

# VALUE ENGINEERING TRAINING STUDY REPORT

SR 9/ North Main Street  
Widening and Improvements

Project No. STP00-0114-01(085)  
Fulton County  
PI No. 721790  
October 22, 2009

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OWNER:



Georgia Department of Transportation  
600 West Peachtree Street  
Atlanta, GA 30308  
(404.631.1770)

VALUE ENGINEERING  
INSTRUCTOR:



MACTEC Engineering and Consulting, Inc.  
3200 Town Point Drive NW, Suite 100  
Kennesaw, GA 30144  
(770.421.3400)

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## **EXECUTIVE SUMMARY**

## EXECUTIVE SUMMARY

# VALUE ENGINEERING TRAINING STUDY REPORT

### SR 9 / North Main Street Widening and Improvements

Project No. STP00-0114-01(085)  
PI No. 721790

**October 22, 2009**

### **Study Background**

This report presents the results of a value engineering (VE) study for the widening and improvements to SR 9 / North Main Street from Upper Hembree Road to Academy Street. The study was conducted as part of a VE training session held for GDOT staff on October 5 to 9, 2009.

SR 9 serves as a major north-south facility between the cities of Roswell and Alpharetta. SR 9 is west of and roughly parallel to SR 400. SR 9 is a non-uniform arterial having several different sections along the corridor including a 3, 4 and 5 lane section with a flush median and a lane undivided section. The overall project corridor consists of improvements to a 3.64 mile section of SR 9 within the City of Alpharetta, Fulton County. The proposed improvements are divided into two projects; PI No. 721790 beginning at Upper Hembree Road and continuing to Academy Street and 721780 from Academy Street to Winward Parkway. The proposed project improvements include widening, reconfiguration of side roads, pedestrian improvements and signal upgrades.

The primary purpose of this project is to relieve traffic congestion while providing safety and operational improvements along the corridor. As a result of recent growth and combined with the proximity to GA 400, the roadway network has struggled to handle the travel demands. Without any operational improvements, many of the signalized intersections will be deficient by the design year. The proposed project improvements would improve the overall corridor safety and operations by relieving congestion and eliminating and/or restricting turning movements by constructing a raised median.

The estimated construction cost of the project is \$7,792,277, the R/W estimate is \$26,902,800 yielding a total project cost of \$34,695,077. On Monday, October 5, 2009, the design team gave an overview of the project to the VE team and on Friday, October 9, 2009, the VE Team presented their recommendations.

This report presents the VE Team's recommendations and all back-up information for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. The **Appendix** includes a complete record of the Team's activities and findings as well as the worksheets developed during the information, creative and evaluation phases of the study. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

**VE-11**

<b>DEVELOPMENT PHASE - EXECUTIVE SUMMARY</b>	
<b>Project:</b> <b>Location:</b>	<b>Team:</b> <b>Date:</b>

**STP 00-0114-01(085), PI No. 721790  
S.R. 9 from Upper Hembree Rd. to Academy St.**

**Introduction**

This report represents the result of the value engineering (VE) study implementation for the improvement of S.R. 9 from Upper Hembree Rd. to Academy Street. The project will relieve traffic congestion and promote safety. The proposed project will widen S.R. 9 throughout by adding sidewalks and bike lanes; improve operation by upgrading signals and reconfiguring sideroads; and will also promote safety by adding a raised median. At present the project is in concept phase and has an estimated construction cost of \$7,792,277.00 and ROW cost of \$26,902,800.00.

The VE Team has analyzed all possible considerations to minimize cost while still fulfilling the need and purpose of the project. This report represents the VE Team’s recommendations by including brief, detailed descriptions, reasons, benefits and calculations.

**Recommendation**

The Team proposed six recommendations which are discussed in detail within the report:

Reduce foot print/reduce width of typical section.
Use 10’ Right Turn Lane
Itemize Grading Complete
Use Asphalt Base instead of GAB
Use 24” C&G
Use Alpharetta Office Space

If these recommendations are implemented, the total saving of construction and ROW will be \$5,660,679.

**VE-10**

**DEVELOPMENT PHASE - SUMMARY OF COST SAVINGS**

<b>Project: Location:</b>					<b>Team No.: Date:</b>	
<b>Idea No.</b>	<b>Creative Idea Description</b>	<b>Original Initial Cost</b>	<b>Proposed Initial Cost</b>	<b>Initial Cost Savings</b>	<b>Future Savings</b>	<b>Total Life Cycle Savings</b>
A-6	Reduce foot print/reduce width of typical section.	\$28,511,700.00	\$25,996,150.00	<b>\$2,515,550</b>		
A-10	Use 10' Right Turn Lane	\$28,213,173	\$27,564,668	\$648,505		
B-11	Itemize Grading Complete	\$2,000,000	\$195,135	\$1,805,865		
C-1	Use Asphalt Base instead of GAB	\$257,103	\$284,374	(\$27,271)		
G-2	Use 24" C&G	\$27,481,426	\$26,838,396	\$643,030		
K-2	Use Alpharetta Office Space	\$76,830	\$1,830	\$75,000		
	<b>Total</b>			<b>\$5,660,679</b>		

## **STUDY IDENTIFICATION**

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Widening and Improvements  
SR 9 – North Main Street  
6115070004.41

Georgia DOT  
October 22, 2009

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## VE-1

### STUDY IDENTIFICATION

<b>Project:</b> STP00-0114-01(085)	<b>Date:</b> October 5-9, 2009
<b>Location:</b> State Route 9 from Upper Hembree Road to Academy Street	

#### VE Team Members

<b>Name:</b>	<b>Position:</b>	<b>Organization:</b>	<b>Telephone:</b>
Nebiat Abraham	Urban Design	GDOT	(404) 631-1732
Daniel Gethi	District 7 Preconstruction	GDOT	(770) 986-1290
Jason Mobley	PM / Design	GDOT	(706) 799-1576
David Moyer	PM / Construction	GDOT	(404) 291-5880
Hiral Patel **	PM / Construction	GDOT	(706) 601-1849
** Team Leader			

#### Project Description:

This project consist of the widening of S.R. 9, reconfiguration of sideroads, addition of pedestrian and bicycle facilities, traffic and operational improvements, signal upgrades and the addition of raised medians. The proposed section is a four lane section with 11 foot travel lanes, 4 foot bicycle lanes, and a 17 foot raised median.

#### Project Constraints / Commitments:

Several historic resources exist along the property. Commitments have been made to keep the route on the existing alignment.

#### Project Briefing:

Before the study the VE team was briefed on the below subject matter in connection of the design of the project:

- Project History
- Accident History
- Functional Classification
- Accident History
- Environmental Study
- Need and Purpose
- ROW cost and purpose
- Speed Limits

## **VE RECOMMENDATIONS**

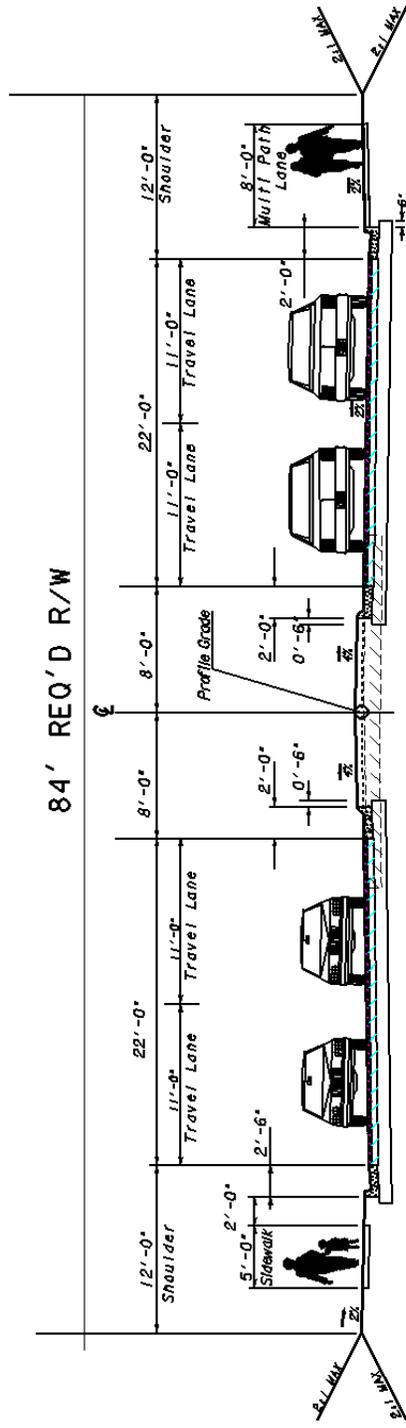
**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
<b>Project: PI # 721790</b>			
<b>Idea No.:</b> <u>A-6</u> A-7, A-8, A-12, J-1, J-3, C-5, C-6	<b>Sheet No.:</b> 1 of 4	<b>CREATIVE IDEA:</b> Reduce Foot Print/ width of Typical section	
Comp By:	Date:	Checked By:	Date:
<p><b>Original Concept:</b></p> <p>The original typical section includes two 4' bike lanes in the roadway in both direction and 5' wide concrete sidewalks in both directions.</p> <p><b>Proposed Change:</b></p> <p>The proposed idea is to remove the bike lanes from the pavement. Use wide asphalt sidewalks as multi-use trails throughout the project in lieu of sidewalks and separate bicycle lanes.</p> <p><b>Justification:</b></p> <p>By eliminating the 4' bicycle lanes and installing 8' asphalt multiuse path on one side of the roadway and 5' asphalt sidewalks on the other side of the roadway, the footprint of the project will be narrowed by 7', which reduces the width of required right-of-way and reduces the amount of full depth paving and eliminate need for concrete for sidewalk.</p> <p>The proposed shoulders can accommodate the extra width for multiuse trail without additional widening.</p> <p>Safety is improved by putting bicycle traffic behind the curb, thus separating it from vehicular traffic.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<b><u>INITIAL COST:</u> Original</b>	\$28,512,000.00		
<b>Proposed</b>	\$25,997,000.00		
<b>Savings</b>	\$2,516,000.00		
<b><u>FUTURE COST:</u> Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			\$2,516,000.00

SKETCH

Project:

Idea No. : A-6  
 Client::  
 Sheet 2 of 4





**VE-9C**

**CALCULATIONS**

**Project:**

Idea No. : A-6  
Client::  
Sheet 4 of 4

Total typical width 7-foot reduction for the project length =  $8,976 \text{ LF} \times 7.0 \text{ LF} = 62,832.00 \text{ SF} / 43560 = 1.44 \text{ AC}$ .

Cost of Ac of R/W is  $\$1,425,000.00 \times 1.44 = \$2,052,000.00$

**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
<b>Project: STP00-0114-01(085)</b>			
<b>Idea No.:</b> A-10	<b>Sheet No.:</b> 1 of 3	<b>CREATIVE IDEA:</b> Use 10' right turn lanes	
Comp By: JWM Date: 10/8/09 Checked By:      Date:			
<p><b>Original Concept:</b> Use 11' right turn lanes.</p> <p><b>Proposed Change:</b> Use 10' right turn lanes.</p> <p><b>Justification:</b> Using 10' right turn lanes will reduce the quantity of required pavement, thereby reducing the cost. This will also reduce the required project width up to 2'. Truck traffic is 4%.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<b>INITIAL COST: Original</b>	\$28,213,173		
<b>Proposed</b>	\$27,564,668		
<b>Savings</b>	\$648,505		
<b>FUTURE COST: Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$648,505</b>



**VE-9C**

**CALCULATIONS**

**Project:** STP00-0114-01(085)

Idea No. : A-10  
 Client: GDOT  
 Sheet: 3 of 3

- Sta. 107+00 to 108+00 LT = 100'
- Sta. 110+00 to 118+00 LT = 800'
- Sta. 113+00 to 115+00 RT = 200'
- Sta. 118+00 to 120+00 RT = 200'
- Sta. 122+00 to 126+00 RT = 400'
- Sta. 126+00 to 132+00 LT = 600'
- Sta. 134+00 to 138+00 RT = 400'
- Sta. 139+00 to 149+00 LT = 1000'
- Sta. 142+00 to 145+00 RT = 300'
- Sta. 148+50 to 150+00 RT = 150'
- Sta. 155+00 to 157+00 RT = 200'
- Sta. 158+00 to 160+00 LT = 200'
- Sta. 163+00 to 165+50 RT = 250'
- Sta. 165+00 to 167+00 LT = 200'
- Sta. 174+00 to 177+50 RT = 350'
- Sta. 174+00 to 175+50 LT = 150'
- Sta. 178+00 to 180+00 LT = 200'
- Sta. 180+50 to 182+00 RT = 150'
- Sta. 184+00 to 185+00 RT = 100'
- Sta. 184+50 to 187+00 LT = 250'
- Sta. 193+00 to 195+50 RT = 250'
- Sta. 195+50 to 199+00 LT = 350'

**TOTAL = 6800 LF of Turn Lanes**

6800 LF \* 1ft / 9sf/sy = 755.56 sy

<b>Asphalt =</b>	<u>43.84</u> TONS 9.5mm <u>101.40</u> TONS 19mm <u>413.89</u> TONS 25mm
<b>GAB =</b>	<u>1266.50</u> TONS
<b>Bituminous Tack Coat =</b>	53.00 GAL

2ft x 1.7miles x 5280ft/mi / 43560 sf/ac = 0.412 acres x \$1,425,000/ac = \$587,100

**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
<b>Project: STP00-0114-01(085)</b>			
<b>Idea No.:</b> B-11	<b>Sheet No.:</b> 1 of 3	<b>CREATIVE IDEA:</b> Break out Grading Complete into more items.	
Comp By: JWM Date: 10/8/09 Checked By:      Date:			
<p><b>Original Concept:</b> The original cost estimate uses a “Grading Complete” pay item.</p> <p><b>Proposed Change:</b> Itemize “Grading Complete” into more items such as earthwork, clearing and grubbing, etc.</p> <p><b>Justification:</b> The original cost of \$2million for grading complete seems excessive due to the minor amount of grading required. Separating items normally included in grading complete may improve the accuracy of the estimates, which should be lower.</p>			
<b>LIFE CYCLE COST SUMMARY</b>	<b>INITIAL Project Cost</b>	<b>FUTURE Project Cost</b>	<b>TOTAL Present Worth Cost</b>
<b>INITIAL COST: Original</b>	\$2,000,000		
<b>Proposed</b>	\$195,135		
<b>Savings</b>	\$1,805,865		
<b>FUTURE COST: Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$1,805,865</b>



**VE-9C**

**CALCULATIONS**

**Project:** STP00-0114-01(085)

Idea No.: B-11  
Client: GDOT  
Sheet 3 of 3

Assume this project ends at approximately Sta. 200+00.

Unadjusted Cut = 19027 cy

Unadjusted Fill = 3964 cy

Unclassified excavation = \$5 cy x 19027 cy = \$95,135

Clearing and Grubbing – 1.7 miles in an urban area. Minimal clearing and grubbing of things other than drainage structures, etc. \$100,000

**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
Project: STP00-0114-01(085)			
<b>Idea No.:</b> C1	<b>Sheet No.:</b> 1 of	<b>CREATIVE IDEA:</b> Change the GAB to Asphalt Base	
Comp By: DGM		Date: 10-9-09	Checked By:      Date:
<b>Original Concept:</b>			
The proposed pavement design is for GAB as the only base material throughout the project.			
<b>Proposed Change:</b>			
The proposed change would be to require the contractor to use asphalt base. This could be implemented throughout the project or only in selected areas.			
<b>Justification:</b>			
The material cost of GAB is lower than asphalt base. In some locations the construction costs and time associated with using GAB make it a worse choice than asphalt. The proposed 10" of GAB will require two lifts with extensive work and time required to grade and compact each layer. It will be required that it is heeled up overnight. In comparison the asphalt option would allow the contractor to go from sub-grade to surfacing in one day with the only delay being the need for one layer of asphalt to cool before the next can be placed. The ability to construct quickly lessens the need for extended maintenance of driveways, traffic control, and erosion control. It can also alleviate problems with the property owners and traveling public when the construction proceeds quickly.			
The cost savings is hard to define. The use of asphalt base will result in a savings of between 30% and 50% in the time required to construct the base. There will be savings in the maintenance of traffic control, erosion control maintenance, and driveway maintenance. These savings are estimated at 10%			
If the GAB work is estimated to take 2 months to construct, using asphalt base will save approximately one month of construction time. The intangible benefits from lessening the impact on property owners, businesses, and the traveling public cannot easily have a dollar value placed on them but will in a real savings even if it is not shown in the project budget.			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<b>INITIAL COST: Original</b>	257103		
<b>Proposed</b>	284374		
<b>Savings</b>	(27,271)		
<b>FUTURE COST: Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			



**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
<b>Project: STP00-0114-01(085)</b>			
<b>Idea No.:</b> G-2	<b>Sheet No.:</b> 1 of 2	<b>CREATIVE IDEA:</b> Use 24" curb and gutter instead of 30".	
Comp By: JWM Date: 10/8/09		Checked By:	Date:
<p><b>Original Concept:</b> The concept proposes 30" curb and gutter along the raised median and along the outside travel lanes.</p> <p><b>Proposed Change:</b> Use 24" curb and gutter throughout.</p> <p><b>Justification:</b> The use of 24-in. vs. 30-in. curb and gutter is merely a cost reduction measure. The possibility of additional drainage outlets due to the 6'in. additional gutter spread is not included in this alternative but is considered negligible at this early stage of design. The current drainage costs/space holder in the estimate would cover this potential increase, if any. Use of 24-in. curb and gutter will reduce the project width up to 2' for additional savings.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<b>INITIAL COST: Original</b>	\$27,481,426		
<b>Proposed</b>	\$26,838,396		
<b>Savings</b>	\$643,030		
<b>FUTURE COST: Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			<b>\$643,030</b>

**VE-9C**

**CALCULATIONS**

**Project:** STP00-0114-01(085)

Idea No. : G-2

Client: GDOT

Sheet 2 of 2

35,564 LF of Curb and Gutter

$$35,564\text{ft} \times 0.5\text{ft} \times 0.5\text{ft} = 8891\text{ft}^3 / 27 \text{ft}^3 / \text{yd}^3 = 329 \text{yd}^3$$

$$329 \text{cy} \times \$170/\text{cy} = \$55,930 \text{ savings}$$

$$2\text{ft} \times 1.7\text{miles} \times 5280\text{ft}/\text{mi} / 43560 \text{sf}/\text{ac} = 0.412 \text{acres} \times \$1,425,000/\text{ac} = \$587,100$$

**VE-9**

<b>DEVELOPMENT AND RECOMMENDATION PHASE</b>			
Project: STP00-0114-01(085)			
<b>Idea No.:</b> K-2	<b>Sheet No.:</b> 1 of 1	<b>CREATIVE IDEA:</b> Approach City of Alpharetta about donating project office space.	
Comp By: DGM    Date: 10-9-09		Checked By:    Date:	
<b>Original Concept:</b>			
The field office is set up as a contract pay item.			
<b>Proposed Change:</b>			
Approach the city of Alpharetta about donating the use of office space for the project office. The Alpharetta City Hall and several other city offices are located on the project or in the immediate area and space could possibly be found to accommodate the field office.			
<b>Justification:</b>			
GDOT will be working closely with the City of Alpharetta during the development and construction of this project. If a good working relationship exists and the city has some usable space this could work well for both entities. There is little risk in seeing if this could be worked out. The only cost to the department would possibly be providing items such as a fireproof file cabinet and a computer for use on the project if the area did not already have these items available.			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<b>INITIAL COST: Original</b>	76830		
<b>Proposed</b>	1830		
<b>Savings</b>	75000		
<b>FUTURE COST: Savings</b>			
<b>TOTAL PRESENT WORTH SAVINGS</b>			

**APPENDIX**

VE-2

**INFORMATION PHASE - SOURCES**  
**Approving/Authorizing Persons**

<b>Name:</b>	<b>Position:</b>	<b>Telephone:</b>
Peter Emmanuel	Project Manager	(404) 354-4111
Bobby Hilliard	State Program Delivery Engineer	(404) 631-1122
Gerald Ross	Chief Engineer	(404) 631-1004

**Personal Contacts**

<b>Name:</b>	<b>Telephone:</b>	<b>Notes:</b>
Kevin Skinner	(678) 336-7740	Pond & Company
Ronald Osterloh	(678) 336-7740	Pond & Company
Susan Thomas	(770) 333-9484	Edwards Pitman
Amber Phillips	(404) 631-1117	GDOT

**Documents/Abstracts**

<b>Reference:</b>	<b>Notes:</b>
Concept Layout	
Unapproved Concept Report	
Construction Plan/Profile	
Construction Cross Sections	
Pavement Design	By email
Earthwork Calculations	By email

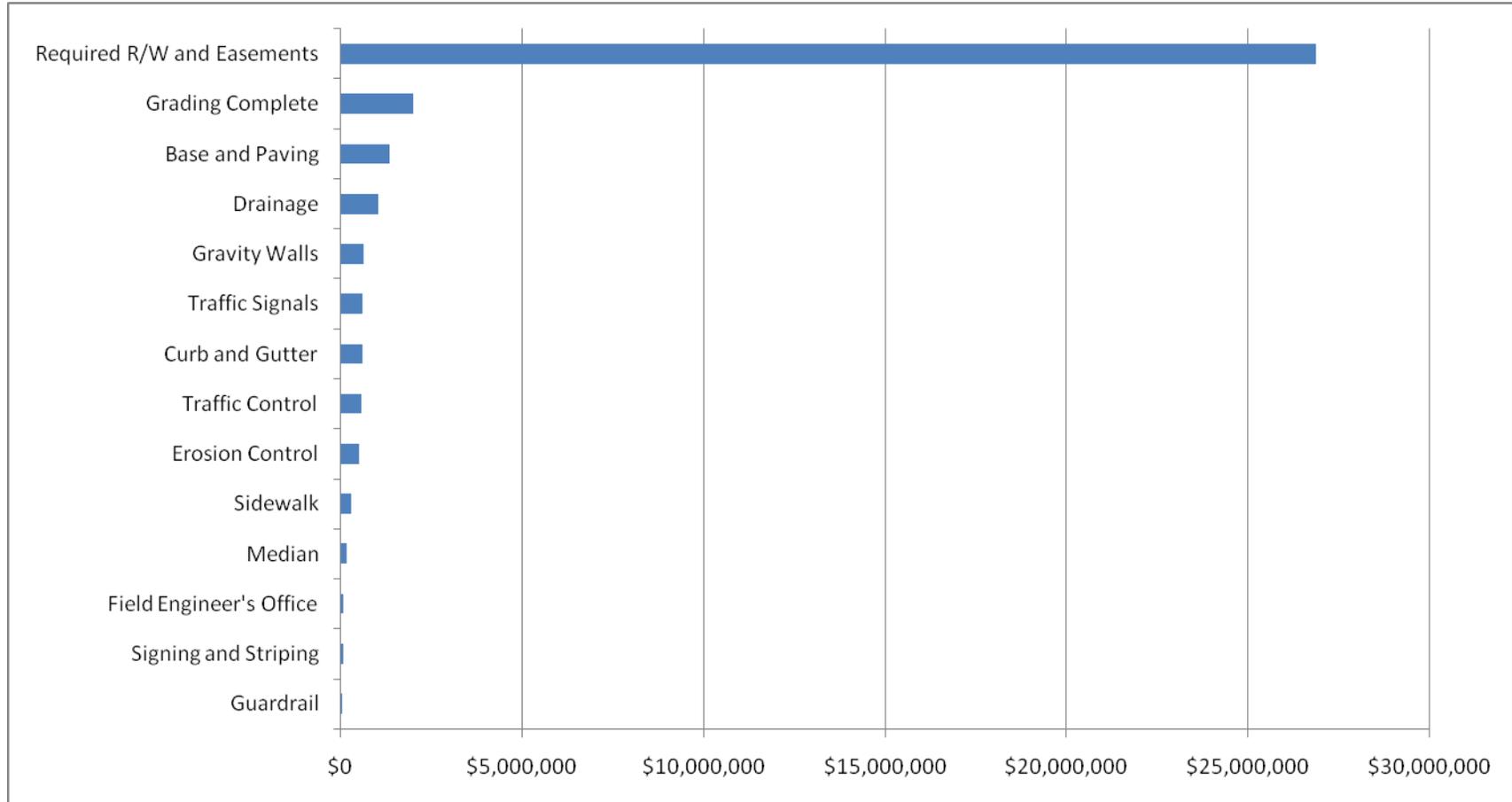
VE-3(1)

**INFORMATION PHASE - COST MODEL**  
**STP00-0114-01(085)**

<b>Item</b>	<b>Description</b>	<b>\$ Amount</b>	<b>% of Total Project</b>
A	Required R/W and Easements	\$26,902,800	77.5%
<b>80% Cost Line</b>			
B	Grading Complete	\$2,000,000	5.8%
C	Base and Paving	\$1,331,741	3.8%
D	Drainage	\$1,038,327	3.0%
E	Gravity Walls	\$630,678	1.8%
F	Traffic Signals	\$595,000	1.7%
G	Curb and Gutter	\$578,626	1.7%
H	Traffic Control	\$550,000	1.6%
I	Erosion Control	\$512,158	1.5%
J	Sidewalk	\$277,162	0.8%
K	Median	\$143,055	0.4%
L	Field Engineer's Office	\$76,830	0.2%
M	Signing and Striping	\$53,489	0.2%
N	Guardrail	\$5,211	<0.1%
	<b>TOTAL</b>	<b>\$34,695,077</b>	<b>100%</b>

VE-3(2)

### INFORMATION PHASE - COST MODEL STP00-0114-01(085)



**VE-4(1)**

**INFORMATION PHASE – FUNCTION ANALYSIS**

**Project:** STP00-0114-01(085)

**Project Function:** Improve Safety & Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	Worth	Comments
A	Required R/W and Easements	Accommodate	Roadway	\$26,902,800	\$20,000,000	Reduce R/W
		Accommodate	Pedestrians			
		Accommodate	Bicyclists			
		Relocate	Utilities			
		Improve	Intersections			
		Construct	Tie-ins			
B	Grading Complete	Clear	Obstructions	\$2,000,000	\$1,900,000	Reduce Grading
		Level	Grade			
C	Base and Paving	Support	Load	\$1,331,741	\$1,100,000	Reduce Paving
		Drain	Water			
		Accommodate	Lane			
D	Drainage	Remove	Water	\$1,038,327	\$600,000	Reduce
		Reduce	Gutter Spread			Drainage

**VE-4(2)**

**INFORMATION PHASE – FUNCTION ANALYSIS**

**Project:** STP00-0114-01(085)

**Project Function:** Improve Safety & Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	Worth	Comments
E	Gravity Walls	Support	Cut slope	\$630,678	\$630,678	Keep
		Reduce	ROW			
F	Traffic Signals	Control	Traffic	\$550,000	\$550,000	Keep
		Improve	Operation			
G	Curb and Gutter	Drain	Water	\$578,626	\$578,626	Keep
H	Traffic Control	Increase	Safety	\$550,000	\$550,000	Keep – Not
		Guide	Traffic			Enough Info
		Accommodate	Construction			
I	Erosion Control	Reduce	Erosion	\$512,158	\$350,000	Remove Devices
		Protect	Environment			
J	Sidewalk	Provide	Access	\$277,162	\$150,000	Alternate Mat'l
		Provide	Safety			Multi-Use Path

**VE-4(3)**

**INFORMATION PHASE – FUNCTION ANALYSIS**

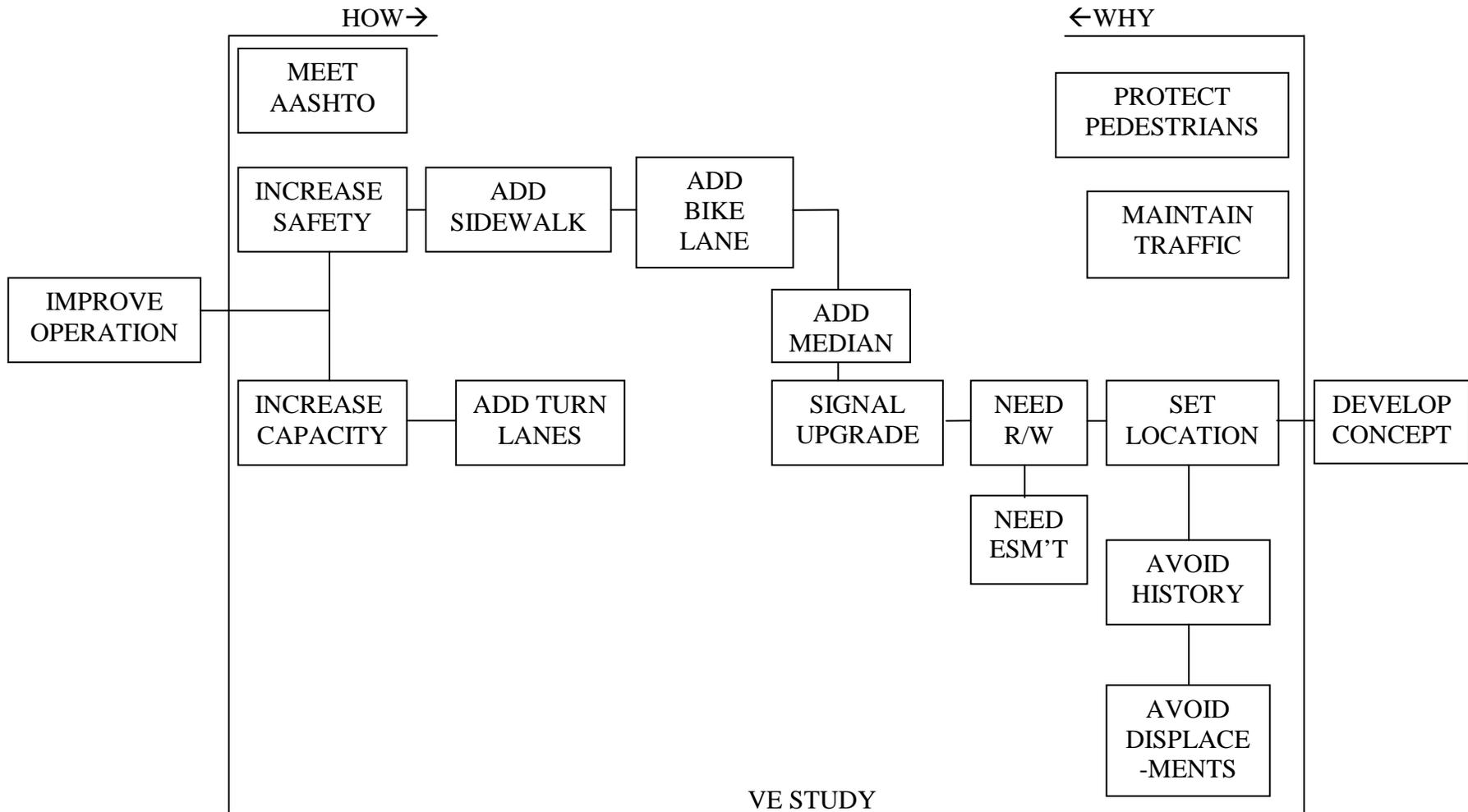
**Project:** STP00-0114-01(085)

**Project Function:** Improve Safety & Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	Worth	Comments
K	Median	Prevent	Crossover	\$143,055	\$100,000	Reduce Median
		Provide	Safety			
L	Field Engineer's Office	Hold	Records	\$76,830	\$0	Alternate Office
		Provide	Necessities			Alpharetta
		Centralize	Workplace			DOT Maintenance
M	Signing and Striping	Provide	Information	\$53,489	\$53,489	Keep
		Guide	Traffic			
N	Guardrail	Provide	Safety	\$5,211	\$5,211	Keep
		Reduce	R/W			
		Protect	Structures			

VE-5

### INVESTIGATION PHASE - FAST DIAGRAM



**VE-6 & 7(1)**

<b>CREATIVE PHASE</b> <b>Creative Idea Listing</b>		<b>JUDGMENT PHASE</b> <b>Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>A</b>	<b>Required R/W and Easements</b>		
A-1	Donate Land	Low probability of success	3
A-2	Alpharetta Purchase	Possible SPLOST?	5
A-3	Reversible Lanes	Unsafe	1
A-4	One-way Pairs	Apparent political opposition	5
A-5	Alternate Route	High Cost	3
<b>A-6</b>	<b>Reduce Footprint</b>	Decreases Req'd R/W	10
A-7	Eliminate / Reduce Sidewalk	Decreases Req'd R/W	10
A-8	Eliminate / Reduce Bike Paths	Decreases Req'd R/W	10
A-9	Double Deck	High costs, complex construction	1
A-10	Narrower Lanes	Reduce pavement, but decrease safety	8
A-11	More Retaining Walls	Reduce Req'd R/W	8
A-12	Multi-Use Path	Decreases Req'd R/W	10
A-13	Promote Carpooling / Alternate Transportation	Low cost, but low probability of success	5
A-14	HOV Lane w/ time restrictions	Possible with time restrictions, low probability of success, requires paradigm shift	3
A-15	Toll	Politically and publicly unacceptable	1

**VE-6 & 7(2)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
A-16	Consider closing driveways	Encourage inter-parcel access agreements	5
<b>B</b>	<b>Grading Complete</b>		
B-1	Change Profile	Profile already on existing grade	1
B-2	Salvage Material	Re-use exist. C&G for Rip Rap	5
B-3	Leave pipes in place	Fill with Flowable Fill	7
B-4	Recycle any removed pavement	Moderate cost savings	7
B-5	Recycle any landscaping items	Use as mulch	5
B-6	Reduce displacements	Low probability	2
B-7	Improve Staging to lessen mobilization/work	Save time	8
B-8	Use alternate equipment	Hard to enforce	4
B-9	Work hour limitations	Increase contract cost	1
B-10	Lime stabilization	Ineffective	1
B-11	Itemize grading complete (other pay items)	More accurate costs/bids	9
B-12	On-site material pit	Save transportation costs	9

**VE-6 & 7(3)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>C</b>	<b>Base and Paving</b>		
C-1	GAB / Asphalt Base alternates	Put options of GAB or Asphalt in the construction contract.	9
C-2	Change in construction specs	Reduce tolerance for spread rate.	2
C-3	Eliminate GAB and use Asphalt Base	Reduce GAB, Increase Asphalt thru business areas. This option will increase materials cost but reduce construction time & cost.	8
C-4	Reduce pavement thickness/Mix	Add 9.5MM mix driveways and side roads.	6
C-5	Reduce paving area	By narrowing lanes and combined bike lanes with sidewalks.	8
C-6	Move bike path off roadway	Reduce R/W and materials cost	10
<b>D</b>	<b>Drainage</b>		
D-1	Use alternate materials	Not applicable	1
D-2	Use recycled materials	Not applicable	1
D-3	Use smaller diameter pipes	This could be more expensive.	1
D-4	Use precast drainage structures	This may increase price but decrease time.	5
D-5	Pervious pavements	This can be used on sidewalk and bike path.	5
D-6	Grass ditches	This will not decrease cost in this case b/c the existing pavement.	2

**VE-6 & 7(4)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>E</b>	<b>Gravity Walls</b>		
E-1	Use masonry	Lower costs than concrete	8
<b>F</b>	<b>Traffic Signals</b>		
F-1	Upgrade Signals instead of new	To save cost	5
F-2	Use Loop Detection	To save cost but increase maintenance cost	4
F-3	Use Roundabout	May not function well due to high ADT and need more R/W to build it.	1
F-4	Eliminate signal	This option will reduce cost but may get resistance from locals government and public.	7
<b>G</b>	<b>Curb and Gutter</b>		
G-1	Use asphalt curb in different sections (ie High Super)	Reduce cost, may not work in high volume.	3
G-2	Header curb/ 24" version	Reduce cost of concrete.	9

**VE-6 & 7(5)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>H</b>	<b>Traffic Control</b>		
H-1	Close Road	Can be use for side roads to reduce time and reduce cost of temporary pavement.	7
H-2	Close sections of mainline or side roads	On weekend to reduce time and reduce cost.	5
H-3	Use alternative to construct side road with GAB	Raise grade with GAB to reduce cost of temporary pavement.	9
H-4	Consider closing driveways	This option will increase capacity. This option should be reviewed on a case by case basis. This option will get a lot of resistance from public. This may reduce cost.	7
<b>I</b>	<b>Erosion Control</b>		
I-1	Obtain local materials (ie mulch)	Check if local county has a mulch program.	5
I-2	Sequentially stage construction w/ time limits to final grade	This will reduce maintenance cost but may increase the bid price.	3

**VE-6 & 7(6)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>J</b>	<b>Sidewalk</b>		
J-1	Multi-use path	Reduce R/W and materials cost	10
J-2	Use asphalt	Reduce materials cost	10
J-3	Narrow width	Reduce R/W and materials cost	10
J-4	Use concrete bike lane instead of full depth asphalt comment.	Provide option to construct bike lane with Asphalt typical same as roadway or 4" concrete.	8
<b>K</b>	<b>Median</b>		
K-1	Landscape portions	This option may not be cost effective due to existing pavement.	2
K-2	Flush medians	This option can be cost effective in low speed areas. Use Tp-10 RPMs.	8
<b>L</b>	<b>Field Engineer's Office</b>		
L-1	Alternate Office (Alpharetta, DOT Maintenance)	This will save field office expense.	10

**VE-6 & 7(7)**

<b>CREATIVE PHASE Creative Idea Listing</b>		<b>JUDGMENT PHASE Idea Evaluation</b>	
<b>No.</b>	<b>CREATIVE IDEA</b>	<b>COMMENTS</b>	<b>IDEA RATING</b>
<b>M</b>	<b>Signing and Striping</b>		
M-1	Paint/Thermo alternative	Use different striping materials to save cost.	7
<b>N</b>	<b>Guardrail</b>		
N-1	Increase wall height	This will save cost if wall is outside the clear zone.	6
N-2	Parapet walls	This will save cost.	8