3700	$144300.00
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	TN	34	2000	$68000.00
413-1000	BITUM TACK COAT	GL	1	4000	$4000.00
441-0016	DRIVEWAY CONCRETE, 6 IN TK	SY	25	50	$1250.00
441-0018	DRIVEWAY CONCRETE, 8 IN TK	SY	30	50	$1500.00
441-4030	CONC VALLEY GUTTER, 8 IN	SY	30	75	$2250.00
441-6222	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	LF	10	500	$5000.00
500-3200	CLASS B CONCRETE	CY	360	50	$18000.00
500-3800	CLASS A CONCRETE, INCL REINF STEEL	CY	520	3	$1560.00
550-1150	STORM DRAIN PIPE, 15 IN, H 1-10	LF	22	200	$4400.00
550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	LF	25	200	$5000.00
550-2150	SIDE DRAIN PIPE, 15 IN, H 1-10	LF	20	200	$4000.00
550-2180	SIDE DRAIN PIPE, 18 IN, H 1-10	LF	24	200	$4800.00
550-3515	SAFETY END SECTION, 15" 6:1 SLOPE	EA	450	8	$3600.00
550-3518	SAFETY END SECTION, 18" 6:1 SLOPE	EA	550	8	$4400.00
550-4218	FLARED END SECTION 18 IN, STORM DRAIN	EA	342	2	$684.00
573-2006	UNDDR PIPE INCL DRAINAGE AGGR, 6 IN	LF	10	500	$5000.00
634-1200	RIGHT OF WAY MARKER	EA	65	20	$1300.00
668-1100	CATCH BASIN, GP 1	EA	1500	4	$6000.00
668-2100	DROP INLET, GP 1	EA	1400	3	$4200.00
668-7015	DRAIN INLET, 15 IN	EA	600	3	$1800.00
				Section SUB TOTAL	$1579044.00
	***** EROSION CONTROL *****				
700-0200	GRASSING	LS	50000	1	$50000.00
				Section SUB TOTAL	$50000.00
	***** TEMPORARY EROSION CONTROL *****				
161-1000	EROSION CONTROL	LS	50000	1	$50000.00
163-2051	CONSTR, MAINT AND REMOVE BALED STRAW EROSION CHECK	LF	2.5614256139	10000	$25614.26
171-0010	TEMPORARY SILT FENCE, TYPE A	LF	2.5928844536	2000	$5185.77
171-0030	TEMPORARY SILT FENCE, TYPE C	LF	4.2361297918	2000	$8472.26
				Section SUB TOTAL	$89272.28
	***** TRAFFIC SIGNS *****				
639-4004	STRAIN POLE, TP IV	EA	3000	8	$24000.00
647-1000	TRAFFIC SIGNAL INSTALLATION NO.1	LS	50000	1	$50000.00
647-1000	TRAFFIC SIGNAL INSTALLATION NO.2	LS	50000	1	$50000.00
				Section SUB TOTAL	$124000.00
	***** INFLATION AND E&C *****				
100-0001	INFLATION (5% PER YEAR FOR 3 YEARS)	LS	290000	LUMP	$290000.00
100-0002	E&C (10%)	LS	215000	LUMP	$215000.00
				Section SUB TOTAL	$505000.00
				Total Project Cost	$2347316.28

USE 2,348,000

JDP
9/11/2001

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-0957-(9) - Newton County
PI No. - 245190

OFFICE: Tennille Utilities

DATE: August 2, 2001

JFH/DAS

FROM James F. Hobby, Jr., District Utilities Engineer

TO David Griffith, District Preconstruction Engineer
Attention: George Brewer

SUBJECT UTILITY COST ESTIMATE

A Utility Cost Estimate has been completed on the above referenced project. The estimate was done by Alan Smith of this office and is based on concept drawings provided by your office, dated July 26, 2001 and an on-site inspection performed on August 1, 2001. Unit costs are based on the "mean item summary" and former "force account agreements". Additional information has been provided by the following: Mike Hopkins – Newton County Water Authority, Ronnie Brown – Atlanta Gas Light Company, Jackie Joyner - BellSouth:

POWER

Snapping Shoals EMC has two service drop poles located on Bethany Road and Butler Bridge Road that will be in conflict and are located off of the existing Right of Way.

Relocate 2 - EMC Power Poles @ $1000.00 each	$2,000.00

Georgia Power Company has a transmission line crossing with a concrete structure located just off of the existing Right of Way.

Relocate 1 - Transmission structure @ $50,000.00 each	$50,000.00

This office recommends a slight alignment shift to the west to avoid relocating this structure.

WATER

Newton County Water Authority has an 8" PVC water line located throughout the project limits and located on the existing Right of Way.

Relocate approximately 11,400 L.F. of 8" PVC water main @ 18.00/L.F.	$205,200.00
Relocate 8 Fire Hydrants @ $1,050.00 each	$8,400.00
TOTAL ESTIMATED UTILITY COSTS:	**$265,600.00**

The following owners have facilities located on the existing Right of Way within the project limits and should not eligible for reimbursement.

TELEPHONE

BellSouth Telephone has fiber optic and copper facilities located on the existing Right of Way within the project limits and are not considered reimbursable.

GAS

Atlanta Gas Light Company has both 6" and 1 ½" high pressure steel gas mains located on the existing Right of Way within the project and are not considered reimbursable.

All of the above information is an estimate and may be revised when project plans are developed and prior rights research has been performed.

If you should have questions, please contact Alan Smith in the Utilities Section of this office at 478-552-4637.

JFH:DAS
cc: Jeff Baker / Scott Greene via e-mail
Herman Griffin
Debbie Pennington

RIGHT OF WAY COST BREAKDOWN SHEET

PROJECT: STP-957 (9) Newton
P. I. No: 245190
No. of Parcels: approximately 33
Project Description:

Date: September 5, 2001

Land:			**$ 100,000.00**
Improvements:	**Single family residences**		**$310,000.00**
Relocation:	**3 residential @ $24,500**		**$73,500.00**
		N/A	
Damages:	**Proximity**		**$25,000.00**
	Estimated Cost of Right of Way		**$508,500.00**
	C/O Condemnation Increase & Legal Cost (50% of R/W)		**$254,250.00**
	Fee Appraisal Cost 33 x 1,200		**$39,600.00**
	Condemnation Cost (33 par x 10% x $5,500)		**$18,150.00**
	Incidentals (33 par x $1,500)		**$49,500.00**
	Net Cost		**$870,000.00**
	Inflation (10% rural; 25% urban)		

TOTAL COST	**$ 870,000.00**
Prepared by:Eric K. Murray	**Credit hours**
Prepared by:	**Credit hours**
Reviewed by:	**Title:**

ORIGINAL TO GENERAL FILES

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-957(9) Newton County
P. I. No. 245190

OFFICE Preconstruction

DATE November 30, 2000

FROM C. Wayne Hutto, Assistant Director of Preconstruction

TO SEE DISTRIBUTION

SUBJECT **PROJECT CONCEPT REPORT APPROVAL**

Attached for your files is the approval for subject project.

CWH/cj

Attachment

DISTRICT TWO
DEC 07 2000
(1) Dist 12-8-00
( ) State Aid
( ) EEO
( ) Comm
( ) Safety
( ) Const
( ) Ct Admin
( ) Estimator
( ) Auditor
( ) Matls
( ) Adm Off
( ) Train
( ) EDP Tech Sppt
( ) Legal
(2) Preconst M
(3) P & P
( ) Environ
(4) Des
( ) Loc
( ) R/W 1
( ) R/W 2
( ) Loc Gvt R/W
( ) Intermodal
( ) Outdoor Adv
(5) Traf Ops
( ) Maint
( ) Utilities
COPY:

DISTRIBUTION:

Tom Turner
David Mulling
Harvey Keepler
Jerry Hobbs
Herman Griffin
Michael Henry
Marion Waters
Marta Rosen
Paul Liles
Jimmy Chambers (ATTN: Ted Cashin)
Mike Thomas

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-957(9) Newton County
P.I. No. 245190

OFFICE Preconstruction

DATE November 16, 2000

FROM Thomas L. Turner, P.E., Director of Preconstruction

TO J. Tom Coleman, Jr., Commissioner

SUBJECT PROJECT CONCEPT REPORT

This project is the intersection improvements at SR 212 and Oak Hill Road/CR 19 in the City of Oak Hill. State Route 212 at this location is a rural two lane roadway with a posted speed limit of 55 MPH. It currently approaches the intersection with a substandard horizontal alignment, from both directions, thereby limiting the sight distance through the intersection. Traffic estimates are as follows:

ROUTE	2006 VPD	2026 VPD
SR 212	10,300	15,400
CR 19	2,400	3,600

The proposed construction will realign SR 212 to correct the substandard horizontal alignment. Left and right turn lanes will be added at all approaches. Traffic will be maintained via staging during construction.

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

The estimated costs for this project are:

	PROPOSED	APPROVED	PROG DATE	LET DATE
Construction (includes E&C and inflation)	$568,000	$688,000	2004	03-07
Right-of-Way	$250,000	$304,000		
Utilities*	$ 8,000	-----		

*LGPA to be sent.

This project is in the STIP. I recommend this project concept be approved.

TLT:JDQ/cj

Attachment

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

APPROVE_____
J. Tom Coleman, Jr., Commissioner

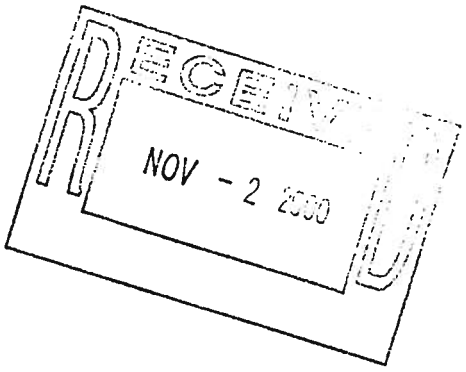
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: STP-957(9) Newton
P.I. Number 245190-

OFFICE: Atlanta, Georgia

DATE: November 1, 2000



FROM: David Mulling, Project Review Engineer DTM

TO: Wayne Hutto, Assistant Director of Pre-construction

SUBJECT: **CONCEPT REPORT**

We have reviewed the concept report submitted November 1, 2000 by the letter from George Brewer dated October 30, 2000, and have no comment.

The costs for the project are:

Construction	$449,000
Inflation	$ 67,000
E&C	$ 52,000
Reimbursable Utilities	$ 8,000
Right of Way	$250,000

DTM

c: George Brewer – District 2 Design

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
PROJECT CONCEPT REPORT
INTERSECTION IMPROVEMENTS AT SR 212 AND CR 19 IN OAK HILL

STP-957(9)

NEWTON COUNTY

U.S. Route No.:	None
State Route No.:	212
GaDOT P.I. No.:	245190
Federal Aid Route No.:	S957

Date of Report: 10/20/00

RECOMMENDATION FOR APPROVAL

Date — State Transportation Planning Administrator

This project concept is contained in the Regional Transportation Improvement Program (RTIP) and/or in the State Transportation Improvement Program (STIP). The concept as presented herein and submitted for approval is consistent with that which is included in the RTIP and/or the STIP.

Date — State Transportation Programming Engineer

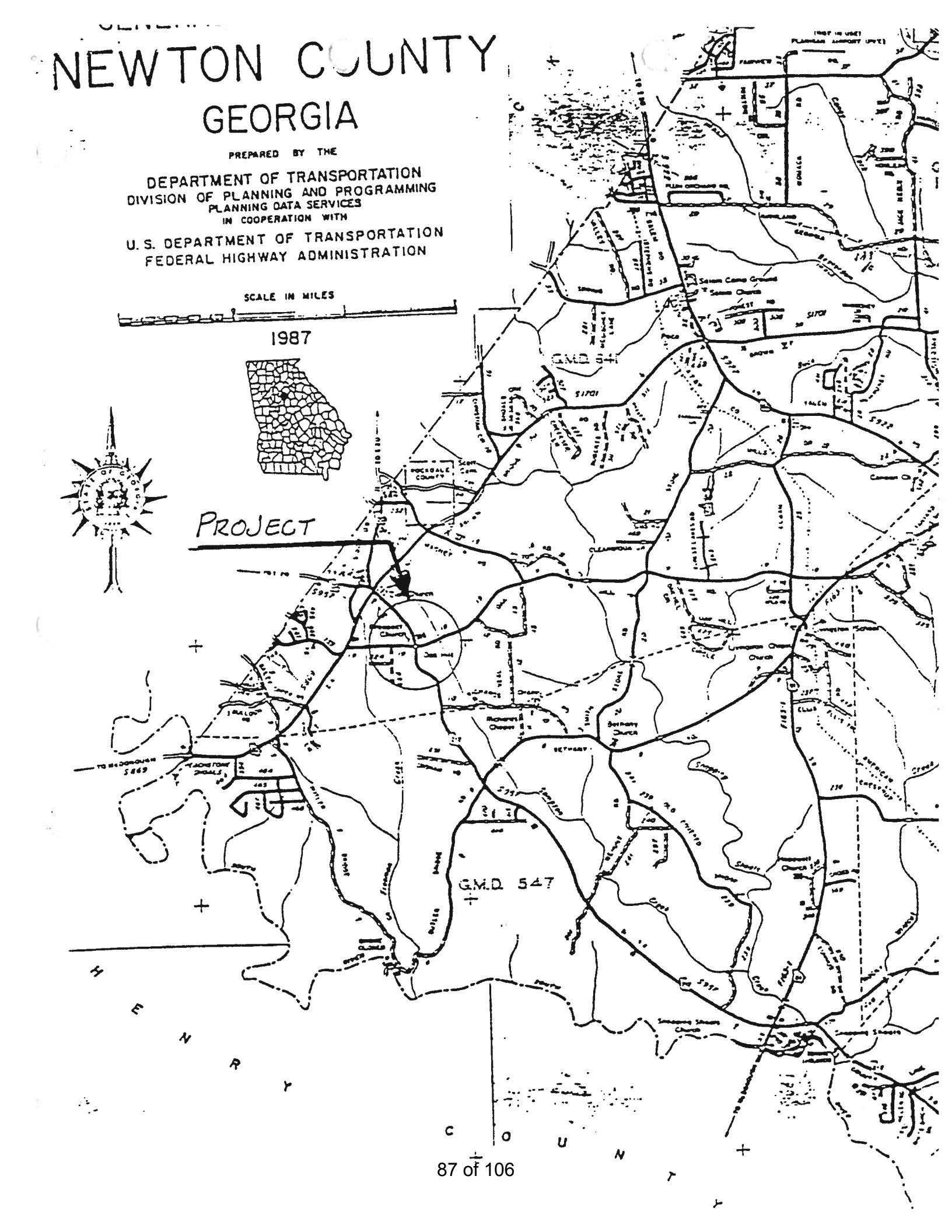
Date — State Environmental/Location Engineer

Date — State Road & Airport Design Engineer

10-30-00 — District Engineer/Tennille

Date — Project Review Engineer

Date — State Traffic Operations Engineer


NEWTON COUNTY
GEORGIA
PREPARED BY THE
DEPARTMENT OF TRANSPORTATION
DIVISION OF PLANNING AND PROGRAMMING
PLANNING DATA SERVICES
IN COOPERATION WITH
U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
SCALE IN MILES
1987
PROJECT
G.M.D. 84
G.M.D. 547
HENRY COUNTY

PROJECT CONCEPT REPORT

PROJECT NUMBER: STP-957(9) Newton County

PROJECT LOCATION AND DESCRIPTION

This project consists of the realignment of SR 212 at the intersection of CR 19 in Oak Hill. Left turn lanes and deceleration lanes will also be added on SR 212 and CR 19.

TRAFFIC

	CURRENT		PROJECTED	
	YEAR	AADT	YEAR	AADT
SR 212	2006	10,300	2026	15,400
CR 19	2006	2,400	2026	3,600

PDP CLASSIFICATION	FUNCTIONAL CLASSIFICATION
Minor on existing alignment	Rural Minor Arterial

FOS ( ) EXEMPT (X) N/A ( )

NEED AND PURPOSE

The intersection of SR 212 and CR 19 (Oak Hill Road) in Newton County has had a high accident rate over the last several years. SR 212 approaches the intersection from both directions with a sub-standard horizontal alignment which limits sight distance through the intersection. There are buildings in three quadrants of the intersection which also limit sight distance. This project will correct the sub-standard alignment and improve the sight distance through the intersection and therefore improve the overall safety of the intersection.

EXISTING ROADWAY

TYPICAL SECTION:	2 Lane Rural	RIGHT-OF-WAY WIDTH: 80'
POSTED SPEED	MAXIMUM DEGREE OF CURVE	MAX. GRADE
55 mph	6°	6.0%

MAJOR STRUCTURES

FEATURES INTERSECTED/TYPE	WIDTH	HEIGHT	SUFF. RATING
None			

HAZARD INDEX: There will be no railroad involvement.

PROPOSED ROADWAY

TYPICAL SECTION:

SR 212 - 2-12' lanes separated by a 14' left turn lane with 10' shoulders (4' paved)
CR 19 (Oak Hill Rd) - 2-12' lanes separated by a 14' left turn lane with 8' shoulders (2' paved)
(Decel lanes will be constructed where conflicts with historic resources are not encountered.)

DESIGN SPEED	MAXIMUM DEGREE OF CURVE		MAX. GRADE	
55 mph	ALLOWABLE	6°	ALLOWABLE	4.5%
	PROPOSED	4°	PROPOSED	4.5%

PROPOSED MAJOR STRUCTURES

FEATURES INTERSECTED/TYPE	LENGTH	WIDTH
All existing box culverts and pipes will be extended.		

PROPOSED RIGHT-OF-WAY

RIGHT-OF-WAY WIDTH	PARCELS IMPACTED	DISPLACEMENTS
Varies 80' to 120'	8	2

TYPE OF ACCESS CONTROL: Permit

COORDINATION AND SCHEDULING

CONCEPT TEAM MEETING DATE:	October 20, 2000
CONFORMS TO TIP/STIP?	Y_X_ N____
MEETS LOGICAL TERMINI REQUIREMENTS?	Y_X_ N____
P.A.R. MEETING:	Not required
PERMITS REQUIRED:	404 Type 26
LEVEL OF PUBLIC INVOLVEMENT:	None
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-163-1(15) Newton
LOCAL GOVERNMENT COMMITMENTS:	Newton County will be requested to fund all reimbursable utility relocations and acquire all required right of way.

MISCELLANEOUS

TRAFFIC CONTROL DURING CONSTRUCTION:	All construction will be done under traffic.
LEVEL OF ENVIRONMENTAL ANALYSIS:	Categorical Exclusion
UNDERGROUND STORAGE TANKS:	None
HAZARDOUS WASTE SITES:	None

DESIGN VARIATIONS REQUESTED

	YES	NO	UNDETERMINED
SUBST HORIZ ALIGNMENT	( )	(X)	( )
SUBST ROADWAY WIDTH	( )	(X)	( )
SUBST SHOULDER WIDTH	( )	(X)	( )
SUBST VERTICAL GRADES	( )	(X)	( )
SUBST CROSS SLOPES	( )	(X)	( )
SUBST STOPPING SIGHT DIST	( )	(X)	( )
SUBST SUPERELEV RATES	( )	(X)	( )
SUBST HORIZONTAL CLEARANCE	( )	(X)	( )
SUBST SPEED DESIGN	( )	(X)	( )
SUBST VERTICAL CLEARANCE	( )	(X)	( )
SUBST BRIDGE WIDTH	( )	(X)	( )
SUBST BR STRUCT CAPACITY	( )	(X)	( )

ALTERNATIVES CONSIDERED

A. Realign SR 212 to the east straightening out the reverse curve on the south approach by shifting the intersection to the east and also allow for sight distance in all directions. Construct left turn lanes on all approaches and decel lanes where conflicts with historic resources do not exist. Install a traffic signal and also correct the vertical alignment on CR 19 east of the intersection. Two residences will be displaced south of the intersection.

B. No build.

ESTIMATED COST

CONSTRUCTION:	$449,000	**RIGHT-OF-WAY:**	$250,000
E & C (10%):	52,000	**ACQUIRED BY:**	Newton County
INFLATION: (3 yrs @ 5% per yr)	70,000	**UTILITIES:**	LGPA
TOTAL CONS'T COST:	$571,000		

COMMENTS

The district recommends Alternate "A" (Correct the substandard vertical alignment) due to the past accident history.

ATTACHMENTS: Sketches, Cost Estimates, Typical Sections, Traffic Data, Pavement Design, Accident Data, Team Meeting Minutes, Utility Cost Estimate

PREPARED BY: George Brewer, District Design Engineer

Department of Transportation
State of Georgia

Interdepartmental Correspondence

FILE R/W Cost Estimate **OFFICE** Atlanta
DATE February 20, 2008

FROM Phil Copeland, Right of Way Administrator

TO Foster Grimes District Tennille Design Squad Leader

SUBJECT **Preliminary Right of Way Cost Estimate**
Project: STP00-0957-00(009)Newton &
STP00-00MS-00(001)Jefferson
P.I. No.: 245190 & 231230
Description: Realignment of SR 212 and SR 24 Passing Lanes

As per your request, attached are copies of the updated approved Preliminary Right of Way Cost Estimate on the above referenced project.

Please note the area of Required Right of Way was furnished with your request and is very much appreciated.

If you have any questions, please contact Jerry Milligan at the West Annex Right of Way Office at (770) 986-1541.

PC:GAM
Attachments
cc: Brian Summers, Engineering Services
Wes Brock, R/W
Windy Bickers, Financial Management
File

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: Jerry Milligan

Date: February 20, 2008
Project: STP-957(9)Newton UPDATED
Existing/Required R/W: Varies/Varies
P.I. Number: 245190
No. Parcels: 37
Project Termini : Realignment of SR 212 from Bethany Road to Oak Hill Road
Project Description: Realignment of SR 212

Land: R/W Residential: 27.0 acres @ $25,000/acre	$ 675,000		
R/W Commercial: 3.1 acres @ $ 125,000 / acre	387,500	$	1,062,500
Improvements : Residences, bldg. fencing, sign, misc. site improvements			615,000
Relocation: Residential (2)			80,000
Damage : Cost to Cure			25,000
Net Cost		$	1,782,500

Net Cost		$ 1,782,500
Scheduling Contingency	55 %	980, 375
Adm/Court Cost	60 %	1,657,725
Market Appreciation	40 %	1,768,240
		$ 6,188,840

Total Cost $6,188,900

Value Engineering Process

VALUE ENGINEERING PROCESS

Introduction
This report summarizes the analysis and conclusions by the PBS&J Value Engineering team as they performed a VE Study during the period of November18 through November 21, 2008 in Atlanta, Georgia, for the Georgia Department of Transportation. The workshop agenda is presented herein.

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
John Luh, Ph.D., P.E., PTOE, AICP, AVS	Highway and Transportation PE
Kevin Martin, Esq. AVS	Highway Construction Specialist
Randy S. Thomas, CVS	Assistant Team Leader

A Site Visit was performed on November 18, 2008.

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) design team and the Georgia Department of Transportation (GDOT) staff. 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 suppose to do?", and "How is it suppose 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**
        - **Increase Capacity**
        - **Separate Traffic**
        - **Provide for future growth**

    - **Project Basic Functions**
        - **Additional Traffic Lanes**
        - **Construct Additional Turn Lanes**
        - **Provide Separation of Traffic**
        - **Provide Traffic Safety Controls**
        - **Provide Bike Lanes and Sidewalks**

- **Speculation Phase -** The VE team performed a brainstorming session to identify ideas that might help meet the project objectives:

    - Improve Safety
    - Increase Capacity
    - Reduce construction and life cycle costs
    - Reduce the time of construction

    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
    - Maintainability
    - Ability to Implement the Idea
    - General Acceptability of the Alternatives
    - Constructability

    Based on these measurement sticks, 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. 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

Project No.: STP00-0957(009)
County: Newton
P.I. No.: 245190
Widening and Reconstruction of SR 212
PBS&J Project Task Order No. 33
November 18-21, 2008

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. A member of the VE Team visits the project site.

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.)
  - Sidewalk, 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
- VE Team visits site

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

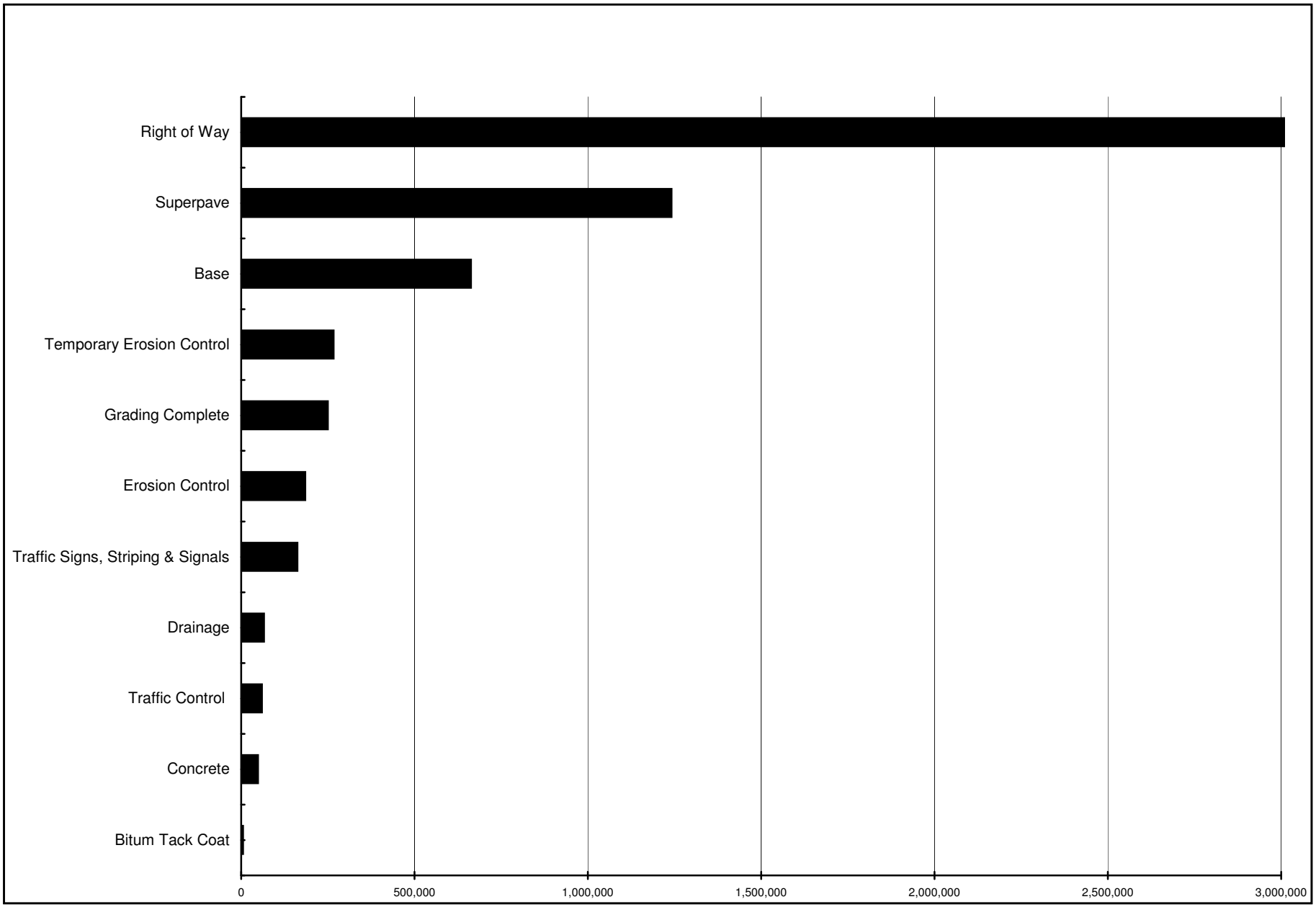
8:00-9:00 Prepare Presentation
9:00-10:00 VE Team Presentation

PARETO CHART - COST HISTOGRAM

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) - P.I. No. 245190
Widening and reconstruction of SR 212 from Bethany Rd. to Oak Hill Rd.

PROJECT ELEMENT	COST	PERCENT	CUM. PERCENT
Right of Way	6,188,900	67.71%	67.71%
Superpave	1,241,120	13.58%	81.29%
Base	662,980	7.25%	88.54%
Temporary Erosion Control	266,334	2.91%	91.46%
Grading Complete	250,000	2.74%	94.19%
Erosion Control	184,739	2.02%	96.22%
Traffic Signs, Striping & Signals	162,019	1.77%	97.99%
Drainage	65,681	0.72%	98.71%
Traffic Control	60,000	0.66%	99.36%
Concrete	48,340	0.53%	99.89%
Bitum Tack Coat	5,000	0.05%	99.95%
ROW Markers	4,875	0.05%	100.00%
Subtotal including ROW costs	**$ 9,139,988**	**100.00%**	
E & C Rate @ 10%	**$ 913,999**		
Inflation Rate 5.0% @1.0Years	**$ 162,310**		
Subtotal =	**$ 10,216,297**		
Total Construction Cost =	**$ 10,216,297**		

Project No. STP00-0957(009)
P.I. No. 245190
Newton County



DESIGNER PRESENTATION

MEETING PARTICIPANTS

Geogia Department of Transportation **November 18, 2008**

Project No.: STP00-0957(009) P.I. No.: 245190 Widening and Reconstruction of SR 212

NAME		ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers		GDOT - Engineering Services	lisa.myers@dot.state.ga.us	404-631-1770
Ron Wishon		GDOT - Engineering Services	rwishon@dot.ga.gov	404-631-1753
Lynn Bean		GDOT-D2 Construction	lbean@dot.ga.gov	478-553-2331
Bryan Gibbs		GDOT-D2 Construction	bgibbs@dot.ga.gov	706-343-5836
Foster Grimes		GDOT-D2 Design Squad Leader	dmoore@dot.ga.gov	478-552-4643
Ken Werho		GDOT-Design	kwherho@dot.ga.gov	404-635-8144
James Magnus		GDOT-Construction Office	jmagnus@dot.ga.gov	770-528-3238
Jerry Milligan		GDOT-Roadway	jmilligan@dot.ga.gov	404-347-0170
Jim Kitchings		District 2 Environmental	jkitchings@dot.ga.gov	478-553-2208
Les Thomas, P.E., CVS-Life		PBS&J	lmthomas@pbsj.com	678-677-6420
Dr. John Luh, AVS		PBS&J	jzluh@pbsj.com	678-677-6420
Kevin Martin, Esq., AVS		PBS&J	klmartin@pbsj.com	205-969-3776

VE TEAM PRESENTATION

MEETING PARTICIPANTS

Geogia Department of Transportation **November 21, 2008**

Project No.: STP00-0957(009) P.I. No.: 245190 Widening and Reconstruction of SR 212

NAME		ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers		GDOT - Engineering Services	lisa.myers@dot.ga.gov	404-631-1770
Les Thomas, P.E., CVS_Life		PBS&J	lmthomas@pbsj.com	678-677-6420
Dr. John Luh, AVS		PBS&J	jzluh@pbsj.com	678-677-6420
Kevin Martin, Esq., AVS		PBS&J	klmartin@pbsj.com	205-969-3776

CREATIVE IDEA LISTING

PROJECT: **Georgia Department of Transportation**
STP00-0957(009) – P.I. 245190
Widening and reconstruction of SR 212 from Bethany Rd to Oak Hill Rd
Newton County

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

NO.	IDEA DESCRIPTION	RATING
	Roadway (RD)	
RD-1	Delete two-way left turn; provide left-turn lanes for school and fire station	4
RD-2	Delete two-way turn lane north of school	4
RD-3	Signalize and add turn lanes for Oak Hill & Bethany Road intersections only, provide left turn lanes for School and fire station; delete all other work	2
RD-4	Reduce side road work	5
RD-5	Reduce 14’ two-way left turn lane to a 12’ two-way turn lane	5
RD-6	Construct two northbound lanes and one southbound lane	2
RD-7	Do not construct project	1
RD-8	Provide signals only at Oak Hill and Bethany Road intersections and provide left turn lanes for School and Fire House, delete all other work	3
RD-9	Do not realign Bethany Road	4
RD-10	Delete cross hatched islands at Bethany Road and CR 8 intersection	DS
RD-11	Delete northbound right turn lane at Bethany Road intersection	4
RD-12	Reduce northbound left turn bay at Bethany Road intersection	4
RD-13	Provide a signal at the fire house entrance	2
RD-14	Increase side slopes to 2:1 where possible	4
RD-15	Delete paved shoulders in areas of no new work	4
RD-16	Delete right turn lane on Bethany Road onto SR 212	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