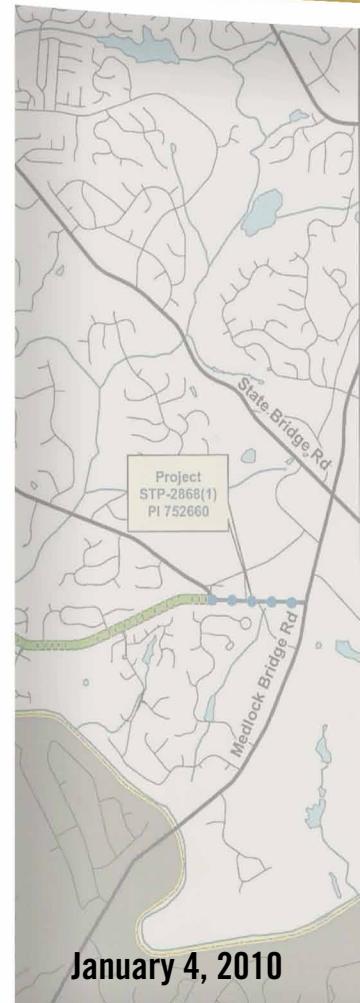
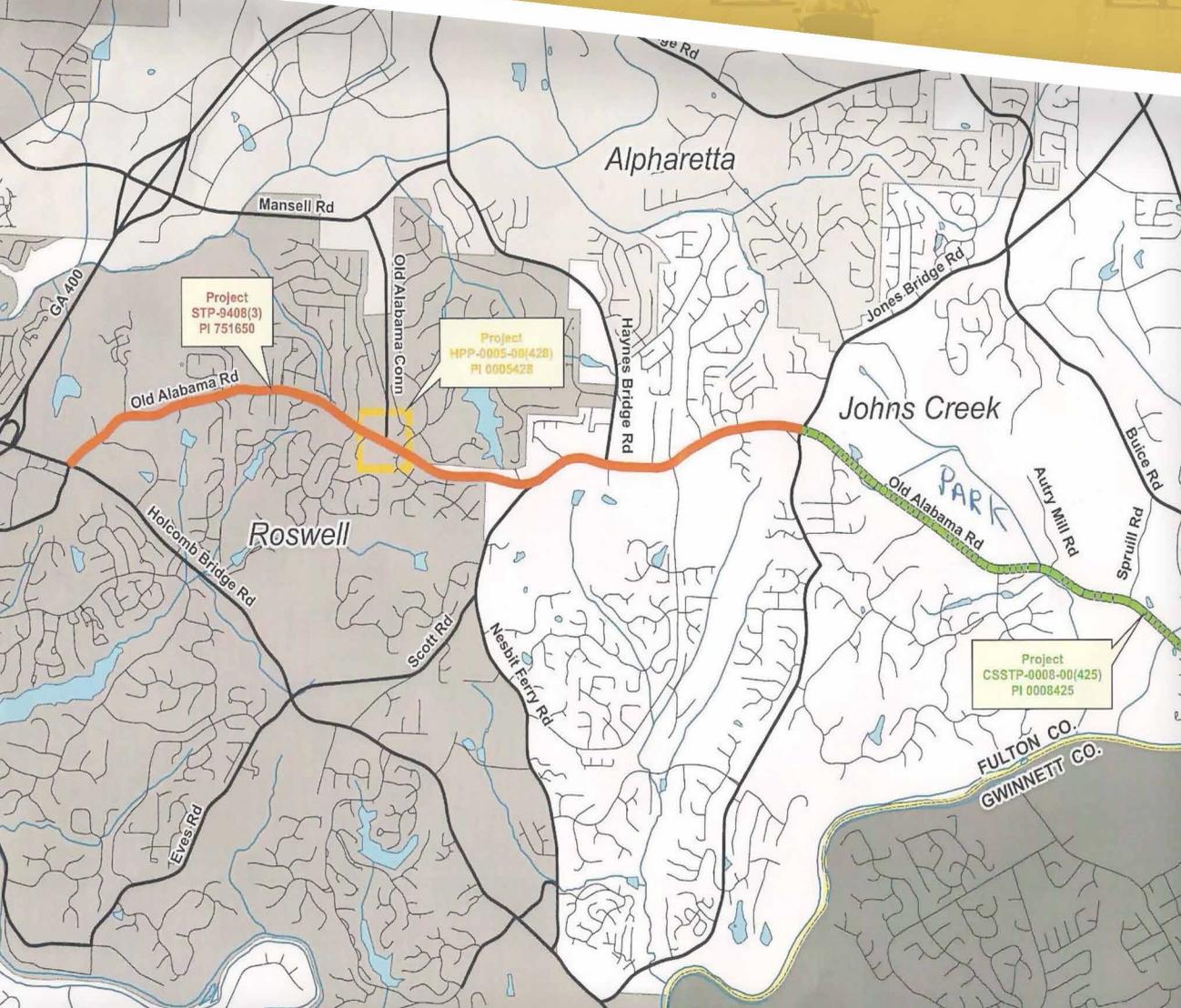


# Value Engineering Study Report

## Georgia Department of Transportation

STP00-9408-00(003) – P.I. No. 751650 and CSSTP-0008-00(425) – P.I. No. 0008425

### SR 961/Old Alabama Road from Holcomb Bridge Road to Buice Road Fulton County



January 4, 2010

12230 | dv | 09



Value Engineering Team



Design Team





January 4, 2010

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  
STP00-9408-00(003) – P.I. No. 751650  
SR 961/Old Alabama Road from Holcomb Bridge Road to Jones Creek Road  
CSSTP-0008-00(425) – P.I. No. 0008425  
SR 961/Old Alabama Road from Jones Creek Road to Buice Road  
Fulton County

Dear Ms. Myers:

Please find enclosed two (2) hard copies and one (1) CD of our final Value Engineering Report for widening and improvements to SR 961 Old Alabama Road from Holcomb Bridge Road to Buice Road.

Using the Value Engineering “Job Plan” – Investigation, Analysis (*Function*), Speculation, Evaluation & Development, the VE Team identified:

- Project goal to be “Improve Safety”
- Seven (7) Alternatives and three (3) Design Suggestions to improve the project safety and value.

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

STP00-9408-00(003) - P.I. No. 751650

Widening and Improvements to SR961/Old Alabama Road  
from Holcomb Bridge Road to Jones Bridge Road  
and

CSSTP-0008-00(425) – P.I. No. 0008425

Widening and Improvements to SR961/Old Alabama Road  
from Jones Bridge Road to Buice Road

Fulton County

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- Creative Idea Listing and Evaluation Worksheet

# **EXECUTIVE SUMMARY**

## **INTRODUCTION**

The subjects of the Value Engineering study are projects STP00-9408-00(003) – P.I. No. 751650 and CSSTP-0008-00(425) – P.I. No. 0008425. Both projects are for the widening and improvements to SR 961/Old Alabama Road in Fulton County.

## **PROJECT DESCRIPTION**

### **STP00-9408-00(003) – P.I. No. 751650**

This project proposes to improve SR 961/Old Alabama Road from the intersection of Holcomb Bridge Road to Jones Bridge Road within the cities of Roswell and Johns Creek. The total project length is approximately 4.6 miles.

The existing roadway varies from two travel lanes (one in each direction) and a maximum of five lanes including two travel lanes in each direction with a center left turn lane. The posted speed limit along the majority of the corridor is 45mph with a short section from Holcomb Bridge Road to just east of Holcomb Woods Parkway at 40mph. The ADT is an average of 27,000. Traffic volumes are expected to reach between 18,000 and 36,000 by the design year 2032. By the year 2032 eleven of the fifteen intersections will operate at LOS E or LOS F during one or both peak time periods. Only one historical resource has been identified, and there does not appear to be any major environmental concerns.

The project proposes to widen Old Alabama Road to four lanes (two in each direction), with a mixture of medians (14' to 20' wide), curb and gutter, a 5 foot sidewalk on the south side and a 10 foot multi-use path on the north side.

The estimated construction cost for the project is \$18,257,985. In addition, Right-of-Way costs are anticipated to be \$21,280,000 with reimbursable utilities cost estimated to be \$3,840,000. The projected total cost for the project is \$43,377,985.

### **CSSTP-0008-00(425) – P.I. No. 0008425**

This project proposes to improve SR 961/Old Alabama Road from the intersection of Jones Bridge Road to Buice Road within the city limits of Johns Creek. The total project length is approximately 3.4 miles. The corridor is currently either a two lane or three lane section. The minimum width provides two travel lanes (one in each direction) and the maximum width is five lanes (two travel lanes with a center left turn lane). There are some right and left turn lanes provided at some intersections and entrances to subdivisions. Posted speed limit is 45mph. ADT is 19,000 vehicles. Level of Service (LOS) at peak hours currently ranges from LOS A to LOS C. The existing signalized intersections range from LOS C to LOS E. By 2032, ADT will increase to between 15,500 to 25,700 vehicles. The roadway itself will drop to LOS D by design year.

Both bridges over Autry Mill Creek and John's Creek are too narrow and have sufficiency ratings in the 40's. The proposed roadway will widen the bridge to have one 12' lane in each direction divided by a 12' raised or flush median depending on need for a left turn, curb and gutter, a 10' multi-use path on the north side and a 5' sidewalk on the south side. Both existing bridges over Autry Mill Creek and Johns Creek will be replaced.

The estimated construction cost for the project is \$11,548,114. In addition, Right-of-Way costs are anticipated to be \$4,530,000 with reimbursable utilities cost estimated to be \$1,575,000. The projected total cost for the project is \$17,653,114.

The design for both projects has been prepared by **Mulkey Engineers and Consultants**.

### **PROJECT CONCERNS AND OBJECTIVES**

- The north side of the roadway will become a multi-use path throughout the entire two projects
- The south side of the roadway will have a five foot sidewalk
- Traffic signals currently do not operate effectively
- There are significant utility impacts within the corridor effecting the widening of the road
- Sufficiency rating on the two bridges is low and bridge widths are too narrow
- Turn lanes need to be added to reduce traffic congestion at residential neighborhoods, side streets, and intersections
- Although the majority of the corridor will need full depth asphalt replacement, part of it should be reused.
- The water reservoir with two water lines serving Sandy Springs and Roswell will not be touched

### **VALUE ENGINEERING PROCESS**

The Value Engineering team followed the seven step Value Engineering Job Plan as promulgated by SAVE International.

Using the first two steps of the Value Engineering Job Plan - Investigation & Analysis (*Function Analysis*); the VE Team identified the goal of this project to be "improve safety" and to "increase capacity".

This led the team through the "Speculative" phase, wherein 36 possible alternatives were identified. Following this, the VE Team moved to the Evaluation and Development Phases where 10 ideas were determined to offer an improvement to the project value.

#### **Conclusions and Recommendations:**

The VE Team selected and recommends those alternatives that appeared to offer the best value improvements for the project. The VE Team identified the advantages and or disadvantages. As a result, the VE Team recommends **seven (7) design alternatives and three (3) design suggestions** for implementation – see the following Summary of Alternatives and Design Suggestions.

# Summary of Alternatives & Design Suggestions



PROJECT:		<b>Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650 and</b> <b>CSSTP-0008-00(425) - P.I. No. 0008425</b> <b>Widening and Improvements SR961/Old Alabama Road</b> <b>from Holcomb Bridge Road to Buice Road</b> <b>Fulton County</b>	SHEET NO.: 1 of 1
ALTERNATIVE NUMBER	DESCRIPTION OF ALTERNATIVE	INITIAL COST SAVINGS	
	<b>ROADWAY RD)</b>		
RD-6	Use asphalt in-lieu of concrete for the multi-use trail	\$ 1,220,660	
RD-7	Use modular block walls in-lieu of cast in place walls	\$ 341,888	
RD-10	Utilize existing pavement from Sta. 138+40 to Sta.184+34	\$ 555,042	
RD-14	Provide a median from Autry Mill Road to Spruill Road	DS	
RD-23	Eliminate 20' two way turn lanes at the fire station	DS	
RD-26	Eliminate two-way left turns	DS	
RD-30	Delete new entrance south of Belcourt Parkway into commercial area	\$ 108,001	
	<b>BRIDGE (BR)</b>		
BR-1	Construct separate bike/pedestrian bridge to the south of bridge #2 and provide 2'-0" shoulder on new bridge	\$ 149,063	
BR-5	Reduce the length of bridge #2 to 110' and use a single span	\$ 295,547	
BR-6	Use a single span structure at bridge #1	\$ 159,240	

# **STUDY RESULTS**

## **INTRODUCTION**

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

This introductory sheet is followed by a **Summary of Alternatives**. 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** may also be used as a “score sheet” within the bounds of an implementation meeting.

## **COST CALCULATIONS**

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

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

# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
**STP00-9408-00(003) - P.I. No. 751650 and**  
**CSSTP-0008-00(425) - P.I. No. 0008425**  
**Widening and Improvements SR961/Old Alabama**  
**Road from Holcomb Bridge Road to Buice Road**  
**Fulton County**

**ALTERNATIVE NO.:**  
**BR-1**

**DESCRIPTION:** Construct separate bike/pedestrian bridge to the south of bridge no. 2 and provide 2'-0" shoulder on new bridge

**SHEET NO.:** 1 of 5

## Original Design:

The original design calls for the construction of a 130'-0" long Bridge No. 2 (John's Creek crossing) at Sta. 424+75. The bridge is on a tangent, is 58'-5" wide and accommodates 2 – 12' travel lanes, 1 – 12' turn lane, 10' raised multi-use path on the North side, a 5'-6" sidewalk on the South side and 2 ft buffers between the travel lanes and the raised sidewalk/multi-use path.

## Alternative Design:

The alternative proposes the use of a separate pre-manufactured Pedestrian Cum Bicycle Bridge alongside the existing Bridge, making use of the abandoned abutments, in-lieu of providing sidewalks and bike lanes on the Road Bridge. The resulting required cross section of the Road Bridge will be less than that in the current design.

## Opportunities:

- Potential savings in construction costs by reducing width of road bridge and utilizing the existing unused abutments for a prefabricated structure
- Reduces construction time
- Enhances safety of bicyclists by relocating Bike Lane off of travel lanes
- Enhances aesthetics, environmentally friendly structures

## Risks:

- Minimal redesign effort
- Minimal rerouting of bike/pedestrian path

## Technical Discussion:

The relocation of the bike lane and sidewalk from alongside the travel lanes to a separate structure (could use the abandoned abutments) will enhance safety of the bicyclists and pedestrians and also blends in more desirably with the aesthetics of the natural surroundings. Remaining geometry of the road bridge complies with the function of the project. The out-to-out of the road bridge will be 42'-5". The Multi Use Path & Sidewalk on the East approach will be re-routed to the South of the Bridge to mirror the West approach loop. See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 242,013	\$	\$ 242,013
ALTERNATIVE	\$ 92,950	\$	\$ 92,950
SAVINGS	\$ 149,063	\$	\$ 149,063

# Illustrations

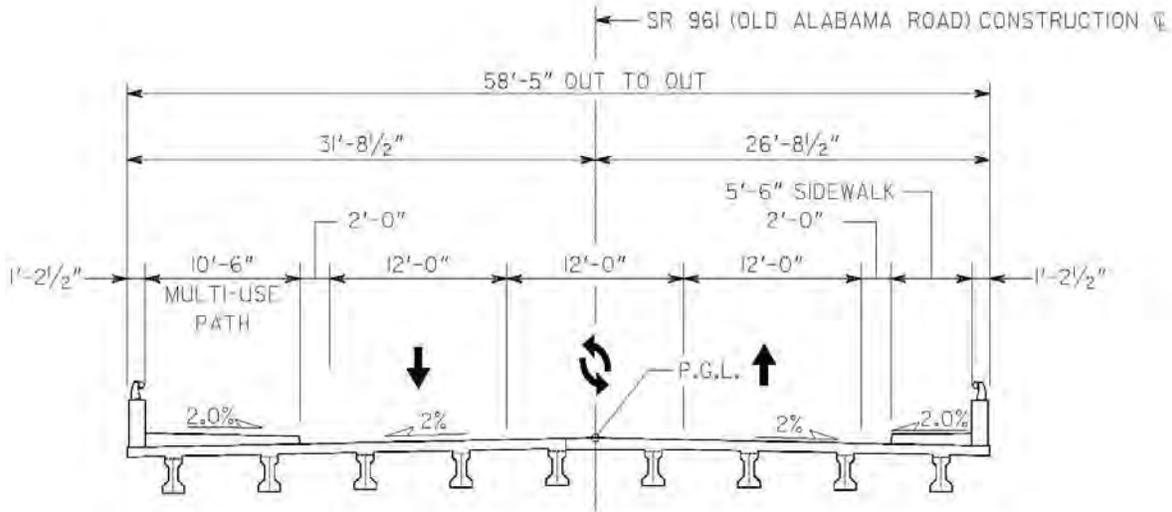


PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

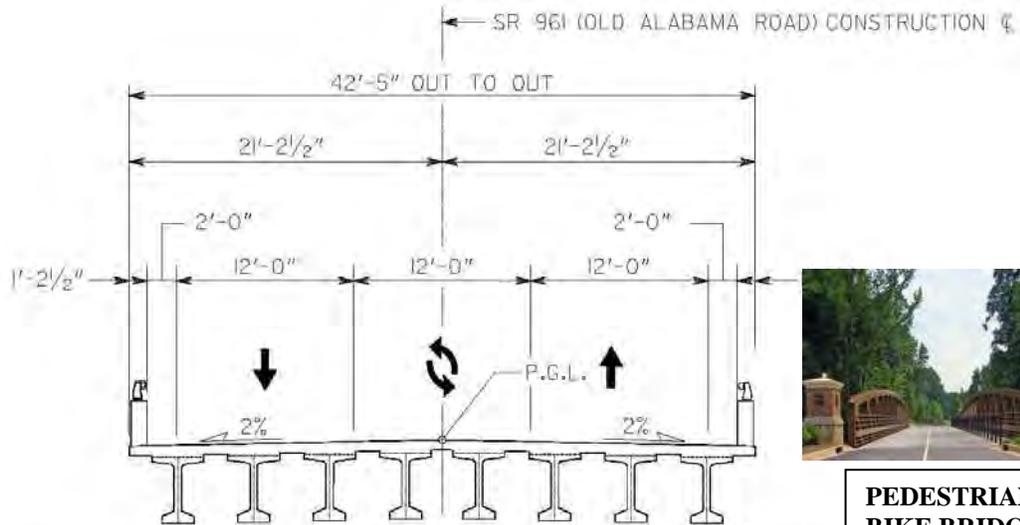
ALTERNATIVE NO.:  
**BR-1**

DESCRIPTION: **Construct separate bike/pedestrian bridge to the south  
of bridge no. 2 and provide 2'-0" shoulder on new bridge**

SHEET NO.: **2 of 5**



CURRENT DESIGN - JOHNS CREEK TYPICAL SECTION  
LOOKING AHEAD



ALTERNATIVE BR-1 - JOHNS CREEK TYPICAL SECTION  
LOOKING AHEAD

**PEDESTRIAN/  
BIKE BRIDGE**

# Illustrations



**PROJECT:** Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County

**DESCRIPTION:** Construct separate bike/pedestrian bridge to the south  
of bridge no. 2 and provide 2'-0" shoulder on new bridge

**ALTERNATIVE NO.:**  
**BR-1**

**SHEET NO.:** 3 of 5



**TYPICAL PRE-FABRICATED  
PEDESTRIAN/BIKE BRIDGES BY  
STEADFAST™**

# Calculations



PROJECT:	<b>Georgia Department of Transportation STP00-9408-00(003) - P.I. No. 751650 and CSSTP-0008-00(425) - P.I. No. 0008425 Widening and Improvements SR961/Old Alabama Road from Holcomb Bridge Road to Buice Road Fulton County</b>	ALTERNATIVE NO.:	<b>BR-1</b>
DESCRIPTION:	<b>Construct separate bike/pedestrian bridge to the south of bridge no. 2 and provide 2'-0" shoulder on new bridge</b>	SHEET NO.:	<b>4 of 5</b>

## **Note:**

- 1) The VE team is cognizant of the fact that the bridge design is in its preliminary phase.
- 2) Since the substructure design had not been completed at the time of the VE study certain assumptions have been made.

## **Current Design (Assumed):**

58'-5" wide bridge, 130' long from Sta. 424+75 to Sta. 426+05.

## **Alternative BR-1:**

The alternative proposes the use of a separate pre-manufactured Pedestrian Cum Bicycle Bridge alongside the existing Bridge in-lieu of providing a sidewalk and bike lanes on the Road Bridge. The road bridge in the alternative will accommodate 2 – 12' travel lanes, 1 – 12' turn lane and 2 ft flush shoulders between the travel lanes and the barrier rail for a revised width of

Reduction in width of Deck =  $[(58'-5") - (42'-5")] = 16'-0"$

Total area of decreased bridge surface =  $[130' \times 16'] = 2080 \text{ SF}$

Reduction in raised sidewalk and Multi Use Path =  $130' \times [10.5' \times 5.5'] / 9 = 231 \text{ SY}$

Total length of pre-fabricated Bike/Pedestrian Bridges added = 130' LF

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report or, at a minimum, offset the cost of re-routing the Multi Use Path & Sidewalk on the East approach to the South side of the bridge. Detailed estimate should include savings in substructure components (piles, piers, caps, and superstructure components).}**

## **NOTE:**

**Reduction from current design = savings for alternative.**

**Cost of Bridge Construction assumed to be \$100 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**

**Cost of 12' wide prefab structure = \$650 per LF, inclusive of substructure (as suggested by STEADFAST Bridges).**



# Cost Worksheet

<b>PROJECT:</b>	<b>Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650 &amp;</b> <b>CSSTP-0008-00(425) - P.I. No. 0008425</b> <b>Widening and Improvements SR961/Old</b> <b>Alabama Road from Holcomb Bridge Road to</b> <b>Fulton County</b>	<b>ALTERNATIVE NO.:</b>
		<b>BR-1</b>
<b>DESCRIPTION:</b>	<b>Construct separate bike/pedestrian bridge to</b> <b>the south of bridge no. 2 and provide 2'-0"</b> <b>shoulder on new bridge</b>	<b>SHEET NO.:</b> 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Bridge	SF	2080	\$ 100	\$208,000	0	\$ 100	\$0
Raised Sidewalk / Path	SY	231	\$ 52	\$12,012	0	\$ 52	\$0
Pre-fabricated Pedestrian Bridge	LF	0	\$ 650	\$0	130	\$ 650	\$84,500
Notes							
Cost of pre-fabricated bridge at \$650 per LF inclusive of substructure as provided by Steadfast <sup>(TM)</sup> Bridges.							
Reduction in Alternative = Cost of Original Design.							
Additional incidental savings in detailed item quantifications assumed to offset cost of re-routing							
Multi Use Path to South.							
<b>Sub-total</b>				\$ 220,012			\$ 84,500
<b>Cons't Mark-up 10.00%</b>				\$ 22,001			\$ 8,450
<b>TOTAL</b>				<b>\$ 242,013</b>			<b>\$ 92,950</b>
<b>Estimated Savings:</b>							<b>\$149,063</b>

# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
**STP00-9408-00(003) - P.I. No. 751650 and**  
**CSSTP-0008-00(425) - P.I. No. 0008425**  
**Widening and Improvements SR961/Old Alabama**  
**Road from Holcomb Bridge Road to Buice Road**  
**Fulton County**

**ALTERNATIVE NO.:**  
**BR-5**

**DESCRIPTION:** Reduce length of bridge no. 2 to 110' and use a single span  
**SHEET NO.:** 1 of 5

### Original Design:

The original design calls for the construction of a three span, 130'-0" long Bridge No. 2 (John's Creek crossing) at Sta. 424+75. The bridge is on a tangent, is 58'-5" wide and accommodates 2 – 12' travel lanes, 1 – 12' turn lane, 10' raised multi-use path on the North side, a 5'-6" sidewalk on the South side and 2 ft buffers between the travel lanes and the raised sidewalk/multi-use path. All three spans (40' + 50' + 40') are made up of Type I MOD Beams supporting a concrete deck.

### Alternative Design:

The alternative proposes the reduction of the bridge length to 110' and providing a single span made up of BT-54 Girders supporting a concrete deck.

### Opportunities:

- Potential savings in construction costs
- Reduction in construction time
- Reduces stream obstructions due to elimination of intermediate piers resulting in better hydraulics
- Enhances aesthetics

### Risks:

- Minimal redesign effort of superstructure and hydraulics
- Reduces vertical clearance but still well above 500 year flood elevation

### Technical Discussion:

The reduction of the bridge length to 110' to permit the use of BT-54 Girders over a single span should not have an adverse impact to the hydraulics. Improved stream flow can be realized due to the removal of the intermediate piers. Remaining geometry of the bridge complies with the function of the project.

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 295,547	\$	\$ 295,547
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 295,547	\$	\$ 295,547

# Illustrations

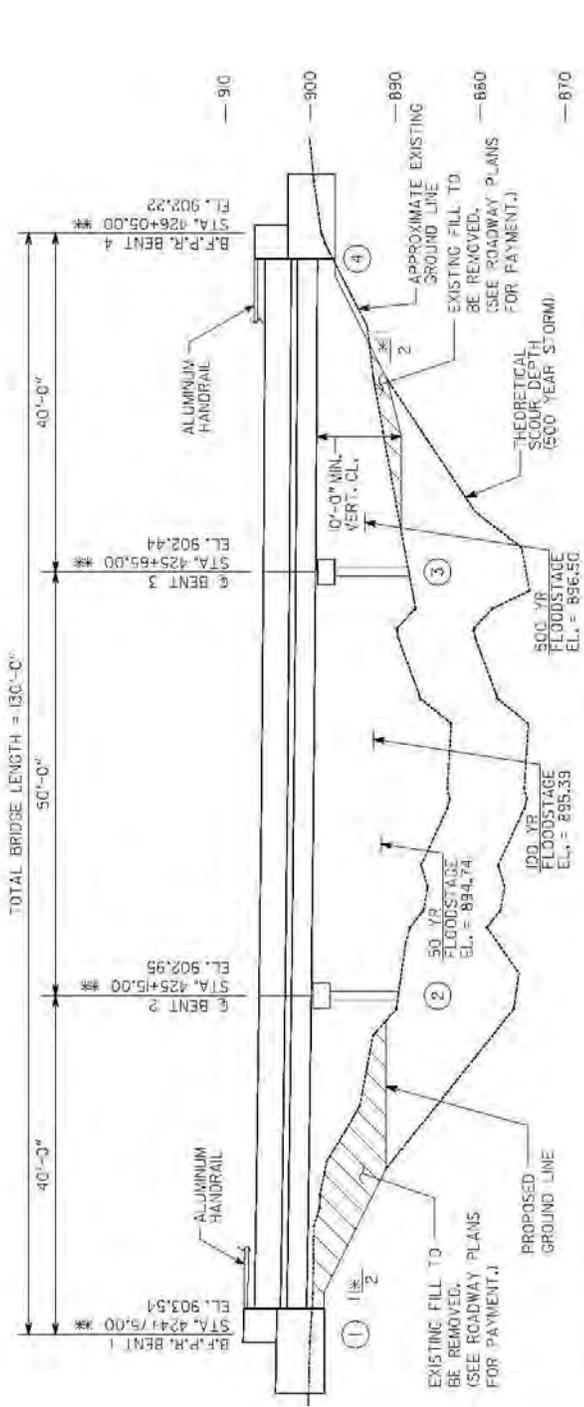


PROJECT: Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
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 Widening and Improvements SR961/Old Alabama Road  
 from Holcomb Bridge Road to Buice Road  
 Fulton County

DESCRIPTION: Reduce length of bridge no. 2 to 110' and use a single span

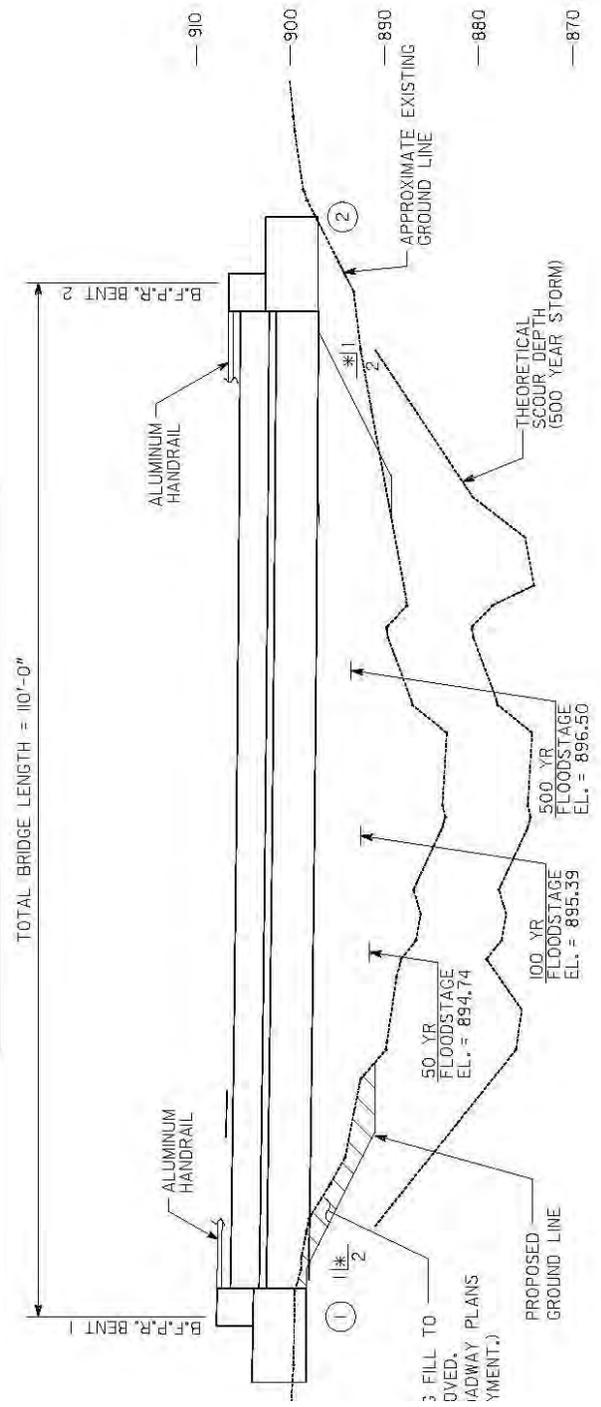
ALTERNATIVE NO.:  
**BR-5**

SHEET NO.: 2 of 5



TRAFFIC DATA

CURRENT DESIGN - JOHNS CREEK ELEVATION



ALTERNATIVE BR-5 - JOHNS CREEK ELEVATION

# Illustrations

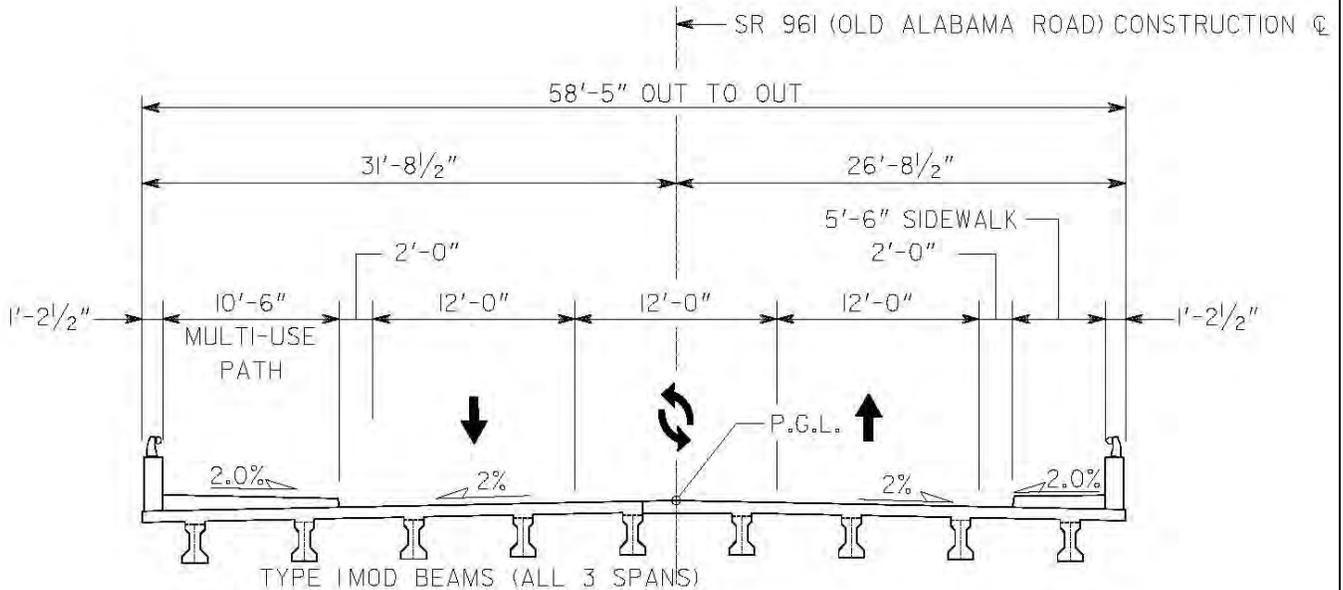


PROJECT: **Georgia Department of Transportation  
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Fulton County**

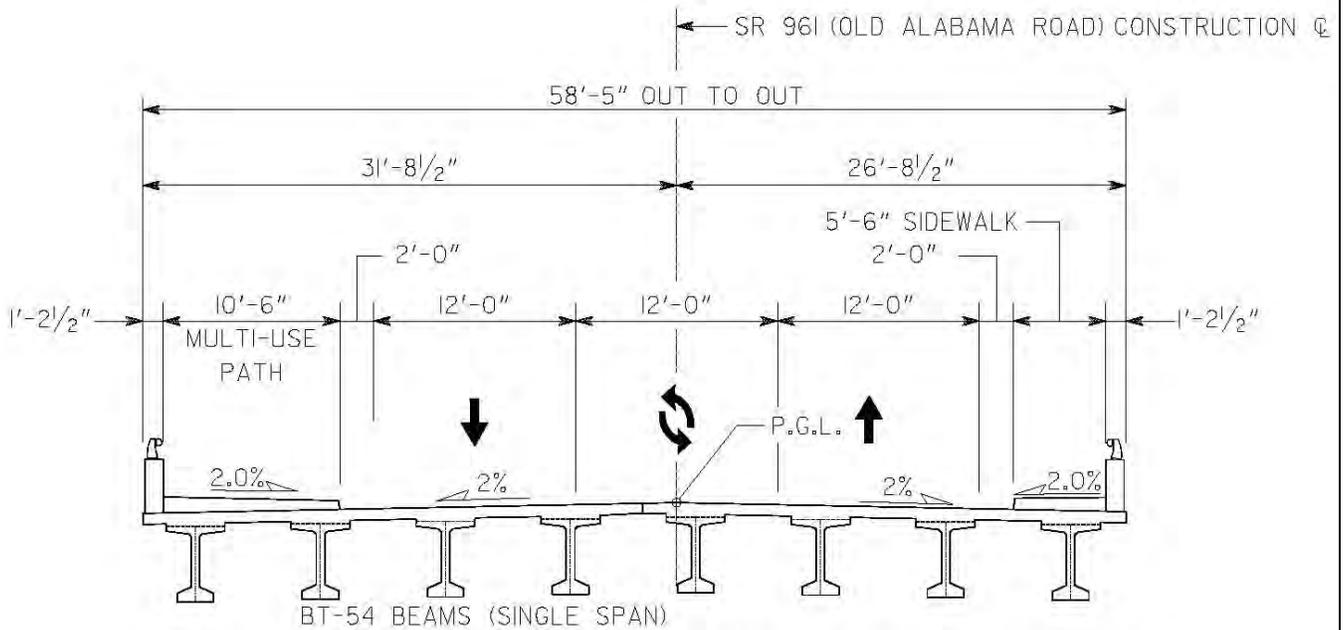
DESCRIPTION: **Reduce length of bridge no. 2 to 110' and use a single span**

ALTERNATIVE NO.:  
**BR-5**

SHEET NO.: **3 of 5**



CURRENT DESIGN - JOHNS CREEK TYPICAL SECTION  
LOOKING AHEAD



ALTERNATIVE BR-5 - JOHNS CREEK TYPICAL SECTION  
LOOKING AHEAD

# Calculations



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

DESCRIPTION: **Reduce length of bridge no. 2 to 110' and use a single  
span**

ALTERNATIVE NO.:  
**BR-5**

SHEET NO.: **4** of **5**

## **Note:**

- 1) The VE team is cognizant of the fact that the bridge design is in its preliminary phase.
- 2) Since the substructure design had not been completed at the time of the VE study certain assumptions have been made.

## **Current Design (Assumed):**

58'-5" wide bridge, 130' long from Sta. 424+75 to Sta. 426+05.

## **Alternative BR-5:**

The alternative proposes the reduction of the bridge length to 110' and providing a single span made up of BT-52 Girders supporting a concrete deck.

Reduction in length of Bridge =  $[(130') - (110')] = 20'-0"$

Total area of decreased bridge surface =  $[8'-5" \times 20'] = 1168.33 \text{ SF}$

Reduction in raised sidewalk and Multi Use Path =  $20' \times [10.5' \times 5.5'] / 9 = 35.5 \text{ SY}$

Reduction in construction time (conservative – assume \$15,000 per day) = 10 days (conservative)

Intermediate bents are not required for this alternative. Cost of end abutments is assumed to be the same (conservative) as the current design.

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps) and superstructure components (one girder line, concrete diaphragms, bearing pads, barrier & rails, etc.)}**

## **NOTE:**

**Reduction from current design = savings for alternative.**

**Cost of Bridge Construction assumed to be \$100 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama  
Road from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**BR-6**

DESCRIPTION: **Use a single span AT bridge no. 1**

SHEET NO.: **1 of 5**

## Original Design:

The original design calls for the construction of a three span, 110'-0" long Bridge No. 1 (John's Creek Tributary crossing) at Sta. 385+08. The bridge is on a 6° curve (approx.) , is 58'-5" wide and accommodates 2 – 12' travel lanes, 1 – 12' turn lane, 10' raised multi-use path on the North side, a 5'-6" sidewalk on the South side and 2 ft buffers between the travel lanes and the raised sidewalk/multi-use path. All three spans (30' + 50' + 30') are made up of Type I MOD Beams supporting a concrete deck.

## Alternative Design:

The alternative proposes providing a single span made up of BT-54 Girders supporting a concrete deck.

## Opportunities:

- Potential savings in construction costs
- Reduced construction time
- Reduced stream obstructions due to elimination of intermediate piers resulting in better hydraulics
- Enhanced aesthetics

## Risks:

- Minimal redesign effort of superstructure and hydraulics
- Reduced vertical clearance but still well above 500 year flood elevation

## Technical Discussion:

The use of BT-54 Girders over a single span should not have adverse impact to the hydraulics. Since the bridge is on a curve, placement of the Girders on chords will achieve the desired superstructure geometry. The use of BT-54 Girders may also facilitate reduction of one Girder line from the current design. Improved stream flow can be realized due to the removal of the intermediate piers. Remaining geometry of the bridge complies with the function of the project.

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 316,346	\$	\$ 316,346
ALTERNATIVE	\$ 156,106	\$	\$ 156,106
SAVINGS	\$ 159,240	\$	\$ 159,240

# Illustrations

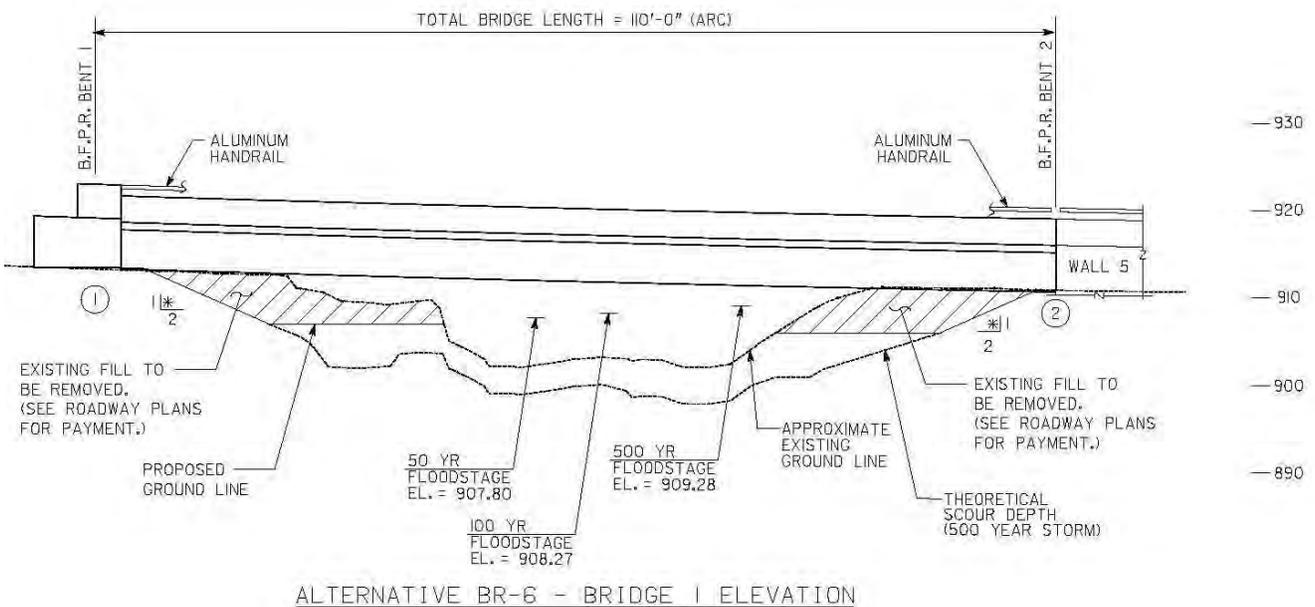
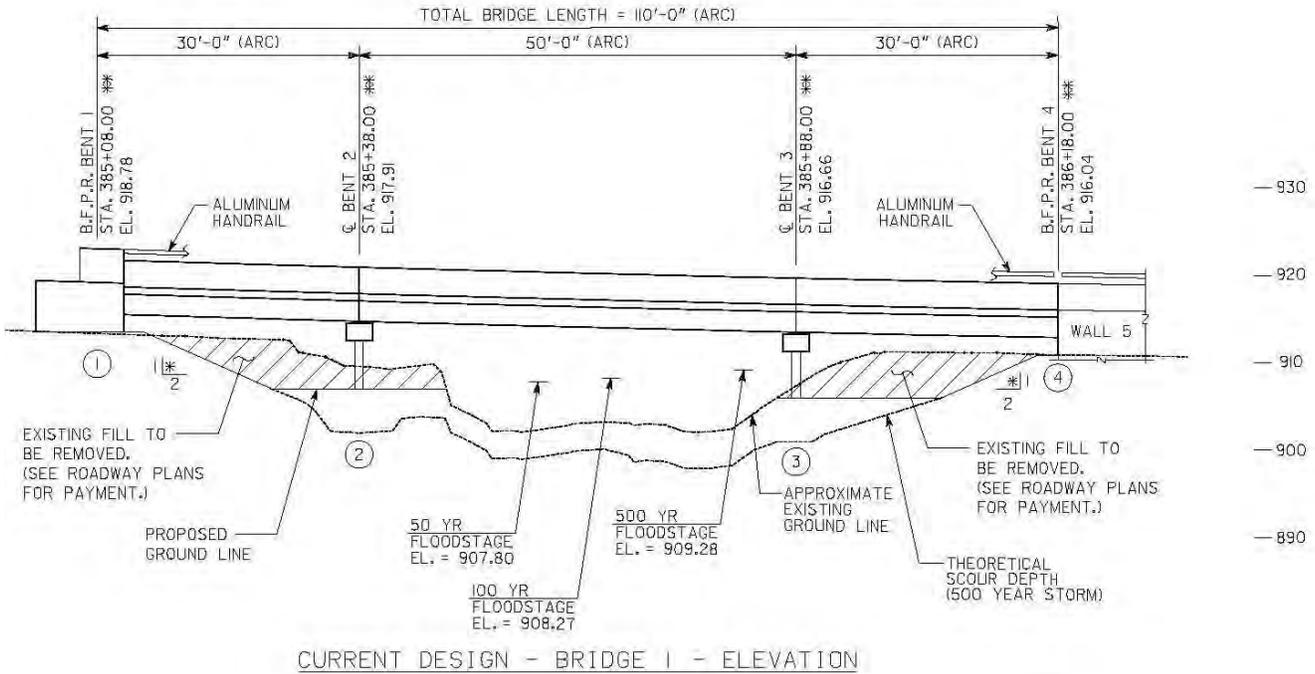


PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**BR-6**

DESCRIPTION: **Use a single span structure at bridge #1**

SHEET NO.: **2 of 5**



# Illustrations

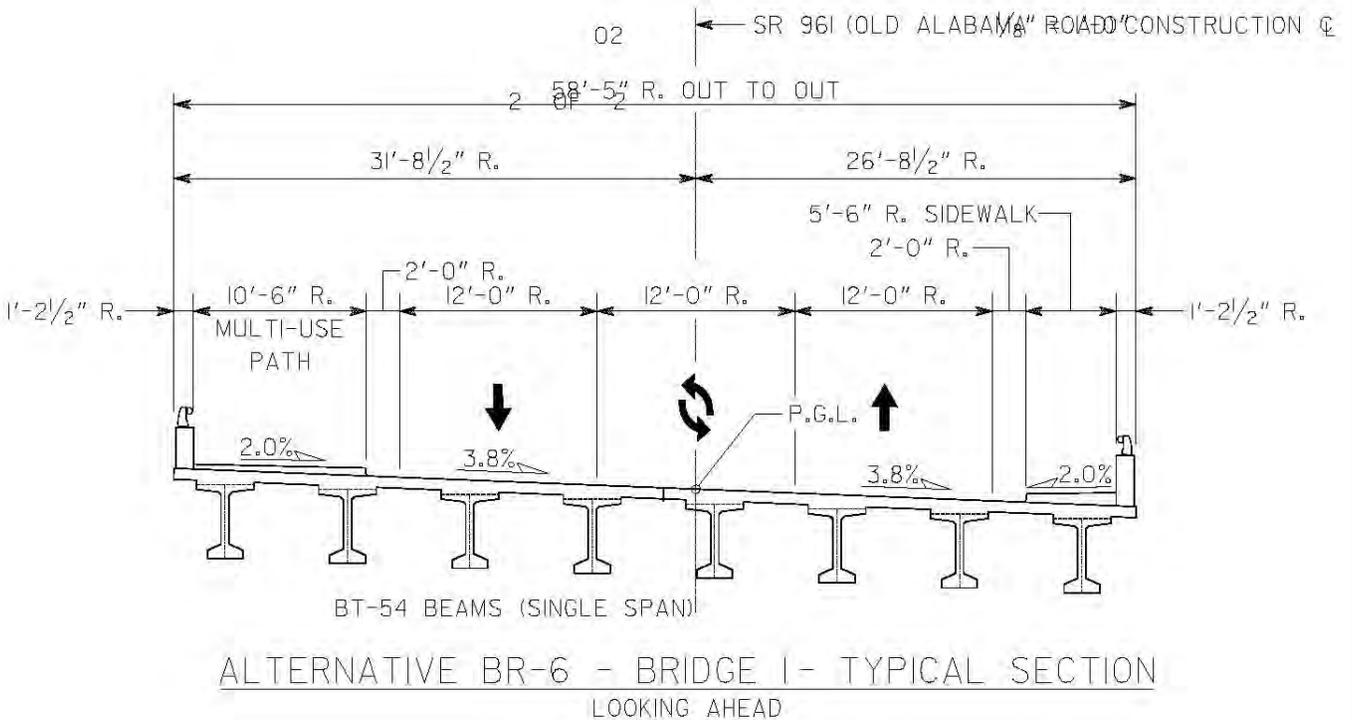
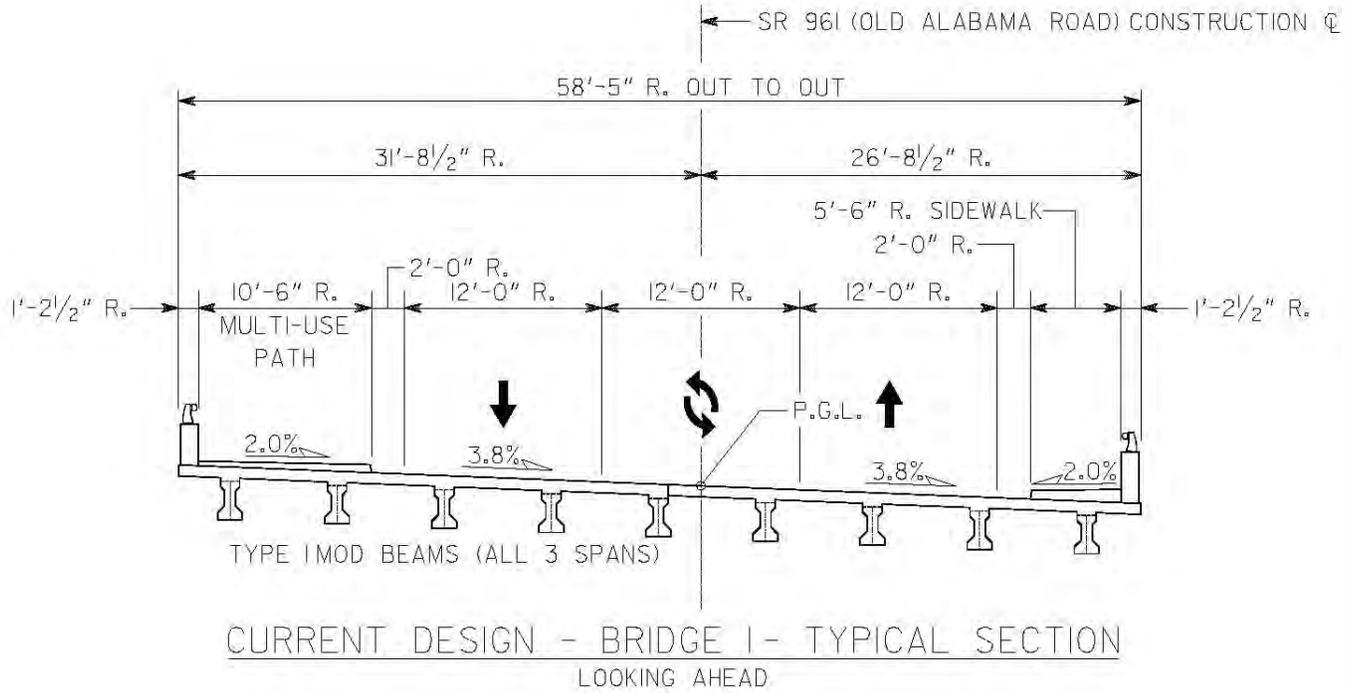


PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**BR-6**

DESCRIPTION: **Use a single span structure at bridge #1**

SHEET NO.: **3 of 5**



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**BR-6**

DESCRIPTION: **Use a single span structure at bridge #1**

SHEET NO.: **4** of **5**

**Note:**

- 1) The VE team is cognizant of the fact that the bridge design is in its preliminary phase.
- 2) Since the substructure design had not been completed at the time of the VE study certain assumptions have been made.

**Current Design (Assumed):**

58'-5" wide bridge, 110' long from Sta. 385+08 to Sta. 366+18.

Assume that the beams are to be laid evenly along chords and equal length of spans (on average). Each span is made up of 9 beams.

Total length of Type I MOD Beams =  $9 \times [30' + 50' + 30'] = 990$  LF

Assume 9 HP 12 X 74 steel piles, 25' deep, per intermediate bent and concrete cap of dimension 3' X 3' and 58' long.

Total length of HP 12 X 74 steel piles =  $9 \times 25' \times 2 = 450$  LF

Volume of concrete in intermediate bents =  $[2 \times 3' \times 3' \times 58'] / 27 = 38.67$  CY

**Alternative BR-6:**

The alternative proposes providing a single span made up of BT-52 Girders supporting a concrete deck. Assume 8 beams are required (larger beam spacing due to deeper girders).

Total length of BT-54 Beams =  $8 \times 110 = 880$  LF

Reduction in construction time (conservative – assume \$15,000 per day) = 10 days (conservative)

Intermediate bents are not required for this alternative. Cost of end abutments is assumed to be the same (conservative) as the current design.

**{A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps) and superstructure components (one girder line, concrete diaphragms, bearing pads, etc.)}**

**NOTE: Reduction from current design = savings for alternative.**



# Cost Worksheet

<b>PROJECT:</b>	<b>Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650 &amp;</b> <b>CSSTP-0008-00(425) - P.I. No. 0008425</b> <b>Widening and Improvements SR961/Old</b> <b>Alabama Road from Holcomb Bridge Road to</b> <b>Fulton County</b>	<b>ALTERNATIVE NO.:</b>
		<b>BR-6</b>
<b>DESCRIPTION:</b>	<b>Use a single span at Bridge No. 1</b>	<b>SHEET NO.:</b> 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE			
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL	
Type I MOD PSC Beams	LF	990	\$ 80.30	\$79,497	0	\$ 80.30	\$0	
BT-54 PSC Beams	LF	0	\$ 162.30	\$0	880	\$ 162.30	\$142,824	
HP 12 X 74 Steel Piles	LF	450	\$ 70.44	\$31,698	0	\$ 70.44	\$0	
Class B Substructure Concrete	CY	39	\$ 682.50	\$26,392	0	\$ 682.50	\$0	
Construction time	Days	10	\$15,000.00	\$150,000	0	\$15,000.00	\$0	
Notes								
Reduction in Alternative = Cost of Original Design.								
Additional savings in detailed substructure quantification not included (conservative).								
<b>Sub-total</b>					\$ 287,587			\$ 142,824
<b>Cons't Mark-up 10.00%</b>					\$ 28,759			\$ 14,282
<b>TOTAL</b>					<b>\$ 316,346</b>			<b>\$ 157,106</b>
<b>Estimated Savings:</b>							<b>\$159,240</b>	

# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama  
Road from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-6**

DESCRIPTION: **Use asphalt in lieu of concrete for multi-use trail**

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

## Original Design:

The original design constructs the 10' multi-use trail with concrete at 4" thickness.

## Alternative Design:

The alternative design would construct the multi-use trail using asphalt, at a 1.5" nominal thickness throughout the project.

## Opportunities:

- Reduction in present costs
- Reduction in life cycle costs
- Requires less time to construct

## Risks:

- None apparent

## Technical Discussion:

The alternative suggests using asphalt to construct the proposed 10' multi-use trail throughout the project. A savings in present costs will be realized by utilizing asphalt, which is much less expensive than concrete on a first cost basis. A life cycle cost analysis is attached which supports the use of asphalt over concrete for the useful life of the proposed multi-use trail. In addition to present and life cycle cost savings, using asphalt would require less time to construct than a similar path constructed of concrete.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,467,640	\$ 0	\$ 3,467,640
ALTERNATIVE	\$ 2,246,979	\$ 0	\$ 2,246,979
SAVINGS	\$ 1,220,660	\$ 0	\$ 1,220,660

# Illustrations



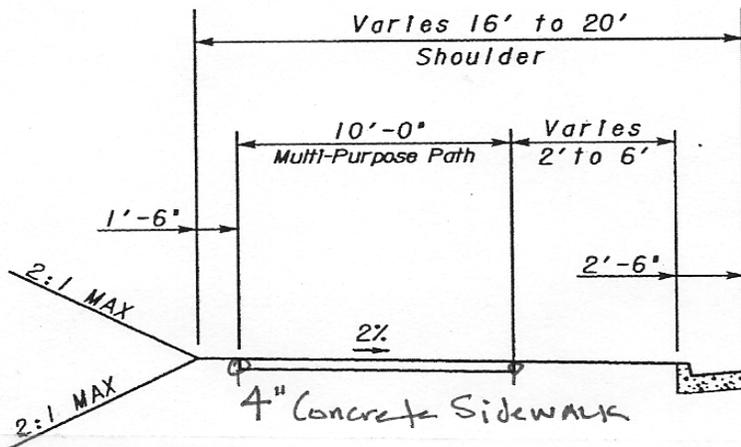
PROJECT: Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County

ALTERNATIVE NO.:  
**RD-6**

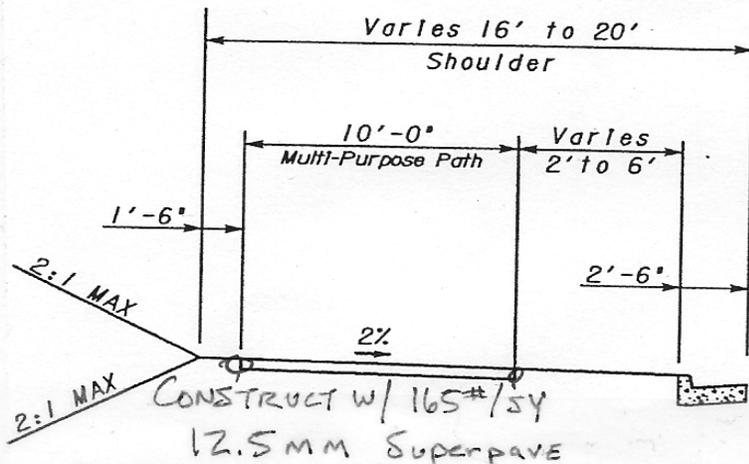
DESCRIPTION: Use asphalt in lieu of concrete for multi-use trail

SHEET NO.: 2 of 5

## ORIGINAL



## ALTERNATIVE



# Calculations



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-6**

DESCRIPTION: **Use asphalt in lieu of concrete for multi-use trail**

SHEET NO.: **3** of **5**

## Assumptions:

Replace 10' concrete proposed multi-use trail with asphalt.

STA 100+00-STA 492+74= 39,274LF

39,274LF x 10/9=43,638 SY total area of multi-use trail

Reduce pay item for 4" concrete sidewalk by 43,638 SY

Increase pay item for 12.5mm Superpave:

43,638 SY x 165LB/SY(2000LB/TN)=3,600 TN required to construct

## Cost per SY using asphalt:

3600 tons x \$64.13/ton=\$230,868/43,638 SY=\$5.29/SY asphalt costs



# LIFE CYCLE COST WORKSHEET



PROJECT: USE ASPHALTIC CONCRETE IN-LIEU OF CONCRETE						ALTERNATIVE NO. <b>RD-6</b>				
						SHEET NO. 5 of 5				
<b>Life Cycle period (yrs)</b>		30						<b>Concrete</b>	<b>Ashpalt</b>	
<b>Interest Rate:</b>		3.00%		<b>Escalation Rate:</b>		0.00%		<b>Original</b>	<b>Proposed</b>	
<b>A.</b>	<b>INITIAL COST</b>			<b>UNIT COST</b>	<b>UNITS</b>		<b>Quantity (S.Y.)</b>			
	Concrete			\$ 30.72	sy		43,638	\$ 1,340,559		
	Useful Life (Years)			30						
	Asphalt			\$ 5.29	sy		43,638		\$ 230,845	
	Useful Life (Years)			30						
<b>INITIAL COST SAVINGS</b>									\$ 1,109,714	
<b>B.</b>	<b>RECURRENT COSTS (Annual Expenditures)</b>									
1.	Maintenance - Concrete	% of First Cost during each year					0.50%	\$ 6,703		
2.	Maintenance - Asphalt	% of First Cost during each year					0.25%		\$ 577	
3.	Energy	Same						\$ -	\$ -	
							Total Annual Costs	\$ 6,703	\$ 577	
							Present Worth Factor	19.6004	19.60	
							Present Worth of RECURRENT COSTS	\$ 131,378	\$ 11,312	
<b>C.</b>	<b>SINGLE EXPENDITURES</b>			<b>Year</b>	<b>Cost/sy</b>	<b>SY</b>	<b>Amount</b>	<b>PW factor</b>	<b>Present Worth</b>	<b>Present Worth</b>
ORIG	PROP	< Put "x" in appropriate box (original design or proposed design)								
x		1.	Leveling	10	2.00	43,638	\$ 87,276	0.7441	\$ 64,942	\$ -
	x	2.	resurfacing	10	5.00	43,638	\$ 218,190	0.7441	\$ -	\$ 162,354
x		3.	Leveling	20	2.00	43,638	\$ 87,276	0.5537	\$ 48,323	\$ -
	x	4.	resurfacing	20	5.00	43,638	\$ 218,190	0.5537	\$ -	\$ 120,807
								1.0000	\$ -	\$ -
								1.0000	\$ -	\$ -
<b>Present Worth of SINGLE EXPENDITURES</b>								\$ 113,265	\$ 283,161	
<b>D.</b>	<b>SALVAGE VALUE</b>			<b>Year</b>	<b>Cost/sy</b>	<b>SY</b>	<b>Amount</b>	<b>PW factor</b>	<b>Present Worth</b>	<b>Present Worth</b>
x		1.	Concrete	30	-1	43,638	\$ (43,638)	0.4120	\$ (17,978)	\$ -
	x	2.	Asphalt	30	-10	43,638	\$ (436,380)	0.4120	\$ -	\$ (179,783)
<b>Present Worth of SALVAGE VALUE</b>								\$ (17,978)	\$ (179,783)	
<b>E.</b>	<b>Total Recurrent Costs &amp; Single Expenditures &amp; Salvage Value (B + C + D)</b>							\$ 226,665	\$ 114,690	
<b>RECURRENT COSTS &amp; SINGLE EXPENDITURES SAVINGS (original - proposed)</b>									\$ 111,975	
<b>TOTAL PRESENT WORTH COST (A + E)</b>								\$ 1,567,224	\$ 345,535	
<b>TOTAL LIFE CYCLE SAVINGS</b>									\$ 1,221,689	

(Note - escalation shown as 0.0% since using constant dollar LCC analysis)

# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama  
Road from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-7**

DESCRIPTION: **Use modular block walls in-lieu of cast-in-place walls** SHEET NO.: **1 of 5**

## Original Design:

The original design calls for Ga STD 9031L, Ga STD PW-I and Ga STD 4948B, cast-in-place gravity and barrier walls. The walls serve as barriers and have aluminum handrails throughout the project length.

## Alternative Design:

The alternative proposes the use of Modular Block walls in lieu of the cast-in-place concrete retaining walls.

The alternatives maintain the original design geometry.

### Opportunities:

- Cost savings
- Reduced construction time
- Manufacturer designs and installs the system
- Improved aesthetics and blends in with surroundings

### Risks:

- Minimal or no redesign effort and cost

## Technical Discussion:

Modular Block walls are easy to construct and have demonstrated acceptable performance and longevity. Performance warranties are also provided by the manufacturers.

The use of this type of wall will allow the project to blend in with the surroundings and also with the existing walls on properties along the project.

See the next sheet for the calculation of the savings noted below.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 963,536	\$	\$ 963,536
ALTERNATIVE	\$ 621,648	\$	\$ 621,648
SAVINGS	\$ 341,888	\$	\$ 341,888

# Illustrations

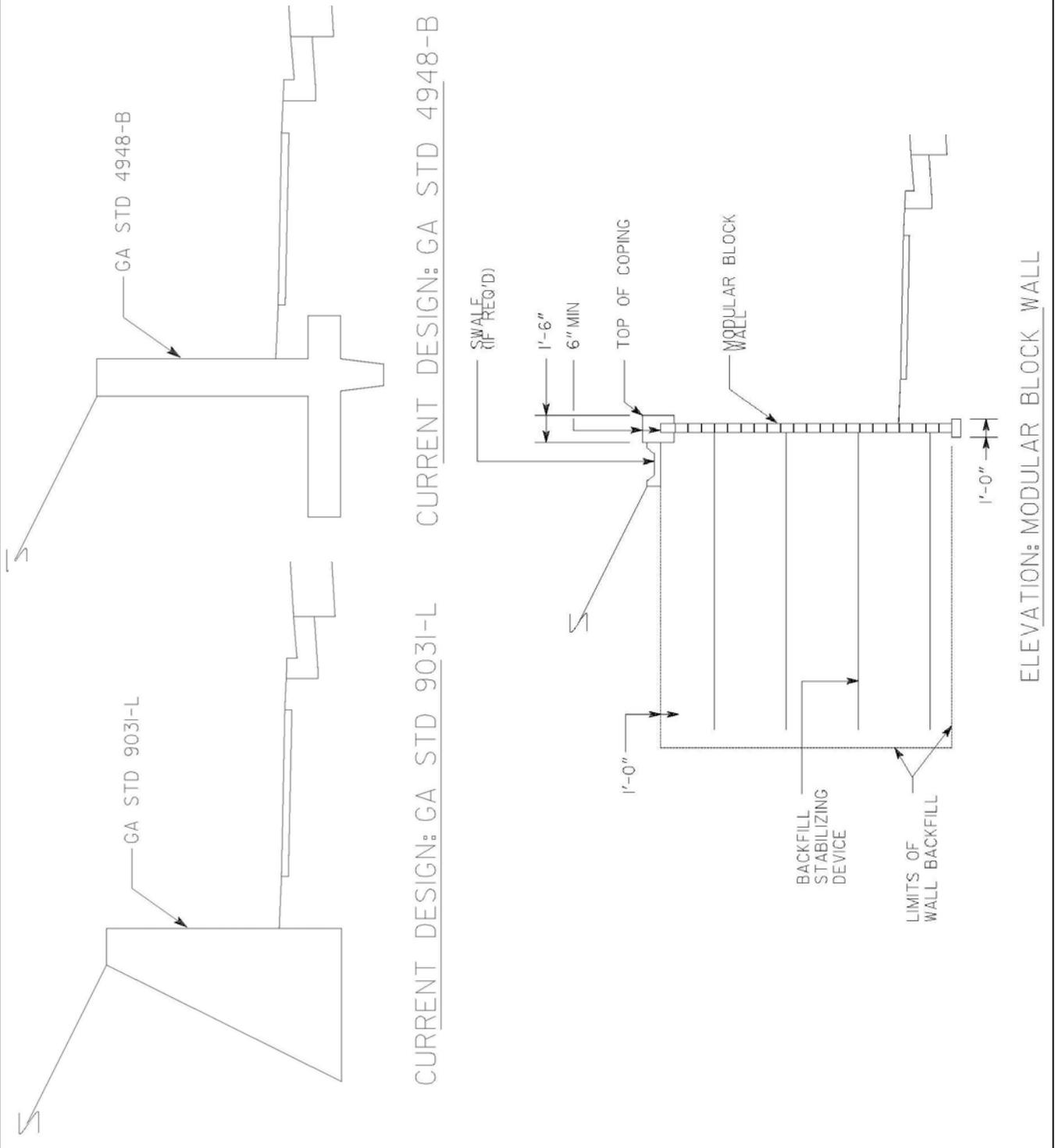


PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-7**

DESCRIPTION: **Use modular block walls in-lieu of cast-in-place walls**

SHEET NO.: **2 of 5**



# Illustrations

**PROJECT:** Georgia Department of Transportation  
**STP00-9408-00(003) - P.I. No. 751650 and**  
**CSSTP-0008-00(425) - P.I. No. 0008425**  
**Widening and Improvements SR961/Old Alabama Road**  
**from Holcomb Bridge Road to Buice Road**  
**Fulton County**

**ALTERNATIVE NO.:**  
**RD-7**

**DESCRIPTION:** Use modular block walls in-lieu of cast-in-place walls

**SHEET NO.:** 3 of 5

## CASE STUDY HIGHWAY APPLICATION



After those nails were placed, the sacrificial nail had to be sealed. Each boring was pressure grouted until all of the air was removed. This process ensured that the galvanized nail did not erode due to moisture contact. The slope face was then shotcreted to prevent erosion or slope failure. Next, the top half of the ramp was removed in order to access the middle portion of the slope and the soil nailing and shotcreting process was repeated.

After removing the last of the ramp, construction of the wall began. As the wall progressed, contractors followed a strict soil nail testing schedule. Using a 100-ton hydraulic jack, they tested every nail for a predetermined amount of design load (dtl) over a certain amount of time using a pressure gauge. For contractors, the danger of this testing is that if you have any nails that fail the pullout test, you must drill and sacrifice a new nail, grout it, and then let it set up before retesting. This delay shuts down wall construction while the new nail cures. Fortunately, this project experienced no failures.

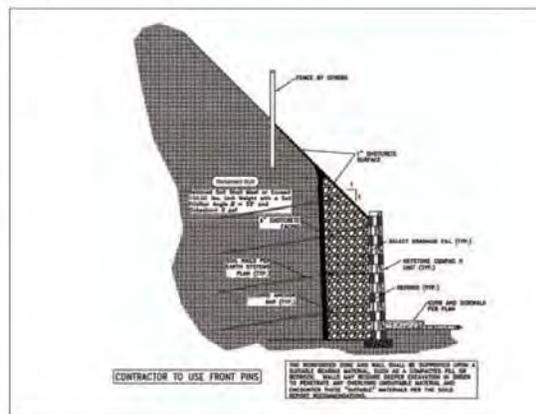
### Making the Connection

Keystone segmental retaining walls are capable of making a very strong connection to soil or rock nails. Each nail had a threaded end that was wrapped to remain clean during the shotcreting process. That cover was



then removed and a four-inch diameter galvanized hook was screwed on. A four-inch galvanized pipe was then woven through the eyelets. After the eyelets were attached and the pipe woven through, it made a very uniform point of connection. The Keystone Compac wall was built using conventional methods with the exception of geogrid placement. The geogrid, was positioned over the fiberglass pins, then placed around the pipe and returned to the wall on the next course up. According to McCaffery, this process created a very structurally sound wall. In the end, Geogrid was able to beat the 61 days allowed to construct all three walls. "I know the developer was blown away as we literally cut his construction time in half and we eliminated the excessive costs associated with excavation and crushing," said McCaffery.

"In this case, the soil nailing was just a means to an end," said Daniel Bruffett of wall contractor Geogrid. "The job called for a permanent solution that was also aesthetically pleasing - to me soil nails and shotcrete are neither. Keystone Compac units were perfect for the job, offering flexibility, strength and good looks."



Over 16,000 square feet of Keystone Compac II units, produced by Keystone supplier RCP Block & Brick, were used on the project. The wall reached 27 feet at its highest point.

Keystone Compac offers outstanding structural performance in a light-weight, space-saving design - perfect for tighter radius curves and corners.

For more information on Keystone Compac or the other innovative Keystone products, please visit [www.keystonewalls.com](http://www.keystonewalls.com) or call (800) 747-8971.



# Calculations



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CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-7**

DESCRIPTION: **Use modular block walls in-lieu of cast-in-place walls**

SHEET NO.: **4** of **5**

## **Current Design – Cast-in-Place Concrete Retaining Walls – GDOT Standards**

The Quantity in CY of Concrete was obtained from the Cost Estimate provided to the VE Team.  
Volume of Class B Retaining Wall Concrete = 1100 CY + 600 CY = 1700 CY

For purposes of this study, the following have been assumed:

- 1) Computations are of **Rough Order of Magnitude**
- 2) All walls are alike (of one type)
- 3) Average height of walls have been used
- 4) Approximate lengths of walls were obtained from wall plans
- 5) Costs of Coping and Handrails are offset

## **Alternate – Modular Block Walls with Coping**

Wall No.	Average Wall Height (ft)	Average Wall Length (ft)	Area Of Wall (SF)
1	5.00	426.00	2130.00
2	7.50	410.34	3077.55
3	5.00	164.58	822.90
4	7.50	397.91	2984.33
5	5.00	130.00	650.00
6	7.50	546.82	4101.15
7	5.00	157.81	789.05
8	5.00	231.00	1155.00
1*	2.50	27.00	67.50
12	10.00	562.77	5627.70
13	2.50	176.80	442.00
14	7.50	368.51	2763.83
15	5.00	389.32	1946.60
16	5.00	205.64	1028.20
17	2.50	85.47	213.68
18	2.50	167.70	419.25
19	2.50	47.38	118.45
20	2.50	157.62	394.05
21	5.00	134.08	670.40
22	2.50	42.53	106.33
23	5.00	190.84	954.20
24	2.50	253.69	634.23
25	5.00	60.00	300.00
		<b>Total</b>	<b>31396.38</b>



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
**STP00-9408-00(003) - P.I. No. 751650 and**  
**CSSTP-0008-00(425) - P.I. No. 0008425**  
**Widening and Improvements SR961/Old Alabama**  
**Road from Holcomb Bridge Road to Buice Road**  
**Fulton County**

**ALTERNATIVE NO.:**  
**RD-10**

**DESCRIPTION:** Utilize existing pavement from Sta. 138+40 to  
**Sta.184+34**

**SHEET NO.:** 1 of 4

### Original Design:

The original design removes the existing pavement and constructs all new paving.

### Alternative Design:

The alternative design would allow a portion of the existing pavement to remain.

### Opportunities:

- Reduction in present costs
- Requires less time to construct

### Risks:

- None apparent

### Technical Discussion:

The alternative suggests using a portion of the existing pavement in this section. This section is planned to be a four lane with a flush median. It appears reasonable since neither the vertical nor the horizontal alignment is being significantly changed, that the existing could remain and could be resurfaced as opposed to being reconstructed, especially since the majority would be within the flush median. This was probably not an option in the beginning as typically this section would have become a raised median, in which case it would have been removed.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 614,456	\$ 0	\$ 614,456
ALTERNATIVE	\$ 59,414	\$ 0	\$ 59,414
SAVINGS	\$ 555,042	\$ 0	\$ 555,042

# Illustrations



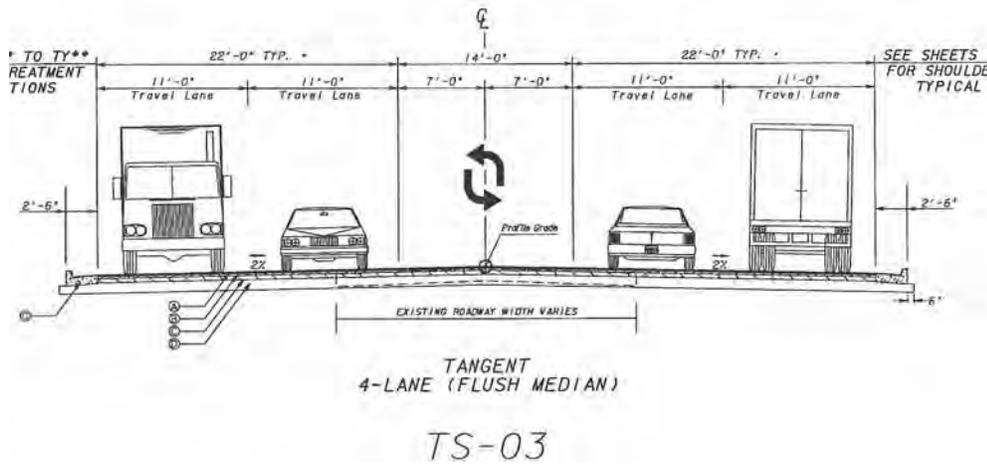
PROJECT: Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
 CSSTP-0008-00(425) - P.I. No. 0008425  
 Widening and Improvements SR961/Old Alabama Road  
 from Holcomb Bridge Road to Buice Road  
 Fulton County

ALTERNATIVE NO.:  
**RD-10**

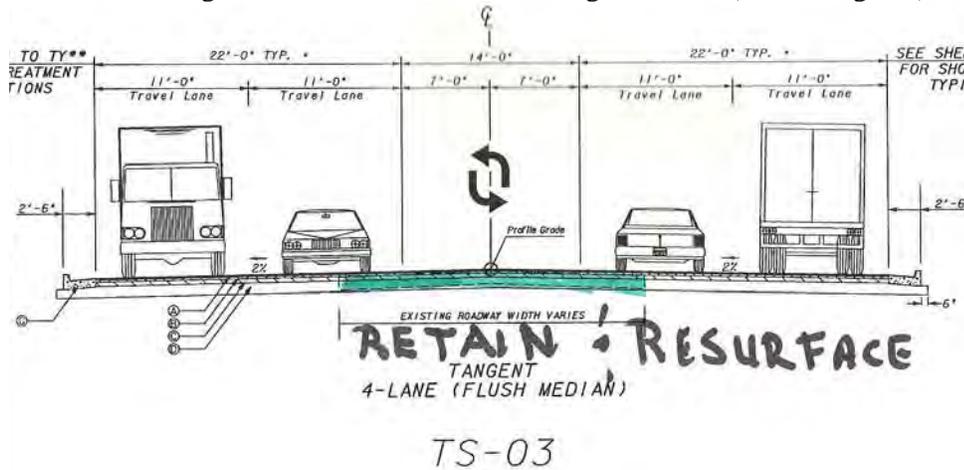
DESCRIPTION: Utilize existing pavement from Sta. 138+40 to Sta.184+34

SHEET NO.: 2 of 4

Original Design:



Alternative Design: Retain and Resurface Existing Pavement (shown in green):



# Calculations



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-10**

DESCRIPTION: **Utilize existing pavement from Sta. 138+40 to Sta.184+34**

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

**Assumptions:**

Reuse approximately 20' of existing pavement

Use a flush section from Sta. 164+35 to Sta. 167+88 and stripe it.

Material	Location	FROM	TO	Length	Width	SF	SY	#/sy	#/cf	Tons
12.5mm	Old Alabama	13,840	18,434	4,594	20	91,880	10,209	165		842
19mm	Old Alabama	13,840	18,434	4,594	20	91,880	10,209	330		1,684
25mm 14"	Old Alabama	13,840	18,434	4,594	20	91,880	10,209	880		4,492
GAB	Old Alabama	13,840	18,434	4,594	20	91,880			135	7,236

# Cost Worksheet



PROJECT:	<b>Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650 &amp;</b> <b>CSSTP-0008-00(425) - P.I. No. 0008425</b> <b>Widening and Improvements SR961/Old</b> <b>Alabama Road from Holcomb Bridge Road</b> <b>to Buice Road</b>  <b>Fulton County</b>	ALTERNATIVE NO.:	<b>RD-10</b>
DESCRIPTION:	<b>Utilize existing pavement from Sta. 138+40</b> <b>to Sta.184+34</b>	SHEET NO.:	<b>4 of 4</b>

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
12.5 mm Superpave	TN	842	\$64.13	\$ 54,012	842	\$64.13	\$ 54,012
19.0 mm Superpave	TN	1,684	\$67.77	\$ 114,156	0	\$67.77	\$ -
25.0 mm Superpave	TN	4,492	\$59.47	\$ 267,134	0	\$59.47	\$ -
GAB	SY	7,236	\$17.04	\$ 123,294	0	\$17.04	\$ -
<b>Sub-total</b>				\$ 558,596			\$ 54,012
<b>Cons't Mark-up 10.00%</b>				\$ 55,860			\$ 5,401
<b>TOTAL</b>				<b>\$ 614,456</b>			<b>\$ 59,414</b>

Estimated Savings: \$555,042

# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation  
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Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-14**

DESCRIPTION: **Provide a median from Autry Mill Road to Spruill Road**

SHEET NO.: **1** of **2**

## Original Design:

The original design calls for a two lane undivided roadway from Autry Mill Road to Spruill Road.

## Alternative:

The alternative would propose a 12'-0" median from Autry Mill Road to Spruill Road.

## Opportunities:

- Improved safety
- Consistent typical section
- 

## Risks:

- Additional R.O.W. costs
- Additional paving costs
- Required culvert extensions

## Technical Discussion:

The proposed section from Autry Mill Road to Spruill Road is the only portion of the 7.5 miles of this project that does not provide a median section. From a safety perspective it is not good practice to introduce a small section of undivided roadway in the middle of a much larger section of divided roadway. This section of roadway is bounded on either end by the Autry Mill Nature Preserve and the Spruill Oaks Library, but the roadway is already has a proposed median in this area so no additional impacts would be anticipated for these properties. The remaining property is undeveloped so it is anticipated that the only additional R.O.W. costs would be strictly land cost.

# Illustrations

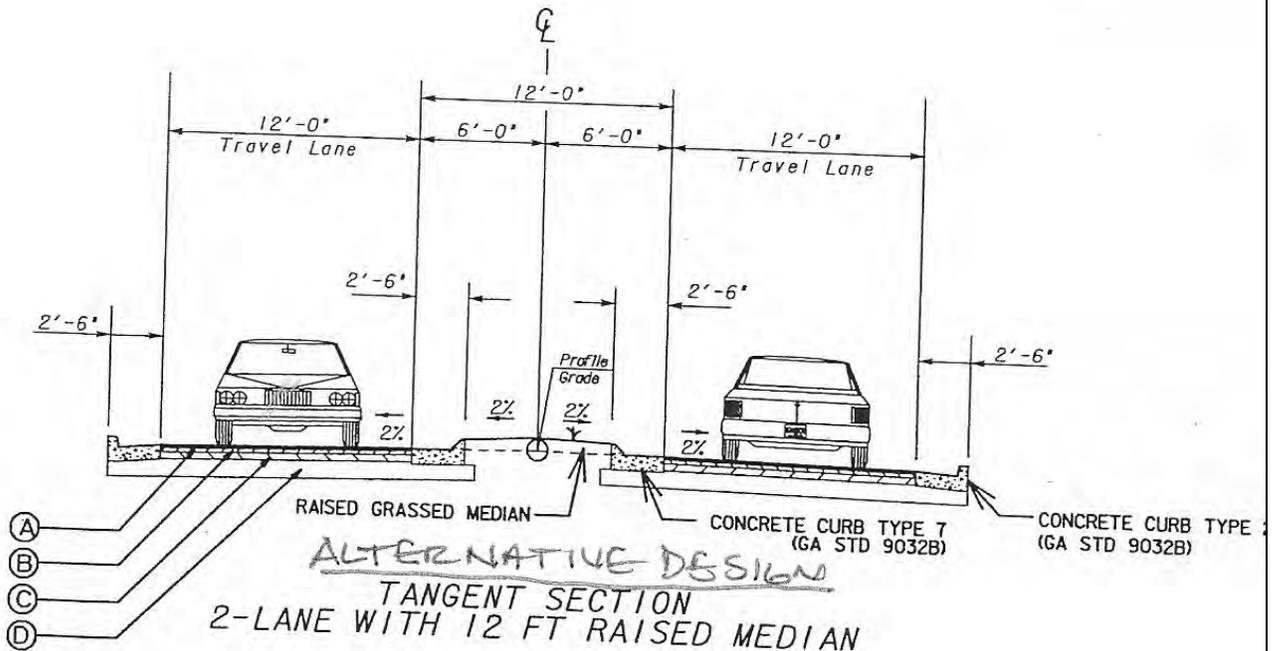
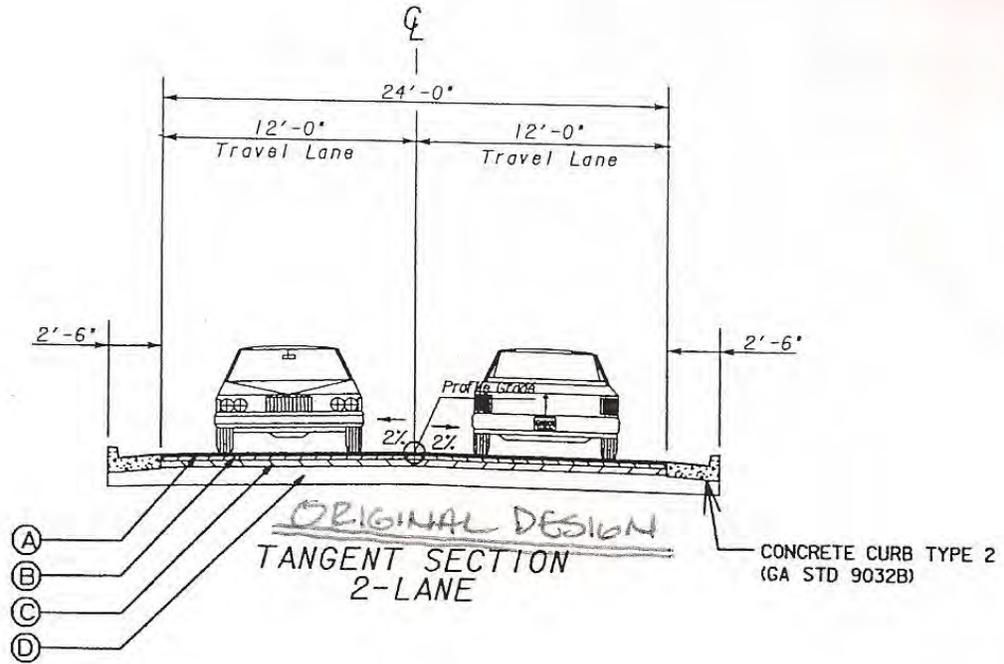


PROJECT: Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
 CSSTP-0008-00(425) - P.I. No. 0008425  
 Widening and Improvements SR961/Old Alabama Road  
 from Holcomb Bridge Road to Buice Road  
 Fulton County

ALTERNATIVE NO.:  
**RD-14**

DESCRIPTION: Provide a median from Autry Mill Road to Spruill Road

SHEET NO.: 2 of 2



# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-23**

DESCRIPTION: **Eliminate 20'-0" Two Way Left Turn east of the Fire  
Station**

SHEET NO.: **1** of **3**

## Original Design:

The original design proposes a 280' section of 20'-0" TWLT east of the Fire Station to Anaheim Drive.

## Alternative:

The alternative would propose eliminating this section of Two Way Left Turn by providing a channelized left turn lane for Newton Park and extending the raised median to close the median opening at Anaheim Drive.

It is also recommended that the left turn bay for the Fire Station be signed and striped as to be restricted for use by "authorized vehicles only".

## Opportunities:

- Improved safety
- Consistent typical section
- Improved access management
- Conform to AASHTO criteria

## Risks:

- Increased roadway costs
- Local opposition

## Technical Discussion:

Small sections of Two Way Left Turns intermingled intermittently with a raised median and channelized left turns can violate driver expectation. An inconsistent typical section can lead to safety issues and reduced operational efficiency. It should be noted that AASHTO recommends that Two Way Left Turn Lanes be between 10'-0" and 16'-0" (AASHTO's A policy on Geometric Design of Highways and Streets, Page #338). TWLT in excess of 16'-0" create safety and operational problems due to the excessive width vehicles will attempt to pass one another within the lane.

Allowing unrestricted access to the left turn lane at the Fire Station could result in a significant number of vehicle attempting U-turns to access the shopping area in the northeast quadrant of SR-961 and Haynes Bridge Road. Utilization of this turn lane could create significant operational and safety issues for the Fire Station personnel.

# Illustrations

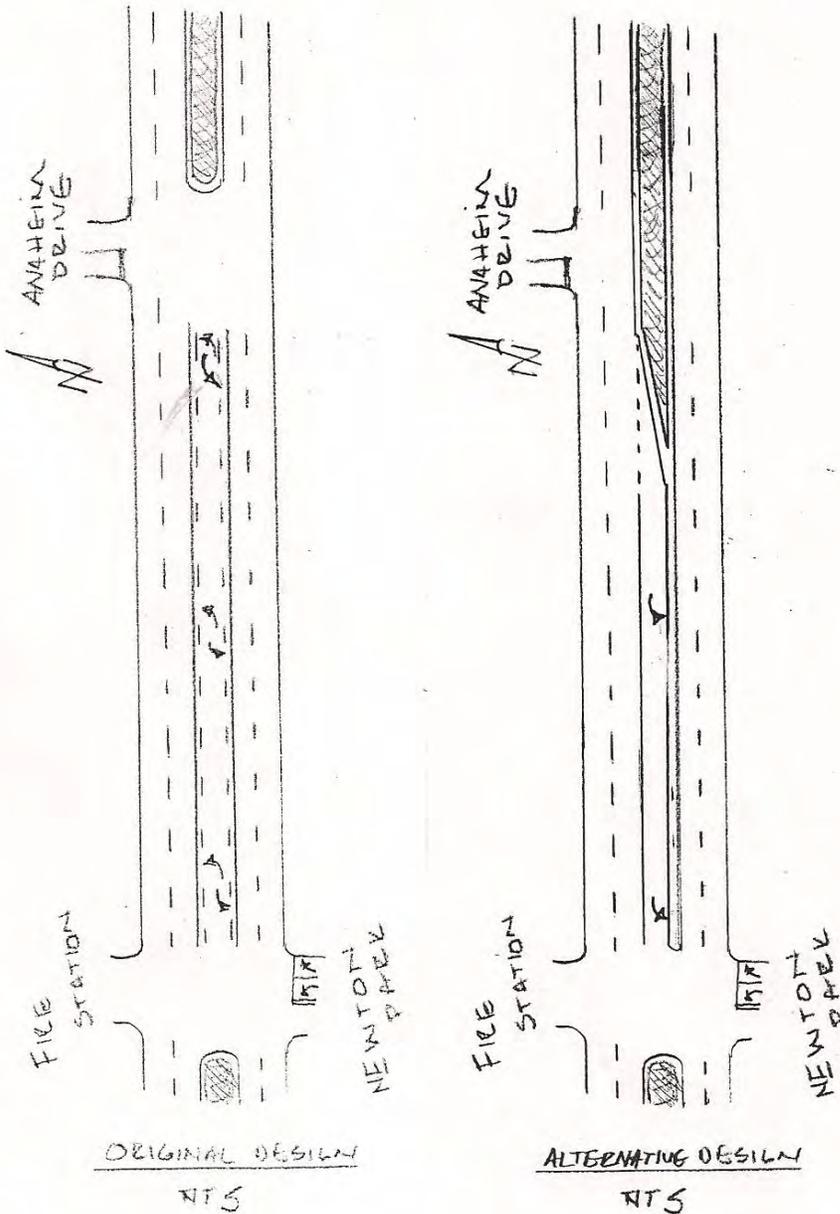


PROJECT: Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama  
Road from Holcomb Bridge Road to Buice Road  
Fulton County

ALTERNATIVE NO.:  
**RD-23**

DESCRIPTION: Eliminate 20'-0" Two Way Left Turn east of the  
Fire Station

SHEET NO.: 2 of 3



# Illustrations

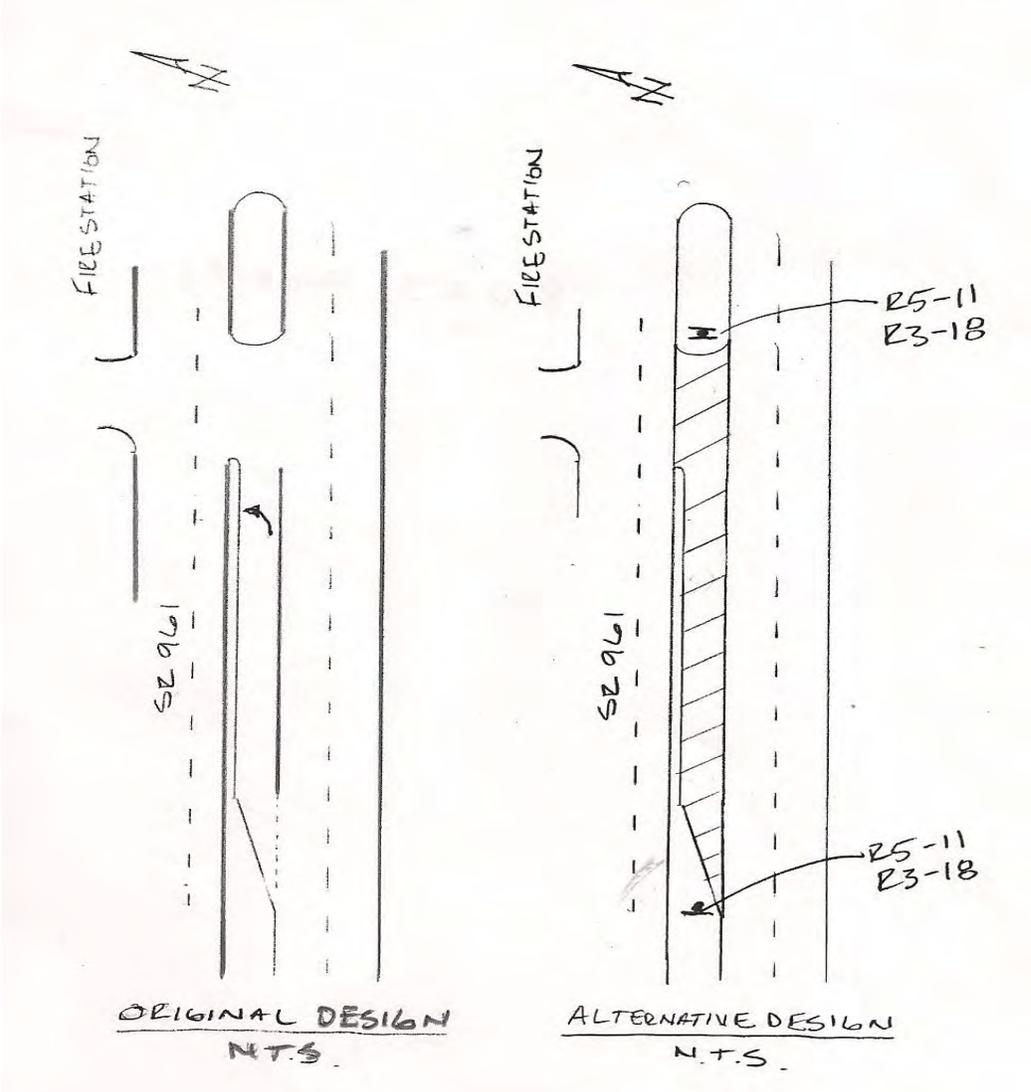


PROJECT: Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old  
Alabama Road from Holcomb Bridge Road to  
Buice Road  
Fulton County

ALTERNATIVE NO.:  
**RD-23**

DESCRIPTION: Eliminate 20'-0" Two Way Left Turn east of the  
Fire Station

SHEET NO.: 3 of 3



# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-26**

DESCRIPTION: **Eliminate Two Way Left Turns**

SHEET NO.: **1** of **2**

## Original Design:

The original design proposes six small segments of Two Way Left Turns ranging from 170' to 600' feet in length.

## Alternative:

The alternative would propose eliminating all the sections of Two Way Left Turns by providing either channelized left turns or raised medians.

## Opportunities:

- Improved safety
- Consistent typical section
- Improved access management

## Risks:

- Decreased access
- Additional paving costs

## Technical Discussion:

Small sections of Two Way Left Turns intermingled intermittently with a raised median and channelized left turns can violate driver expectation and lead to safety issues and reduced operational efficiency.

# Illustrations

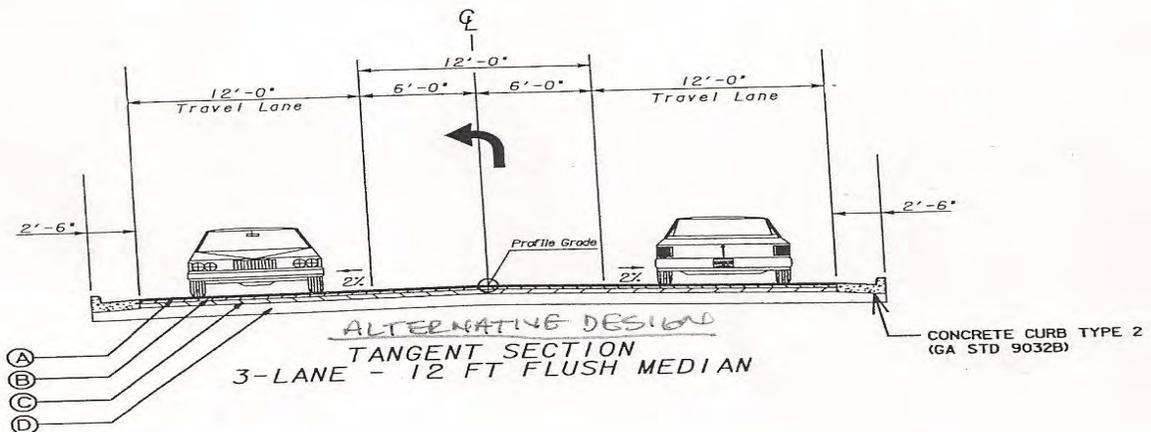
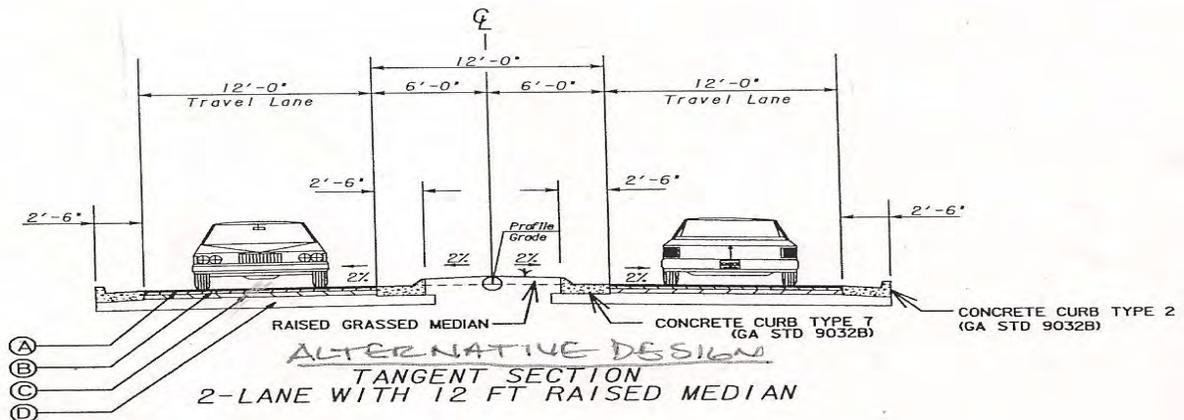
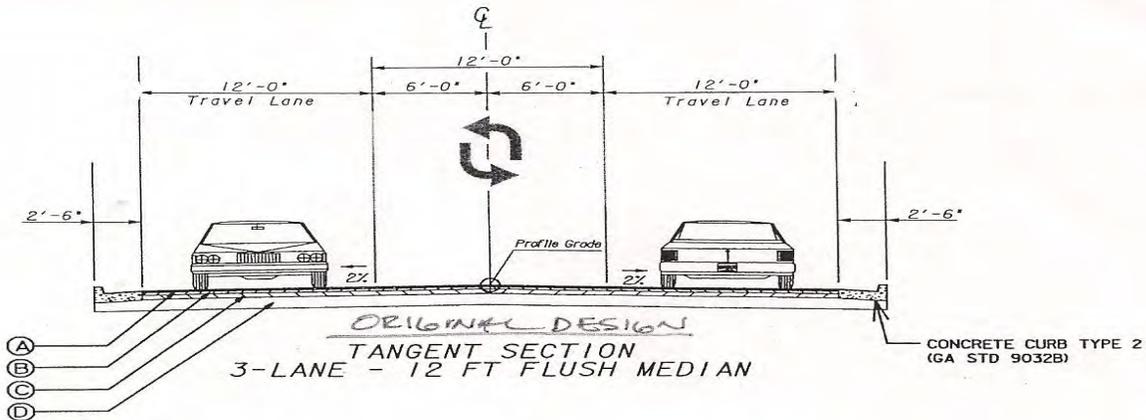


PROJECT: Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
 CSSTP-0008-00(425) - P.I. No. 0008425  
 Widening and Improvements SR961/Old Alabama Road  
 from Holcomb Bridge Road to Buice Road  
 Fulton County

ALTERNATIVE NO.:  
**RD-26**

DESCRIPTION: **Eliminate Two Way Left Turns**

SHEET NO.: **2 of 2**



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
 CSSTP-0008-00(425) - P.I. No. 0008425  
 Widening and Improvements SR961/Old Alabama  
 Road from Holcomb Bridge Road to Buice Road  
 Fulton County

**ALTERNATIVE NO.:**  
**RD-30**

**DESCRIPTION:** Delete new entrance south of Belcourt Parkway into  
 commercial area

**SHEET NO.:** 1 of 4

**Original Design:**

The original design provides an additional new entrance into the existing parking lot.

**Alternative Design:**

The alternative design would allow the existing parking lot to remain as is and to maintain its current entrances and exits.

**Opportunities:**

- Reduction in construction costs
- Reduction in construction time and delays

**Risks:**

- None apparent

**Technical Discussion:**

The existing commercial plaza currently has its own entrances and exits to Old Alabama Road. The proposed design adds a new entrance and aligns it with the existing Belcourt Parkway. This may result in having to add another signal to manage traffic in this portion of the road.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 108,001	\$ 0	\$ 108,001
ALTERNATIVE	\$ 0	\$ 0	\$ 0
SAVINGS	\$ 108,001	\$ 0	\$ 108,001

# Illustrations



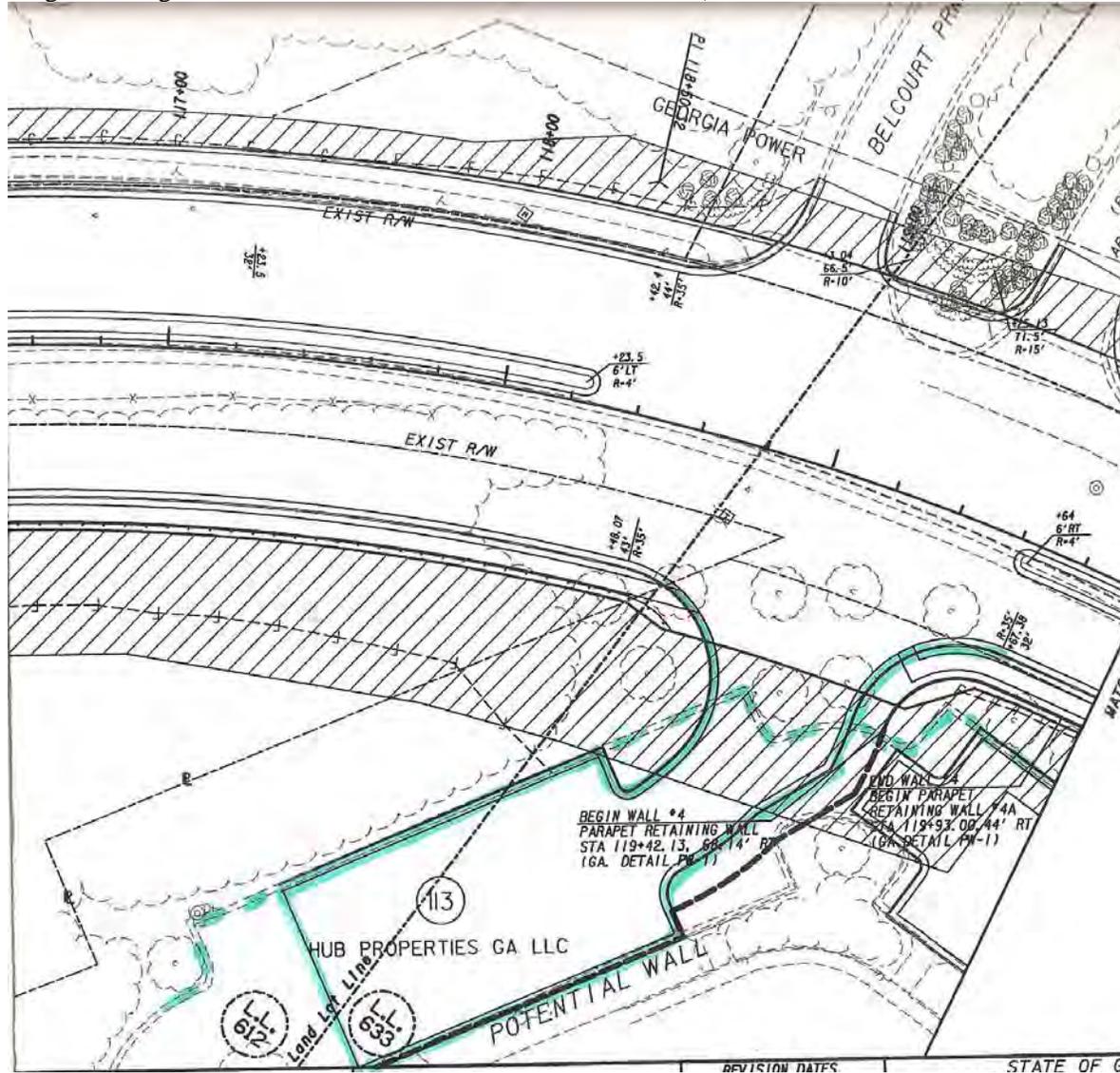
PROJECT: Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County

DESCRIPTION: Delete new entrance south of Belcourt Parkway into  
commercial area

ALTERNATIVE NO.:  
**RD-30**

SHEET NO.: 2 of 4

Original Design: Provides a new entrance to commercial area (outlined in solid Green)



Alternative Design: Leave as existing (dashed green) – there is an entrance to the east that traffic now uses

# Calculations



PROJECT: **Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road  
from Holcomb Bridge Road to Buice Road  
Fulton County**

ALTERNATIVE NO.:  
**RD-30**

DESCRIPTION: **Delete new entrance south of Belcourt Parkway into  
commercial area**

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

## Assumptions:

Delete construction of a 100' x 60' parking lot = 6,000 sf = 667 sy

Delete new entrance – say 80' x 24' = 1,920 sf = 213 sy

Delete construction of a new retaining wall

# Cost Worksheet



PROJECT:	<b>Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650 &amp;</b> <b>CSSTP-0008-00(425) - P.I. No. 0008425</b> <b>Widening and Improvements SR961/Old</b> <b>Alabama Road from Holcomb Bridge Road</b> <b>to Buice Road</b>  <b>Fulton County</b>	ALTERNATIVE NO.:
		<b>RD-30</b>
DESCRIPTION:	<b>Delete new entrance south of Belcourt</b> <b>Parkway into commercial area</b>	SHEET NO.: <b>4 of 4</b>

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
12.5 mm Superpave	TN	73	\$ 64.13	\$ 4,656	0	\$ 64.13	\$ -
19.0 mm Superpave	TN	97	\$ 67.77	\$ 6,560	0	\$ 67.77	\$ -
25.0 mm Superpave	TN	194	\$ 59.47	\$ 11,513	0	\$ 59.47	\$ -
GAB	SY	4,135	\$ 17.04	\$ 70,454	0	\$ 17.04	\$ -
Retaining Wall	LF	50	\$100.00	\$ 5,000	0	\$ 100.00	\$ -
<b>Sub-total</b>				\$ 98,183			\$ -
<b>Cons't Mark-up 10.00%</b>				\$ 9,818			\$ -
<b>TOTAL</b>				\$ 108,001			\$ -

Estimated Savings:	\$108,001
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# PROJECT DESCRIPTION

## INTRODUCTION

The subjects of the Value Engineering study are projects STP00-9408-00(003) – P.I. No. 751650 and CSSTP-0008-00(425) – P.I. No. 0008425. Both projects are for the widening and improvements to SR 961/Old Alabama Road in Fulton County.

## STP00-9408-00(003) – P.I. No. 751650

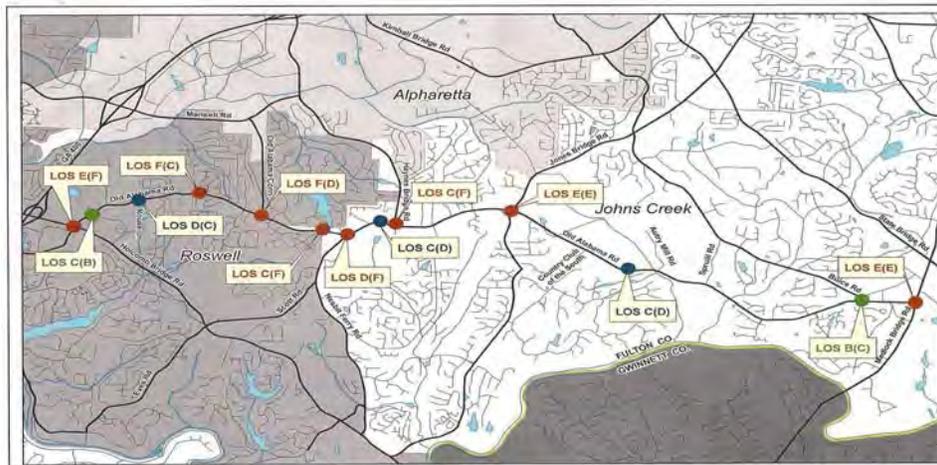
## PROJECT DESCRIPTION

This project proposes to improve SR 961/Old Alabama Road from the intersection of Holcomb Bridge Road to Jones Bridge Road within the cities of Roswell and Johns Creek. The total project length is approximately 4.6 miles.

Old Alabama Road is classified as an urban minor arterial. The existing roadway varies from two travel lanes (one in each direction) and a maximum of five lanes including two travel lanes in each direction with a center left turn lane. The posted speed limit along the majority of the corridor is 45mph with a short section from Holcomb Bridge Road to just east of Holcomb Woods Parkway at 40mph. Sidewalks are provided inconsistently. The ADT is an average of 27,000. Institutions, such as parks, schools, churches and libraries are found throughout the corridor in addition to both residential and commercial areas.

## NEED AND PURPOSE

Traffic volumes are expected to reach between 18,000 and 36,000 by the design year 2032. The worst operations occur at the major intersections with Holcomb Bridge Road, the Old Alabama Connector, Nesbit Ferry Road, and Haynes Bridge Road. Currently, the highest volume of traffic is between Nesbit Ferry Road and Jones Bridge Road. By the year 2032 eleven of the fifteen intersections will operate at LOS E or LOS F during one or both peak time periods.



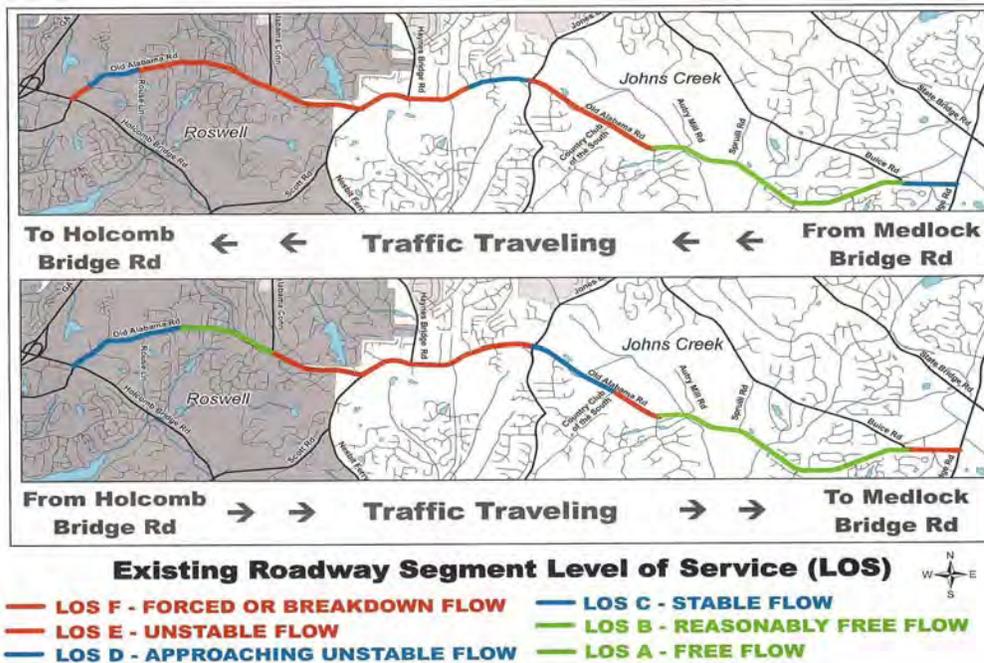
### Existing Intersection Level of Service (LOS)

PEAK HOUR: AM (PM)

**LOS F - EXCESSIVE DELAYS OR BREAKDOWN**  
**LOS E - VERY LONG DELAYS**  
**LOS D - LONG TRAFFIC DELAYS**

**LOS C - AVERAGE TRAFFIC DELAYS**  
**LOS B - SHORT TRAFFIC DELAYS**  
**LOS A - LITTLE OR NO DELAYS**

All but one roadway segment in one direction will operate at LOS E or poorer



The lack of appropriate turn lanes at side streets, driveways, and shopping center intersections impede traffic flow and contributes to higher accident rates and delays. Major access deficiencies are caused by vehicles slowing for right turns and vehicles using center lane to bypass slow moving vehicles, drivers blocking intersections and left turns caused by backups at intersections and schools. Ineffective signalization of traffic signals are causing congestion. Accident rates are higher in this corridor compared to comparable state rates.

Even though sidewalks exist along several segments of the corridor there is a need to provide better connectivity with the area’s recreational and community facilities. Multi-use trails are proposed.

There are major utility involvements along the corridor. Only one historical resource has been identified, and there appears to be no major environmental concerns.

## PROPOSED PROJECT

The project proposes to widen Old Alabama Road from:

- Holcomb Bridge Road to Big Creek Park: Four-11 foot lanes (two in each direction) divided by a 20 foot raised median as well as curb and gutter and 5 foot sidewalks on both sides
- Big Creek Park to Rouse Lane: Four-11 foot lanes (two in each direction) divided by a 20 foot raised median , curb and gutter, a 5 foot sidewalk on the south side and a 10 foot multi-use path on the north side

- Rouse Lane to Hunter's Cove: Four-11 foot lanes with a 14 foot raised or flush median, curb and gutter, a five foot sidewalk on the south side and a 10 foot multi-use path on the north side
- 500 feet east of Roxburgh Drive/Pinebloom Drive to Newton Park: Four-11 foot lanes with a 20 foot raised median, curb and gutter, a five foot sidewalk on the south side and a 10 foot multi-use path on the north side
- Newton Park to Anaheim Drive: Four-11 foot lanes with a 20 foot flush median, curb and gutter, a 5 foot sidewalk on the south side and a 10 foot multi-use path on the north side
- Anaheim Drive to 500 feet east of Jones Bridge Road: Four-11 foot lanes with a 20 foot raise median, curb and gutter, a 5 foot sidewalk on the south side and a 10' multi-use path on the north side
- Design speed will drop to 35mph between Holcomb Bridge Road and Nesbit Ferry Road. The rest of the corridor will remain at 45mph.

The estimated construction cost for the project is \$18,257,985. In addition, Right-of-Way costs are anticipated to be \$21,280,000 with reimbursable utilities cost estimated to be \$3,840,000. The projected total cost for the project is \$43,377,985.

### **CSSTP-0008-00(425) – P.I. No. 0008425**

#### **PROJECT DESCRIPTION**

This project proposes to improve SR 961/Old Alabama Road from the intersection of Jones Bridge Road to Buice Road within the city limits of Johns Creek. The total project length is approximately 3.4 miles.

The existing road is classified as an urban minor arterial. The corridor is currently either a two lane or three lane section. The minimum width provides two travel lanes (one in each direction) and the maximum width is five lanes (two travel lanes with a center left turn lane. There are some right and left turn lanes provided at some intersections and entrances to subdivisions.

Posted speed limit is 45mph. ADT is 19,000 vehicles. Sidewalks are inconsistent and exist mainly in the entrances to subdivisions. There are many single family residential neighborhoods throughout the corridor. Commercial development is concentrated at the intersection with Jones Bridge Road. In addition, institutions such as parks, golf courses, schools and a library are on the corridor.

#### **NEED AND PURPOSE**

Level of Service (LOS) at peak hours currently range from LOS A to LOS C. The existing signalized intersections range from LOS C to LOS E. By 2032, ADT will increase to between 15,500 to 25,700 vehicles. The intersections at Autry Mill Middle School/Country Club of the South, Jones Bridge Road, and Hunts Pointe Drive will drop to LOS F. The roadway itself will drop to LOS D.

Lack of left turn lanes into residential neighborhoods and at schools cause large traffic delays and higher accident rates. Turn lanes that exist are too narrow and too short to accommodate traffic.

Both bridges over Autry Mill Creek and John's Creek are too narrow and geometrically deficient.

Ineffective turn signals have caused increased congestion and difficulties making right and left turns.

## **PROPOSED PROJECT**

- Beginning at Foxworth Drive the roadway will widen to one 12' lane in each direction divided by a 12' raised or flush median depending on need for a left turn, curb and gutter, a 10' multi-use path on the north side and a 5' sidewalk on the south side
- The three lane section will continue to Autry Mill Road where the road will taper to a single lane in each direction without a median to minimize stream impacts.
- West of Spruill Road will widen back to two 12' lanes (one in each direction) with a 12' divided raised or flush median where turn lanes are required.
- A 10' multi-use path will be provided on the north side and a 5' sidewalk on the south side for the entire length of the project
- Both existing bridges over Autry Mill Creek and Johns Creek will be replaced

The estimated construction cost for the project is \$11,548,114. In addition, Right-of-Way costs are anticipated to be \$4,530,000 with reimbursable utilities cost estimated to be \$1,575,000. The projected total cost for the project is \$17,653,114.

The design for both projects has been prepared by **Mulkey Engineers and Consultants**.

## **REPRESENTATIVE DOCUMENTS**

- Georgia Department of Transportation
  - Construction Cost Estimates
  - Preliminary Right-of-Way Cost Estimate
  - Reimbursable Cost Estimate
  - Concept Reports
  - Project Location Maps
  - Typical Road Section

The VE Team utilized the GDOT supplied project materials noted above plus the preliminary plans provided by Mulkey Engineers and Consultants.

**Estimate Report for file "Old Alabama Road - P.I. 751650\_2009-08-05"**

<b>Section ROADWAY</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
150-1000	1	LS	300000.00	TRAFFIC CONTROL -	300000.00
153-1300	1	EA	73914.48	FIELD ENGINEERS OFFICE TP 3	73914.48
210-0100	1	LS	165000.00	GRADING COMPLETE -	165000.00
310-1101	152202	TN	17.04	GR AGGR BASE CRS, INCL MATL	2593522.08
402-3121	79199	TN	59.47	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	4709964.53
402-3130	14850	TN	64.13	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	952330.50
402-3190	29700	TN	67.77	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	2012769.00
413-1000	16200	GL	2.00	BITUM TACK COAT	32400.00
441-0016	2000	SY	42.35	DRIVEWAY CONCRETE, 6 IN TK	84700.00
441-0104	30300	SY	30.72	CONC SIDEWALK, 4 IN	930816.00
441-0740	6900	SY	32.91	CONCRETE MEDIAN, 4 IN	227079.00
441-4020	300	SY	43.97	CONC VALLEY GUTTER, 6 IN	13191.00
441-6222	29300	LF	14.96	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	438328.00
441-6740	23700	LF	13.12	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	310944.00
500-3201	1100	CY	515.26	CLASS B CONCRETE, RETAINING WALL	566786.00
620-0100	4000	LF	26.46	TEMPORARY BARRIER, METHOD NO. 1	105840.00
634-1200	150	EA	93.93	RIGHT OF WAY MARKERS	14089.50
643-8200	4000	LF	2.21	BARRIER FENCE (ORANGE), 4 FT	8840.00
<b>Section Sub Total:</b>					<b>\$13,540,514.09</b>

<b>Section Erosion Control</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
163-0232	24	AC	283.37	TEMPORARY GRASSING	6800.88
163-0240	1080	TN	129.90	MULCH	140292.00
163-0300	138	EA	1148.70	CONSTRUCTION EXIT	158520.60
163-0503	188	EA	442.20	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	83133.60
163-0530	25000	LF	2.42	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	60500.00
165-0010	7500	LF	0.53	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	3975.00
165-0030	20000	LF	0.66	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	13200.00
165-0070	12500	LF	2.83	MAINTENANCE OF BALED STRAW EROSION CHECK	35375.00
165-0087	200	EA	113.48	MAINTENANCE OF SILT CONTROL GATE, TP 3	22696.00
165-0101	141	EA	481.34	MAINTENANCE OF CONSTRUCTION EXIT	67868.94
167-1000	1	EA	460.30	WATER QUALITY MONITORING AND SAMPLING	460.30
167-1500	36	MO	685.80	WATER QUALITY INSPECTIONS	24688.80
171-0010	15000	LF	1.84	TEMPORARY SILT FENCE, TYPE A	27600.00
171-0030	40000	LF	2.95	TEMPORARY SILT FENCE, TYPE C	118000.00
603-2018	700	SY	39.99	STN DUMPED RIP RAP, TP 1, 18 IN	27993.00
700-6910	14	AC	674.07	PERMANENT GRASSING	9436.98
700-7000	50	TN	60.51	AGRICULTURAL LIME	3025.50
700-8000	20	TN	409.57	FERTILIZER MIXED GRADE	8191.40
716-2000	40000	SY	0.95	EROSION CONTROL MATS, SLOPES	38000.00
<b>Section Sub Total:</b>					<b>\$849,758.00</b>

<b>Section Drainage</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
550-1180	13000	LF	36.27	STORM DRAIN PIPE, 18 IN, H 1-10	471510.00
550-1181	400	LF	53.99	STORM DRAIN PIPE, 18 IN, H 10-15	21596.00
550-1240	4300	LF	41.79	STORM DRAIN PIPE, 24 IN, H 1-10	179697.00
550-1241	300	LF	53.45	STORM DRAIN PIPE, 24 IN, H 10-15	16035.00
550-1360	2100	LF	62.22	STORM DRAIN PIPE, 36 IN, H 1-10	130662.00
550-1361	100	LF	62.84	STORM DRAIN PIPE, 36 IN, H 10-15	6284.00
550-2180	500	LF	33.24	SIDE DRAIN PIPE, 18 IN, H 1-10	16620.00

550-2240	500	LF	32.24	SIDE DRAIN PIPE, 24 IN, H 1-10	16120.00
550-3318	15	EA	549.83	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	8247.45
550-3324	22	EA	842.19	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	18528.18
550-4218	35	EA	551.07	FLARED END SECTION 18 IN, STORM DRAIN	19287.45
550-4224	15	EA	643.26	FLARED END SECTION 24 IN, STORM DRAIN	9648.90
550-4236	10	EA	1055.83	FLARED END SECTION 36 IN, STORM DRAIN	10558.30
610-6015	92	EA	500.00	REM DROP INLET	46000.00
615-1000	200	LF	248.35	JACK OR BORE PIPE - 36", 1/2 THK STEEL PIPE	49670.00
615-1000	300	LF	248.35	JACK OR BORE PIPE - 24", 1/2 THK STEEL PIPE	74505.00
615-1000	400	LF	248.35	JACK OR BORE PIPE - 18", 1/2THK STEEL PIPE	99340.00
668-1100	100	EA	2429.74	CATCH BASIN, GP 1	242974.00
668-1110	250	LF	168.54	CATCH BASIN, GP 1, ADDL DEPTH	42135.00
668-2100	57	EA	2360.78	DROP INLET, GP 1	134564.46
668-2110	100	LF	196.09	DROP INLET, GP 1, ADDL DEPTH	19609.00
668-4300	10	EA	2269.90	STORM SEWER MANHOLE, TP 1	22699.00
<b>Section Sub Total:</b>					<b>\$1,656,290.74</b>

**Section Signing and Marking**

Item Number	Quantity	Units	Unit Price	Item Description	Cost
610-6515	136	EA	31.60	REM HIGHWAY SIGN, STD	4297.60
611-5360	10	EA	153.55	RESET HIGHWAY SIGN	1535.50
632-0003	6	EA	5791.80	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	34750.80
636-1033	1100	SF	20.24	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	22264.00
636-2070	1800	LF	8.71	GALV STEEL POSTS, TP 7	15678.00
653-0120	296	EA	72.49	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	21457.04
653-0170	110	EA	90.68	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	9974.80
653-0210	220	EA	103.08	THERMOPLASTIC PVMT MARKING, WORD, TP 1	22677.60
653-1501	71200	LF	0.44	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	31328.00
653-1502	42700	LF	0.45	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	19215.00
653-3501	45000	GLF	0.33	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	14850.00
653-6004	14900	SY	2.71	THERMOPLASTIC TRAF STRIPING, WHITE	40379.00
653-6006	2600	SY	2.63	THERMOPLASTIC TRAF STRIPING, YELLOW	6838.00
654-1001	300	EA	3.04	RAISED PVMT MARKERS TP 1	912.00
654-1003	1900	EA	3.20	RAISED PVMT MARKERS TP 3	6080.00
<b>Section Sub Total:</b>					<b>\$252,237.34</b>

**Section GUARDRAIL**

Item Number	Quantity	Units	Unit Price	Item Description	Cost
641-1200	1500	LF	17.89	GUARDRAIL, TP W	26835.00
641-5001	20	EA	673.15	GUARDRAIL ANCHORAGE, TP 1	13463.00
641-5012	20	EA	1762.58	GUARDRAIL ANCHORAGE, TP 12	35251.60
<b>Section Sub Total:</b>					<b>\$75,549.60</b>

**Section PED CULVERT**

Item Number	Quantity	Units	Unit Price	Item Description	Cost
207-0203	270	CY	44.73	FOUND BK FILL MATL, TP II	12077.10
500-3101	300	CY	238.02	CLASS A CONCRETE	71406.00
511-1000	3500	LB	0.89	BAR REINF STEEL	3115.00
<b>Section Sub Total:</b>					<b>\$86,598.10</b>

**Section CULVERT LIGHTING**

Item Number	Quantity	Units	Unit Price	Item Description	Cost
681-4120	4	EA	3455.93	LIGHTING STD, 12 FT MH, POST TOP	13823.72

681-6520	4	EA	761.48	LUMINAIRE, TP 5, 150 W, HP SODIUM	3045.92
681-6850	12	EA	603.00	LUMINAIRE, LOW MOUNTING, 150W, HP SODIUM	7236.00
682-1404	6200	LF	1.14	CABLE, TP XHHW, AWG NO 10	7068.00
682-1407	1800	LF	2.58	CABLE, TP XHHW, AWG NO 4	4644.00
682-6108	500	LF	5.68	CONDUIT, RIGID, 3/4 IN	2840.00
682-6219	300	LF	5.08	CONDUIT, NONMETL, TP 2, 1 IN	1524.00
682-9000	1	LS	14247.27	MAIN SERVICE PICK UP POINT	14247.27
<b>Section Sub Total:</b>					<b>\$54,428.91</b>

<b>Section SIGNAL</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
639-4004	52	EA	5819.39	STRAIN POLE, TP IV	302608.28
647-1000	12	LS	120000.00	TRAFFIC SIGNAL INSTALLATION NO - 1-17	1440000.00
<b>Section Sub Total:</b>					<b>\$1,742,608.28</b>

**Total Estimated Cost: \$18,257,985.06**

# Preliminary Right of Way Cost Estimate

**Date:** June 10, 2009  
**Project:** STP-9408(3) **P.I. Number** 751650  
**Existing/Required R/W:** Varies/Varies **No. Parcels** 160  
**Project Termini:** SR 961/Old Alabama Road: Holcomb Bridge Road to Jones Bridge Road  
**Project Description:** Old Alabama Road Widening and Improvements

**Fee Simple:**

Heavy Commercial	103,330 sf @ \$	18.00 /sf = \$	1,859,940	
Light Commercial	57,089 sf @ \$	9.00 /sf = \$	513,801	
Residential Acreage	36,548 sf @ \$	5.00 /sf = \$	182,740	
Average Residential Lot	41,527 sf @ \$	5.00 /sf = \$	207,635	
Premium Residential Lot	19,045 sf @ \$	10.00 /sf = \$	190,450	
				\$ 2,954,566

**Permanent Construction Easement:**

Heavy Commercial	176,804 sf @ \$	9.00 /sf = \$	1,591,236	
Light Commercial	148,887 sf @ \$	4.50 /sf = \$	669,992	
Residential Acreage	57,878 sf @ \$	2.50 /sf = \$	144,695	
Average Residential Lot	186,857 sf @ \$	2.50 /sf = \$	467,143	
Premium Residential Lot	86,342 sf @ \$	5.00 /sf = \$	431,710	
<b>TOTAL</b>				<b>\$ 3,304,776</b>

**Improvements:**

44 Residential	=	\$	270,000	
4 Commercial	=	\$	35,000	
<b>TOTAL</b>				<b>\$ 305,000</b>

**Relocation:**

0 Residential	=	\$	0	
0 Commercial	=	\$	0	
<b>TOTAL</b>				<b>\$ 0</b>

**Damages:**

Proximity -	28 Parcels	\$	280,000	
Consequential -	7 Parcels	\$	1,525,000	
Cost to Cure -	4 Parcels	\$	210,000	
<b>TOTAL</b>				<b>\$ <u>2,015,000</u></b>

**SUB-TOTAL** **\$ 8,579,342**

Net Cost		\$	8,579,342
Scheduling Contingency	55%	\$	4,718,638
Adm/Court Cost	60%	\$	7,978,788
		\$	21,276,768

## Total Cost

**\$ 21,280,000**

Prepared By : *J. G. Simshauser*  
 John G. Simshauser, Cert. No. 2772  
 Moreland Altobelli Associates, Inc.

Reviewed / Approved: \_\_\_\_\_  
 Howard P. Copeland  
 R/W Administrator

Note: Accuracy of estimate is the sole responsibility of the Preparer.

Note: The Market Appreciation (40%) is not included in this Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

**FILE** **OFFICE** District Seven Utilities  
**DATE** February 3, 2009

**FROM** Jonathan Walker, District Utilities Engineer

**TO** Kimberly Nesbitt, Associate Project Manager, Office of Program Delivery

**SUBJECT** **Preliminary Utility Cost Estimate**  
**P.I. No. 751650 (SR961/OLD ALABAMA RD FM HOLCOMB BRIDGE RD TO JONES BRIDGE) STP00-9408-00(003) Fulton County**

As per your request, a field inspection was conducted on the above referenced project. The following companies have facilities that occupy the public right-of-way and should be relocated at **no cost** to the Department of Transportation:

**AGL Networks**  
**Atlanta Gas Light Company**  
**City of Atlanta Bureau of Water**  
**Comcast**  
**Fulton County Public Works**  
**Georgia Transmission Corporation**  
**Sawnee EMC**  
**Verizon Business (formerly MCI Worldcom)**

The following utility companies could potentially have prior rights on this project and may have reimbursable costs:

<b>Georgia Power Company (Transmission)</b>	<b>\$1,700,000.00</b>
<b>Georgia Power Company (Distribution)</b>	<b>940,000.00</b>
<b>AT&amp;T (BellSouth)</b>	<b>1,200,000.00</b>
<b>Total Reimbursable Costs:</b>	<b>\$3,840,000.00</b>

**Estimate Report for file "Old Alabama Road - P.I. 008425\_2009-08-05"**

<b>Section ROADWAY</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
150-1000	1	LS	250000.00	TRAFFIC CONTROL -	250000.00
153-1300	1	EA	73914.48	FIELD ENGINEERS OFFICE TP 3	73914.48
210-0100	1	LS	90000.00	GRADING COMPLETE -	90000.00
310-1101	65446	TN	17.04	GR AGGR BASE CRS, INCL MATL	1115199.84
402-3121	31722	TN	59.47	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1886507.34
402-3130	5948	TN	64.13	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	381445.24
402-3190	11896	TN	67.77	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	806191.92
413-1000	4326	GL	2.00	BITUM TACK COAT	8652.00
441-0016	1000	SY	42.35	DRIVEWAY CONCRETE, 6 IN TK	42350.00
441-0104	28900	SY	30.72	CONC SIDEWALK, 4 IN	887808.00
441-0740	550	SY	32.91	CONCRETE MEDIAN, 4 IN	18100.50
441-4020	150	SY	43.97	CONC VALLEY GUTTER, 6 IN	6595.50
441-6222	24100	LF	14.96	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	360536.00
441-6740	14600	LF	13.12	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	191552.00
500-3201	600	CY	515.26	CLASS B CONCRETE, RETAINING WALL	309156.00
620-0100	3000	LF	26.46	TEMPORARY BARRIER, METHOD NO. 1	79380.00
634-1200	100	EA	93.93	RIGHT OF WAY MARKERS	9393.00
643-8200	2000	LF	2.21	BARRIER FENCE (ORANGE), 4 FT	4420.00
<b>Section Sub Total:</b>					<b>\$6,521,201.82</b>

<b>Section Erosion Control</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
163-0232	15	AC	283.37	TEMPORARY GRASSING	4250.55
163-0240	800	TN	129.90	MULCH	103920.00
163-0300	51	EA	1148.70	CONSTRUCTION EXIT	58583.70
163-0503	150	EA	442.20	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	66330.00
163-0530	20000	LF	2.42	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	48400.00
165-0010	6000	LF	0.53	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	3180.00
165-0030	15000	LF	0.66	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	9900.00
165-0070	10000	LF	2.83	MAINTENANCE OF BALED STRAW EROSION CHECK	28300.00
165-0087	150	EA	113.48	MAINTENANCE OF SILT CONTROL GATE, TP 3	17022.00
165-0101	51	EA	481.34	MAINTENANCE OF CONSTRUCTION EXIT	24548.34
167-1000	2	EA	460.30	WATER QUALITY MONITORING AND SAMPLING	920.60
167-1500	36	MO	685.80	WATER QUALITY INSPECTIONS	24688.80
171-0010	12000	LF	1.84	TEMPORARY SILT FENCE, TYPE A	22080.00
171-0030	30000	LF	2.95	TEMPORARY SILT FENCE, TYPE C	88500.00
603-2018	500	SY	39.99	STN DUMPED RIP RAP, TP 1, 18 IN	19995.00
700-6910	18	AC	674.07	PERMANENT GRASSING	12133.26
700-7000	40	TN	60.51	AGRICULTURAL LIME	2420.40
700-8000	18	TN	409.57	FERTILIZER MIXED GRADE	7372.26
716-2000	30000	SY	0.95	EROSION CONTROL MATS, SLOPES	28500.00
<b>Section Sub Total:</b>					<b>\$571,044.91</b>

<b>Section Drainage</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
550-1180	10000	LF	36.27	STORM DRAIN PIPE, 18 IN, H 1-10	362700.00
550-1181	300	LF	53.99	STORM DRAIN PIPE, 18 IN, H 10-15	16197.00
550-1240	4000	LF	41.79	STORM DRAIN PIPE, 24 IN, H 1-10	167160.00
550-1241	300	LF	53.45	STORM DRAIN PIPE, 24 IN, H 10-15	16035.00
550-1360	1500	LF	62.22	STORM DRAIN PIPE, 36 IN, H 1-10	93330.00
550-1361	100	LF	62.84	STORM DRAIN PIPE, 36 IN, H 10-15	6284.00
550-2180	400	LF	33.24	SIDE DRAIN PIPE, 18 IN, H 1-10	13296.00

550-2240	400	LF	32.24	SIDE DRAIN PIPE, 24 IN, H 1-10	12896.00
550-3318	10	EA	549.83	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	5498.30
550-3324	8	EA	842.19	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	6737.52
550-4218	10	EA	551.07	FLARED END SECTION 18 IN, STORM DRAIN	5510.70
550-4224	9	EA	643.26	FLARED END SECTION 24 IN, STORM DRAIN	5789.34
550-4236	9	EA	1055.83	FLARED END SECTION 36 IN, STORM DRAIN	9502.47
610-6015	23	EA	500.00	REM DROP INLET	11500.00
615-1000	200	LF	248.35	JACK OR BORE PIPE - 18", 1/2 THK STEEL PIPE	49670.00
615-1000	150	LF	248.35	JACK OR BORE PIPE - 24", 1/2 THK STEEL PIPE	37252.50
615-1000	100	LF	248.35	JACK OR BORE PIPE - 36", 1/2 THK STEEL PIPE	24835.00
668-1100	40	EA	2429.74	CATCH BASIN, GP 1	97189.60
668-1110	200	LF	168.54	CATCH BASIN, GP 1, ADDL DEPTH	33708.00
668-2100	20	EA	2360.78	DROP INLET, GP 1	47215.60
668-2110	80	LF	196.09	DROP INLET, GP 1, ADDL DEPTH	15687.20
668-4300	5	EA	2269.90	STORM SEWER MANHOLE, TP 1	11349.50
<b>Section Sub Total:</b>					<b>\$1,049,343.73</b>

<b>Section Signing and Marking</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
610-6515	75	EA	31.60	REM HIGHWAY SIGN, STD	2370.00
611-5360	6	EA	153.55	RESET HIGHWAY SIGN	921.30
632-0003	4	EA	5791.80	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	23167.20
636-1033	700	SF	20.24	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	14168.00
636-2070	1000	LF	8.71	GALV STEEL POSTS, TP 7	8710.00
653-0120	150	EA	72.49	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	10873.50
653-0170	10	EA	90.68	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	906.80
653-0210	100	EA	103.08	THERMOPLASTIC PVMT MARKING, WORD, TP 1	10308.00
653-1501	55000	LF	0.44	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	24200.00
653-1502	36000	LF	0.45	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	16200.00
653-3501	36000	GLF	0.33	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	11880.00
653-6004	5600	SY	2.71	THERMOPLASTIC TRAF STRIPING, WHITE	15176.00
653-6006	2200	SY	2.63	THERMOPLASTIC TRAF STRIPING, YELLOW	5786.00
654-1001	400	EA	3.04	RAISED PVMT MARKERS TP 1	1216.00
654-1003	1400	EA	3.20	RAISED PVMT MARKERS TP 3	4480.00
<b>Section Sub Total:</b>					<b>\$150,362.80</b>

<b>Section GUARDRAIL</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
641-1100	2000	LF	52.35	GUARDRAIL, TP T	104700.00
641-1200	100	LF	17.89	GUARDRAIL, TP W	1789.00
641-5001	15	EA	673.15	GUARDRAIL ANCHORAGE, TP 1	10097.25
641-5012	15	EA	1762.58	GUARDRAIL ANCHORAGE, TP 12	26438.70
<b>Section Sub Total:</b>					<b>\$143,024.95</b>

<b>Section SIGNAL</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
639-4004	12	EA	5819.39	STRAIN POLE, TP IV	69832.68
647-1000	3	LS	120000.00	TRAFFIC SIGNAL INSTALLATION NO - 1-17	360000.00
<b>Section Sub Total:</b>					<b>\$429,832.68</b>

<b>Section Bridge</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost

500-3107	1	CY	300000.00	WALL	300000.00
540-1102	1	LS	389757.26	REMOVAL OF EXISTING BR, BR NO - 1	389757.26
540-1102	1	LS	43545.82	REMOVAL OF EXISTING BR, BR NO - 2	43545.82
541-0001	1	LS	200000.00	DETOUR BRIDGE - 1	200000.00
541-0001	1	LS	200000.00	DETOUR BRIDGE-2	200000.00
541-0001	1	LS	850000.00	CONSTRUCTION OF BRIDGE COMPLETE, BR NO-1	850000.00
541-0001	1	LS	700000.00	CONSTRUCTION OF BRIDGE COMPLETE, BR NO-2	700000.00
<b>Section Sub Total:</b>					<b>\$2,683,303.08</b>

**Total Estimated Cost: \$11,548,113.97**

# Preliminary Right of Way Cost Estimate

**Date:** June 10, 2009  
**Project:** CSSTP-0008-00(425) **P.I. Number** 0008425  
**Existing/Required R/W:** Varies/Varies **No. Parcels** 97  
**Project Termini:** SR 961/Old Alabama Road: Jones Bridge Road to Buice Road  
**Project Description:** SR 961/Old Alabama Road Widening and Improvements

**Fee Simple:**

Heavy Commercial	0 sf	@	\$	18.00 /sf =	\$	0	
Light Commercial	1,594 sf	@	\$	9.00 /sf =	\$	14,346	
Residential Acreage	77,039 sf	@	\$	5.00 /sf =	\$	385,195	
Average Residential Lot	11,694 sf	@	\$	5.00 /sf =	\$	58,470	
Premium Residential Lot	11,917 sf	@	\$	10.00 /sf =	\$	119,170	
							\$ 577,181

**Permanent Construction Easement:**

Heavy Commercial	368 sf	@	\$	9.00 /sf =	\$	3,312	
Light Commercial	18,954 sf	@	\$	4.50 /sf =	\$	85,293	
Residential Acreage	164,635 sf	@	\$	2.50 /sf =	\$	411,588	
Average Residential Lot	144,948 sf	@	\$	2.50 /sf =	\$	362,370	
Premium Residential Lot	30,031 sf	@	\$	5.00 /sf =	\$	150,155	
<b>TOTAL</b>							<b>\$ 1,012,718</b>

**Improvements:**

18 Residential				=	\$	92,000	
2 Commercial				=	\$	94,000	
<b>TOTAL</b>							<b>\$ 186,000</b>

**Relocation:**

0 Residential				=	\$	0	
0 Commercial				=	\$	0	
<b>TOTAL</b>							<b>\$ 0</b>

**Damages:**

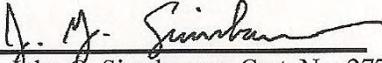
Proximity -	4 Parcels				\$	50,000	
Consequential -	0 Parcels				\$	0	
Cost to Cure -	0 Parcels				\$	0	
<b>TOTAL</b>							<b>\$ 50,000</b>

**SUB-TOTAL** **\$ 1,825,899**

Net Cost		\$	1,825,899
Scheduling Contingency	55%	\$	1,004,244
Adm/Court Cost	60%	\$	1,698,086
		\$	4,528,229

## Total Cost

**\$ 4,530,000**

Prepared By :  Reviewed / Approved: \_\_\_\_\_  
 John G. Simshauser, Cert. No. 2772 Howard P. Copeland  
 Moreland Altobelli Associates, Inc. R/W Administrator

Note: Accuracy of estimate is the sole responsibility of the Preparer.

Note: The Market Appreciation (40%) is not included in this Preliminary Cost Estimate.

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

**FILE** **OFFICE** District Seven Utilities  
**DATE** February 3, 2009

**FROM** Jonathan Walker, District Utilities Engineer

**TO** Kimberly Nesbitt, Associate Project Manager, Office of Program Delivery

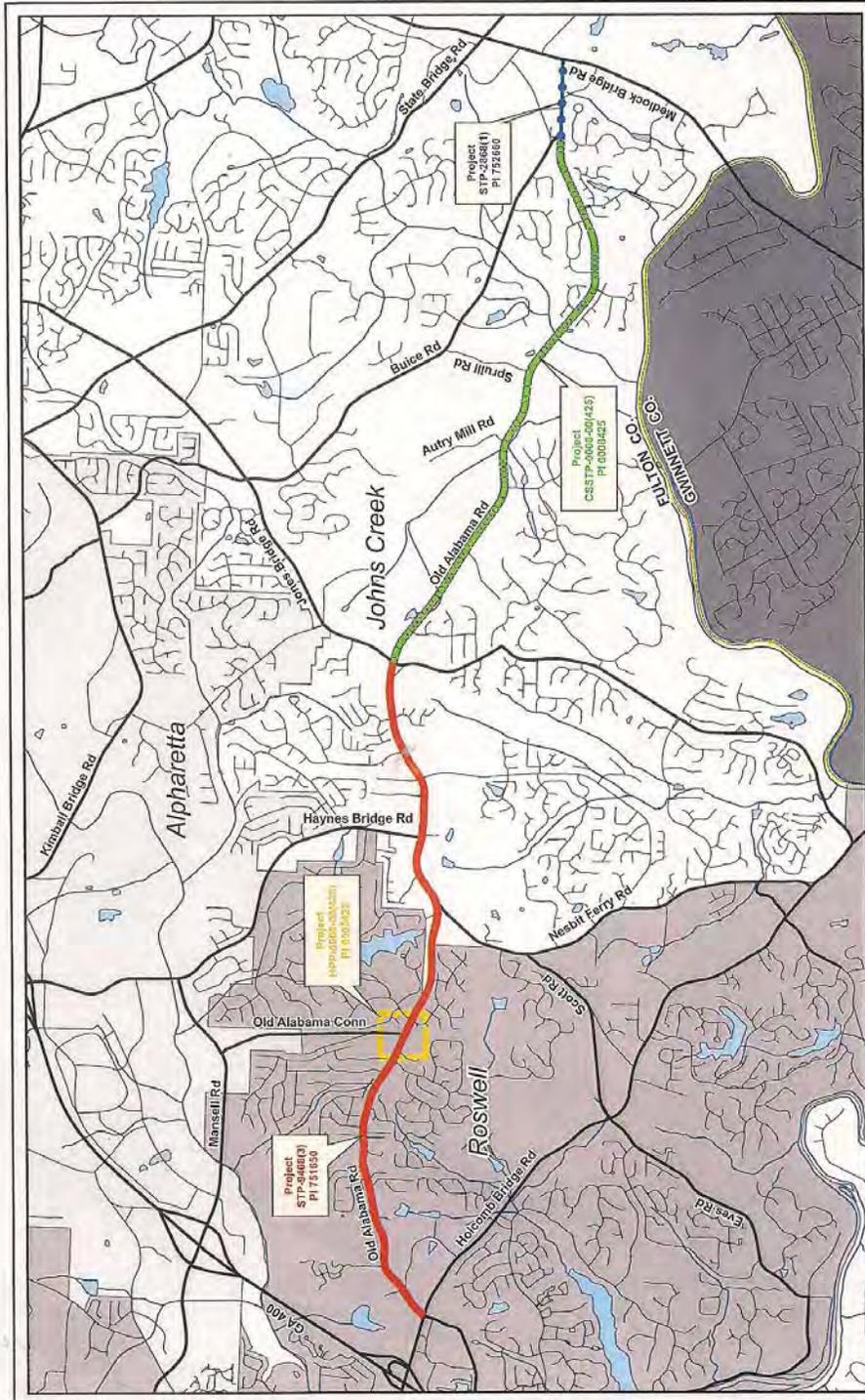
**SUBJECT** **Preliminary Utility Cost Estimate**  
**P.I. No. 0008425 (OLD ALABAMA RD FM CR 65/JONES BRIDGE RD TO CR**  
**111/BUICE) CSSTP-0008-00(425) Fulton County**

As per your request, a field inspection was conducted on the above referenced project. The following companies have facilities that occupy the public right-of-way and should be relocated at **no cost** to the Department of Transportation:

**AGL Networks**  
**Atlanta Gas Light Company**  
**City of Atlanta Bureau of Water**  
**Comcast**  
**Charter Communications**  
**Fulton County Public Works**  
**Georgia Power Company (Transmission)**  
**Georgia Transmission Corporation**  
**Sawnee EMC**  
**Verizon Business (formerly MCI Worldcom)**

The following utility companies could potentially have prior rights on this project and may have reimbursable costs:

<b>Georgia Power Company (Distribution)</b>	<b>725,000.00</b>
<b>AT&amp;T (BellSouth)</b>	<b>850,000.00</b>
<b>Total Reimbursable Costs:</b>	<b>\$1,575,000.00</b>



# Project Location Map

## Improvements to Old Alabama Road

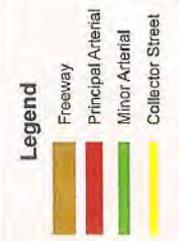
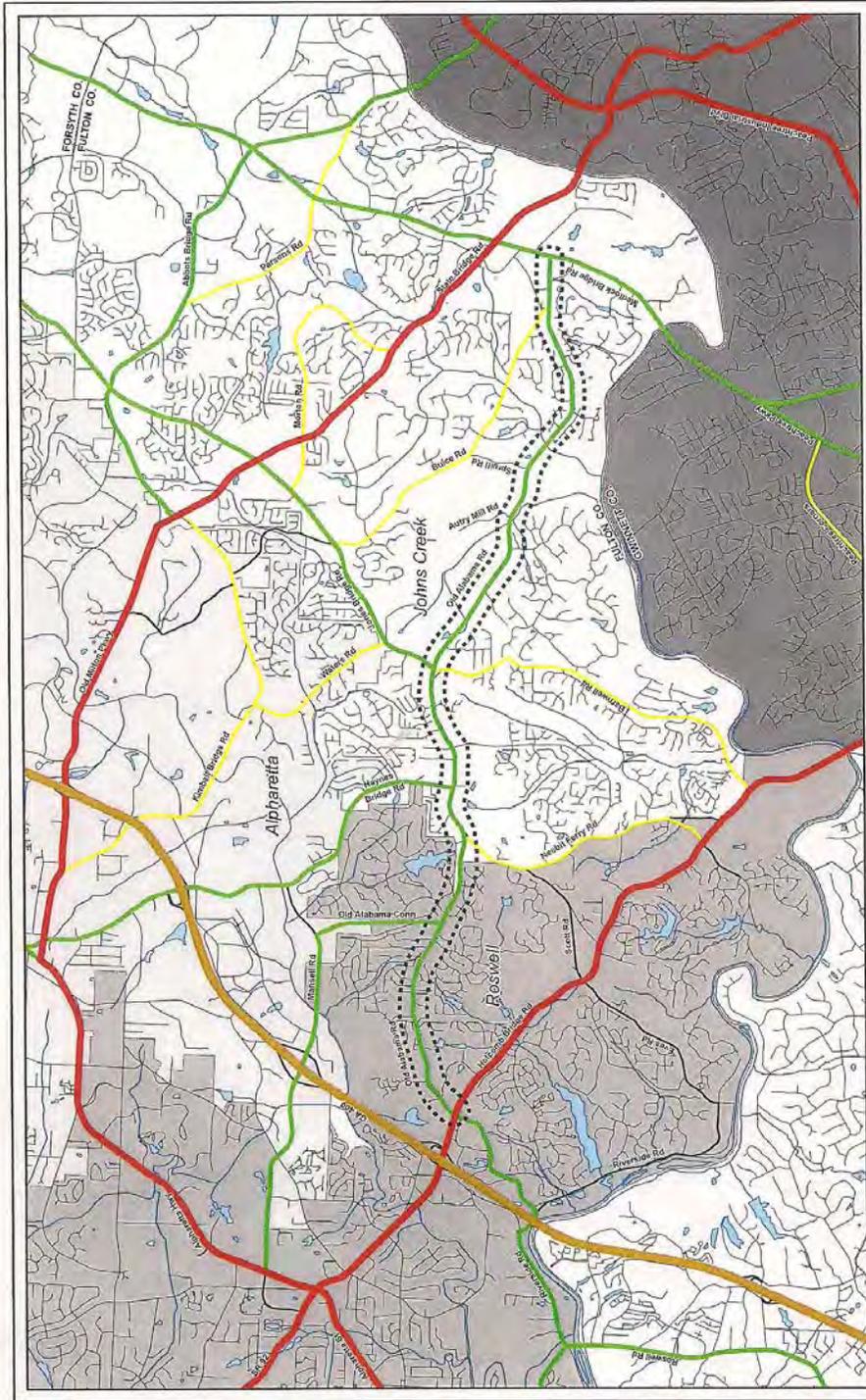


Prepared for:



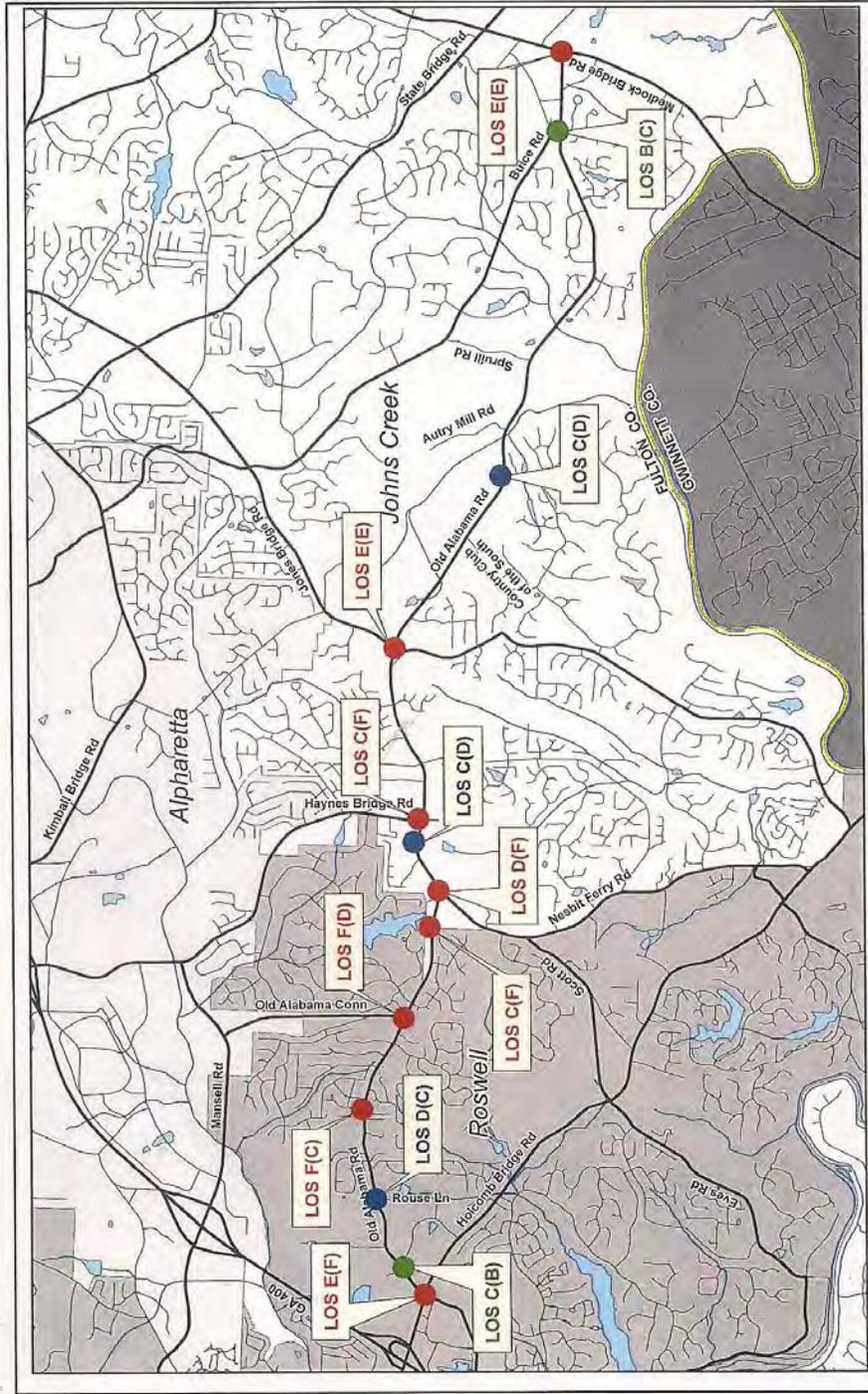
Fulton County





# REGIONAL ROADWAYS

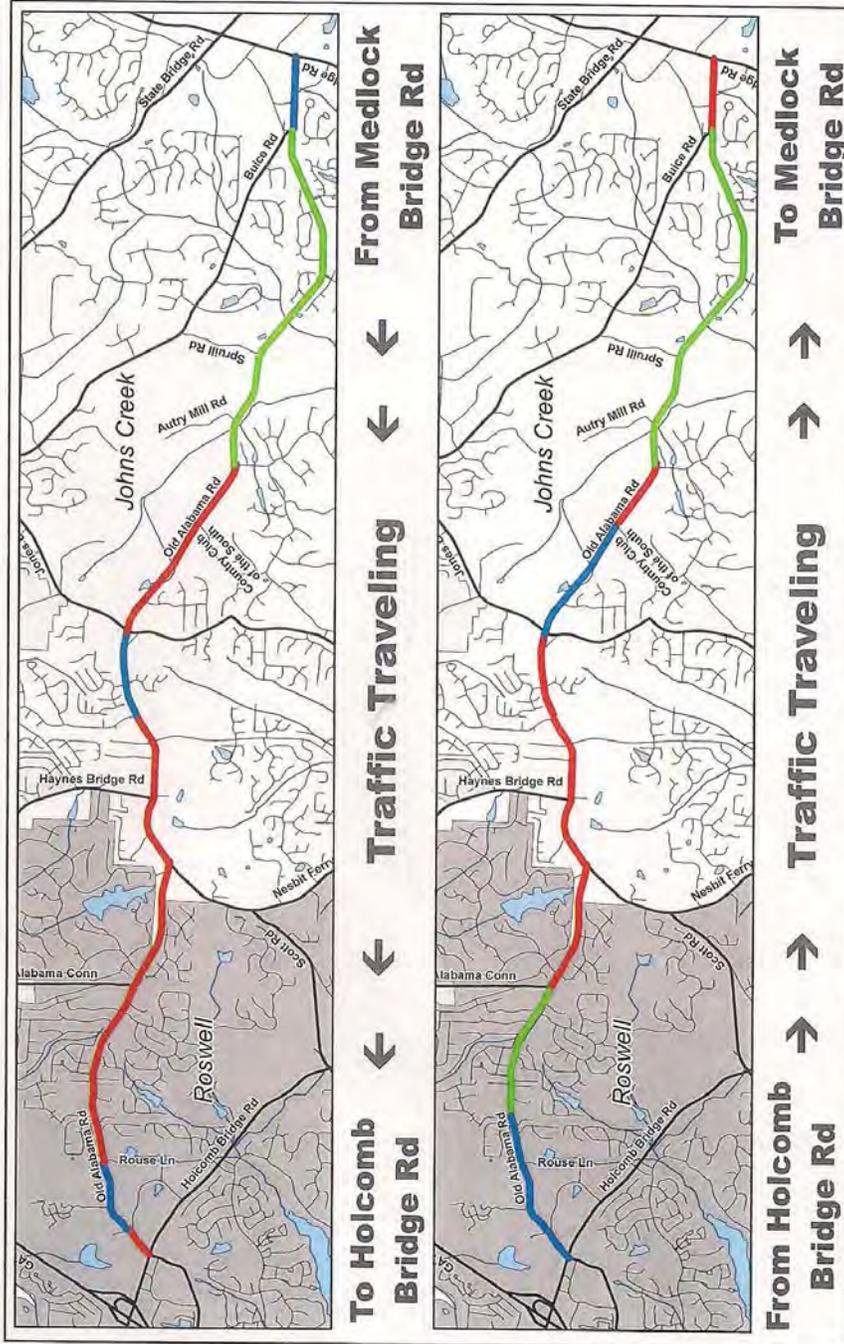
OLD ALABAMA ROAD SERVES AS A MINOR ARTERIAL

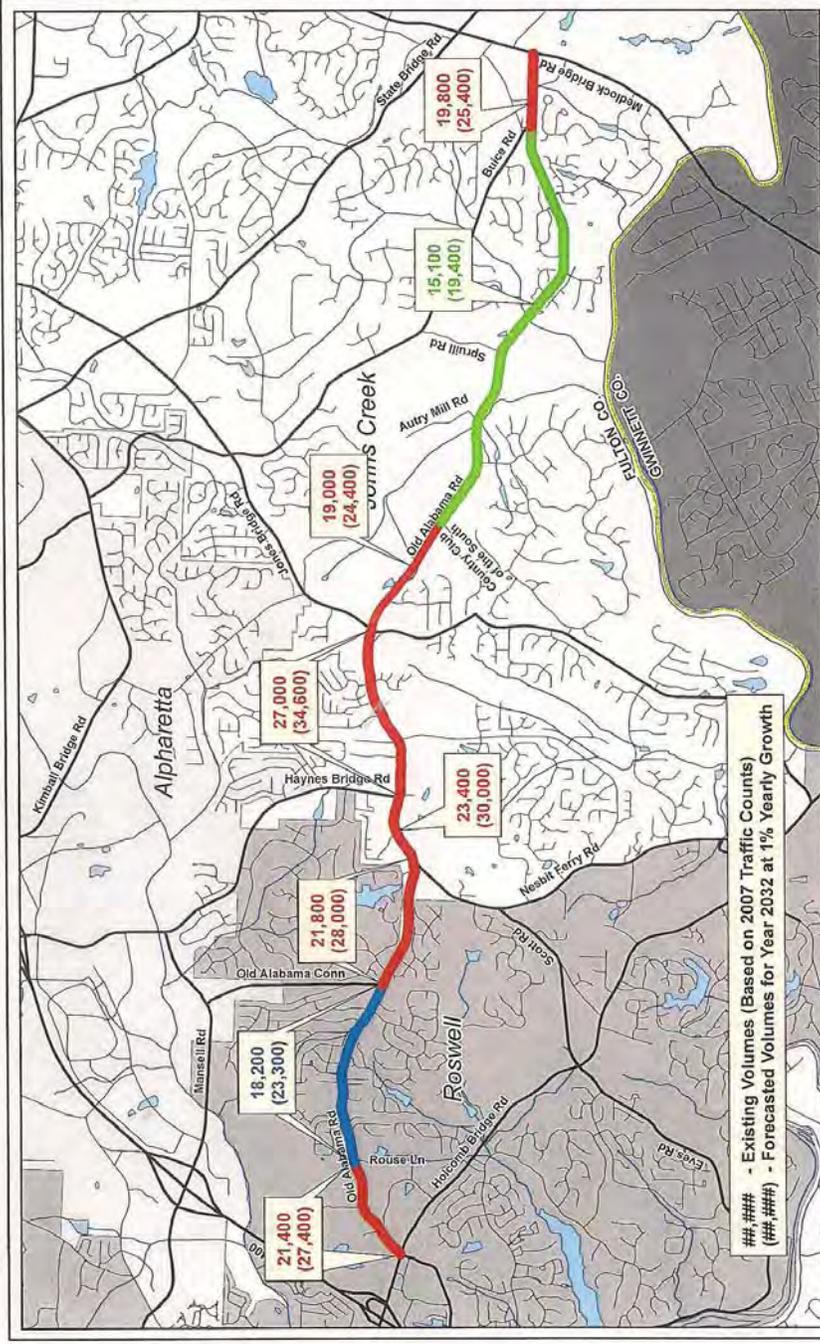


## Existing Intersection Level of Service (LOS)

PEAK HOUR: AM (PM)

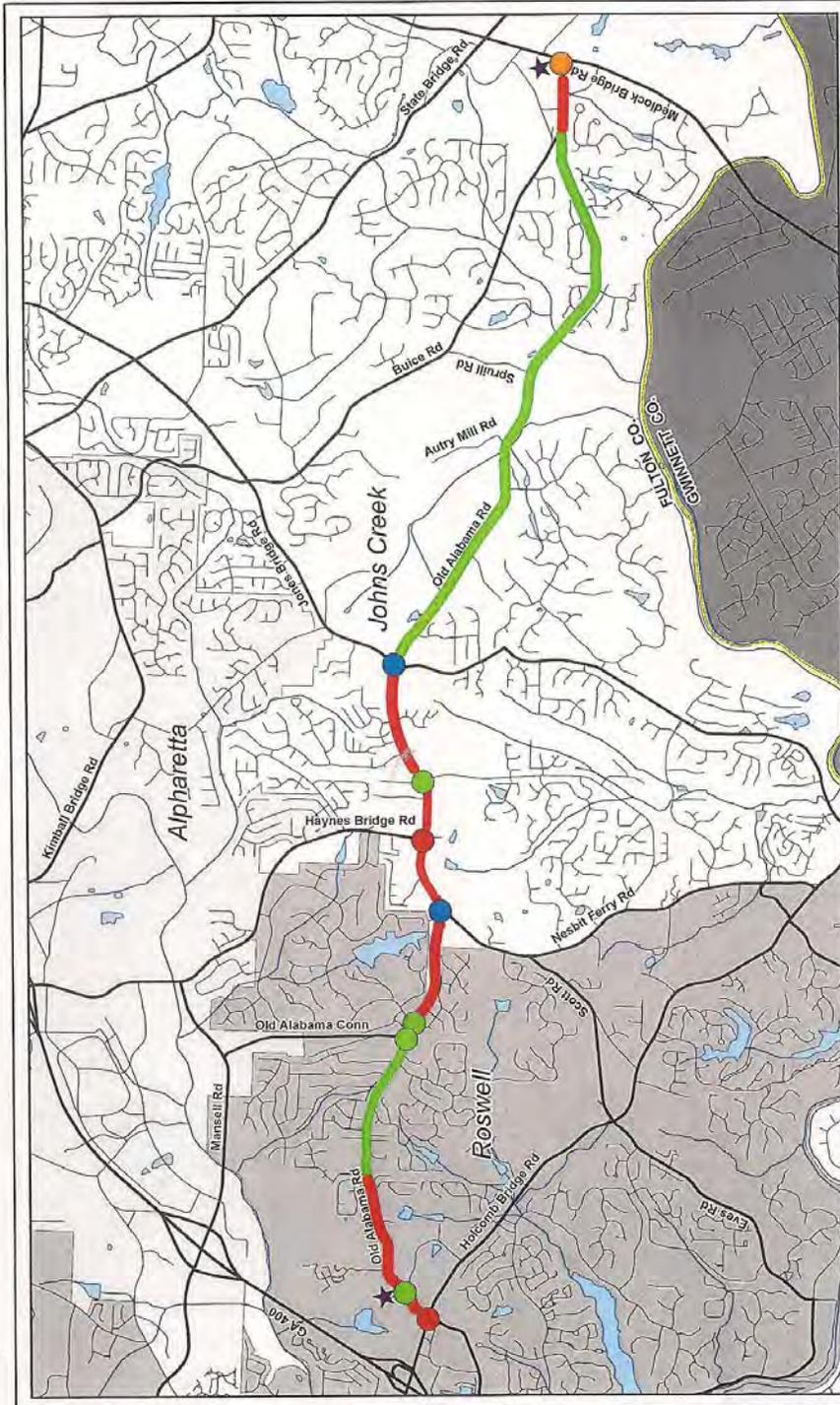
- LOS F - EXCESSIVE DELAYS OR BREAKDOWN**
- LOS E - VERY LONG DELAYS**
- LOS D - LONG TRAFFIC DELAYS**
- LOS C - AVERAGE TRAFFIC DELAYS**
- LOS B - SHORT TRAFFIC DELAYS**
- LOS A - LITTLE OR NO DELAYS**





###,### - Existing Volumes (Based on 2007 Traffic Counts)  
 (##,###) - Forecasted Volumes for Year 2032 at 1% Yearly Growth

# Average Annual Daily Trips (AADT)

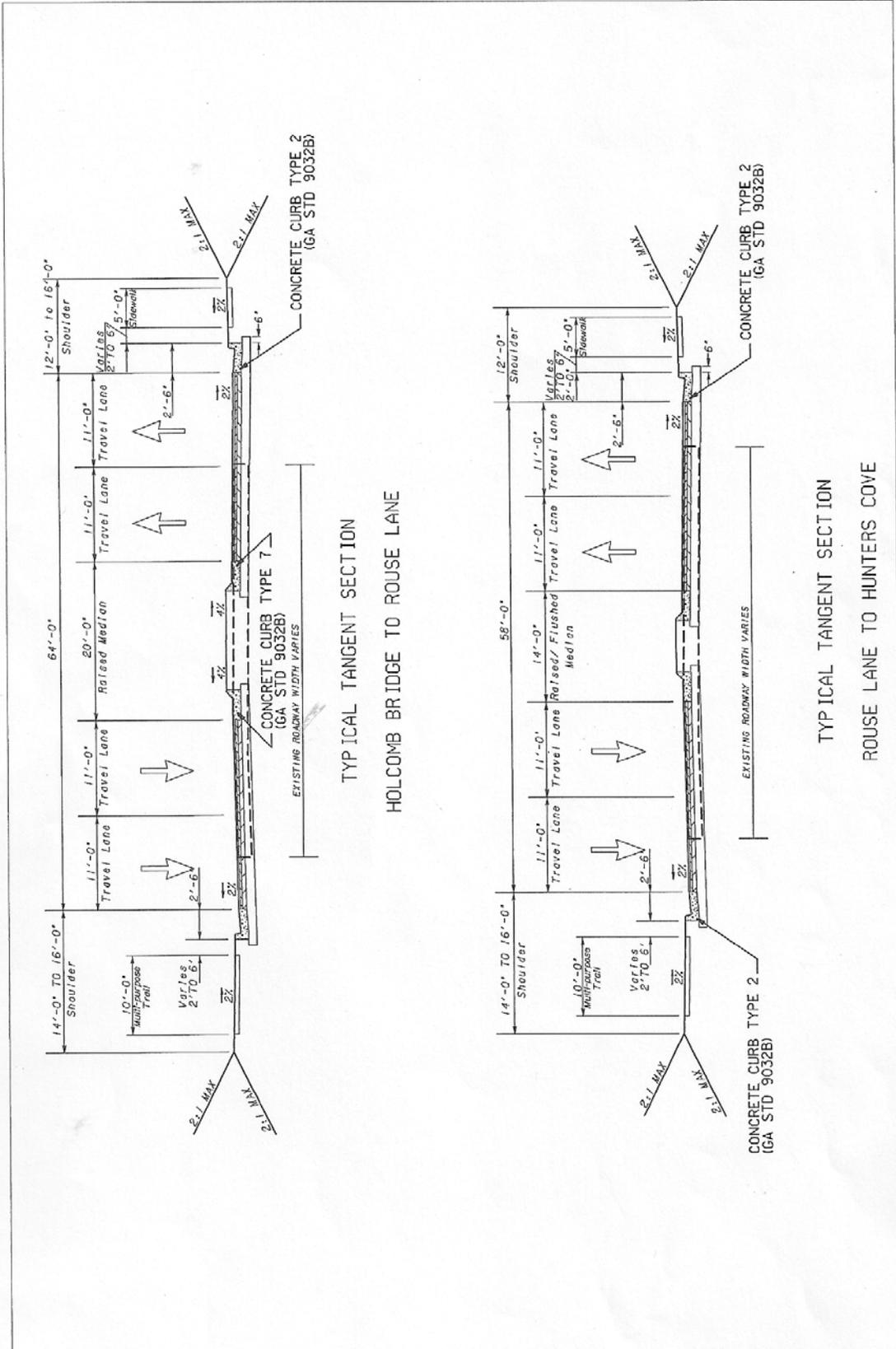


# Accident Hot Spots

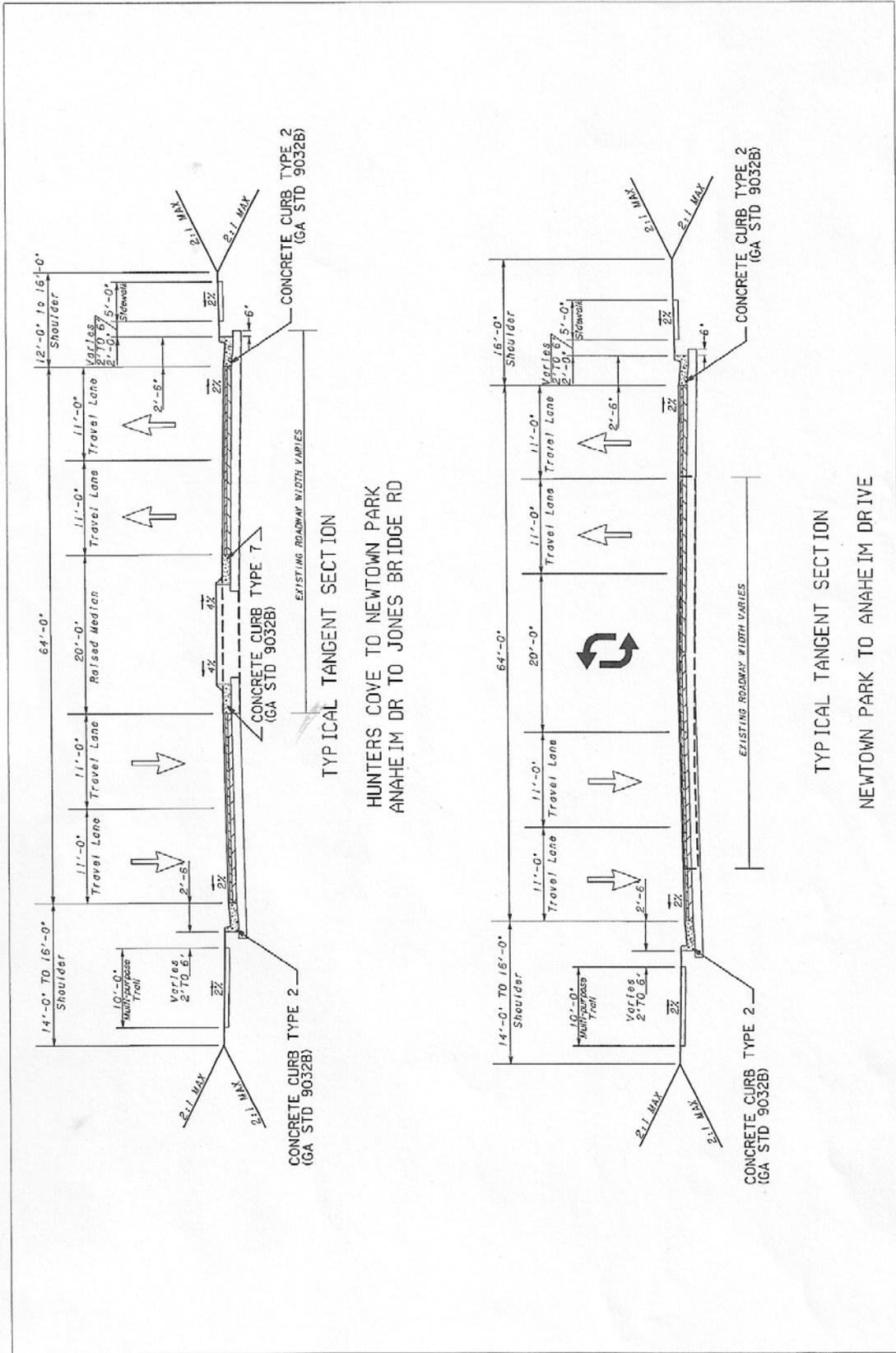
AVERAGE PER YEAR  
(LAST 3 YEARS)

<b>INTERSECTIONS</b>		<b>ROADWAY SEGMENTS</b>	
● 11-20 ACCIDENTS	● 41-50 ACCIDENTS	— EXCEEDS STATEWIDE AVERAGE	— LESS THAN STATEWIDE AVERAGE
● 21-30 ACCIDENTS	● 50+ ACCIDENTS		
● 31-40 ACCIDENTS	★ FATALITY		



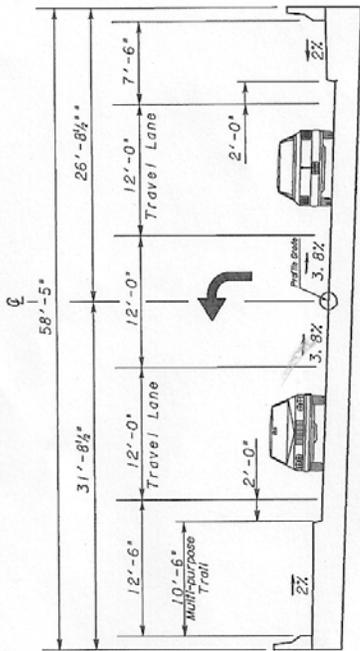


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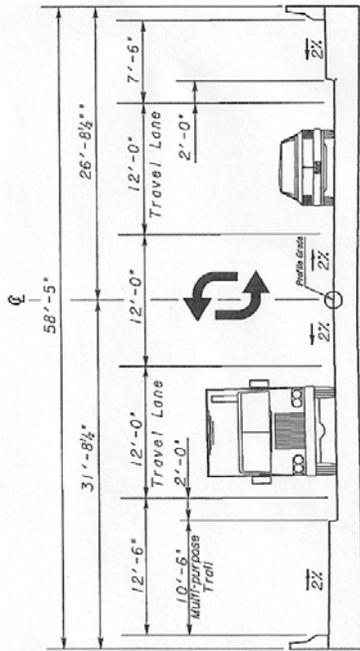
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BRIDGE 1  
STA 385+08 TO 386+18

TS-03



BRIDGE 2  
STA 424+75 TO 426+05

TS-04

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# VALUE ENGINEERING PROCESS

This report summarizes the analysis and conclusions by the PBS&J Value Engineering team as they performed a VE Study during the period of December 14 through December 17, 2009 in Atlanta, Georgia, for the Georgia Department of Transportation.

## INTRODUCTION

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

Les M. Thomas, PE, CVS-Life	Team Leader
Luke Clarke, PE, AVS	Senior Highway Design Engineer
Ramesh Kalvakaalva, PE	Senior Bridge Engineer
Kevin Martin, Esq., AVS	Highway Construction Specialist
Randy S. Thomas, CVS	Assistant Team Leader

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

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

- The important functions of the project were identified as follows:
  - **Project Objective/Goals**
    - **Improve safety**
  - **Project Basic Functions**
    - **Increase capacity**
    - **Improve bicycle/pedestrian accommodations**
    - **Improve traffic operations**
    - **Meet standards**
    - **Reduce accidents**
    - **Increase capacity**
- **Speculation Phase** - The VE team performed a brainstorming session to identify ideas that might help meet the project objectives:
  - **Improve mobility**
  - **Decrease time delays**
  - **Improve signal operations**
  - **Reduce width of sidewalks**
  - **Reduce raised median width**
  - **Improve bridge safety**
  - **Create adequate turn lanes**
  - **Modify medians**
  - **Reduce bridge length**
  - **Reduce bridge spans**

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

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

Following that selection process, the VE Team used the following values as measures of whether or not an alternative had enough merit to be carried forward in the VE process:

- Construction cost savings
- Improve value
- Maintainability
- Ability to implement the idea
- General acceptability of the alternatives
- Constructability
- Scheduling delays

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

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

# VALUE ENGINEERING STUDY AGENDA

for  
Georgia Department of Transportation  
Project No. STP00-9409-00(003) – P.I. No. 751650  
Project No. CSSTP-0008-00(425) – P.I. No. 008425

SR 961/Old Alabama Road  
From Holcomb Bridge Road to Buice Road  
Fulton County

December 14-17, 2009

## Pre-Workshop Activities

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

## Day One

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

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

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

- Review design team’s presentation
- Review agenda and goals of the study
- Visit project site if time permits

### **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

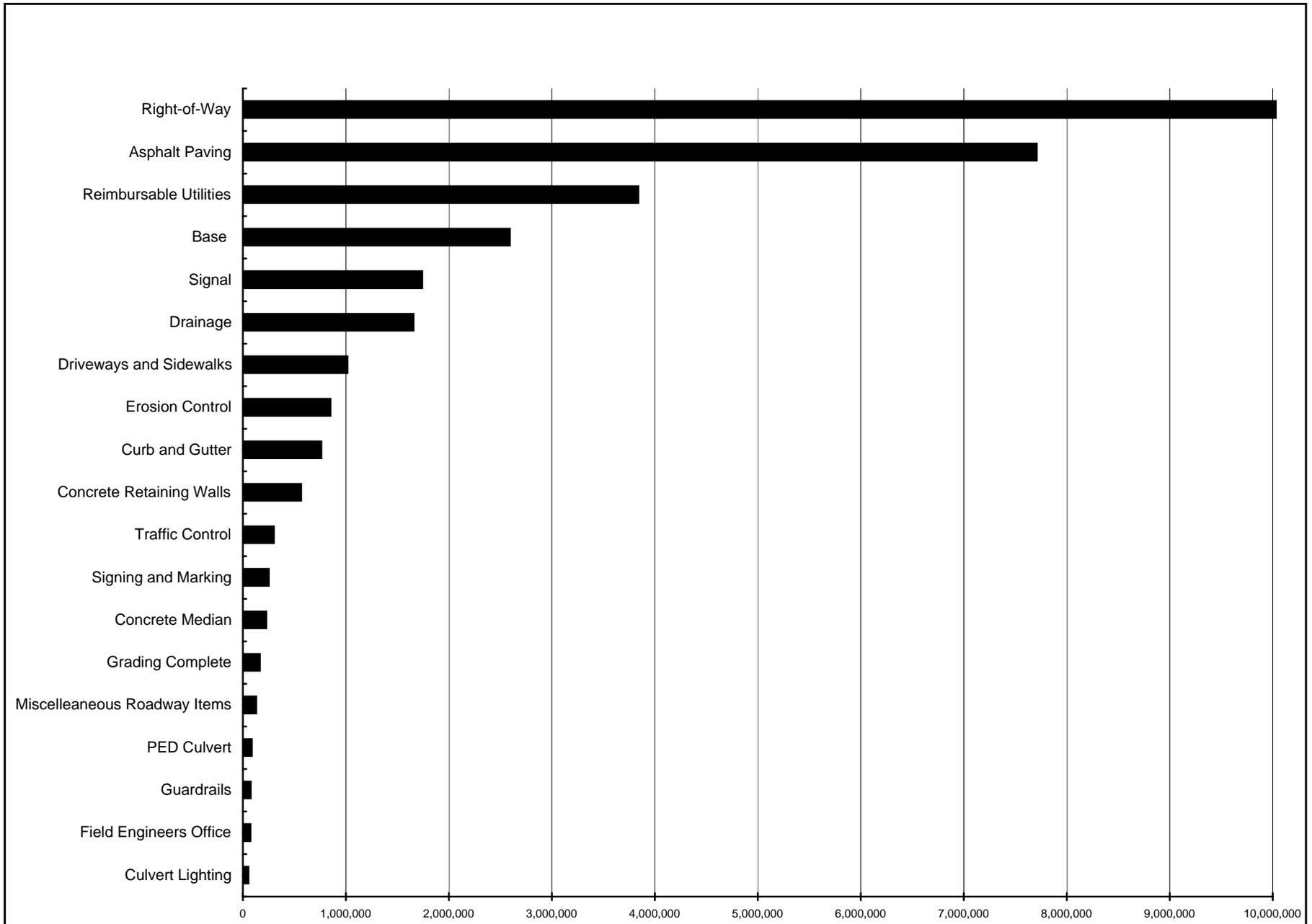
## **Day Four**

### **8:00-9:00 Prepare Presentation**

### **9:00-10:00 VE Team Presentation**

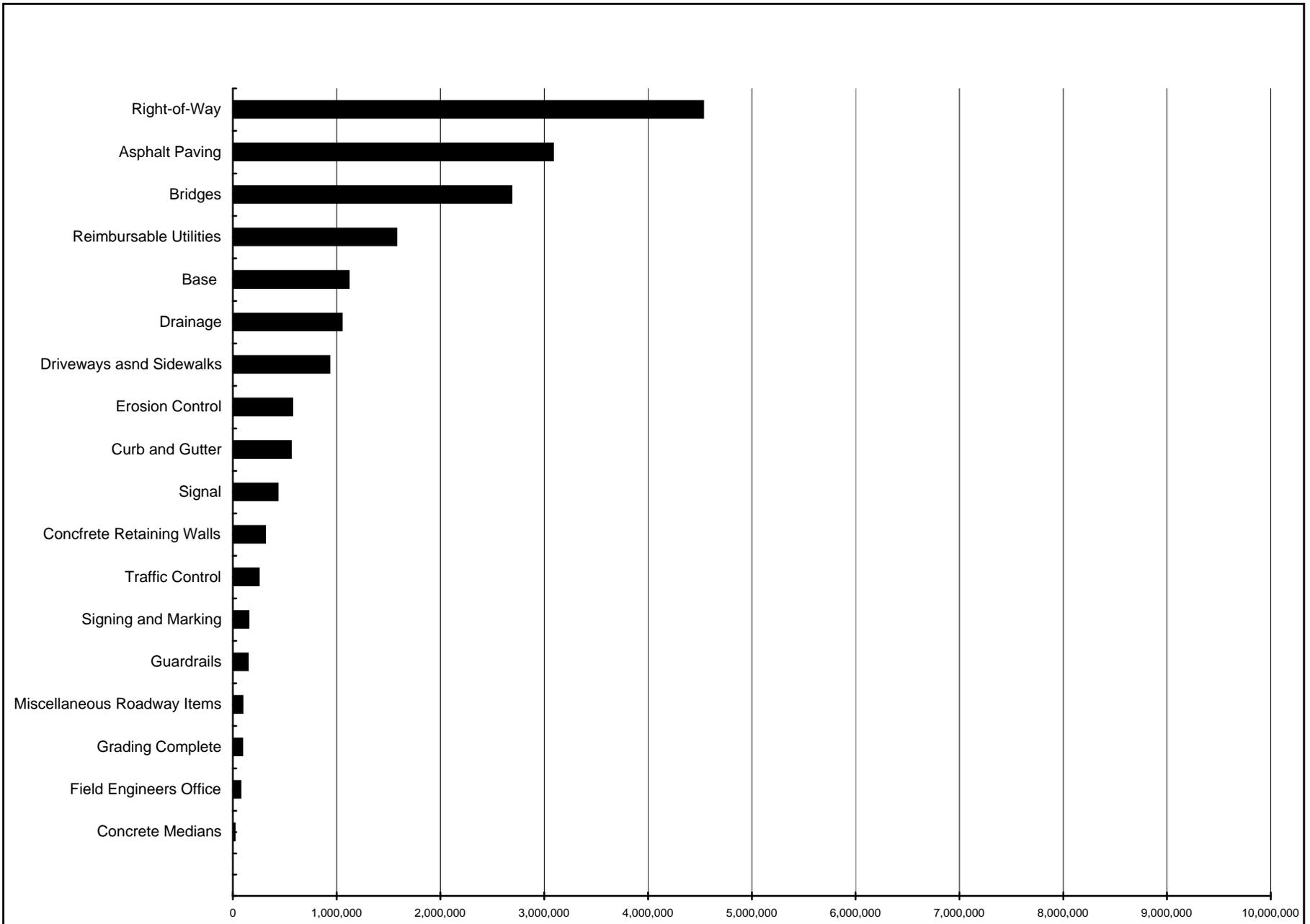
# PARETO CHART - COST HISTOGRAM

<b>PROJECT: Georgia Department of Transportation</b> <b>STP00-9408-00(003) - P.I. No. 751650</b> <b>SR961/Old Alabama Road from Holcomb Bridge Road to Jones Bridge Road</b> <b>Fulton County</b>			
PROJECT ELEMENT	COST	PERCENT	CUM. PERCENT
Right-of-Way	21,280,000	49.06%	49.06%
Asphalt Paving	7,707,465	17.77%	66.83%
Reimbursable Utilities	3,840,000	8.85%	75.68%
Base	2,593,522	5.98%	81.66%
Signal	1,742,608	4.02%	85.67%
Drainage	1,656,291	3.82%	89.49%
Driveways and Sidewalks	1,015,516	2.34%	91.83%
Erosion Control	849,758	1.96%	93.79%
Curb and Gutter	762,403	1.76%	95.55%
Concrete Retaining Walls	566,786	1.31%	96.86%
Traffic Control	300,000	0.69%	97.55%
Signing and Marking	252,237	0.58%	98.13%
Concrete Median	227,079	0.52%	98.65%
Grading Complete	165,000	0.38%	99.03%
Miscellaneous Roadway Items	128,829	0.30%	99.33%
PED Culvert	86,598	0.20%	99.53%
Guardrails	75,550	0.17%	99.70%
Field Engineers Office	73,914	0.17%	99.87%
Culvert Lighting	54,429	0.13%	
Construction Cost including ROW & Utilites	<b>\$ 43,377,985</b>		
Construction Cost less ROW & Utilites	<b>\$ 18,257,985</b>		
E & C Rate @10%	<b>\$ 1,825,799</b>		
<b>Total Construction Costs</b>	<b>\$ 20,083,784</b>		
<b>Right-of-Way</b>	<b>\$ 21,280,000</b>		
<b>Utilities Reimbursement</b>	<b>\$ 3,840,000</b>		
<b>TOTAL</b>	<b>\$ 45,203,784</b>		



# PARETO CHART - COST HISTOGRAM

<b>PROJECT: Georgia Department of Transportation</b> <b>CSSTP-0008-00(425) - P.I. 0008425</b> <b>SR961/Old Alabama Road from Jones Bridge Road to Buice Road</b> <b>Fulton County</b>			
PROJECT ELEMENT	COST	PERCENT	CUM. PERCENT
Right-of-Way	4,530,000	25.66%	25.66%
Asphalt Paving	3,082,796	17.46%	43.12%
Bridges	2,683,303	15.20%	58.32%
Reimbursable Utilities	1,575,000	8.92%	67.25%
Base	1,115,200	6.32%	73.56%
Drainage	1,049,344	5.94%	79.51%
Driveways asnd Sidewalks	930,156	5.27%	84.78%
Erosion Control	571,045	3.23%	88.01%
Curb and Gutter	558,654	3.16%	91.18%
Signal	429,833	2.43%	93.61%
Concrete Retaining Walls	309,156	1.75%	95.36%
Traffic Control	250,000	1.42%	96.78%
Signing and Marking	150,363	0.85%	97.63%
Guardrails	143,025	0.81%	98.44%
Miscellaneous Roadway Items	93,193	0.53%	98.97%
Grading Complete	90,000	0.51%	99.48%
Field Engineers Office	73,914	0.42%	99.90%
Concrete Medians	18,100	0.10%	100.00%
Construction Cost including ROW & Utilites	<b>\$ 17,653,082</b>		
Construction Cost less ROW & Utilites	<b>\$ 11,548,114</b>		
E & C Rate @10%	<b>\$ 1,154,811</b>		
<b>Total Construction Costs</b>	<b>\$ 12,702,925</b>		
<b>Right-of-Way</b>	<b>\$ 4,530,000</b>		
<b>Utilities Reimbursement</b>	<b>\$ 1,575,000</b>		
<b>TOTAL</b>	<b>\$ 18,807,925</b>		



# DESIGNER PRESENTATION



## MEETING PARTICIPANTS

Geogia Department of Transportation		December 14, 2009	
STP00-9408-00(003) - P.I. No. 751650			
CSSTP-0008-00(425) - P.I. No. 0008425			
<b>Fulton County</b>			
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers	 GDOT - Engineering Services	<a href="mailto:lm Myers@dot.ga.gov">lm Myers@dot.ga.gov</a>	404-631-1770
James K. Magnus	 GDOT-Construction	<a href="mailto:jmagnus@dot.ga.gov">jmagnus@dot.ga.gov</a>	404-631-1971
Matt Sanders	 GDOT-Engineering Services	<a href="mailto:msanders@dot.ga.gov">msanders@dot.ga.gov</a>	404-631-1752
Ken Werho	 GDOT-Traffic Operations	<a href="mailto:kwerho@dot.ga.gov">kwerho@dot.ga.gov</a>	404-635-8144
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Randy Thomas, CVS	 PBS&J	<a href="mailto:rsthomas@pbsj.com">rsthomas@pbsj.com</a>	770-883-1545
Ramesh Kalvakalva	 CSI	<a href="mailto:rameshk@civilservicesinc.com">rameshk@civilservicesinc.com</a>	770-312-2014
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Kimberly Nesbitt	 GDOT-Program Delivery	<a href="mailto:knesbitt@dot.ga.gov">knesbitt@dot.ga.gov</a>	404-631-1575
Keisha Jackson	 GDOT/OES	<a href="mailto:kejackson@dot.ga.gov">kejackson@dot.ga.gov</a>	404-631-1160
Scott Gero	 Mulkey Engineers	<a href="mailto:sgero@mulkeyinc.com">sgero@mulkeyinc.com</a>	678-795-3608

# VE TEAM PRESENTATION



## MEETING PARTICIPANTS

Georgia Department of Transportation			December 17, 2009
STP00-9408-00(003) - P.I. No. 751650			
CSSTP-0008-00(425) - P.I. No. 0008425			
<b>Fulton County</b>			
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers	 GDOT - Engineering Services	<a href="mailto:lmyers@dot.ga.gov">lmyers@dot.ga.gov</a>	404-631-1770
Matt Sanders	 GDOT-Engineering Services	<a href="mailto:msanders@dot.ga.gov">msanders@dot.ga.gov</a>	404-631-1752
Les Thomas, PE, CVS	 PBS&J	<a href="mailto:lmthomas@pbsj.com">lmthomas@pbsj.com</a>	678-677-6420
Luke Clarke, PE, AVS	 PBS&J	<a href="mailto:lwclarke@pbsj.com">lwclarke@pbsj.com</a>	205-746-4615
Kevin Martin, Esq., AVS	 PBS&J	<a href="mailto:klmartin@pbsj.com">klmartin@pbsj.com</a>	205-969-3776
Ramesh Kalvakaalva, P.E., AVS	 Civil Services, Inc.	<a href="mailto:rameshk@civilservicesinc.com">rameshk@civilservicesinc.com</a>	404-685-8001
Kimberly Nesbitt	 GDOT-Program Delivery	<a href="mailto:knesbitt@dot.ga.gov">knesbitt@dot.ga.gov</a>	404-631-1575
Scott Gero	 Mulkey Engineers	<a href="mailto:sgero@mulkeyinc.com">sgero@mulkeyinc.com</a>	678-795-3608

# CREATIVE IDEA LISTING



**PROJECT: Georgia Department of Transportation  
 STP00-9408-00(003) - P.I. No. 751650 and  
 CSSTP-0008-00(425) - P.I. No. 0008425  
 Widening and Improvements SR961/Old Alabama Road from  
 Holcomb Bridge Road to Buice Road  
 Fulton County**

SHEET NO.: 1 of 2

NO.	IDEA DESCRIPTION	RATING
	<b>ROADWAY (RD)</b>	
RD-1	Use a 20' raised median throughout entire project	2
RD-2	Delete sidewalks on the south side	2
RD-3	Use a 5 lane section throughout the project	2
RD-4	Use a flush 14'-0" median for project CSSTP-0008-00(425)	2
RD-5	Use an 8' multi-use trail in-lieu of a 10' multi-use trail	2
RD-6	Use modular block walls in-lieu of cast in place walls	4
RD-7	Use modular block walls for retaining walls	4
RD-8	Use concrete walls with stamped façade to match existing	2
RD-9	Use 20' medians for all of project STP-00-9408-00(003) from Rouse Lane to Hunter's Cove	2
RD-10	Utilize existing pavement from Rouse Lane to Hunters Cove	5
RD-11	Use intermittent sidewalks	2
RD-12	Provide eyebrows for U-turns	2
RD-13	Do not reconstruct project from Holcomb Bridge Road to Jones Bridge Road	2
RD-14	Provide a median from Autry Mill Road to Spruill Road	DS
RD-15	Route multi-use trail to the south side from Hunts Pointe Drive to Bridge #2	2
RD-16	Shift alignment to only take Right-of-Way on one side	2
RD-17	Reduce raised median to 14' throughout project and provide eyebrows at U-turns	2
RD-18	Use 11' lanes throughout the project	2
RD-19	Use a 12'-0" median	2
RD-20	Minimize tie-in work on Nesbit Ferry Road and Haynes Bridge Road	2

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

# CREATIVE IDEA LISTING



**PROJECT: Georgia Department of Transportation  
STP00-9408-00(003) - P.I. No. 751650 and  
CSSTP-0008-00(425) - P.I. No. 0008425  
Widening and Improvements SR961/Old Alabama Road from  
Holcomb Bridge Road to Buice Road  
Fulton County**

SHEET NO.: 2 of 2

NO.	IDEA DESCRIPTION	RATING
<b>ROADWAY (RD)</b>		
RD-21	Delete ±10 traffic signals, use a 4-lane urban section and provide properly designed U-turns	2
RD-22	Reduce the number of median openings	2
RD-23	Eliminate 20' two way turn lanes at the fire station	DS
RD-24	Design a fly-over at Nesbit Ferry Road	2
RD-25	Create a 4-lane roadway with a divided raised median of at least 14'-0" to be consistent throughout the project	2
RD-26	Eliminate two-way left turns	DS
RD-27	Eliminate multi-use trail from Nesbit Ferry Road to Buice Road	2
RD-28	"Green" Autry Falls Way intersection by widening and provide grass/tree median	2
RD-29	Modify alignment to use existing Right-of-Way in-lieu of Right-of-Way purchase	2
RD-30	Delete new entrance south of Belcourt Parkway into commercial area	4
<b>BRIDGE (BR)</b>		
BR-1	Construct separate bike/pedestrian bridge to the south of bridge #2 and provide 2'-0" shoulder on new bridge	5
BR-2	Delete the turn lane on bridge #1	2
BR-3	Delete the turn lane on bridge #2	2
BR-4	Route multi-use trail to the north in park with stream crossing and use a 2'-0" raised shoulder on bridge #1	3
BR-5	Reduce the length of bridge #2 to 110' and use a single span	5
BR-6	Use a single span structure at bridge #1	4

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