VALUE ENGINEERING REPORT

Widening & Reconstruction of Godby Road
Clayton County
CSSTP-0006-00(860), PI No. 0006860

September 13, 2011

SPONSOR:

Clayton County
Transportation and Development
7960 McDonough Street
Jonesboro, GA 30236

OWNER:

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

VALUE ENGINEERING CONSULTANT:

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Widening & Reconstruction of Godby Road
Clayton County
State Project No. CSSTP-0006-00(860)

EXECUTIVE SUMMARY

Executive Summary

VALUE ENGINEERING STUDY

Project Number: CSSTP-0006-00(860)
Widening & Reconstruction of Godby Road
Date August 29 – September 1, 2011

Introduction

This report presents the results of a value engineering (VE) study conducted on the proposed design to widen Godby Road between the Godby / Southampton Road intersection and the Godby /SR 314 / West Fayetteville Road intersection. This project will widen the existing two-lane roadway to a four-lane divided roadway with a 20-foot raised concrete median and 12-foot shoulders on both the north and south side of the road. The project will include 5-foot sidewalks on both sides of the roadway. The total project length is approximately 3,100 feet of which 1,800 feet is in the City of College Park and the remaining 1,300 feet is in Clayton County. The existing roadway on the west end consists of a four-lane roadway and the existing roadway on the east end consists of a divided four-lane roadway.

The purpose of the project is to increase capacity, relieve traffic congestion, improve traffic movements, and keep the level of service (LOS) within acceptable levels for all intersections within the project limits. Major contract work items include asphalt pavement, traffic signals, grading, retaining walls, curb and gutter, and sidewalks. The total estimated project cost including right-of-way (R/W) is $8.656 million. Right of way costs are more than twice the cost of construction. The study took place August 29 – September 1, 2011, at the Georgia DOT Headquarters Office in Atlanta, GA, using a three person VE team.

This report presents the 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. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

Considerations

The VE team was presented with several constraints to consider when developing their recommendations. The constraints were; to stay within the current R/W and avoid impacting a historic tree on the east end of the project (south side of the project).

Current project status: The Project Concept Report has been approved. The Environmental Assessment has been approved. Right-of-way acquisition is underway and construction is

scheduled for 2012. Clayton County is responsible for designing the project, acquiring the R/W, and having the utilities relocated. Georgia DOT will let the contract and supervise construction.

Results Obtained

The VE team focused their efforts on the high cost items of the project. Through the use of functional analysis and "brain storming" techniques, the team generated 36 ideas with 19 being identified for additional evaluation as possible recommendations or design suggestions. The VE team developed six independent recommendations and one alternative recommendation. Implementation of the six independent recommendations has the potential to reduce the project cost by approximately $1.53 million. A detailed write-up of each recommendation is contained in the respective portion of this report. A summary of the recommendations and design suggestions follows.

Recommendation Highlights

Idea A-4: Reduce the width of the raised concrete median from 20 feet to 16 feet.

The original urban roadway typical section for the proposed project includes four 12-foot lanes and a 20-foot wide raised concrete median. In areas where there is a left turn lane, the median width is reduced to 8 feet

It is recommended that the proposed 20-foot median width be reduced by 4 feet to a total median width of 16 feet. Along the left turn lanes where the median width would be 4 feet, the 4-foot median should be constructed using a 2-foot corrugated concrete median with 1-foot offsets from the inside edge of the adjacent lanes. Reducing the median width 4-feet would reduce the amount of ROW required for the project and reduce the lengths of storm drain cross pipes and volume of earthwork.

The total potential savings is $217,000.

Idea A-5: Reduce the width of the outside shoulders from 12 feet to 10 feet.

The original design would construct a 12-foot width outside shoulder.

This recommendation would construct a 10-foot width outside shoulder in-lieu-of a 12-foot shoulder. Right-of-way costs are over twice the cost of construction on this project and reducing the shoulder width will reduce the amount of R/W required to construct this project. This concept places the sidewalk next to the curb and gutter which is the same concept already in place on the four-lane roadway connecting to the west end of this project.

The total potential savings is $190,000.

Idea A-10: Shift the roadway alignment (Station 107-110) to avoid four displacements on the south side of the roadway.

The original concept requires the displacement of several parcels on the south side of the roadway between Station 107 and Station 110.

This recommendation would realign the roadway to the northeast between Station 107 and Station 110 to eliminate the need to acquire all of the parcels. This concept requires some re-design of the horizontal and vertical alignments. Incorporating R/W and roadway template reduction measures will provide the opportunity to potentially eliminate 4 displacements on Godby Road from stations 107 to 110. This will reduce the right of way costs and delays associated with displacements.

The total potential savings is $488,000.

Idea B-1: Construct a 5-lane roadway section in-lieu-of a divided 4-lane roadway section and raised concrete median.

The original design would construct a divided four-lane urban roadway section with a 20-foot raised concrete median. The roadway would be 73 feet wide and consist of four, 12-foot travel lanes, a 20-foot raised concrete median, and dual 2.5-foot curb and gutters.

This recommendation would construct a five-lane urban roadway section. This 67-foot wide roadway concept would consist of four, 12-foot travel lanes, one, 14-foot turn lanes, and dual 2.5-foot curb and gutters. The current (12,527 VPD in 2005) traffic volumes and future (22,549 VPD in 2029) traffic volumes meet the criteria for a five-lane roadway section. The five-lane concept would provide a logical connection between the existing four-lane roadway section on the west end of the project and the divided four-lane roadway section on the east end of the project. The five-lane concept reduces the project's footprint by 6 feet saving R/W and reducing project cost.

The total potential savings is $321,000.

Idea B-3: Reduce the four travel lanes from 12 feet wide to 11 feet wide.

The original concept proposes to construct a divided four-lane roadway with four, 12-foot travel lanes and a 20-foot raised concrete median.

This recommendation would construct a divided four-lane roadway with four, 11-foot travel lanes and a 20-foot raised concrete median. This concept is applicable to either a 4-lane or 5-lane roadway section. This project will have a posted speed limit of 35 MPH. The revised concept results in significant savings in R/W and asphalt pavement costs.

The total potential savings is $244,000.

Idea B-3.1: <u>Alternate to Idea B-3</u> Reduce the inside travel lanes from 12 feet wide to 11 feet wide.

The original concept proposes to construct a divided four-lane roadway with four, 12-foot travel lanes and a 20-foot raised concrete median.

This recommendation would revise the original concept and install 11-foot wide inside lanes and 12-foot wide outside lanes. The 12-foot wide outside lanes are provided to accommodate the heavy truck volumes. This concept is applicable to either a 4-lane or 5-lane roadway section. This project will have a posted speed limit of 35 MPH. The revised concept results in savings in R/W and asphalt pavement costs.

The total potential savings is $122,000.

Idea B-5: Revise the Godby / Southampton Road intersection to eliminate the reverse curve on the Southampton Road approach.

The original design would construct a reverse curve alignment on the Southampton Road approach to Godby Road. The Southampton Road connection would have an intersection angle of 80 degrees.

This recommendation would eliminate the reverse curve and use a single curve for the connection. The revised approach alignment would have a 70 degree skew. The VE concept eliminates the 25 MPH reverse curve approach alignment. The revised single curve alignment would use a 400-foot radius curve which provides a 35 MPH design. This concept reduces R/W impacts and shortens the length of reconstruction required on Southampton Road by about 225 feet.

The total potential savings is $68,000.

Widening & Reconstruction of Godby Road

SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL LIFE CYCLE SAVINGS
	RECOMMENDATIONS					
A-4	Reduce the width of the raised concrete median from 20 feet to 16 feet.	$275,000	$58,000	$217,000	N/A	$217,000
A-5	Reduce the width of the outside shoulders from 12 feet to 10 feet.	$190,000	$0	$190,000	N/A	$190,000
A-10	Shift the roadway alignment (Station 107-110) to avoid four displacements on the south side of the roadway.	$500,000	$12,000	$488,000	N/A	$488,000
B-1	Construct a 5-lane roadway section in-lieu-of a divided 4-lane roadway section and raised concrete median.	$345,000	$24,000	$321,000	N/A	$321,000
B-3	Reduce the four travel lanes from 12 feet wide to 11 feet wide.	$244,000	$0	$244,000	N/A	$244,000
B-3.1	**Alternative to Idea B-3** Reduce the inside travel lanes from 12 feet wide to 11 feet wide.	$122,000	$0	$122,000	N/A	$122,000
B-5	Revise the Godby / Southampton Road intersection to eliminate the reverse curve on the Southampton Road approach.	$81,000	$13,000	$68,000	N/A	$68,000

STUDY IDENTIFICATION

Study Identification

Project: Widening and Reconstructing Godby Road	**Date:** August 29 – September 1
Location: Clayton County	

VE Team Members

Name:	Title:	Organization:	Telephone:
George Obaranec, PE, AVS	Highway Design	AMEC	770-421-3346
Steven Gaines, PE, AVS	Highway Construction	Wolverton & Associates	770-447-8999
Keith Borkenhagen, PE, CVS	VE Team Facilitator	AMEC	623-556-1875

Project Description

This report presents the results of a value engineering (VE) study conducted on the proposed design to widen Godby Road between the Godby / Southampton Road intersection and the Godby /SR 314 / West Fayetteville Road intersection. This project will widen the existing two-lane roadway to a four-lane divided roadway a with 20-foot raised concrete median and 12-foot shoulders on both the north and south side of the road. The project will include 5-foot sidewalks on both sides of the roadway. The total project length is approximately 3,100 feet of which 1,800 feet is in the City of College Park and the remaining 1,300 feet is in Clayton County.

The roadway to the west consists of a four-lane roadway and the roadway to the east consists of a divided four-lane roadway. Major contract work items include asphalt pavement, traffic signals, grading, retaining walls, curb and gutter, and sidewalks. The total estimated project cost including right-of-way (R/W) is $8.656 million. Right of way costs are more than twice the cost of construction.

Conditions / Constraints

The VE team was presented with several constraints to consider when developing their recommendations. The constraints were;

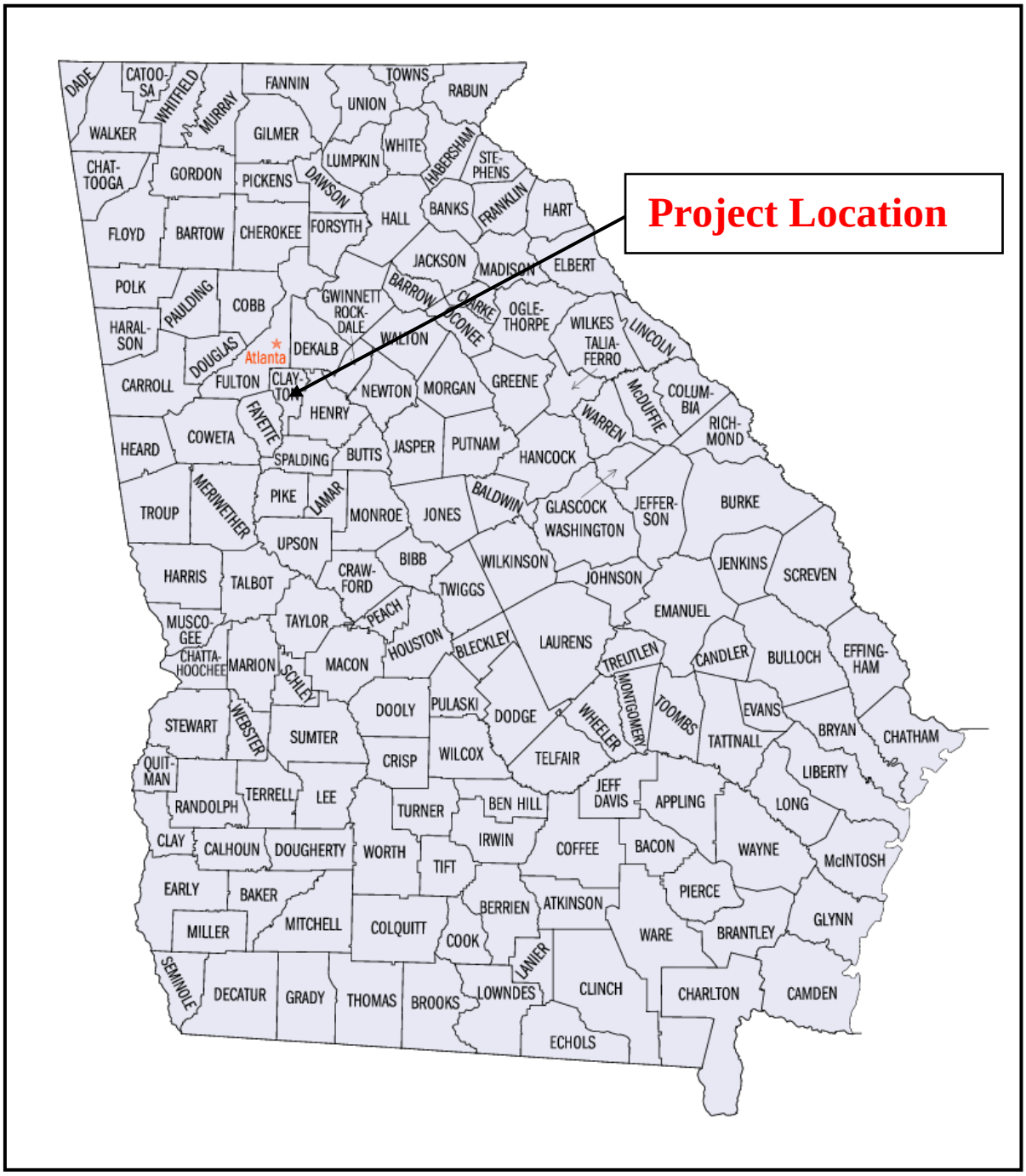
- to stay within the current R/W, and
- to avoid impacting the historic tree on the east end of the project.

Project Briefing

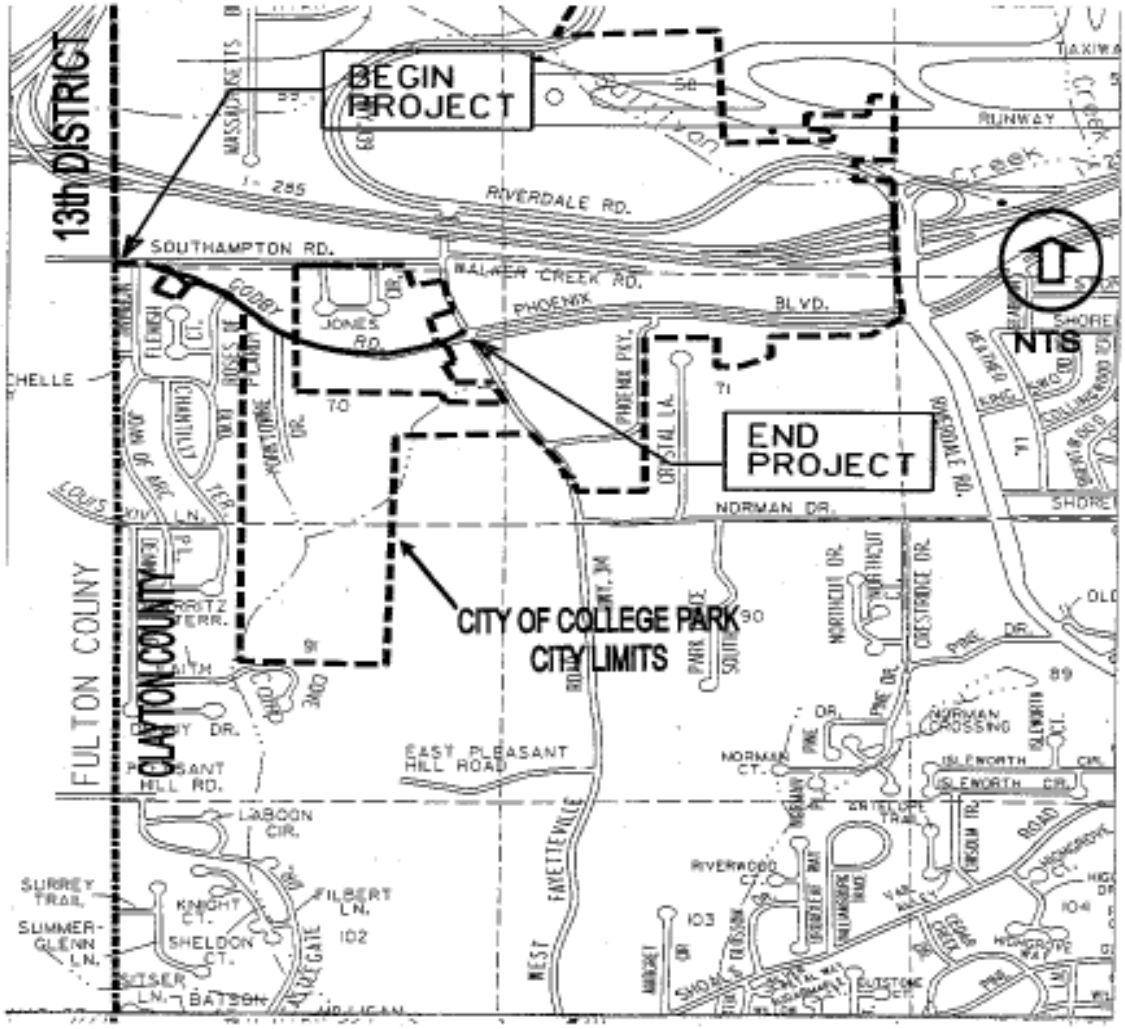
The VE team received a project briefing by Mr. Don Miller, PE of B & E Jackson and Mr. Birdel Jackson, PE of B & E Jackson, PE, project design consultant. The following comments were presented:

- This project will widen and reconstruct a two-lane roadway section of Godby Road to a divided four-lane roadway connecting to the existing 4-lane roadways at both project limits. The roadway section is approximately 3,100 feet long.
- The project will start at the Godby Road / Southampton Road intersection on the west end and end at the Godby Road / SR 314 / West Fayetteville Road intersection. Both intersections and signals will be reconstructed and upgraded.
- The new roadway will consist of a divided four-lane road with a 20-foot raised concrete median. The new roadway will have 12-foot shoulders with sidewalks on both sides. The existing roadway on the west end of the project consists of a four-lane roadway. The existing roadway on the east end of the project consists of a divided four-lane roadway with a grass / landscaped median.
- The new roadway will skirt a parcel eligible to be placed on the National Register including a historic tree on the property. No R/W will be taken from the parcel and the tree is to be protected during the construction of the project. The County has received SHPO concurrence for the project.
- R/W is very tight throughout the project and changes should not be made to the project that would require additional R/W. R/W acquisition is already underway by the County. R/W costs are more than twice the cost of construction.
- The Categorical Exclusion for the project has been approved.
- Construction is scheduled for 2012.
- The existing signals will be replaced at the Godby Road/Southampton/Norman Road and Godby Road / SR 314 / West Fayetteville Road intersections. None of the other intersections will be signalized.

Project Sketch Map



PROJECT MAP – PROJECT NO.: CSSTP-00006-00 (860), CLAYTON COUNTY



VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Godby Road Widening and Reconstruction Project

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:**
A-4	1 of 4	Reduce the Median Width from 20 feet to 16 feet

Comp By: S.G. Date: 9/1/2011 Checked By: K.B. Date: 9/1/2011

Original Concept:

The original urban roadway typical section for the proposed project includes four 12-foot lanes and a 20-foot wide raised median. In areas where there is a left turn lane, the median width is reduced to 8 feet. The baseline design for this 8-foot median consists of dual 2'-6" curb and gutters with the 3'-0" area between the curbs filled with concrete median paving.

Proposed Change:

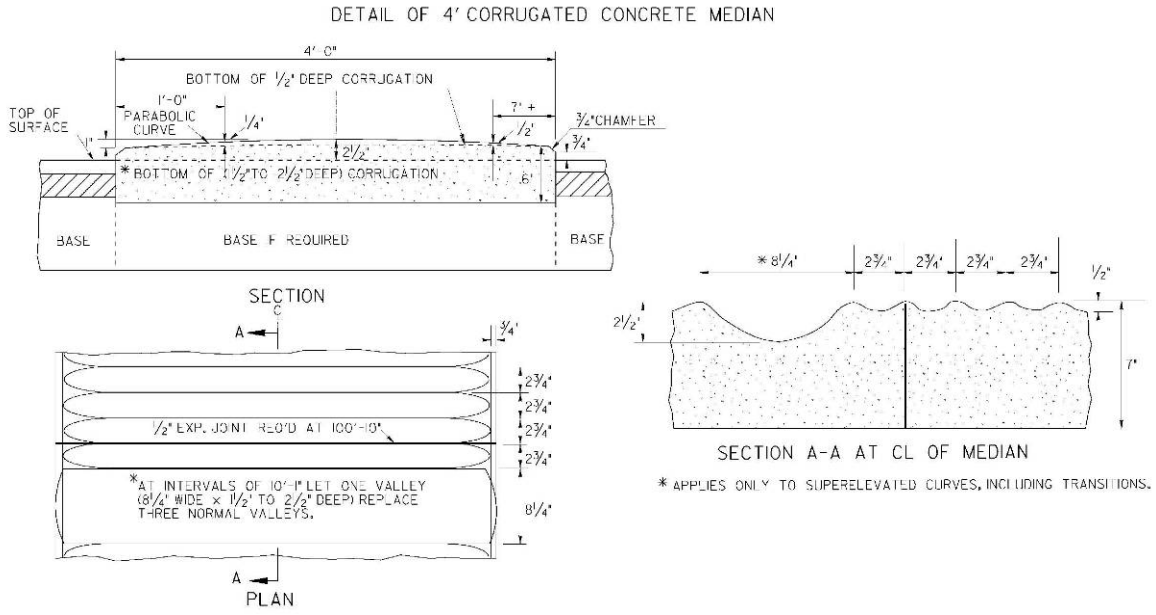
It is recommended that the proposed 20-foot median width be reduced by 4 feet to a total width of 16 feet. This 4-foot reduction would result in a 4-foot median along the left turn lanes, which is the majority of this project. It is further recommended that the 4-foot median be constructed using a corrugated concrete (2-foot wide) median with 1-foot offsets from the inside edge of the adjacent lanes, although a raised, narrow median is also a suitable option.

Justification:

Reducing the median width 4 feet would reduce the amount of ROW required for the project and reduce the lengths of storm drain cross pipes and volume of earthwork. Constructing the median with a raised 2-foot-wide corrugated concrete strip (with 1-foot offsets) in-lieu-of dual curb and gutters with concrete median paving would further reduce cost, improve project constructability, and reduce construction time. The corrugated concrete median would present a clear visual and physical barrier. As a suitable alternative, a raised, narrow median would provide a more positive separation and deterrent to median cross-overs and illegal left turns. This concept may require additional adjustments to the outside lane at intersections for U-Turns.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$275,000		
- Proposed	$58,000		
- Savings	$217,000		$217,000
FUTURE COST – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**$217,000**

SKETCH	
Project: Godby Road Widening and Reconstruction Project	ITEM No.: A-4 CLIENT: GADOT Sheet 2 of 4



Detail from GDOT Special Detail – A2

COST WORKSHEET							
Project: Godby Road Widening and Reconstruction Project					IDEA No.: A-4 CLIENT: GADOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
Curb & Gutter	LF	4,840	$11.97	$57,935			
GAB	TN	371	$15.59	$5,784			
Concrete Median	SY	806	$26.43	$21,303			
R/W	SF	12,200	$15.57	$189,954			
Asphalt Pavement	SY	0	$40.00	$0			
VE Concept:							
Curb & Gutter	LF				0	$11.97	$0
GAB	TN				0	$15.59	$0
Concrete Median	SY				583	$26.43	$15,409
R/W	SF				0	$15.57	$0
Asphalt Pavement	SY				1,076	$40.00	$43,040
SUBTOTAL				$274,976			$58,449
TOTAL ROUNDED				**$275,000**			**$58,000**

CALCULATIONS	
Project: Godby Road Widening & Reconstruction Project	ITEM No.: A-4 CLIENT: GADOT Sheet 4 of 4

Assumptions

Original design provides a 20-foot raised concrete median. However, since the design contains left turn bays for the entire length, the raised portion of the median is actually only 8 feet in width (two, 2' 6" curb and gutters plus a 3-foot concrete center).

Assume 4-foot width standard pavement section required for a 4-foot median. This assumption is conservative because 12.5mm and 19mm not required for 2-foot corrugated concrete median.

Total length of median at turn lanes = 2,420 LF (See B-1 for Calculations)

Project Length = 3,050 LF

Original Concept

Length (curb and gutter) = 2,420 ft x 2 = 4,840 ft
Area (concrete median) = 2,420 ft x 3 ft x 1 SY / 9 SF = 806 SY
Weight (GAB) = 2,420 ft x 3 ft x 8 / 12 ft x 2.07 tons / CY x 1 CY / 27 CF = 371 tons
Area (R/W) = 3,050 ft x 4 ft = 12,200 SF

VE Concept

Area (concrete median) = 2,420 ft x 2 SF x 1 SY / 9 SF = 538 SY
Area (asphaltic concrete pavement) = 2,420 ft x 4 ft x 1 SY /9 SF = 1,076 SY
Area (R/W) = 0 SF

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:**
A-5	1 of 5	Reduce the outside shoulder width from 12 feet to 10 feet

Comp By: S.G. Date: 9/1/2011 Checked By: K.B. Date: 9/1/2011

Original Concept:

The original concept proposes to install a 12-foot width outside shoulder.

Proposed Change:

The revised concept proposes to install a 10-foot width outside shoulder.

Justification:

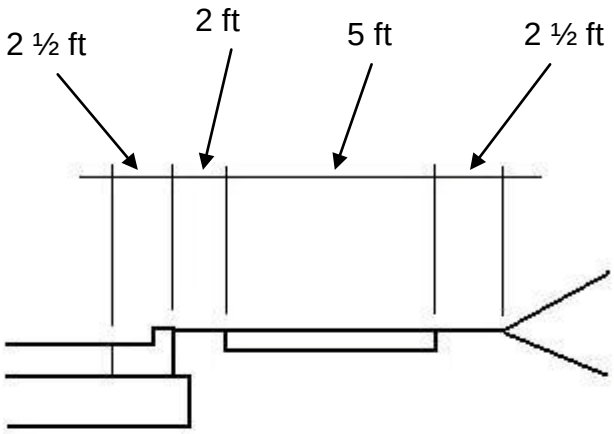
The purpose of the outside shoulder is to accommodate pedestrians on the sidewalk and provide a portion of the required roadway clear zone. This purpose can be accomplished by implementation of a 10-foot width shoulder. Right-of-way costs are over twice the construction cost on this project and reducing the shoulder width will reduce the amount of R/W required to construct this project.

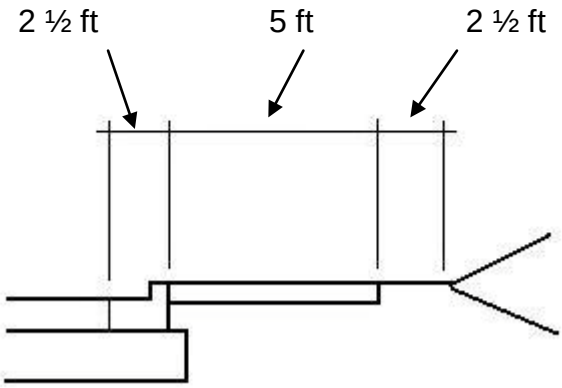
This concept places the sidewalk next to the curb and gutter which is the same concept already in place on the four-lane roadway connecting to the west end of this project.

COST SUMMARY	**INITIAL COST**	**FUTURE COST**	**TOTAL L. C. COST SAVINGS**
Original	$190,000		
Proposed	$0		
Savings	$190,000		$190,000
FUTURE COST: – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**$190,000**

SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: A-5 Client: Clayton County / GDOT Sheet 2 of 5

Original Shoulder Concept





VE Shoulder Concept

SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: A-5 Client: Clayton County / GDOT Sheet 3 of 5

Sidewalk / Curb & Gutter Concept

Existing Four-Lane Section of Godby Road West of Project

COST WORKSHEET							
Project: Widening & Reconstruction of Godby Road					Idea No.: A-5 Client: Clayton County / GDOT Sheet 4 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
R/W	SF	12,200	$15.57	$189,954			
VE Design:							
R/W					0		$0
SUBTOTAL				$189,954			$0
TOTAL ROUNDED				**$190,000**			**$0**

CALCULATIONS

Project: Widening & Reconstruction of Godby Road	Idea No.: A-5 Client: Clayton County / GDOT Sheet 5 of 5

Assumptions

Total R/W Area by parcel = 3974+10649+2279+2859+2340+4478+3570+4531+4488+3949+8787+1411+191+3003+4194+190+9858+2134+7006+2557+4890+4584+7040+5900+3904+1923+2728+6664+6498+4001+5817+1131+492+6874+3332+2448+17993+4576+8201+1368+13483+157+28+81+1835) = 198,396 SF

Total R/W Cost = $1,871,807 x 1.5 x 1.1 = $3,088,482 SF

R/W Unit Cost = $3,088,482 / 198,396 SF = $15.57/SF

2 ft width savings in R/W along entire Godby Road corridor.

Corridor Length = (130+50 – 100+00) = 3,050 LF

Original Concept:

Additional R/W Area = 3,050 ft x 4 ft = 12,200 SF

Revised Concept:

Additional R/W Area = 0 SF

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.: A-10	**Sheet No.:** 1 of 7	**CREATIVE IDEA:** Shift the roadway alignment (Station 107-110) to avoid four displacements on the south side of the roadway

Comp By: G.O. Date: 8/31/2010 Checked By: K.B. Date: 9/5/2011

Original Concept:

The original concept requires the displacement of several parcels (#7, #8, #9, & #10) on the south side of the roadway between Station 107 and Station 110.

Proposed Change:

This recommendation would realign the roadway between Station 107 and Station 110 to the northeast to eliminate the need to acquire all of the parcels.

Justification:

This concept requires some re-design of the horizontal and vertical alignments. It would hold the current PI (Station 115+09.54) and rotate the westerly tangent up, thereby shifting the PI (Station 108+47.50) northeasterly approximately 50-100 feet. The radiuses of horizontal curves KC102 and KC103 would be reduced shifting the roadway to the northeast and away from the displaced properties on the south side of the road. The 45 MPH design speed allows for smaller radii than the current 1,500 foot radius.

This concept also requires raising the profile through this area approximately 3-4 feet to reduce the height of the cut section in front of the houses. Raising the profile could be accomplished by extending the tangent section at Station 104 – 106 (+0.50% grade), increasing the grade on the tangent section at Station 109 – 110+50 (-3.25% to -4.5% grade), and shortening the length of the vertical curve between these tangents. Adjusting the vertical profile will require raising the retaining wall along the north side of the road (Station 106-107).

COST SUMMARY	**INITIAL COST**	**FUTURE COST**	**TOTAL L. C. COST SAVINGS**
Original	$500,000		
Proposed	$12,000		
Savings	$488,000		$488,000
FUTURE COST: – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**$488,000**

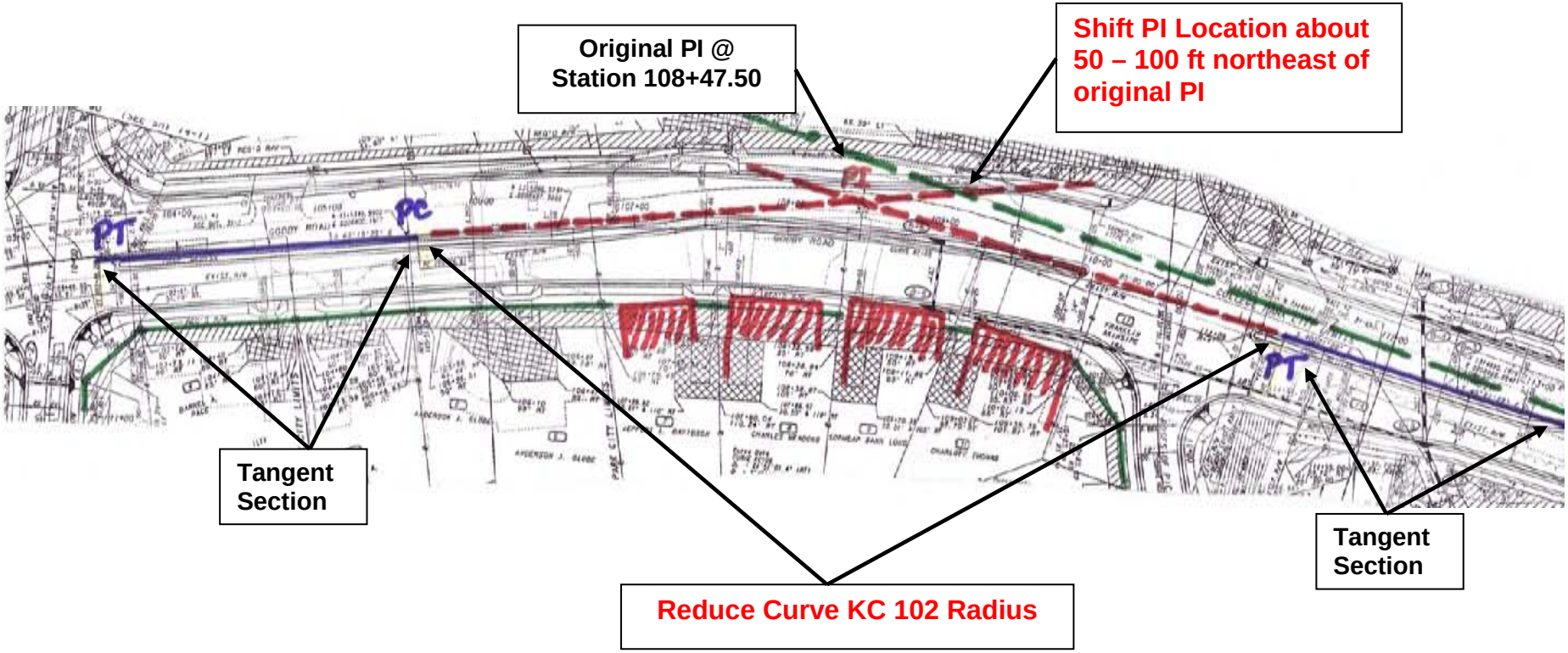
CONTINUATION	
Project: Widening & Reconstruction of Godby Road	Idea No.: A-10 Client: Clayton County / GDOT Sheet 2 of 7

Incorporating R/W and roadway template reduction measures will provide the opportunity to potentially eliminate 4 displacements on Godby Road from stations 107 to 110. This will reduce the right of way costs and delays associated with displacements.

Redesigning the horizontal and vertical alignments can be combined with template reductions such as a 5-lane section and narrower shoulders (as presented in other recommendations) to further reduce impacts to the properties. A detailed analysis and design is required to more accurately determine the impacts.

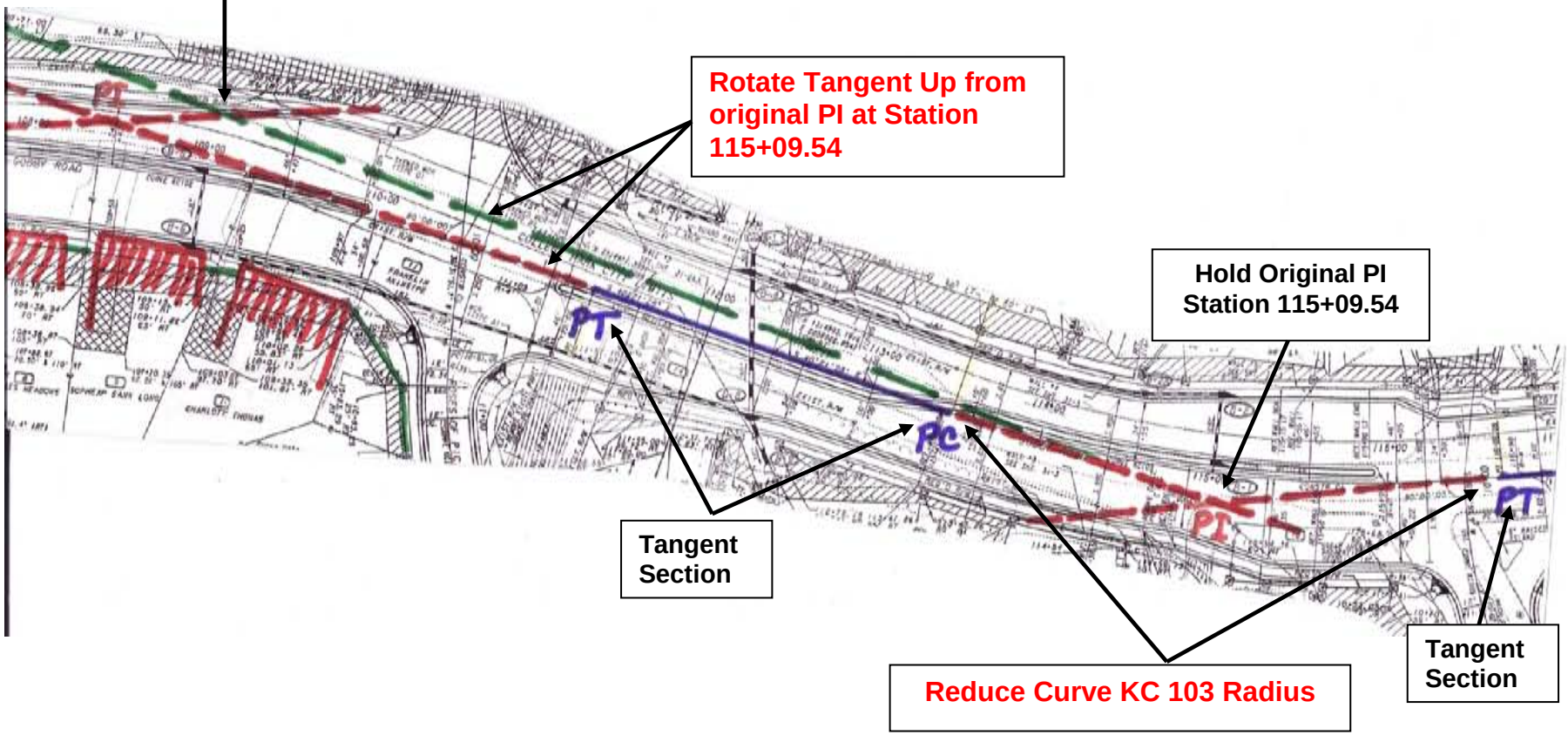
SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: A-10 Sheet 3 of 7

Horizontal Shift in Alignment

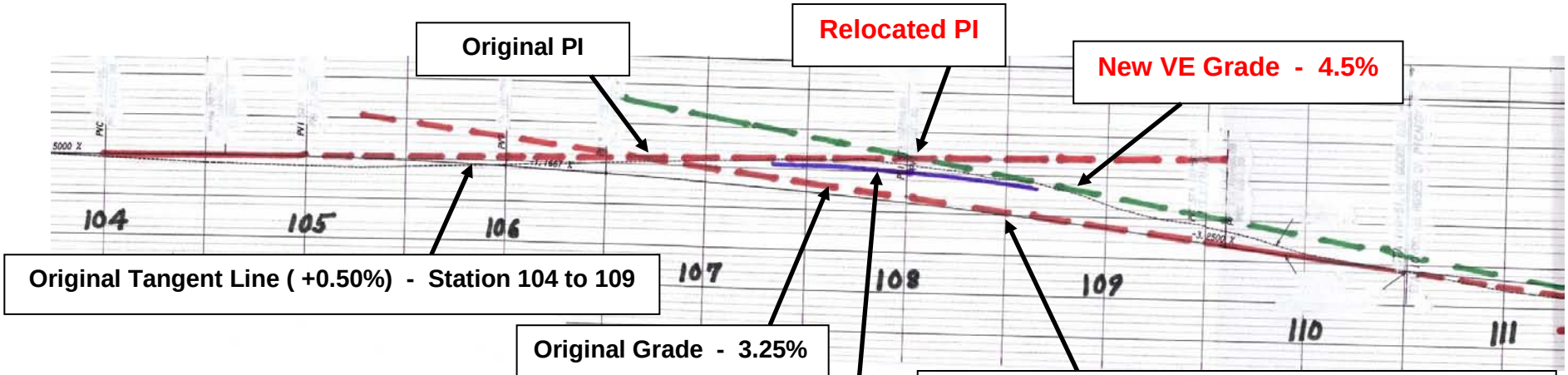


SKETCH		
Project: Widening & Reconstruction of Godby Road	Idea No.: A-10	Sheet 4 of 7

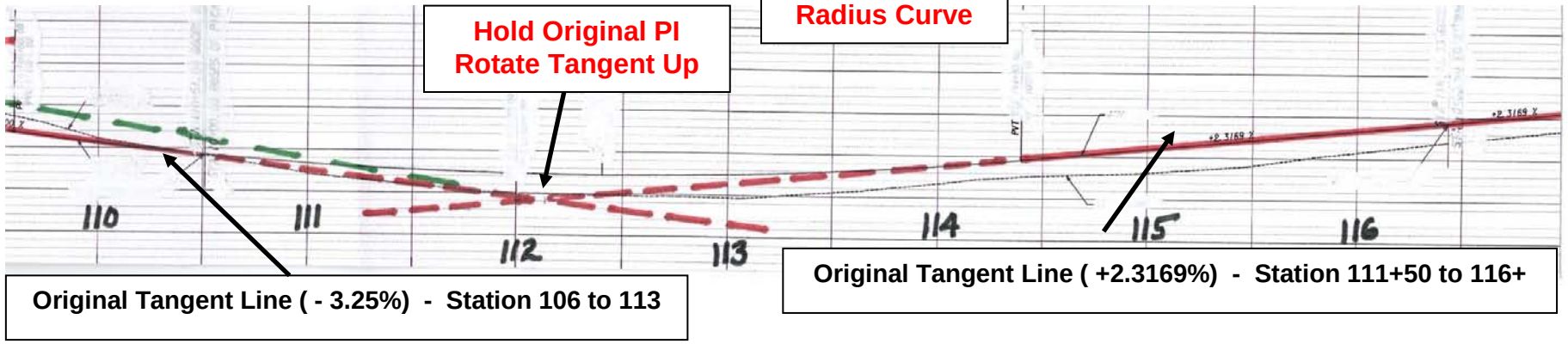
Horizontal Shift in Alignment



SKETCH		
Project: Widening & Reconstruction of Godby Road	Idea No.: A-10	Sheet 5 of 7



Vertical Shift in Alignment



COST WORKSHEET							
Project: Widening & Reconstruction of Godby Road					Idea No.: A-10 Client: Clayton County / GDOT Sheet 6 of 7		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
Displacements	EA	4	$125,000	$500,000			
VE Concept:							
Extend Retaining Wall	CY				24.7	$477.70	$11,799
SUBTOTAL				$500,000			$11,799
TOTAL ROUNDED				**$500,000**			**$12,000**

CALCULATIONS	
Project: Widening & Reconstruction of Godby Road	Idea No.: A-10 Client: Clayton County / GDOT Sheet 7 of 7

Increase in retaining wall; assume 2 feet higher, 500 ft long,8 in thick

2 ft x 500 ft x 8 / 12 = 667 CF / 27 = 24.7 CY

24.7 CY x $477.7 per CY = $11,799

Eliminate displacements:
Assume a displacement cost of $125,000 each
4 x $125,000 = $500,000

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:**
B-1	1 of 5	Construct a 5-lane roadway section in-lieu-of a divided 4-lane roadway section.

Comp By: S.G. Date: 8/30/2011 Checked By: K.B. Date: 9/5/2011

Original Concept:

The original design would construct a divided four-lane urban roadway section with a 20-foot raised concrete median. The roadway would be 73 feet wide and consist of four, 12-foot travel lanes, a 20-foot raised concrete median, and dual 2.5-foot curb and gutters.

Proposed Change:

This recommendation would construct a five-lane urban roadway section. This 67-foot wide roadway concept would consist of four, 12-foot travel lanes, one, 14-foot turn lanes, and dual 2.5-foot curb and gutters.

Justification:

The current (12,527 VPD in 2005) traffic volumes and future (22,549 VPD in 2029) traffic volumes meet the criteria for a five-lane roadway section. The five-lane concept would provide a logical connection between the existing combined four-lane roadway section on the west end of the project and the divided four-lane roadway section on the east end of the project.

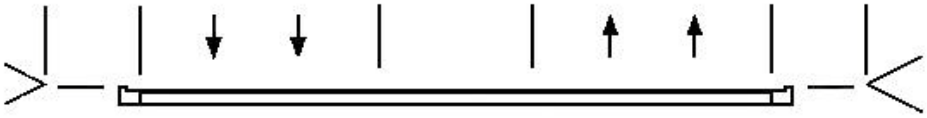
The five-lane concept meets the need and purpose of the project which is to increase vehicle carrying capacity, relieve traffic congestion, improve traffic movement, and keep the intersection LOS at an acceptable level. The five-lane concept reduces the project's footprint by 6 feet saving R/W and reducing project cost.

NOTE: Additional R/W savings can be achieved by reducing the lane widths to 11 feet and the shoulder widths to 10 feet to obtain an additional reduction of 8 feet (total 14 feet).

COST SUMMARY	**INITIAL COST**	**FUTURE COST**	**TOTAL L. C. COST SAVINGS**
Original	$345,000		
Proposed	$24,000		
Savings	$321,000		$321,000
FUTURE COST: – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**$321,000**

SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-1 Client: Clayton County / GDOT Sheet 2 of 5

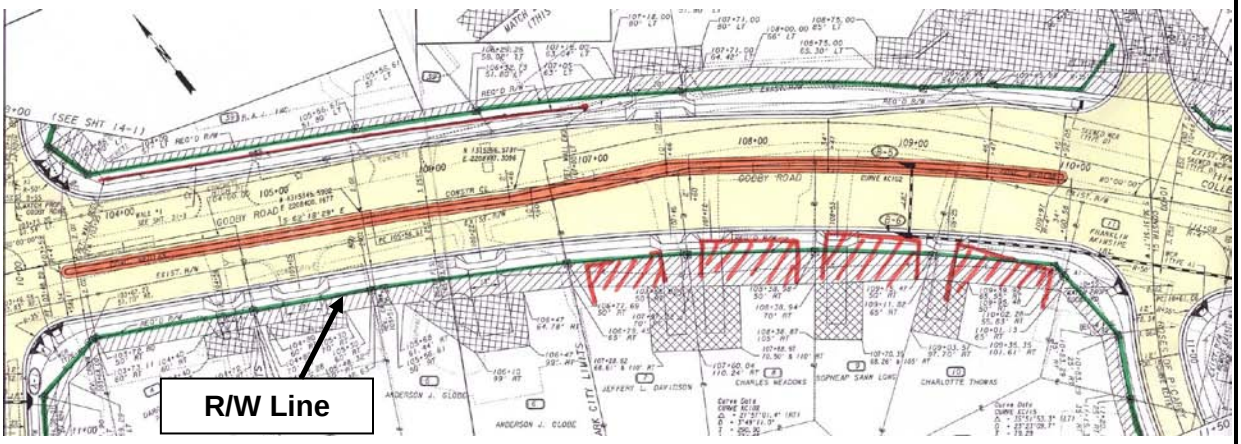
Original Design
Divided 4-Lane Roadway
4 @ 12 ft + 20 ft Paved Median



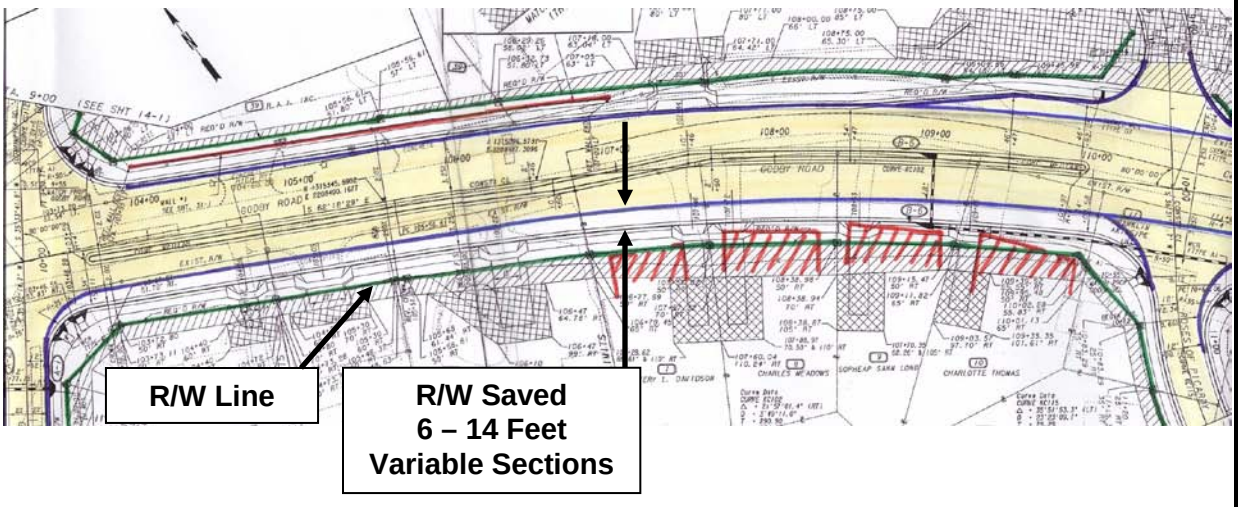
VE Design
5-Lane Roadway
4 @ 12 ft + 1 @ 14 ft

SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-1 Client: Clayton County / GDOT Sheet 3 of 5

Original Design – Divided 4-Lane Roadway with 20-Foot Concrete Median



VE Concept – 5-Lane Roadway



COST WORKSHEET

Project: Widening & Reconstruction of Godby Road					Idea No.: B-1 Client: Clayton County / GDOT Sheet 4 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
Median Curb & Gutter	LF	4,840	$11.97	$57,935			
Concrete Median	SY	872	$26.43	$23,049			
Add Pavement Intersections	SY	190	$40.00	$7,600			
Additional R/W	SF	16,500	$15.57	$256,905			
VE Design:							
Add Pavement Center Lane	SY				611	$40.00	$24,440
SUBTOTAL				$345,489			$24,440
TOTAL ROUNDED				**$345,000**			**$24,000**

CALCULATIONS

Project: Widening & Reconstruction of Godby Road	Idea No.: B-1 Client: Clayton County / GDOT Sheet 5 of 5

VE Concept: Construct 5-Lane Roadway
Length of 5-lane section Station 104+00 to Station 131+50 = 2,750 ft

Remove median curb and gutter:
Station 104+10 to Station 110+00 = 590 ft
Station 112+10 to Station 116+00 = 390 ft
Station 116+30 to Station 123+20 = 690 ft
Station 124+00 to Station 131+50 =750 ft
Total curb & gutter length = 2,420 LF x 2 = 4,840 LF

Concrete median:
Use plan quantity = 872 SY

Pavement quantities:
Additional pavement for 14-foot median lane = 2,750 ft x 2 ft = 5,500 SF / 9 = 611 SY
Reduce pavement for 3 intersections = 6 ft x (110 ft + 95 ft + 80 ft) = 1,710 SF / 9 = 190 SY

Reduced R/W Area:
Divided 4-lane section: 4 @ 12 ft + 20 ft + (2 x 2.5 ft) = 73 ft
5-lane section: 4 @ 12 ft + 1 @ 14 ft + (2 x 2.5 ft) = 67 ft
6 ft x 2,750 ft = 16,500 SF
Use $15.57 / SF for R/W Cost See calculations in Recommendation A-5

Assumed Godby Road Pavement Costs: Use 7.5 inches Asphalt on 12 inches GAB
(7.5 / 12 ft) (150 # / CF) (1 ton / 2000 #) = 0.046875 ton / SF
(12 / 12 ft) (135 # / CF) (1 ton / 2000 #) = 0.0675 ton / SF
Cost per SY:
(0.046875 ton / SF x 9 SF / SY x $65 / ton) + (0.0675 ton / SF x 9 SF / SY x $15.59 / ton) =
$27.42 + $9.47 = $36.89 / SY **Use: $40 per SY**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:**
B-3	1 of 4	Reduce the through travel lane from 12 feet to 11 feet

Comp By: S.G. Date: 9/1/2011 Checked By: K.B. Date: 9/1/2011

Original Concept:

The original concept proposes to construct a divided four-lane roadway with four, 12-foot travel lanes and a 20-foot raised concrete median.

Proposed Change:

This recommendation would construct a divided four-lane roadway with four, 11-foot travel lanes and a 20-foot raised concrete median.

This concept is applicable to either a 4-lane or 5-lane roadway section; however, the cost savings reflect the current 4-lane divided section.

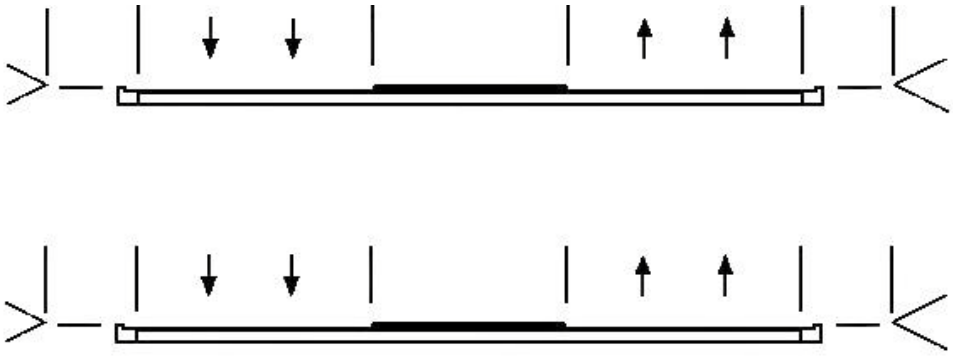
Justification:

The purpose of the travel lanes is to provide adequate capacity for through traffic on Godby Road. This purpose can be accomplished through implementation of 11-foot travel lanes. The revised concept results in significant savings in R/W and asphalt pavement costs. This project will have a posted speed limit of 35 MPH.

COST SUMMARY	**INITIAL COST**	**FUTURE COST**	**TOTAL L. C. COST SAVINGS**
Original	$244,000		
Proposed	$0		
Savings	$244,000		$244,000
FUTURE COST: – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**$244,000**

SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-3 Client: Clayton County / GDOT Sheet 2 of 4

Original Design
Divided 4-Lane Roadway
4 @ 12 ft + 20 ft Paved Median



VE Design
Divided 4-Lane Roadway
4 @ 11 ft + 20 ft Paved Median

COST WORKSHEET

Project: Widening & Reconstruction of Godby Road					Idea No.: B-3 Client: Clayton County / GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Concept:							
Extra R/W	SF	12,200	$15.57	$189,954			
Extra Asphalt Pavement	SY	1,356	$40.00	$54,240			
VE Concept:							
R/W	SF				0	$15.57	$0
Asphalt Pavement	SY				0	$40.00	$0
SUBTOTAL				$244,194			$0
TOTAL ROUNDED				$244,000			$0

CALCULATIONS	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-3 Client: Clayton County / GDOT Sheet 4 of 4

Assumptions

4-foot width savings in full depth pavement and R/W along entire Godby Road corridor.

Corridor Length = (Station 130+50 – 100+00) = 3,050 LF

R/W Unit Cost = ($3,088,482 / 198,396 SY = $15.57 / SF (See A-4 for Calculation)

Full Depth Pavement Unit Cost = $40 / SY

Original Concept

Additional R/W Area = (3,050 LF) (4 LF) = 12,200 SF

Additional Pavement Area = (3,050 LF) (4 LF) (1SY / 9SF) = 1,356 SY

VE Concept

Additional R/W Area = 0 SF

Additional Pavement Area = 0 SF

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.: B-3.1	**Sheet No.:** 1 of 3	**CREATIVE IDEA: <u>Alternative to Idea B.3</u>** Reduce the Inside Travel Lane Width from 12 feet to 11 feet.

Comp By: S.G. Date: 9/1/2011 Checked By: K.B. Date: 9/1/2011

Original Concept:

The original concept proposes to install four, 12-foot wide travel lanes.

Proposed Change:

This recommendation would revise the original concept and install 11-foot wide inside lanes and 12-foot wide outside lanes.

Justification:

The purpose of the travel lanes is to provide adequate capacity for through traffic on Godby Road. This purpose can be accomplished through implementation of 11-foot inside travel lanes. The full 12-foot wide outside lanes are provided in this concept to accommodate the heavy truck volumes. The revised concept results in savings in R/W and asphalt pavement costs.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	$122,000		
Proposed	$0		
Savings	$122,000		
FUTURE COST: – Savings			
TOTAL PRESENT WORTH SAVINGS			**$122,000**

COST WORKSHEET

Project: Widening & Reconstruction of Godby Road					Idea No.: B-3.1 Client: Clayton County / GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
R/W	SF	6,100	$15.57	$94,977			
Asphalt Pavement	SY	678	$40.00	$27,120			
VE Design:							
R/W	SF				0		$0
Asphalt Pavement	SY				0		$0
SUBTOTAL				$122,097			$0
TOTAL ROUNDED				$122,000			$0

CALCULATIONS	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-3.1 Client: Clayton County / GDOT Sheet 3 of 3

Assumptions

2-foot width savings in full depth pavement and R/W along entire Godby Road corridor.

Corridor Length = (130+50 – 100+00) = 3,050 ft

R/W Unit Cost = $15.57 / SF (See A-4 for Calculation)

Full Depth Pavement Unit Cost = $40 / SY

Original Concept

Additional R/W Area = (3,050 ft) x (2 ft) = 6,100 SF

Additional Pavement Area = (3,050 ft) x (2 ft) x (1 SY / 9 SY) = 678 SY

Revised Concept

Additional R/W Area = 0 SF

Additional Pavement Area = 0 SY

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Widening & Reconstruction of Godby Road

IDEA No.: B-5	**Sheet No.:** 1 of 5	**CREATIVE IDEA:** Revise alignment at the Southampton Road intersection

Comp By: G.A.O. Date: 8/31/2011 Checked By: K.B. Date: 9/5/2011

Original Concept:

The original design would construct a reverse curve alignment on the Southampton Road approach to Godby Road. The Southampton Road connection would have an intersection angle of 80 degrees. This concept requires R/W from the northwest side of Southampton Road and also encroaches on the gas station parcel.

Proposed Change:

This recommendation would eliminate the reverse curve concept and use a single curve for the connection. The revised approach alignment would have a 70 degree skew.

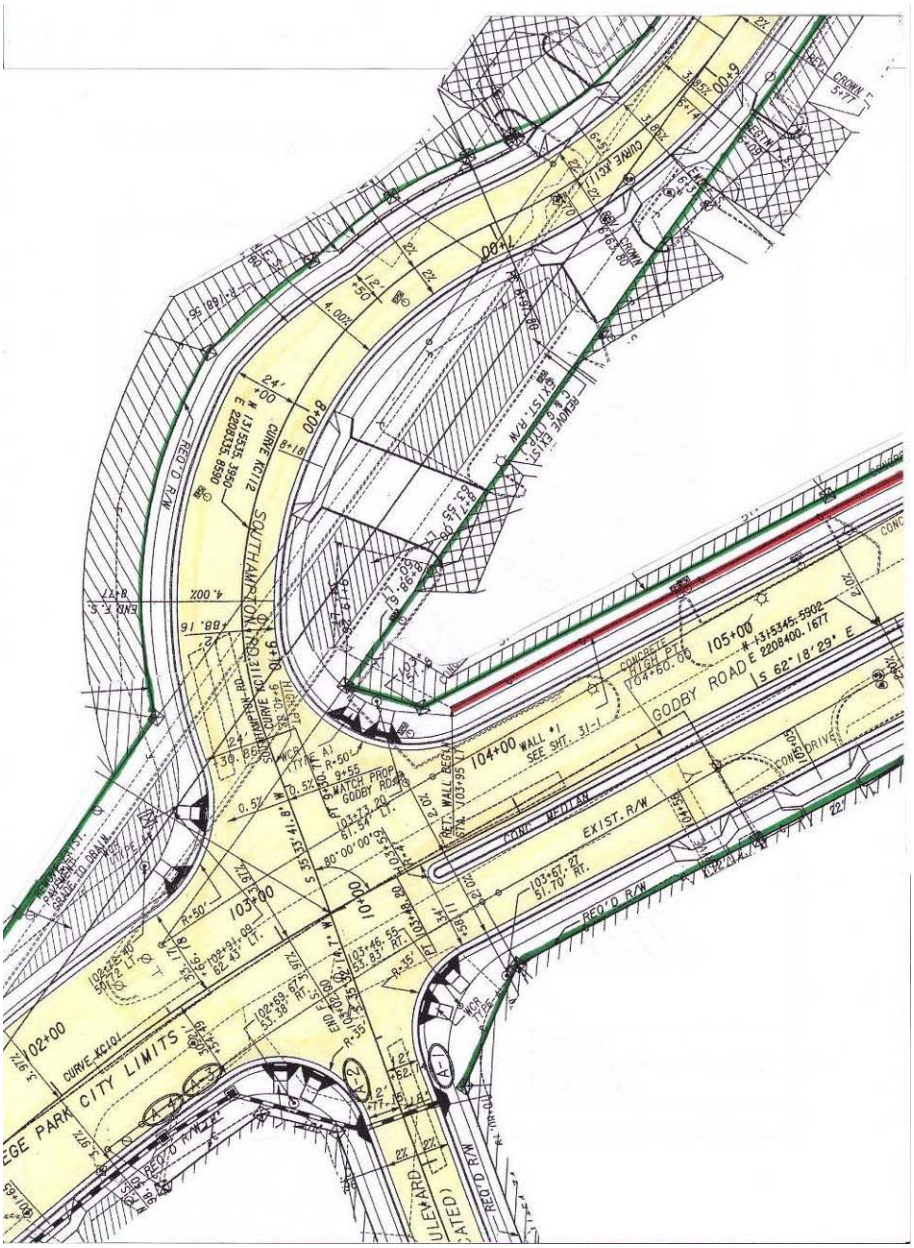
Justification:

The VE concept eliminates the reverse curve approach alignment. The revised single curve alignment would use a simple curve with a 400-foot radius curve (+/-). This concept reduces R/W impacts and shortens the length of reconstruction required on Southampton Road by about 225 feet. The skew angle will require some redesign on the southern leg of the intersection, Norman Boulevard, but there are no appreciable design or cost ramifications. The VE concept will require some additional R/W at the corner gas station; however, the current design already requires some acquisition from the gas station to construct the retaining wall along Godby Road. This parcel has been under remediation activities for some time. This recommendation assumes that the gas station property at the corner is completely remediated and suitable for acquisition.

COST SUMMARY	**INITIAL COST**	**FUTURE COST**	**TOTAL L. C. COST SAVINGS**
Original	81,000		
Proposed	13,000		
Savings	68,000		68,000
FUTURE COST: – Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS			**68,000**

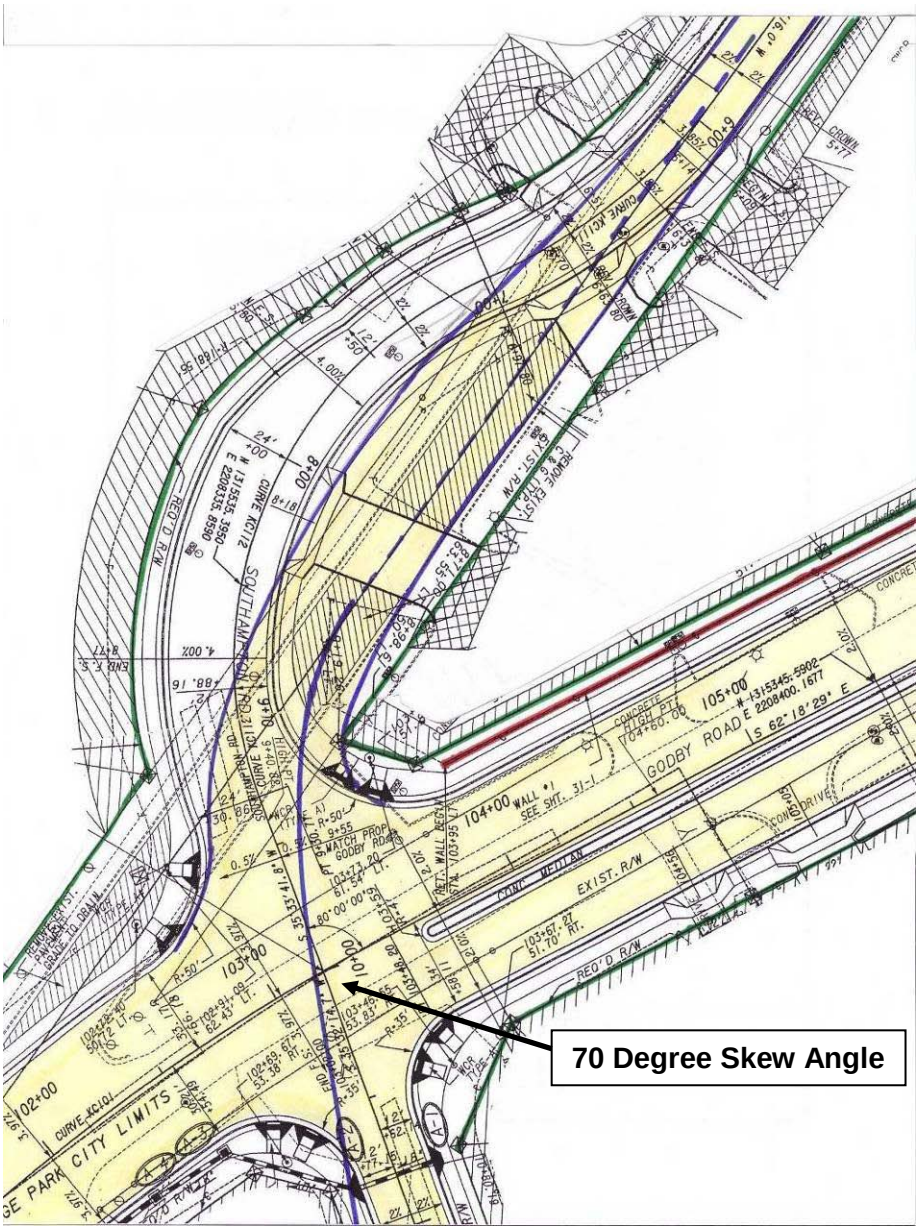
SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-5 Client: Clayton County / GDOT Sheet 2 of 5

Original Design – Reverse Curve



SKETCH	
Project: Widening & Reconstruction of Godby Road	Idea No.: B-5 Client: Clayton County / GDOT Sheet 3 of 5

VE Design – No Reverse Curve



COST WORKSHEET

Project: Widening & Reconstruction of Godby Road					Idea No.: B-5 Client: Clayton County / GDOT Sheet 4 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Original Design:							
Original R/W	LS	1	$57,483	$57,483			
Pavement	SY	600	$40.00	$24,000			
VE Design:							
Revised R/W	LS				1	$12,600	$12,600
SUBTOTAL				$81,483			$12,600
TOTAL ROUNDED				**$81,000**			**$13,000**

CALCULATIONS

Project: Widening & Reconstruction of Godby Road	Idea No.: B-5 Client: Clayton County / GDOT Sheet 5 of 5

Right of way factor; counter offer / condemnation – 50%; market appreciation – 10% = 1.6

Reduced right of way;
Parcel 40 – 90 %
Parcel 41 – 100%
0.9 (20,150) + 17,792 = $35,927 x 1.6 = $57,483

Additional right of way – Parcel 39;
area = ½ x 30 x 35 = 525 SF @ $15 per SF = $7,875 x 1.6 = $12,600

Reduce length of Southampton Road
total reduction (500 ft – 275 ft) = 225 ft; 24 ft wide = 225 ft x 24 ft = 5,400 SF / 9 = 600 SY

Assumed Godby Road Pavement Costs: Use 7.5 inches Asphalt on 12 inches GAB
(7.5 / 12 ft) (150 # / CF) (1 ton / 2000 #) = 0.046875 ton / SF
(12 / 12 ft) (135 # / CF) (1 ton / 2000 #) = 0.0675 ton / SF
Cost per SY:
(0.046875 ton / SF x 9 SF / SY x $65 / ton) + (0.0675 ton / SF x 9 SF / SY x $15.59 / ton) =
$27.42 + $9.47 = $36.89 / SY **Use: $40 per SY**

APPENDIX

VE STUDY SIGN-IN SHEET

Project No.: CSSTP-0006-00(860) County: Clayton PI No.: 0006860 Date: August 29 - Sept. 1, 2011

Days

FIRST	LAST	NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
✓	✓	Lisa L. Myers		Engineering Services	404-631-1770	lmyers@dot.ga.gov
✓	✓	Matt Sanders		Engineering Services	404-631-1752	msanders@dot.ga.gov
✓	O	Melissa Harper		Construction	404-631-1971	mharper@dot.ga.gov
✓	O	Ken Werho		Traffic Operations	404-635-8144	kwerho@dot.ga.gov
✓	✓	Ron Wishon		Engineering Services	404-631-1753	rwishon@dot.ga.gov
✓	O	Karyn Matthews		Program Delivery	404-631-1584	kmatthews@dot.ga.gov
✓	O	Lee Upkins		D7 Construction	770-986-1414	lupkins@dot.ga.gov
✓	✓	Jeff Metarko		Clayton Co.	770-477-3686	jeff.metarko@co.clayton.ga.us
✓	✓	Keith Rohling		Clayton Co.	770-473-5453	keith.rohling@co.clayton.ga.us
✓	O	Don Miller		B&E Jackson	678-732-3026	dmiller@bejackson.com
✓	✓	Birdel Jackson		B&E Jackson	678-732-3016	bjackson@bejackson.com
✓	✓	Nilesh Ostwal		B&E Jackson	678-732-3019	nostwal@bejackson.com
✓	✓	Keith Borkenhagen		AMEC	623-556-1875	kborkenhagen@msn.com
✓	✓	George Obaranec		AMEC	770-421-3346	gaobaranec@mactec.com
✓	✓	Steven Gaines		Wolverton & Assoc.	678-405-3137	steven.gaines@wolverton-assoc.com

✓ Check all that attend O Did Not Attend 15 Attended Project Overview (Day 1) 10 Attended Project Presentation (Day 4)

Sources

Approving/Authorizing Persons

Name:	Position:	Telephone:
Karyn Matthews	Project Manager – Program Delivery	404-631-1584
Ron Wishon	Engineering Services	404-631-1753

Personal Contacts

Name:	Telephone:	Notes:
Don Miller	678-732-3026	Project Design Briefing
Birdel Jackson	678-732-3016	Project Briefing
Birdel Jackson	678-732-3016	R/W cost breakdown
Karyn Matthews	404-631-1584	Traffic projections / turn lane
Karyn Matthews	404-631-1584	Roundabout analysis

Documents/Abstracts

Reference:	Reference:
Aerial Layout	Project Cross Sections
Right-of-Way Plans	Project Profile
Project Plans	Phase II Environmental Site Assessment
Soil Survey Report	Project Categorical Exclusion Report
Pavement Design Analysis	

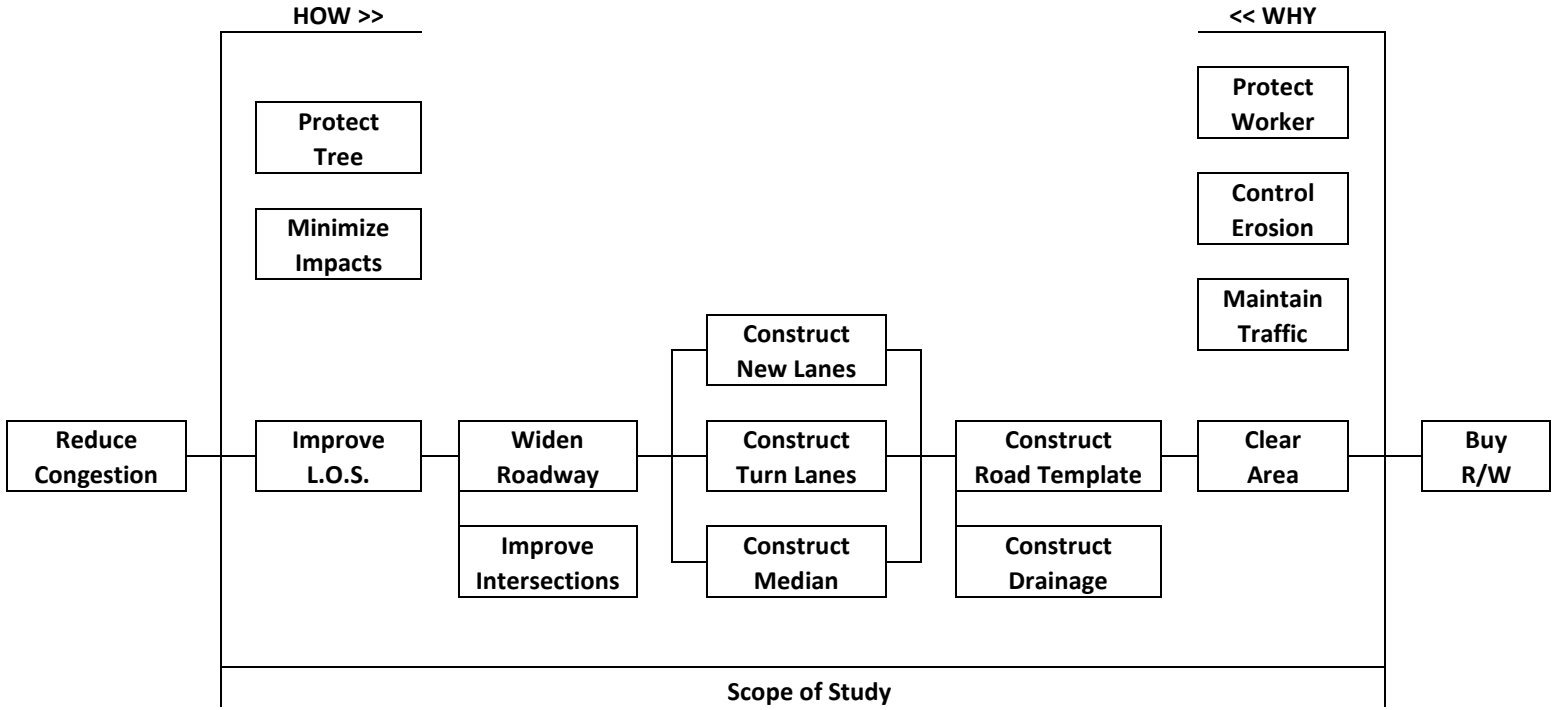
Widening & Reconstructing Godby Road

Cost Model / Distribution

Item	Description	$ Amount	% of Total Project
A	Right-of-Way	$5,840,000	67.5
B	Asphalt Pavement	$692,000	8.0
C	Aggregate Base Course	$357,000	4.1
D	Signals	$346,000	4.0
E	Retaining Walls	$290,000	3.4
F	Grading Complete	$283,000	3.3
G	Miscellaneous	$276,000	3.2
H	Curb & Gutter	$227,000	2.6
I	Traffic Control	$140,000	1.6
J	Drainage	$111,000	1.3
K	4” Concrete Sidewalk	$94,000	1.1
	Project Totals	$8,656,000	

FAST Diagram

Widening & Reconstructing Godby Road



INFORMATION PHASE – FUNCTION ANALYSIS

Project: Widening & Reconstructing Godby Road
Function: Improve Level of Service

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
A	**Right-of-Way**	Enable	Construction	$5,840,000	67.5%	Yes
		Store	Project			
		Widen	Roadway			
		Realign	Intersection			
		Avoid	Historic Tree			
		Accommodate	Turn Lanes			
B	**Asphalt Pavement**	Support	Load	$692,000	8.0%	Yes
		Widen	Roadway			
		Construct	Turn Lanes			
		Increase	Capacity			
		Improve	Intersections			
		Facilitate	U-Turns			
C	**Aggregate Base Course**	Support	Load	$357,000	4.1%	Yes
		Drain	Subbase			
		Widen	Roadway			
		Support	Curb & Gutter			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: Widening & Reconstructing Godby Road
Function: Improve Level of Service

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
D	**Signals**	Upgrade	Existing	$346,000	4.0%	Yes
		Control	Turn Movements			
		Control	Traffic			
		Control	Pedestrians			
		Improve	L.O.S.			
E	**Retaining Walls**	Reduce	R/W Needs	$290,000	3.4%	Yes
		Reduce	Fill Material			
		Achieve	Grade			
		Hold	Material			
F	**Grading Complete**	Widen	Roadway	$283,000	3.3%	Yes
		Achieve	Grade			
		Construct	Turn Lanes			
		Construct	Median			
		Reconstruct	Intersections			
		Improve	Off-site Drainage			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: Widening & Reconstructing Godby Road
Function: Improve Level of Service

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
G	**Miscellaneous**	Allow	Construction	$276,000	3.2%	No
		Construct	Project			
H	**Curb & Gutter**	Reduce	R/W	$227,000	2.6%	Yes
		Control	Drainage			
		Separate	Roadway			
		Separate	Sidewalk			
		Meet	Standards			
I	**Traffic Control**	Allow	Construction	$140,000	1.6%	Yes
		Stage	Work			
		Protect	Workers			
		Maintain	Traffic			
J	**Drainage Items**	Extend	Existing	$111,000	1.3%	
		Drain	Roadway			
		Convey	Water			
		Discharge	Storm Water			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: Widening & Reconstructing Godby Road
Function: Improve Level of Service

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
K	**4" Concrete Sidewalk**	Accommodate	Pedestrians	$94,000	1.1%	
		Connect	To Existing			
		Control	Pedestrians			
		Reduce	Conflicts			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
A	**Right-of-Way**		
A-1	Reduce the through travel lanes from 12 feet to 11 feet	See Idea B-3	X
A-2	Reduce the inside travel lane from 12 feet to 11 feet	See Idea B-4	X
A-3	Construct a 5-lane roadway section	See Idea B-1	X
A-4	Reduce the median width from 20 feet to 16 feet	Reduce footprint, Reduce cost	✓
A-5	Reduce the shoulder width from 12 feet to 10 feet	Reduce footprint, Reduce cost	✓
A-6	Use header curb in-lieu-of standard curb & gutter	Reduce footprint, May not meet standards	✓
A-7	Realign the Southampton Road Interchange	See Idea B-5	X
A-8	Shorten side road reconstruction limits	Not practical due to curves & superelevation	X
A-9	Revise project and construct a one-way roadway pair	Impacts to SR 314	X
A-10	Shift the roadway north through Station 106 – 111 to eliminate / reduce impacts to properties on the south side	Reduce R/W impacts on south side, Possible to eliminate some R/W relocations	✓
A-11	Raise the roadway grade through Station 106 – 111 to reduce impacts to properties on the south side	Combine with Idea B10	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
B	**Asphalt Pavement**		
B-1	Construct a 5-lane roadway section	Reduce footprint, reduce cost, good transition	✓
B-2	Reduce the length of the turn bays	Turning movements don't justify lengths	✓
B-3	Reduce the through travel lanes from 12 feet to 11 feet	Reduce footprint, Reduce cost	✓
B-4	Reduce the inside travel lane from 12 feet to 11 feet	Reduce footprint, Reduce cost	✓
B-5	Revise the Southampton Road Intersection	Eliminate reverse curve, Improve sight distance	✓
B-6	Shorten the side road reconstruction limits	Not practical due to curves & superelevation	X
B-7	Construct a combination 5-lane section with a divided 4-lane section on the east end of the project	See Idea B-1	X
B-8	Construct a roundabout at the Southampton Road	Eliminate signals, must meet 4-lane section	✓
B-9	Construct 4-lane section to Station 110 & 5-lane section	Possible to avoid 5 relocations	✓
C	**Aggregate Base Course**		
C-1	Construct a 5-lane roadway	See Idea B-1	X
C-2	Construct 11-foot travel lanes	See Idea B-3	X
C-3	Shorten side road reconstruction limits	Not practical due to curves & superelevation	X
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
D	**Signals**		
D-1	Construct a roundabout at the Southampton Intersection	See Idea B-8	X
E	**Retaining Walls**		
E-1	Use retaining walls (Station 107-110) to reduce the R/W Takes / Relocations on the south side of the roadway	See Idea A-10	X
E-2	Revise roadway profile to reduce retaining wall sizes	Reduce cost, Reduce R/W needs	✓
E-3	Revise retaining wall type based on height of wall	Simplify construction, Reduce cost	✓
E-4	Analyze the Phoenix Roadway turn lane construction to see if retaining wall is required	Address differential lane profiles	✓
E-5	Construct a split road profile (Station 107-110) with a retaining wall in the median to obtain required grades	Reduce R/W needs	✓
F	**Grading Complete**		
F-1	Adjust the roadway profile through Station 107-110	See Idea A-10	X
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CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
H	**Curb & Gutter**		
H-1	Use header curb in-lieu-of standard curb & gutter	See Idea A-6	X
I	**Traffic Control**		
I-1	Close the road (except for local access) and detour through traffic to Southampton Road	Would have to address local access, may need improvements to SR 314, Signals at SR 314	✓
I-2	Make Godby Road a one-lane, one-way local access road with through traffic on Southampton Road	Minimize construction impacts, Possibly reduce construction time	✓
I-3	Develop a specific staging plan for how the steep cut / fill section (Station 107-110) will be constructed	Address different roadway profile for east & west traffic, may reduce R/W takes	✓
J	**Drainage**		
J-1	Construct a 5-lane roadway and reduce drainage extensions	See Idea B-1	X
K	**4" Concrete Sidewalk**		
K-1	Place the sidewalk next to the curb & gutter	See Idea A-5	X
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