

VALUE ENGINEERING REPORT

**Douthit Ferry Road Widening
City of Cartersville
Bartow County
CSSTP-0007-00(494); PI No. 0007494**

November 19, 2012

OWNERS:



City of Cartersville
Public Works Department
330 South Erwin Street
Cartersville, GA 30120



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

VALUE ENGINEERING CONSULTANT:



AMEC Environment & Infrastructure, Inc.
1075 Big Shanty Road NW, Suite 100
Kennesaw, GA 30144

TABLE OF CONTENTS

VALUE ENGINEERING STUDY

Douthit Ferry Road Widening
City of Cartersville
Bartow County
CSSTP-0007-00(494); PI No. 0007494

Disclaimer	3
Executive Summary	4
Introduction	5
Results Obtained	6
Recommendation Highlights	6
Summary Table	9
Study Identification	11
Team Member List	12
Project Description	12
Project Design Briefing	13
Project Location Map	14
Value Engineering Recommendations	15
Appendix	67
Sources	68
Cost Model / Distribution	69
Function Analysis	70
Creative Ideas / Idea Evaluation	74
Sign-In Sheet	77

Disclaimer

This Value Engineering (VE) report presents recommendations for consideration by the design team for alternate methods of completing the current design that may be acceptable to both the design team and the owner. In most cases, each recommendation contains a cost estimate to help evaluate each recommendation on a cost effective basis including both capital and life cycle costs. These estimates are generated whenever possible using the design team's best estimate of cost and mark-ups for quantities and/or unit costs for items proposed to be changed. Using this method, a comparison can be made of the cost estimates for each item by evaluating the original design concept against the proposed change in the VE recommendation. The VE recommendation cost estimates are developed based on the information provided by the design team during the study. At this stage of design, and considering the limited time available for a VE study, the costs should be considered as order of magnitude costs only and do not reflect the final design estimated costs or actual construction costs. The difference in the original design concept and proposed VE recommendation reflects the potential cost change that may be considered by decision makers.

Finally, the VE recommendations and associated cost estimates are for consideration by only the design team and owner. The VE team does not make decisions as to which, if any, of the recommendations are incorporated into the project design. A decision to incorporate a VE recommendation is the responsibility of the design team. Also, the VE recommendations do not have to be accepted as presented in the VE study report. The recommendations should be considered a concept that can be improved and/or modified by the design team to result in a design modification that is mutually acceptable to the design team, project sponsor, owner and GDOT.

EXECUTIVE SUMMARY

Executive Summary

VALUE ENGINEERING STUDY

**Douthit Ferry Road Widening
CSSTP-0007-00(494)**

PI No. 0007494

October 28 - November 1, 2012

Introduction

This report presents the efforts and results of a Value Engineering (VE) study of the preliminary plans for the widening and improvements to Douthit Ferry Road in the City of Cartersville, Bartow County. The project will widen the existing 2 – 12 foot lanes to 4-12 foot lanes with a raised, 20 foot median with 12 foot urban shoulders from Old Alabama Road to Old Mill Road and to a flush, 5-lane section from Old Mill Road to SR 61/SR 113, for a total project distance of 2.48 miles. It is classified as an Urban Collector and has 2 designated bike trails within its corridor, Trail 125 and 145. This project is to relieve congestion, accommodate current and future travel demands, reduce crash frequency and severity and improve the intersections to acceptable levels of service.

This section of Douthit Ferry Road is projected to experience rapid and extensive traffic growth, deteriorating operating conditions and further worsening of crash occurrences. The current year traffic, ADT (2011) is 8,000 vpd, open year (2018) is 12,950 vpd and design year (2038) is 26,050 vpd. As a result, this corridor requires widening and improvements. This is also an area accessing a large City recreational facility and schools. It is an important project identified by and being developed by the City of Cartersville in conjunction with GDOT.

The major project items include right of way, paving, earthwork, utility modifications and a new and widened bridge over the Etowah River. The plans are being coordinated with the Eastern Band American Indian Tribe due to the presence of burial mounds in the vicinity. The project is in the concept phase with some of the field environmental investigations performed. The project is currently listed in the long range program.

The total estimated construction cost is \$20,979,458 and includes \$8,623,000 for Right of Way acquisition and \$2,460,556 for utility modifications. It does not include any escalation or contingencies. These are based on estimates prepared by the design team as included in the Concept Report. The cost estimate is dated July, 12, 2012. The study took place October 28 – November 1, 2012, at the Georgia DOT General Office in Atlanta using a four-person VE team.

This report presents the Team's recommendations and all back-up information, for consideration by the decision-makers. The Executive Summary includes the general overview and a brief description of each recommendation. The Study Identification section contains information about the project and the team. The VE Recommendations section presents the detailed description and support information about each recommendation. The Appendix includes a complete record of the VE 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.

Results Obtained

The VE team focused their efforts on the high cost items of the project. Using function analysis and brain storming techniques, the team generated 33 ideas with all of them identified for additional evaluation as possible recommendations or design considerations. The VE team developed 14 recommendations and 2 design considerations for review and consideration by the design team. The Summary of Potential Cost Savings table listed later in this section lists these ideas. The last column of that table indicates the maximum potential savings summary for the entire study which amounts to \$4,823,000. A detailed write-up of each recommendation is contained in the respective portion of this report. A summary of the recommendations follows.

Recommendation Highlights

Idea P-1: Use 11 foot left lanes.

This idea narrows the left lane width to 11 feet in each direction and will reduce the pavement, bridge and right of way costs. The current raised median and curb and gutter will continue to provide a 2 foot offset.

The total potential savings is \$145,000

Idea P-2: Narrow the median to 16 feet.

This concept reduces the raised median width from 20 to 16 feet which still provides the access control and adequate space for left turn lanes.

The total potential savings is \$325,000

Idea P-4: Use an 8 foot wide median; Sta. 182 – 213.

This proposal reduces the raised median width to 8 feet within the northern section of the project. This area is partially residential and undeveloped, with no current driveways or access points. If future development warrants a wider median, the developer can construct it as part of their permit approval.

The total potential savings is \$195,000

Idea P-5: Eliminate the on-road bike lane and use the multi-use trail.

This recommendation applies to the area from the bridge to the roundabout, along the SB lanes (west side) where the proposed sidewalk is already shifted to the multi-use trail. Recreational bike riders are better suited to the trail and experienced bicyclists rarely use the bike-friendly shoulder.

The total potential savings \$139,000

Idea P-7: Use rural section and eliminate the curb and gutter, SB.

This recommendation applies to the area from the bridge to the roundabout along the SB lanes (west side). There is adequate room to use a rural shoulder

The total potential savings is \$206,600

Idea P-7.1: Use rural section and eliminate the curb and gutter, NB.

This recommendation applies to the area from the bridge to the roundabout along the NB lanes (east side). There is adequate room to use a rural shoulder and bike and pedestrian traffic can be accommodated by the multi-use trail on the west (park) side.

The total potential savings is \$367,700

Idea P-9: Use a 5-lane section.

Since this is a controlled corridor with only park driveways and mostly undeveloped parcels, the ultimate typical section could be a 5-lane roadway with a flush median. A raised median will not be required for access control. This will narrow the overall roadway template and reduce R/W impacts. The traffic volumes are close to the acceptable range.

The total potential savings is \$124,000

Idea P-13: Shift roundabout for added constructability benefits.

Realign the location of the proposed roundabout not only off the main road as currently shown but also off the side road to ease constructability and reduce right of way impacts.

The total potential savings is \$321,000

Idea E-1: Modify the profile at the roundabout.

The proposed profile in the area of the roundabout is raised by about 10 feet which will create difficulties during construction for maintenance of traffic. There was not an

apparent reason for this change and revising the proposed profile to match the existing ground will reduce earthwork and ease construction.

The total potential savings is \$321,000

Idea E-3: Eliminate the roadside ditches; and reduce R/W width.

Review select areas for drainage redundancy and eliminate roadside ditches where appropriate, thereby reducing the right of way width.

The total potential savings is \$2,480,000

Idea RW-3: Use easements; reduce R/W width.

This recommendation reduces the overall total right of way width to a true urban section and uses easements, at 50% of the cost of R/W for the remaining required width.

The total potential savings is \$338,000

Idea RW-4: Realign residential connections at the southern end of the project.

This recommendation will realign the side road tie-ins at the residential area at the southern section of the project and potentially salvage 2 displaced properties.

The total potential savings is \$125,000

Design Considerations:

Idea B-2: Review bridge design and layout.

The design team should review GDOT Bridge Policies and coordinate the bridge layout with the roadway plans. Consideration should also be given to eliminating the 0% grade.

Idea P-10: Use a realistic cost for the concrete pavement:

The concrete pavement is one of the most costly and prominent items of the project. Developing and using a realistic unit cost for this item is critical to properly budget the project as well as make informed and proper decisions regarding project design elements.

**Douthit Ferry Road – Widening and Improvements
PI No. 0007494**

SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Potential Savings of VE recommendations
P-1	Use 11 foot wide interior / left lanes	\$145,000	\$0	\$145,000	\$0	\$0	\$145,000
P-2	Use 16 foot wide median	\$325,000	\$0	\$325,000	\$0	\$0	\$325,000
P-4	Use 8 foot wide median; Sta 182 - 213	\$195,000	\$0	\$195,000	\$0	\$0	\$195,000
P-5	Eliminate on-road bike lane from bridge to roundabout	\$139,000	\$0	\$139,000	\$0	\$0	\$0
P-7	Use rural section; eliminate C&G along park area, bridge to school; SB side	\$269,000	\$62,400	\$206,600	\$0	\$0	\$206,600
P-7.1	Use rural section; eliminate C&G along park area, bridge to school; NB side	\$434,000	\$66,300	\$367,700	\$0	\$0	\$367,700
P-9	Use 5-lane section	\$544,000	\$420,000	\$124,000	\$0	\$0	\$0

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Potential Savings of VE Recommendations
P-13	Shift roundabout for additional constructability benefits	\$321,000	\$0	\$321,000	\$0	\$0	\$321,000
E-1	Modify profile at roundabout	\$321,000	\$0	\$321,000	\$0	\$0	\$321,000
E-3	Eliminate roadside ditches; reduce R/W width	\$2,480,000	\$0	\$2,480,000	\$0	\$0	\$2,480,000
RW-3	Use easement; reduce R/W width	\$675,000	\$337,000	\$338,000	\$0	\$0	\$338,000
RW-4	Realign residential connection at southern section of project	\$125,000	\$0	\$125,000	\$0	\$0	\$125,000
	DESIGN CONSIDERATIONS						
B-2	Review bridge design and layout	\$0	\$0	\$0	\$0	\$0	\$0
P-10	Use realistic concrete pavement cost	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL POTENTIAL SAVINGS						\$4,823,000

STUDY IDENTIFICATION

Study Identification

Project: Douthit Ferry Road Widening	Date: October 28 – November 1, 2012
Location: GDOT General Offices, Atlanta, GA	

VE Team Members

Name:	Title:	Organization:	Telephone:
Jeff Van Dyke, PE	Highway Design	RS & H	678-528-7234
Greg Grant, PE, VMP	Structures	RS & H	678-528-7229
Peng Zhang, PE	Highway Design	AMEC	770-421-7053
George Obaranec, PE, CVS	VE Team Facilitator	AMEC	770-421-3346

Project Description

This project is for the widening and improvements to Douthit Ferry Road in the City of Cartersville, Bartow County. The project will widen the existing 2 – 12 foot lanes to 4-12 foot lanes with a raised, 20 foot median with 12 foot urban shoulders from Old Alabama Road to Old Mill Road and to a flush, 5-lane section from Old Mill Road to SR 61/SR 113, for a total project distance of 2.48 miles. It is classified as an Urban Collector and has 2 designated bike trails within its corridor, Trail 125 and 145. This project is to relieve congestion, accommodate current and future travel demands, reduce crash frequency and severity and improve the intersections to acceptable levels of service.

This section of Douthit Ferry Road is projected to experience rapid and extensive traffic growth, deteriorating operating conditions and further worsening of crash occurrences. The current year traffic, ADT (2011) is 8,000 vpd, open year (2018) is 12,950 vpd and design year (2038) is 26,050 vpd. As a result, this corridor requires widening and improvements. This is also an area accessing a large City recreational facility and schools. It is an important project identified by and being developed by the City of Cartersville in conjunction with GDOT.

The major project items include right of way, paving, earthwork, utility modifications and a new and widened bridge over the Etowah River. The plans are being coordinated with the Eastern Band American Indian Tribe due to the presence of burial mounds in the vicinity. The project is in the concept phase with some of the field environmental investigations performed. The project is currently listed in the long range program.

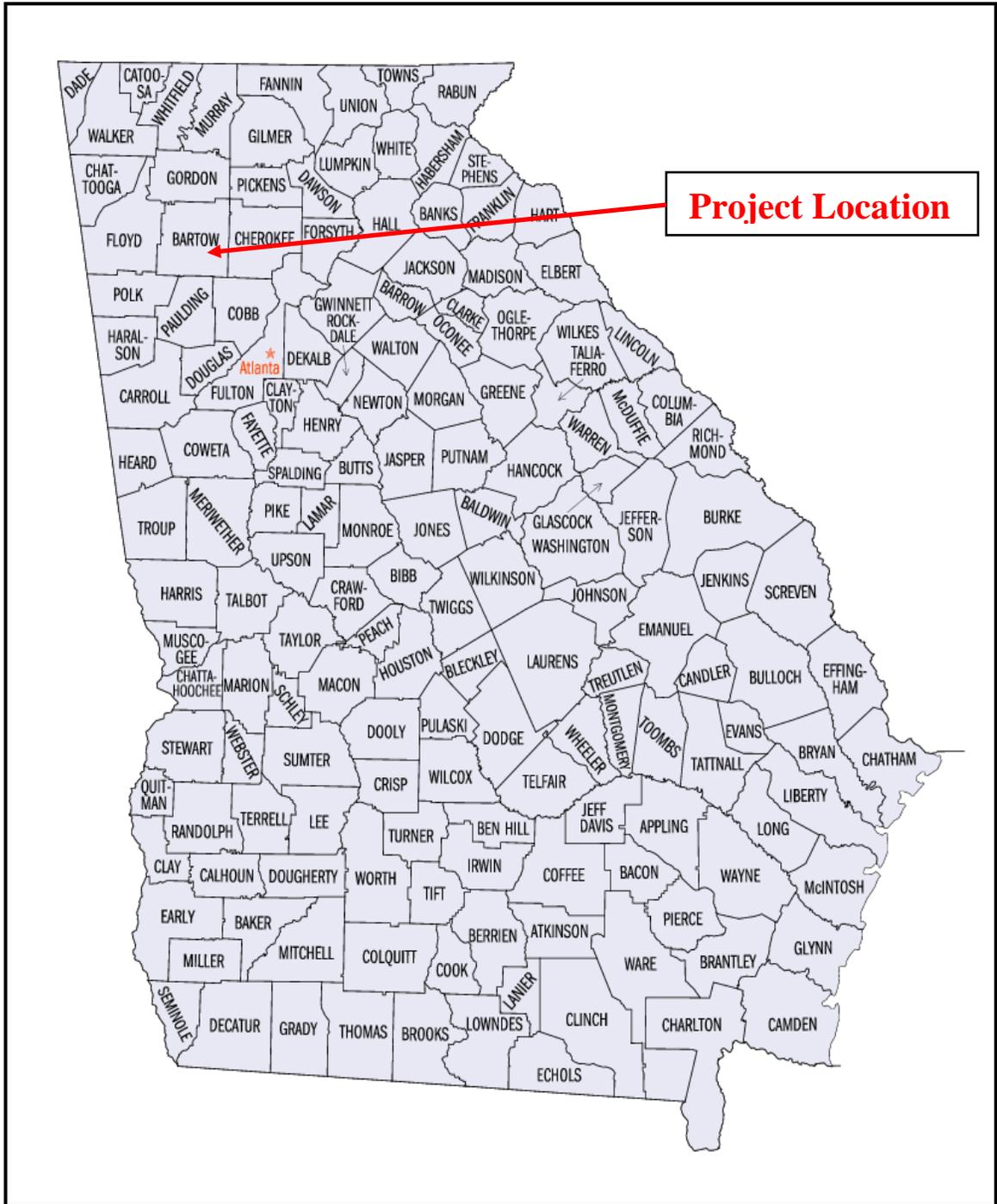
The total estimated construction cost is \$20,979,458 and includes \$8,623,000 for Right of Way acquisition and \$2,460,556 for utility modifications. It does not include any escalation or contingencies.

Project Design Briefing

The VE team received a detailed project briefing by Karl Lutjens, David Moore and Janis Steinbrennar of Southland Engineering, the design consultants for the City of Cartersville. The following comments were presented:

- The project improvements provide for a 4-lane, divided urban section with 12 foot lanes and a 20 foot raised median. Bike lanes are included in the corridor.
- This section of Douthit Ferry Road provides direct access to I-75 and is a critical route for truck traffic.
- There is a roundabout proposed at the intersection of Walnut Grove/Pine Grove Roads, adjacent to the school. It has been coordinated with the school and should be constructed when school is not in session to ease school bus and traffic circulation.
- The design team provided a concept sketch of the Milam Farm Park Master Plan.
- There is an Indian burial mound at the NE quadrant, just north of the bridge. The improvements are being coordinated with the respective tribal representatives.
- The southern tie-in of the project is developed to match the ongoing Old Alabama Road improvements being developed by GDOT.
- The existing pavement is in poor condition with no salvage value.
- The project is listed as in the long range program.

Project Location Map



VE RECOMMENDATIONS

15

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-1	Sheet No.: 1 of 3	CREATIVE IDEA: Reduce Interior Lane Width from 12 ft to 11 ft
-------------------------	-----------------------------	---

Comp By: JJV Date: 10-30-12 Checked By: Date:

Original Concept:

Typical Section
12 ft outside lane, 12 ft inside lane, 20ft raised median, 12 ft inside lane, 12 ft outside lane

Proposed Change:

Typical Section
12 ft outside lane, 11 ft inside lane, 20ft raised median, 11 ft inside lane, 12 ft outside lane

Justification:

11 ft lanes are acceptable by GDOT policy and AASHTO guidelines. Trucks will predominately stay in the outside 12 ft lane. The 11 ft lanes will reduce the project footprint and thereby reduce construction and right-of-way cost. Additionally, with a raised median, the inside lane offset will still have the additional 2 feet of gutter.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$145,000		
Proposed	\$0		
Savings	\$145,000		\$145,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$145,000

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-1
Client: Cartersville/GDOT
Sheet 3 of 3

Original Concept:

Roadway Area

Roadway Length = (2.48 miles)(5,280 ft/mile) – 280 ft bridge = 12,814 ft
(12,814 ft)(2 ft additional pvmt width)(SY/ 9 SF) = 2,848 SY Roadway Area

Bridge Area

New (1 ft Lane)(280 ft long) = 280 sf
Widened (1 ft lane)(280 ft long) = 280 sf

Proposed Change:

Roadway Area

Roadway Length = (2.48 miles)(5,280 ft/mile) – 280 ft bridge = 12,814 ft
(12,814 ft)(0 ft additional pvmt width)(SY/ 9 SF) = 0 SY Roadway Area

Bridge Area

New (0 ft Lane)(280 ft long) = 0 sf
Widened (0 ft lane)(280 ft long) = 0 sf

Unit Cost of Concrete Pavement; 8" thick, 10" GAB

Item 430-0180; \$25.35 per SY

Cost per SY – GAB – Item 310-1101; \$14.77 per ton

$(\$14.77 / \text{Ton}) (1 \text{ Ton} / 2,000 \#) (135\#/\text{CF}) (0.83 \text{ ft}) (9\text{SF}/1\text{SY}) = \$ 7.45 / \text{SY}$

Total cost $(\$25.35 + \$7.45) = \$32.80$

USE \$35 per SY

Unit Cost of Bridge

New $(\$708,146.95) / (280 \text{ ft long})(40.33 \text{ ft wide}) = \$62.71 / \text{SF}$

Widened

Width = $(2.292 \text{ ft} + 5.583 \text{ ft} + 3.5 \text{ ft} - 1.33/2 \text{ half beam flange}) = 10.709 \text{ ft}$
 $(\$293,543.10) / (280 \text{ ft long})(10.709 \text{ ft wide}) = \$97.90 / \text{SF}$

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-2	Sheet No.: 1 of 3	CREATIVE IDEA: Reduce Median Width from 20 ft to 16 ft
-------------------------	-----------------------------	--

Comp By: JJV Date: 10-31-12 Checked By: GAO Date: 11-13-12

Original Concept:

Typical Section
2 – 12 foot travel lanes, 20ft raised median, 2 – 12 foot travel lanes

Proposed Change:

Typical Section
2 – 12 foot travel lanes, 16ft raised median, 2 – 12 foot travel lanes

Justification:

A 16 ft median provides positive separation from opposing traffic. The 16 ft median also provides access control. The 16 ft median will reduce the project footprint and thereby reduce construction and right-of-way cost while continuing to maintain adequate space for the left turn lanes.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$325,000		
Proposed	\$0		
Savings	\$325,000		\$325,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$325,000



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-2
Client: Cartersville/GDOT
Sheet 3 of 3

Original Concept:

20 ft median –STA 215+00 – STA 101+25 = 11,375 ft long
(11,375 ft)(4 ft additional median width)(AC/43,560 SF) = 1.0 AC
75% (1.0 AC) = 0.75 AC Residential
25% (1.0 AC) = 0.25 AC Commercial

Proposed Change:

20 ft median –STA 215+00 – STA 101+25 = 11,375 ft long
(11,375 ft)(0 ft additional median width)(AC/43,560 SF) = 0 AC
75% (0 AC) = 0 AC Residential
25% (0 AC) = 0 AC Commercial

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre
Total raw land cost: \$329,925 + \$1,122,500 = \$1,452,425; Total cost of R/W
\$5,909,000
Mark-up factor: 5,909,000 / 1,452,425 = 4.0684
Cost Per Acre;
Residential @ \$25,000 = **\$100,000 per acre**
Commercial @ \$250,000 = **\$1,000,000 per acre**

Residential – 13.2 AC
Commercial – 4.49 AC
Total – 17.69 AC
Residential 13.2 AC/17.69 AC = 74.6% of ROW Area
Use Residential = 75% of ROW Area
Use Commercial = 25% of ROW Area

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

IDEA No.: P-4	Sheet No.: 1 of 3	CREATIVE IDEA: Reduce the median width from 20 ft to 8 ft from Carrington Drive / Carter Grove Circle to First Baptist Church Cartersville Driveway
-------------------------	-----------------------------	--

Comp By: JJV Date: 10-31-12 Checked By: GAO Date: 11-13-12

Original Concept:

Typical Section
 2 – 12 foot travel lanes, 20 ft raised median, 2 – 12 foot travel lanes

Proposed Change:

Typical Section
 2 – 12 foot travel lanes, 8 ft raised median, 2 – 12 foot travel lanes from Carrington Drive / Carter Grove Circle to First Baptist Church Cartersville Driveway

Justification:

An 8 ft median provides positive separation from opposing traffic. The 8 ft median also provides access control. 8 ft medians require widening at median opening. Future median openings are not likely from Carrington Drive / Carter Grove Circle northward for approximately 1,200 feet due to the land already being developed residential. If the land between the subdivision and the First Baptist Church Cartersville were to develop in the future, the median could be widened as part of the development and City permitting process.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$195,000		
Proposed	\$0		
Savings	\$195,000		\$195,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$195,000

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-4
Client: Cartersville/GDOT
Sheet 3 of 3

Original Concept:

Full 20 ft median –STA 209+00 – STA 186+50 = 2,250 ft long
(2,250 ft)(12 ft additional median width)(AC/43,560 SF) = 0.6 AC
75% (0.6 AC) = 0.45 AC Residential
25% (0.6 AC) = 0.15 AC Commercial

Proposed Change:

Full 20 ft median –STA 209+00 – STA 186+50 = 2,250 ft long
(2,250 ft)(0 ft additional median width)(AC/43,560 SF) = 0 AC
75% (0 AC) = 0 AC Residential
25% (0 AC) = 0 AC Commercial

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre
Total raw land cost: \$329,925 + \$1,122,500 = \$1,452,425; Total cost of R/W
\$5,909,000
Mark-up factor: 5,909,000 / 1,452,425 = 4.0684
Cost Per Acre;
Residential @ \$25,000 = **\$100,000 per acre**
Commercial @ \$250,000 = **\$1,000,000 per acre**

Residential – 13.2 AC
Commercial – 4.49 AC
Total – 17.69 AC
Residential 13.2 AC/17.69 AC = 74.6% of ROW Area
Use Residential = 75% of ROW Area
Use Commercial = 25% of ROW Area

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-5	Sheet No.: 1 of 3	CREATIVE IDEA: Use multi-use path and remove on-road bike lane from the bridge to the roundabout.
-------------------------	-----------------------------	--

Comp By: PZ Date: 10-31-12 Checked By: GAO Date: 11-13-12

Original Concept: The proposed typical section includes a 4 foot wide, on-road bike lane for the entire length of the project. In the area from the bridge to the roundabout, there is also an off-road multi-use trail. The sidewalk on this side of the road was eliminated due to the existence and duplicity of the trail.

Proposed Change: Use the existing multi-use trail for the bike path and eliminate the on-road bike lane from the bridge to the roundabout.

Justification: This recommendation follows the similar idea already incorporated into the plans to take advantage of the duplicity of the multi-use trail in eliminating the sidewalk and also eliminate the on-road bike lane and use the trail.

The off-road multi-use path is better suited to most recreational and younger bike riders who comprise the majority of the users, especially with the school and park in the vicinity. The more experienced bike riders who tend to ride on the road generally occupy the travel lane and not a designated bike lane.

This recommendation will also reduce the overall roadway template width which is more critical in the environmentally sensitive mound area.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$139,000		
Proposed	\$0		
Savings	\$139,000		\$139,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$139,000

CALCULATIONS

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: P-5
Client: Cartersville/GDOT
Sheet 3 of 3

Reduced concrete pavement: Sta 114+00 to Sta 170+00 = 5,600 ft
 $5,600 \times 4 \text{ ft} = 22,400 \text{ SF} = 2,489 \text{ SY}$

Cost of Concrete Pavement; 8"thick, 10 "GAB

Item 430-0180; \$25.35 per SY

Cost per SY – GAB – Item 310-1101; \$14.77 per ton

$(\$14.77 / \text{Ton}) (1 \text{ Ton} / 2,000 \#) (135\# / \text{CF}) (0.83 \text{ ft}) (9\text{SF} / 1\text{SY}) = \$ 7.45 / \text{SY}$

Total cost $(\$25.35 + \$7.45) = \$32.80$

USE \$35 per SY

Right of Way savings:

$5,600 \times 4 = 22,400 \text{ SF} = 0.514 \text{ acre}$

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre

Total raw land cost: $\$329,925 + \$1,122,500 = \$1,452,425$; Total cost of R/W
 $\$5,909,000$

Mark-up factor: $5,909,000 / 1,452,425 = 4.0684$

Cost Per Acre;

Residential @ \$25,000 = **\$100,000 per acre**

Commercial @ \$250,000 = **\$1,000,000 per acre**

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-7	Sheet No.: 1 of 4	CREATIVE IDEA: Use rural shoulders on west side of Douthit Ferry Road from station 116+18 to station 167+00. Move bike lane to paved shoulder.
-------------------------	-----------------------------	---

Comp By: PZ Date: 10-31-12 Checked by: GAO Date: 11-15-12

Original Concept: 12' urban shoulder with 30" curb and gutter and on-road 4 foot wide bike lane.

Proposed Change: Use a 10' rural shoulder with 6.5' paved section. Move 4' bike lane to paved shoulder. The proposed change applies along west side of Douthit Ferry Road from station 116+18 to 167+00, a length of 5,081 feet.

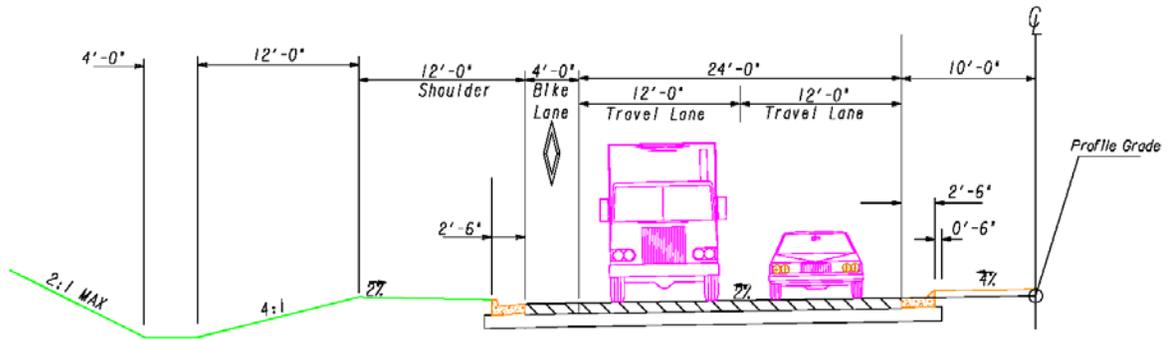
Justification: The original plan calls for 12' urban shoulder with 30" curb and gutter and no sidewalk from station 116+18.63 to 167+00. The sidewalks at both end of this section tie to the existing multi-use trail. Under the current design using the urban section, a ditch section is also proposed along the section beyond the shoulder break point. This duplicates some design elements and requires a wider template and R/W. The recommended rural shoulder will remove the cost of curb/gutter, reduce the cost of bike lane by shifting it from full depth PCC pavement to paved shoulder, as well as reduce the footprint, earthwork and cost of right of way.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$269,000		
Proposed	\$62,400		
Savings	\$206,600		\$206,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$206,600

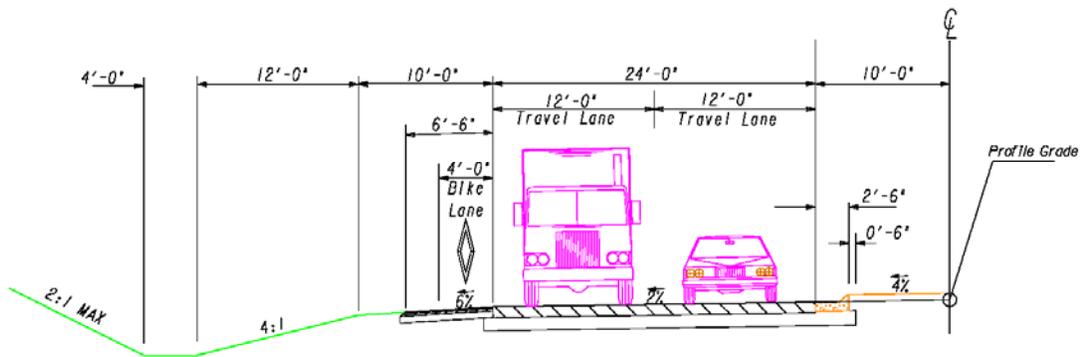
SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: P-7
 Client:
 Cartersville/GDOT
 Sheet 2 of 4



CURRENT DESIGN
 TYPICAL SECTION #3
 DOUTHIT FERRY ROAD
 4 LANE WITH BIKES - 20' RAISED MEDIAN
 STA. 116+18.63 TO STA. 167+00



RECOMMENDATION
 TYPICAL SECTION #3
 DOUTHIT FERRY ROAD
 4 LANE WITH BIKES - 20' RAISED MEDIAN
 STA. 116+18.63 TO STA. 167+00

COST WORKSHEET

Project: Douthit Ferry Road Widening; City of Cartersville, Bartow County					IDEA No.: P-7 CLIENT: Cartersville/GDOT		
Comp BY: PZ Date: 10-31-12 Checked By: GAO Date: 11-15-12					Sheet 3 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
				\$0			\$0
Original Design:				\$0			\$0
				\$0			\$0
Bike Lane	SY	2,258	\$35.00	\$79,030			
Right of Way	AC	0.700	\$0 *	\$0			
Curb and Gutter	LF	5,081	\$12.30	\$62,496			\$0
Storm Pipe	LF	3,000	\$30.00	\$90,000			\$0
Storm Inlets	EA	18	\$2,105.00	\$37,890			\$0
				\$0			\$0
VE Design:				\$0			\$0
				\$0			\$0
Paved Shoulder (Bike Lane)	SY			\$0	3,669	\$17.00	\$62,373
Right of Way	AC			\$0	0	\$0.00	\$0
Curb and Gutter	LF			\$0	0	\$12.30	\$0
Storm Pipe	LF			\$0	0	\$30.00	\$0
Storm Inlets	EA			\$0	0	\$2,105.00	\$0
				\$0			\$0
				\$0			\$0
* City owns all the parcels so the price was set to \$0				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
SUBTOTAL				\$269,416			\$62,373
TOTAL ROUNDED				\$269,000			\$62,400



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-7
Client: Cartersville/GDOT
Sheet 4 of 4

Bike Lane/Paved Shoulder:

Original: $4' \times 5,081' / 9 = 2,258.2$ SY.

The unit price for PCC full depth including GAB is \$35 per SY.

The total cost for Bike Lane is $\$2,258.2 \times 35 = \$79,038$

Proposed: $6.5'$ (total paved shoulder, including 4' Bike Lane) $\times 5,081' / 9 = 3,669.6$ SY.

The unit price for pavement shoulder including asphalt, GAB, and tack coat, BL is \$17 per SY.

The total cost for Paved Shoulder (Bike Lane) is $\$3,669.6 \times 17 = \$62,383$

Curb and Gutter

Original: $\$5,081' \times \12.30 per LF = \$62,497

Proposed: \$0

Footprint / Right of way:

Original: 4' Bike lane + 12' Urban shoulder + ditch section = 16' + ditch section

Proposed: 10' rural shoulder + ditch section = 10' + ditch section.

Footprint has a 6' reduction and so does the required right of way.

The right of way reduction cost is estimated as $6' \times 5,081' / 43,560 \times \$100,000 = \$69,986$

Because the city of Cartersville owns all the property west of Douthit Ferry Road along this section, the right of way acquisition cost saving will not be counted.

Drainage Inlet/Pipe system:

Original: Assume 18" RCP pipe and inlet spacing of average 300'.

The total pipe length: 3,000'. Cost: $3,000 \times \$30 = \$90,000$

The number of 1033D/1034D catch basin: 18. Cost: $18 \times \$2,105 = \$37,890$

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-7.1	Sheet No.: 1 of 4	CREATIVE IDEA: Use rural shoulder on east side of Douthit Ferry Road from station 115+00 to sta 169+00. Move bike lane to paved shoulder. Remove sidewalk.
---------------------------	-----------------------------	---

Comp By: PZ Date: 10-31-12 Checked by: GAO Date: 11-15-12

Original Concept: 12' urban shoulder with 30" curb and gutter, on-road 4 foot wide bike lane and 5 foot wide sidewalk.

Proposed Change: Use a 10' rural shoulder with 6.5' paved section. Move 4' bike lane to paved shoulder. The proposed change applies along west side of Douthit Ferry Road from station 115+00 to 169+00, a length of 5,400 feet. This area is currently a sod farm with little anticipated pedestrian activity. The multi-use trail will serve as the primary pedestrian pathway.

Justification: The original plan calls for 12' urban shoulder with 30" curb and gutter and 5' sidewalk from station 116+18.63 to 167+00. Pedestrian could use the existing multi-use trail along the SB (park) side of the road. Under the current design using the urban section, a ditch section is also proposed along the section beyond the shoulder break point. This duplicates some design elements and requires a wider template and R/W.

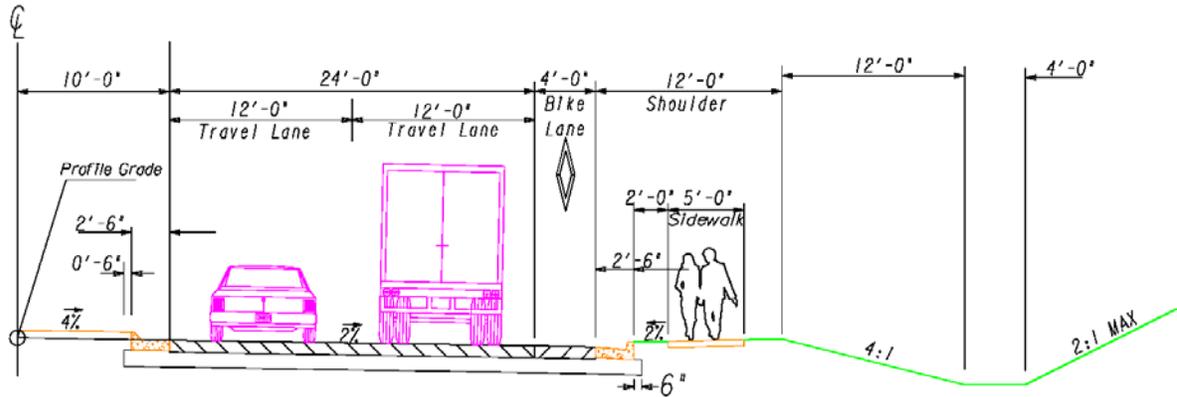
The recommended rural shoulder will remove the cost of curb/gutter, sidewalk, reduce the cost of bike lane by shifting it from full depth PCC pavement to paved shoulder, as well as reduce the footprint, earthwork and cost of right of way.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$434,000		
Proposed	\$66,300		
Savings	\$367,700		\$367,700
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$367,700

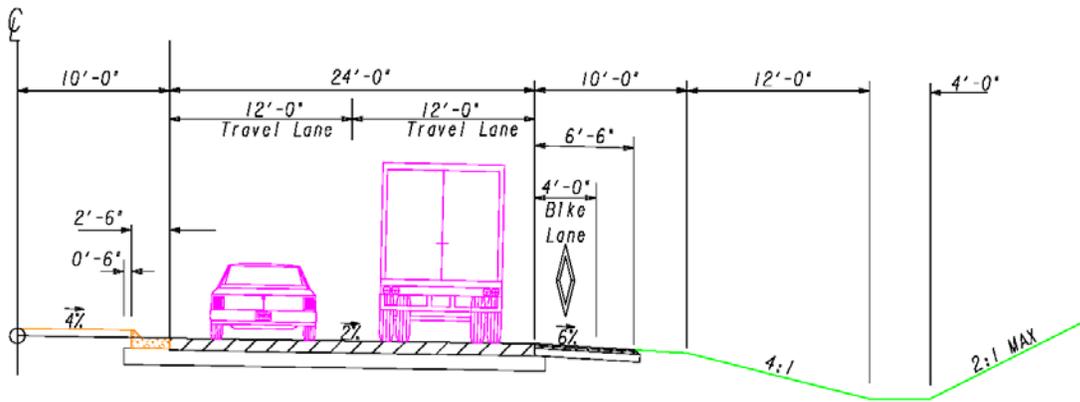
SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: P-7.1
 Client:
 Cartersville/GDOT
 Sheet 2 of 4



CURRENT DESIGN
 TYPICAL SECTION
 DOUTHIT FERRY ROAD
 4 LANE WITH BIKES - 20' RAISED MEDIAN
 STA. 115+00 TO 169+00



RECOMMENDATION
 TYPICAL SECTION
 DOUTHIT FERRY ROAD
 4 LANE WITH BIKES - 20' RAISED MEDIAN
 STA. 115+00 TO 169+00

COST WORKSHEET							
Project: Douthit Ferry Road Widening; City of Cartersville, Bartow County					IDEA No.: P-7.1 CLIENT: Cartersville/GDOT		
Comp BY: PZ Date: 10-31-12 Checked By: GAO Date: 11-15-12					Sheet 3 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
				\$0			\$0
Original Design:				\$0			\$0
				\$0			\$0
Bike Lane	SY	2,400	\$35.00	\$84,000			
Right of Way	AC	0.743	\$100,000	\$74,300			
Curb and Gutter	LF	5,400	\$12.30	\$66,420			\$0
Storm Pipe	LF	3,200	\$30.00	\$96,000			\$0
Storm Inlets	EA	20	\$2,105.00	\$42,100			\$0
Sidewalk	SY	3,000	\$23.66	\$70,980			\$0
VE Design:				\$0			\$0
				\$0			\$0
Paved Shoulder (Bike Lane)	SY			\$0	3,900	\$17.00	\$66,300
Right of Way	AC			\$0	0	\$0.00	\$0
Curb and Gutter	LF			\$0	0	\$12.30	\$0
Storm Pipe	LF			\$0	0	\$30.00	\$0
Storm Inlets	EA			\$0	0	\$2,105.00	\$0
Sidewalk	SY			\$0	0	\$23.66	\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
SUBTOTAL				\$433,800			\$66,300
TOTAL ROUNDED				\$434,000			\$66,300



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-7.1
Client: Cartersville/GDOT
Sheet 4 of 4

Bike Lane/Paved Shoulder:

Original: $4' \times 5,400' / 9 = 2,400$ SY.

The unit price for PCC full depth including GAB is \$35 per SY.

The total cost for Bike Lane is $2,400 \times \$35 = \$84,000$

Proposed: $6.5'$ (total paved shoulder, including 4' Bike Lane) $\times 5,400' / 9 = 3,900$ SY.

The unit price for pavement shoulder including asphalt, GAB, and tack coat, BL is \$17 per SY.

The total cost for Paved Shoulder (Bike Lane) is $3,900 \times \$17 = \$66,300$

Curb and Gutter

Original: $5,400' \times \$12.30$ per LF = \$66,420

Proposed: \$0

Footprint / Right of way:

Original: 4' Bike lane + 12' Urban shoulder + ditch section = 16' + ditch section

Proposed: 10' rural shoulder + ditch section = 10' + ditch section.

Footprint has a 6' reduction and so does the required right of way.

The right of way reduction cost is estimated as $6' \times 5,400' / 43,560 \times \$100,000 = \$74,380$

Drainage Inlet/Pipe system:

Original: Assume 18" RCP pipe and inlet spacing of average 300'.

The total pipe length: 3,200'. Cost: $3,200 \times \$30 = \$96,000$

The number of 1033D/1034D catch basin: 20. Cost: $20 \times \$2,105 = \$42,100$

Sidewalk:

Original: $5,400' \times 5' / 9 = 3,000$ SY, $3,000 \times \$23.66 = \$70,980$

Proposed: \$0

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-9	Sheet No.: 1 of 3	CREATIVE IDEA: Use a 5-lane section
-------------------------	-----------------------------	--

Comp By: PZ Date: 10-30-12 Checked By: GAO Date: 11-15-12

Original Concept: The current plans provide a 4 lane section with a 20 foot raised median.

Following GDOT's analysis policy for future widening, the 5-lane section was not cost effective based on GDOT's analysis policy to include the ultimate widening to a 20 foot raised median section.

Proposed Change: Evaluate the 5 lane section as-is, not against any future potential widening since most of the development in this corridor is residential and park land and will be controlled.

Justification: In general, future access control by use of a raised median will not be required for this section of roadway and a 5-lane section will provide the required capacity improvements and include space for left turning lanes at the intersections.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$544,000		
Proposed	\$420,000		
Savings	\$124,000		\$124,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$124,000

COST WORKSHEET							
Project: Douthit Ferry Road Widening; City of Cartersville, Bartow County					IDEA No.: P-9 CLIENT: Cartersville/GDOT		
Comp BY: PZ Date: 10-30-12 Checked By: GAO Date: 11-15-12					Sheet 2 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
				\$0			\$0
Original Design:				\$0			\$0
				\$0			\$0
Right of Way	acre	1.653	\$100,000	\$165,300	0	\$1.00	\$0
Concrete curb and gutter, type 7	lf	20,619	\$11.85	\$244,335			\$0
Concrete median, 7 1/2	SY	1,066	\$42.15	\$44,932			\$0
Concrete median, 8	SY	1,382	\$46.81	464,691			\$0
Misc drainage and earthwork	LS	1	\$25,000	\$25,000			
				\$0			\$0
VE Design:				\$0			\$0
				\$0			\$0
Additional pavement	SY			\$0	12,009	\$35.00	\$420,315
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
SUBTOTAL				\$544,258			\$420,315
TOTAL ROUNDED				\$544,000			\$420,000



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-9
Client: Cartersville/GDOT
Sheet 3 of 3

Total project length; Sta 101+00 to Sta 221+00; 12,000 ft

R/W reduction; 20 ft to 14 ft; 6 foot reduction
 $12,000 \times 6 = 72,000 \text{ sq ft} = 1.653 \text{ acres}$

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre

Total raw land cost: \$329,925 + \$1,122,500 = \$1,452,425; Total cost of R/W
\$5,909,000

Mark-up factor: $5,909,000 / 1,452,425 = 4.0684$

Cost Per Acre;

Residential @ \$25,000 = **\$100,000 per acre**

Commercial @ \$250,000 = **\$1,000,000 per acre**

Reduced curb and gutter, Type 7; from Estimate: 20,619 lf

Reduced concrete median, 7 ½ in; from Estimate: 1,066 lf

Reduced concrete median, 8 in; from Estimate: 1,382 lf

Assume reduced drainage and earthwork: **Use \$25,000**

Additional pavement: 12,000 lf – (280 *bridge* + (8 x 500) *median openings*)

$12,000 - 4,280 = 7,720 \text{ lf} \times 14 \text{ ft} = 108,080 \text{ sq ft} = 12,009 \text{ sq yds}$

Cost of Concrete Pavement; 8" thick, 10" GAB

Item 430-0180; \$25.35 per SY

Cost per SY – GAB – Item 310-1101; \$14.77 per ton

$(\$14.77 / \text{Ton}) (1 \text{ Ton} / 2,000 \#) (135\#/\text{CF}) (0.83 \text{ ft}) (9\text{SF}/1\text{SY}) = \$7.45 / \text{SY}$

Total cost $(\$25.35 + \$7.45) = \$32.80$

USE \$35 per SY

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-13	Sheet No.: 1 of 4	CREATIVE IDEA: Shift roundabout south to allow for constructability and reduced R/W impacts
--------------------------	-----------------------------	--

Comp By: PZ Date: 10-30-12 Checked By: GAO Date: 11-15-12

Original Concept: Layout the proposed roundabout as shown on the plans. The current layout shifts/offsets the location from Douthit Ferry Road to facilitate construction.

Proposed Change: Shift/offset the layout of the roundabout to the south, to facilitate traffic flow and constructability along Walnut Grove and Pine Grove Roads. This shift would also reduce R/W impacts to the commercial parking area in the NE quadrant.

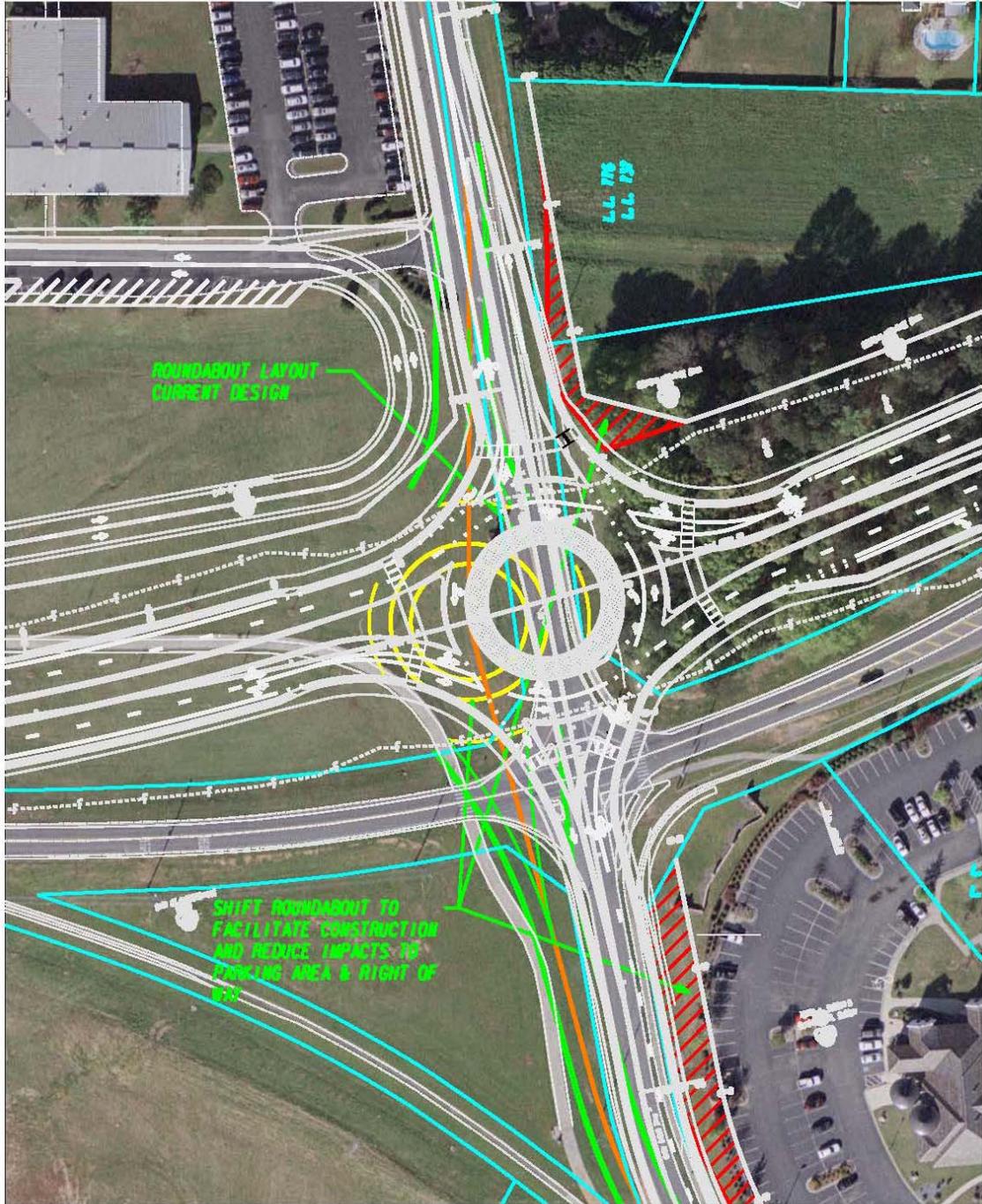
Justification: Shifting the roundabout location south will allow more flexibility and ease of construction since it will be offset from the existing road, facilitating traffic flow with less temporary pavement and construction control devices. Another benefit is shifting the Pine Grove Road alignment which would reduce and potentially eliminate impacts to the commercial parking area at the NE quadrant. The western leg/approach can also be shifted slightly but should not affect the school parking area. The legs of the roundabout are allowed to be offset and skewed, not required to be perfectly perpendicular and aligned as a conventional intersection.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$321,000		
Proposed	\$0		
Savings	\$321,000		\$321,000
FUTURE COST: – Savings			\$0
TOTAL PRESENT WORTH SAVINGS			\$321,000

SKETCH

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-13
Client:
Cartersville/GDOT
Sheet 2 of 4



0007494roundabout-relayout.dgn 11/15/2012 11:47:47 AM

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-13
Client: Cartersville/GDOT
Sheet 4 of 4

Reduce R/W along Pine Grove Road; Sta 22+00 to 26+50; 450 ft
Area from plans = 0.321 acres

All other costs are generally similar.

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre

Total raw land cost: \$329,925 + \$1,122,500 = \$1,452,425; Total cost of R/W
\$5,909,000

Mark-up factor: $5,909,000 / 1,452,425 = 4.0684$

Cost Per Acre;

Residential @ \$25,000 = **\$100,000 per acre**

Commercial @ \$250,000 = **\$1,000,000 per acre**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

IDEA No.: E-1	Sheet No.: 1 of 4	CREATIVE IDEA: Lower the grade at the proposed roundabout.
-------------------------	-----------------------------	---

Comp By: PZ Date: 10-30-12 Checked By: GAO Date: 11-15-12

Original Concept: The current design profile at the proposed roundabout, sta 171+00 +/-, is set at 8.5' over the existing grade. There was no specific reason given for this elevation difference.

Proposed Change: Revise the profile to maintain the existing elevation throughout this area.

Justification: Raising the grade over 8 feet introduces many project concerns including constructability, drainage and layout issues. This is especially sensitive because it is in the area of the proposed roundabout. Even though it is slightly offset from the mainline, it is right on top of the side road and will be very problematic to construct. Also, a grade change of this magnitude will introduce different drainage patterns that will most likely require special attention. The design could be addressing one issue but creating several others. Maintaining the existing profile, minimizing the grade difference, will reduce the earthwork as well as required right of way width and allow for easier construction and traffic maintenance.

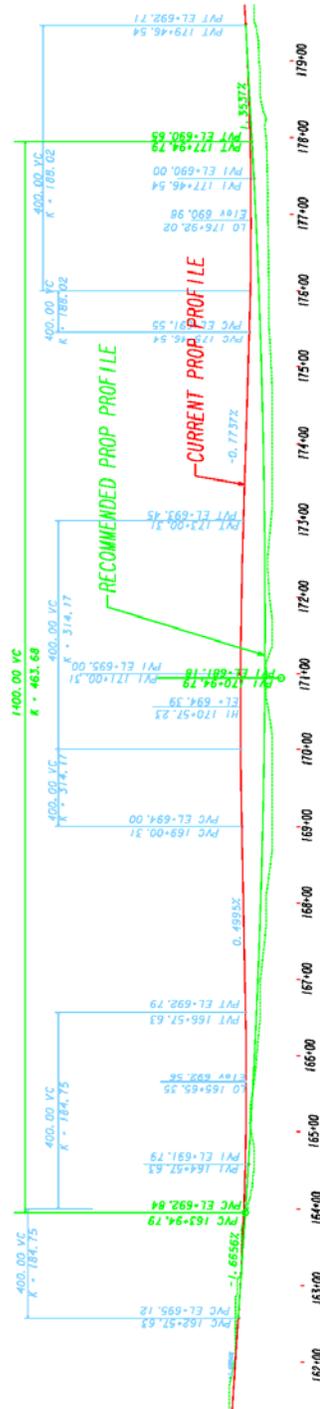
If there are unforeseen causes to incorporate this significant grade change, strong consideration should be given to investigating and providing an alternate solution.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$321,000		
Proposed	\$0		
Savings	\$321,000		\$321,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$321,000

SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: E-1
 Client: Cartersville/GDOT
 Sheet 2 of 4



COST WORKSHEET

**Project: Douthit Ferry Road Widening; City of
Cartersville, Bartow County**

IDEA No.: E-1
CLIENT: Cartersville/GDOT

Comp BY: PZ Date: 10-30-12 Checked By: GAO Date: 11-15-12

Sheet 3 of 4

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
				\$0			\$0
Original Design:				\$0			\$0
				\$0			\$0
Earthwork	CY	39,390	\$4.22	\$166,225			
Right of Way	SY	750	\$206.00	\$154,500			
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
VE Design:				\$0			\$0
				\$0			\$0
Earthwork				\$0	0	\$0.00	\$0
Right of Way				\$0	0	\$0.00	\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
SUBTOTAL				\$320,725			\$0
TOTAL ROUNDED				\$321,000			\$0



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: E-1
Client: Cartersville/GDOT
Sheet 4 of 4

Earthwork - Main Line:

Area between original profile and proposed profile: 6,647 SQ FT.

Average cross section length as per the provided cross section in range of station 162+57.63 to station 179+46.54: 160'

The earthwork reduction is estimated at $6,647 \times 160 / 27 = 39,389.7$ CY.

The unit cost for earthwork is \$4.22 per CY

The total earthwork saving is $39,389.7 \times \$4.22 = \$166,224$

Right of way - Main Line:

The footprint/construction limits are reduced with proposed change. The reduction at each cross section location varies upon grade reduction and tie in slope. At both ends of the proposed grade change, the reduction is close to zero. At the roundabout location, the reduction is estimated to be 32 feet on each side. The average reduction is estimated as $(32 + 0) / 2 = 16$ feet on each side. The city owns the west side of the property and only east side of right of way reduction is considered in this calculation.

The length of this grade change is about 1,688 feet.

The right of way reduction is estimated at $1,688 \times 16 / 9 = 3,000$ SY.

Since the City owns the school property and the triangle area located southwest of the roundabout, the cost reduction is estimated as: $3,000 \times \$206 \text{ per SY} \times 25\% = \$154,500$.

The reduction of earthwork and right of way on side road is not significant comparing to the mainline.

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: E-3	Sheet No.: 1 of 4	CREATIVE IDEA: Remove redundant ditches along both sides of Douthit Ferry Road.
-------------------------	-----------------------------	--

Comp By: PZ Date: 10-30-12 Checked by: GAO Date: 11-15-12

Original Concept: Use 12 foot urban shoulders with ditch sections.

Proposed Change: Use 12 foot urban shoulders without ditch section except for locations where special ditches are applicable and necessary based upon drainage design.

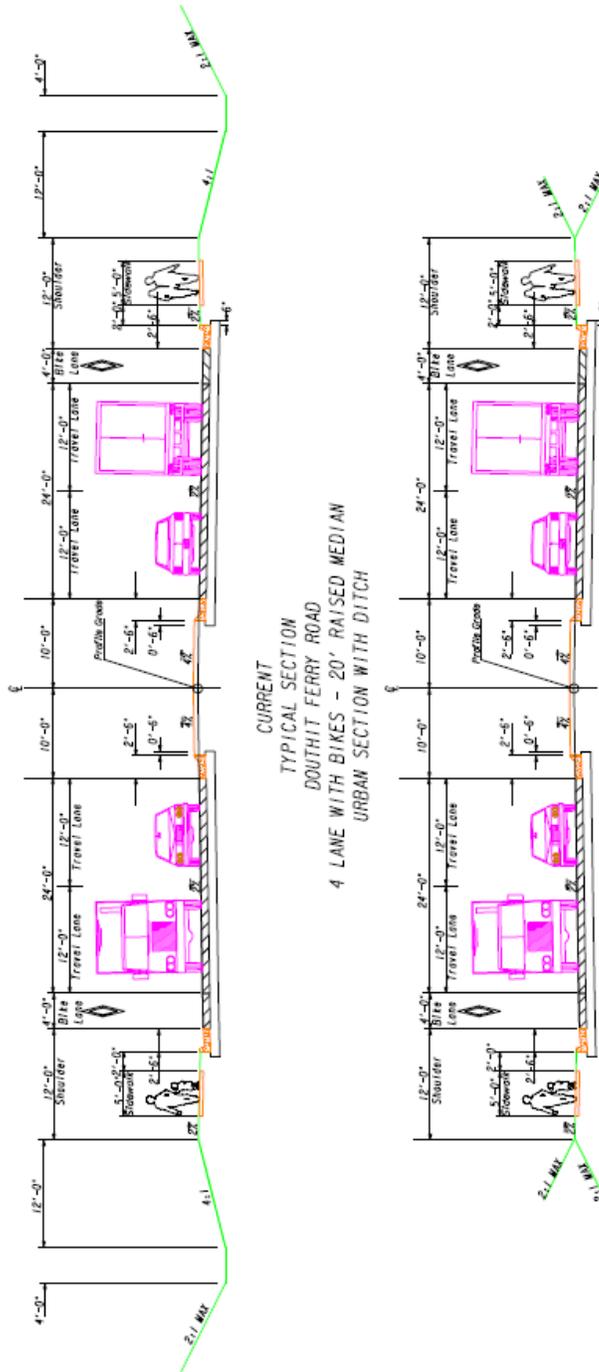
Justification: Removing redundant ditches on both sides of Douthit Ferry Road will reduce the overall roadway template, thereby reducing the required R/W and earthwork.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$2,480,000		
Proposed	\$0		
Savings	\$2,480,000		\$2,480,000
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$2,480,000

SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: E-3
 Client: Cartersville/GDOT
 Sheet 2 of 4



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: E-3
Client: Cartersville/GDOT
Sheet 4 of 4

Reviewing the cross section sheets showed that some of the ditch sections are not necessary at multiple station ranges with the proposed urban shoulder. There were locations where the current flat bottom ditch may still be valid or subject to further decision as per the final, detailed drainage design calculations.

Removing the ditch section will reduce the width of footprint by 12' (foreslope) + 4' (ditch width) + 4 x 3' (ditch depth) = 28' on either side. The reduction of earthwork could also be estimated as $(12 \times 2 + 4 + 4) \times 3 / 2 = 48$ CU FT per LF for each side.

Assume 50% of the ditches could be removed on either side of Douthit Ferry Road. The required right of way width is set to 130' for those locations.

Earthwork Volume Reduction:

$12,600'$ (corridor length) x 2 (sides) x 50% x 48 cu ft/LF /27 = 22,400 CY.

$22,400$ CY x \$4.22 / CY = \$94,528.

Right of Way Reduction:

$(180' - 130') \times 12,600'$ (corridor length) x 50% = 315,000 SF

Assume 40% was owned by the City of Cartersville and 50% split between residential and commercial/institutional.

$31,500 / 43,560 \times 60\% \times (100,000 + 1,000,000) / 2 = \$2,386,364$

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: RW-3	Sheet No.: 1 of 3	CREATIVE IDEA: Narrow the Right of Way and use easements
--------------------------	-----------------------------	---

Comp By: JJV Date: 11-1-12 Checked By: GAO Date: 11-13-12

Original Concept: The average full Right of Way width is about 180 feet and is typically set beyond the limits of grading.

Proposed Change: Reduce the overall Right of Way width to a true urban width, at the break points, and use easements, which are generally acquired at about a 50% reduction.

Justification: The 180 foot typical R/W width is excessive for this type of terrain and project. Using an urban width for R/W with easements, which can typically be acquired at a 50% reduction, will provide a significant cost savings.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$675,000		
Proposed	\$337,000		
Savings	\$338,000		\$338,000
FUTURE COST: – Savings			\$0
TOTAL PRESENT WORTH SAVINGS			\$338,000

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: RW-3
Client: Cartersville/GDOT
Sheet 3 of 3

Total area of R/W acquisition = 17.69 acres

Total length of project = 12,600 ft;

Average R/W acquisition width; $(17.69 \times 43,560) / 12,600 = 61.16$ ft; **USE 60 ft**

Average width of potential easements: use 30 feet; 15 feet each side

Length of easement use reduced through new park area; distance of 5,600 ft

$(12,600 \times 2) - 5,600 = 19,600$ ft

$19,600 \times 15 = 294,000$ sq ft = 6.749 acres

Assume easement costs are 50% of full R/W acquisition

Cost of Right of Way:

Residential - \$25,000 per acre; Commercial - \$250,000 per acre

Total raw land cost: $\$329,925 + \$1,122,500 = \$1,452,425$; Total cost of R/W
\$5,909,000

Mark-up factor: $5,909,000 / 1,452,425 = 4.0684$

Cost Per Acre;

Residential @ \$25,000 = **\$100,000 per acre**

Commercial @ \$250,000 = **\$1,000,000 per acre**

Use Residential

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: RW-4	Sheet No.: 1 of 4	CREATIVE IDEA: Realign connection of Park Court to Riverside Court.
--------------------------	-----------------------------	--

Comp By: PZ Date: 10-31-12 Checked by: GAO Date: 11-13-12

Original Concept: Align Park Court to tie in Riverside Court. Eliminate the intersection of Park Court and Riverside Court. The realigned Park Court required two displacements on Parcel 5 and 6.

Proposed Change:

Realign the connection between Park Court and Riverside Court. The new connection is shifted to the west of the original plan by running between Parcel 5,6 and Parcel 46,47. It potentially avoids the two displacements on Parcel 5 and 6.

Justification:

The proposed change provides the same access as original concept for properties along Park Court. The new intersection of Park Court and Riverside Court is pushed further away (west) from the intersection of Riverside Court and Douthit Ferry Road, which also has traffic operational benefits. In addition, the proposed connection potentially saves the two displacements on Parcel 5 and 6.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$125,000		
Proposed	\$0		
Savings	\$125,000		\$125,000
FUTURE COST: – Savings			\$0
TOTAL PRESENT WORTH SAVINGS			\$125,000

SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: RW-4
Client: Cartersville/GDOT
Sheet 2 of 4



COST WORKSHEET							
Project: Douthit Ferry Road Widening; City of Cartersville, Bartow County					IDEA No.: RW-4 CLIENT: Cartersville/GDOT		
Comp BY: PZ Date: 10-31-12 Checked By: GAO Date: 11-13-12					Sheet 3 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
				\$0			\$0
Original Design:				\$0			\$0
				\$0			\$0
Condemnation Filing	EA	2	\$5,000	\$10,000			
Displacements	EA	2	\$40,000	\$80,000			
Demolition	EA	2	\$15,000	\$30,000			\$0
Relocation Admin Service	EA	2	\$2,500	\$5,000			\$0
							\$0
				\$0			\$0
VE Design:				\$0			\$0
				\$0			\$0
Condemnation Filing	EA			\$0	0	\$5,000	\$0
Displacements	EA			\$0	0	\$40,000	\$0
Demolition	EA			\$0	0	\$15,000	\$0
Relocation Admin Service	EA			\$0	0	\$2,500	\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
				\$0			\$0
SUBTOTAL				\$125,000			\$0
TOTAL ROUNDED				\$125,000			\$0



CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: RW-4
Client: Cartersville/GDOT
Sheet 4 of 4

The proposed design and the original concept have comparable construction cost and right of way land acquisition cost. The savings for the proposed design are located in the category of building displacement.

As per the GDOT Preliminary ROW Cost Estimation Worksheet attached in the concept report, Saving two residential displacement will reduce the cost of:

Legal Services - Condemnation Filing: \$5,000 each x 2 = \$10,000

Displacements - Residential: \$40,000 each x 2 = \$80,000

Demolition - Residential: \$15,000 each x 2 = \$30,000

Relocation Admin Service - \$2,500 each x 2 = \$5,000

Total reduced cost: \$125,000

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: B-2	Sheet No.: 1 of 7	CREATIVE IDEA: Review bridge design and layout
-------------------------	-----------------------------	---

Comp By: GCG Date: 10/31/12 Checked By: GAO Date: 11-15-12

Original Concept: The original concept widens the existing bridge and constructs a new parallel bridge to the west. The existing bridge has a gutter to gutter width of 28 feet. The existing edge of bridge to the right is held and the cross section is as follows:

Left jersey barrier & Overhang = 1.625'
 Shy distance = 2' (inside shoulder width)
 Laneage = two (2) – 12 ft lanes + 4 ft bike lane = 28 ft
 Shy distance = 2'
 Sidewalk = 5.5'
 Parapet & Overhang = 1.2083'

 Total width = 40.33 ft

The side barriers of the existing bridge are removed to make way for bridge widening and parapet construction. The new bridge (each side) would be 40.33 ft wide

Proposed Change: Close in the median and have one complete cross section with a flush median across the bridge. The bridge would be symmetrical about the centerline and have a section as follows:

Cl roadway
 raised median = 8.00'
 Shy distance = 2' (inside gutter)
 Laneage = two (2) – 12 ft lanes + 4 ft bike lane = 28 ft
 Shy distance = 2' (outside gutter)
 Sidewalk = 5.5'
 Parapet & Overhang = 1.2083'

 Total width = 46.7083 ft (46'-8½")

Justification: From the bridge design manual, for this situation, it would appear that the inside shoulder if using jersey barrier would be a minimum of 4 feet.

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.:
B-2

Sheet No.:
2 of 7

CREATIVE IDEA: Review bridge design and layout

Comp By: GCG Date: 10/31/12 Checked By: GAO Date: 11-15-12

This change creates a more uniform cross section along the project and is more consistent with driver expectancy. The change also reduces potential hazards in the median by eliminating guardrail and guardrail end treatments at both ends of the bridge. This idea was prepared and analyzed based on conformance to the GDOT Bridge policies and the additional cost calculated will have to be included in the total project cost upon continued design and development of the bridge plans. While it is shown as a cost increase, it represents the realistic cost of the bridge. The total realistic cost of the bridge is an additional \$263,000.

2.9.1.2 Bridges off the state and federal system

*Rural section (2 lanes without curb)**

Speed Design	Design Year ADT	Bridge Width Clear Distance
All Speeds	0-399	2' + TW + 2'
All Speeds	400-2000	3' + TW + 3'
All Speeds	Above 2000	8' + TW + 8'

*For low volume roads with an approach roadway width of one lane, a minimum bridge width of 18 ft. may be selected with concurrence of the Chief Engineer.

Rural section (multilane undivided – 4 lanes or more): 8' + TW + 8'

Rural section (multilane divided): 4' (inside shoulder) + TW + 8' (outside shoulder)

Urban section (with curb)

The minimum clear width for all new or reconstructed bridges shall be the curb to curb width of the approaches except that the minimum curb to curb width for two-lane, two-way bridges shall be TW + 4 ft (1.2 m) unless an exception is obtained from the Chief Engineer. Sidewalks shall be provided on bridges where curb and gutter is provided on the approach roadway. Minimum sidewalk width on bridges shall be 5.5 ft (1.7 m), 6 inches of which would be curb along the roadway

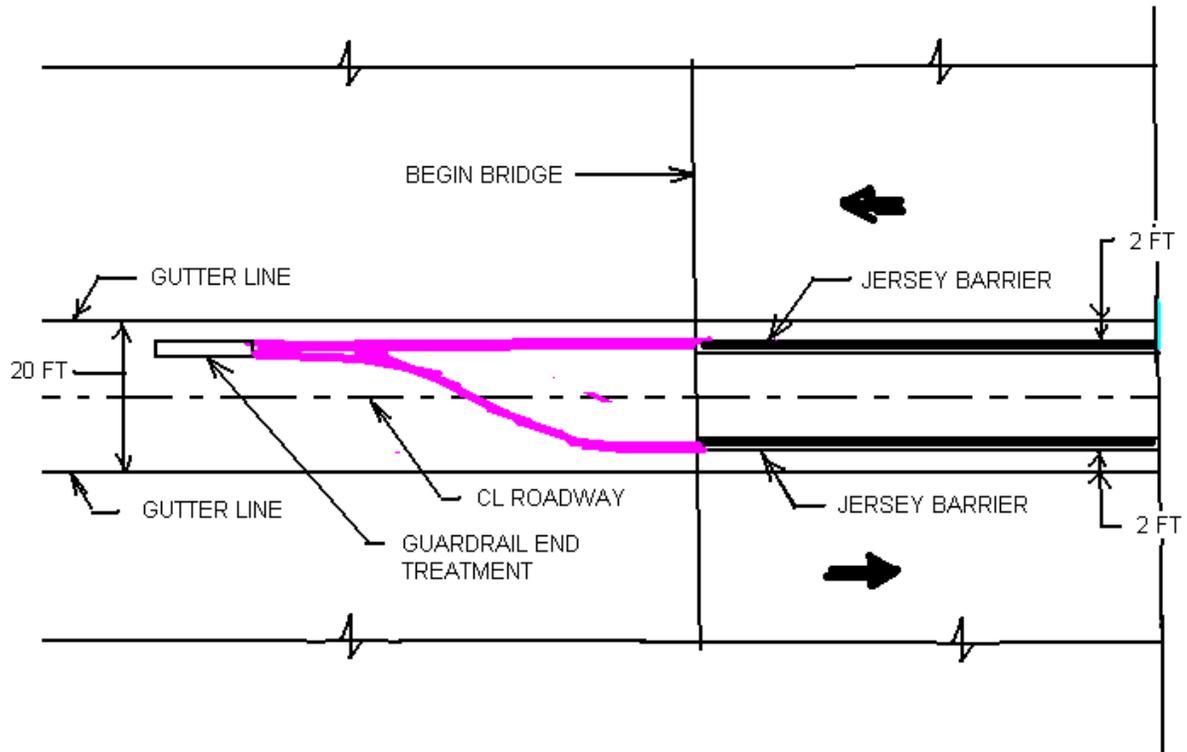
The design team, upon further continued bridge development, should also consider removing the 0% grade on the bridge and approach roadway as well as coordinating with the roadway design to ensure the PGL lines are appropriately located. These are undesirable conditions and as the continued design efforts progress, this issue should be reconsidered and addressed, as feasible.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$0		
Proposed	\$0		
Savings	\$0		\$0
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$0

SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: B-2
Client: Cartersville/GDOT
Sheet 3 of 7



Original Concept – Conceptual Median Guardrail Treatment

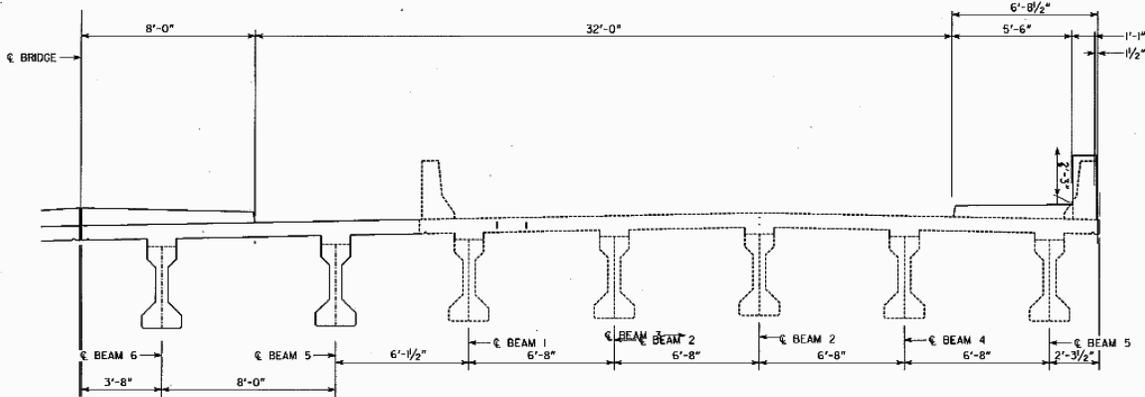
The above sketch is a concept of a median guardrail treatment. There doesn't appear to be a standard detail for guardrail treatment for dual bridges less than 38 ft medians. So, an adaptation of the current standards for the narrow width would need to be developed.

Closing in the median will increase the surface area of bridge, but reduce the amount of guardrail impact attenuators at each approach.

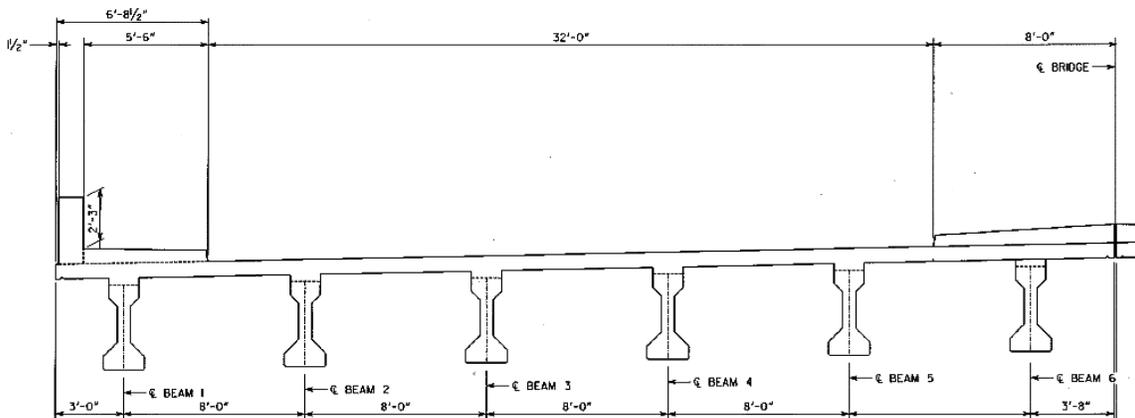
SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: B-2
 Client: Cartersville/GDOT
 Sheet 4 of 7



Right side (looking ahead)



Left side (looking ahead)

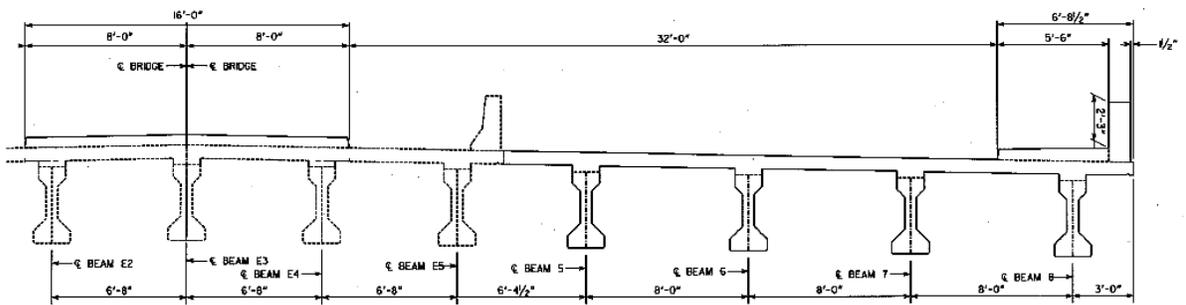
Proposed Cross-section (asymmetrical about centerline)

SKETCH

Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County

Idea No.: B-2
Client: Cartersville/GDOT
Sheet 5 of 7

As an option, a symmetrical cross section might also be chosen similar to the one shown below.



SYMMETRICAL SECTION THRU BRIDGE (20 FT MEDIAN)

Proposed Cross-section (symmetrical about centerline)

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: B-2
Client: Cartersville/GDOT
Sheet 7 of 7

Square foot cost of Bridges:

New Bridge: $(\$708,146.95 \text{ from cost estimate}) / (280 \text{ ft long})(40.33 \text{ ft wide}) = \$62.71 / \text{SF}$

Widened Bridge:

Width = $(2.292 \text{ ft} + 5.583 \text{ ft} + 3.5 \text{ ft} - 1.33/2 \text{ half beam flange}) = 10.709 \text{ ft}$
 $(\$293,543.10 \text{ from cost estimate}) / (280 \text{ ft long})(10.709 \text{ ft wide}) = \$97.90 / \text{SF}$

Additional width required:

For new bridge to close in Median

Cl of road to gutterline = 8 feet.

8 feet – width of barrier = $8 \text{ ft} - 1.625 = 6.375 \text{ ft}$

Area = $6.375 \times 280 = 1,785 \text{ sq ft}$

For existing bridge to close in Median

Cl of road to gutterline = 8 feet.

8 feet – width of barrier = $8 \text{ ft} - 1.625 = 6.375 \text{ ft}$

Area = $6.375 \times 280 = 1,785 \text{ sq ft}$

Guardrail:

Estimate 200 feet for each run x 2 sides of road x 2 ends of bridge = 800 feet

W beam = $800 - 48 = 752 \text{ ft}$

T- Beam = $21 \times 4 \text{ sides} = 84 \text{ ft}$

Guardrail Terminator

One at each end of bridge x 2 ends = 2

DEVELOPMENT AND RECOMMENDATION PHASE

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

IDEA No.: P-10	Sheet No.: 1 of 2	CREATIVE IDEA: Use a realistic unit cost for 8 in. concrete pavement
--------------------------	-----------------------------	---

Comp By: JJV / VE Team Date: 10-30-12 Checked By: GAO Date: 11-15-12

Original Concept: The current plans and construction cost estimate are based on a unit price for 8 inch, PC concrete pavement, Item No. 430-0180, of \$25.35 per SY. This is based on 1 bid over the last several years, which is unrealistically low.

Proposed Change: Working with the District construction staff and GDOT Cost estimators, develop and use a realistic unit cost. This analysis assumed \$35 per SY, a differential of about \$10.

Justification: Consideration should be given to developing and using a realistic unit cost for the concrete pavement which is one of the major project items. Based on a unit cost differential of \$10, the project budget will need to be increased by about \$900,000.

In addition, the unrealistic unit cost is driving several other design elements including pavement design, typical section elements, the use of the roundabout and overall traffic data and projections. A re-evaluation of this cost is a good opportunity to review the project design elements.

COST SUMMARY	INITIAL COST	FUTURE COST	TOTAL L. C. COST SAVINGS
Original	\$0		
Proposed	\$0		
Savings	\$0		\$0
FUTURE COST: – Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$0

CALCULATIONS

**Project: Douthit Ferry Road Widening; PI 0007494
City of Cartersville, Bartow County**

Idea No.: P-10
Client: Cartersville/GDOT
Sheet 2 of 2

Current cost of concrete pavement - \$25.35, from bid tab data represented by only 1 bid for the specific item – 430-0180

Realistic cost of 8 in. concrete pavement; use 35 per sy; assume a differential of \$10
Review with GDOT Cost Estimators and District Construction staff

Realistic cost of concrete pavement (addition / cost increase)
 $89,700 \text{ sy} \times \$10 = (\$897,000)$

APPENDIX

Sources

Approving/Authorizing Persons

Name:	Position:	Telephone:
Tommy Sanders	City of Cartersville	678-855-1734
Leonora Leigh	Project Manager – Program Delivery	678-580-8798
Lisa Myers	State Project Review	404-631-1770
Matt Sanders	Office of Engineering Services	404-631-1752

Personal Contacts

Name:	Telephone:	Notes:
Susan Thomas	770-323-9484	NEPA documentation, EPE
AJ Jubran	404-608-4771	Pavement Design, GDOT
Jeff VanDiver	770-491-7550	Bridge designer, HGA

Documents/Abstracts

Reference:	Reference:
Preliminary Plans/Aerial Layout	Roadway Cross Sections
Preliminary Cost Estimate	Preliminary Bridge Plans
Draft Project Concept Report	Milam Farm Park Master Plan
Project Traffic Data	ROW data and costs; 10-08-12
East Option – Alternate plans	

INFORMATION PHASE – FUNCTION ANALYSIS

Project: PI 0007494; Douthit Ferry Road Widening

Basic Function: Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost X \$1,000	% of Total	Worth X \$1,000
1.	Right of Way	store	project	\$8,623	41.1	\$4,000
		address	drainage			
		control	access			
		store	bike lanes			
		allow	construction / staging			
		avoid/limit	Impacts			
		store	utilities			
2.	Utilities	service	customers	\$2,461	11.7	\$2,461
3	Concrete pavement	support	trucks	\$2,274	10.8	\$1,500
		support	bike lanes			
		add	capacity			
		accommodate	growth (traffic)			
		connect	segments			
		access	driveways			
		reduce	crash rates			
		improve	safety			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: PI 0007494; Douthit Ferry Road Widening

Basic Function: Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost X \$1,000	% of Total	Worth X \$1,000
4.	Asphalt pavement (side roads)	connect	roads	\$1,555	7.4	\$1,000
		improve	intersections			
5.	Earthwork	establish	grade	\$1,345	6.4	\$1,000
		create	template			
		avoid	impacts			
		create	ditch			
		drain	roadside			
		support	pavement			
6.	Drainage	collect	run-off	\$1,180	5.6	\$1,100
		drain	area			
		discharge	run-off			
7.	Miscellaneous Concrete C&G/median/sidewalk	collect	run-off	\$1,007	4.8	\$800
		delineate	road			
		separate	peds/bicyclists			
		accommodate	peds/bicyclists			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: PI 0007494; Douthit Ferry Road Widening

Basic Function: Increase Capacity

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost X \$1,000	% of Total	Worth X \$1,000
		store	turn lanes			
		access	U & left turns			
8.	Bridge No. 1	separate	grade	\$857	4.1	\$600
		separate	traffic			
		accommodate	peds/bikes			
		span	river/flood elev			
9.	Signals	control	traffic	\$408	1.9	\$400
		restrict / allow	movements			
		display	information			
10.	Erosion control	follow	guidelines	\$390	1.9	\$390
		restrict/control	sediment			
11.	Bridge No. 2 – See item 8			\$362	1.7	\$362
12.	Traffic Control	beautify	project	\$330	1.6	\$330
13.	Signing	maintain	traffic	\$107	0.5	\$107

PI# 0007494; Douthit Ferry Road Widening

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
RW	Right of Way		
1.	Eliminate ditches/ narrow R/W width	See E-3	✓
2.	Use narrower R/W	See E-3	✓
3.	Use easements; urban R/W width		✓
4.	Review area at displacements; re-align side road		✓
P	Pavement		
1.	Use 11 ft inside lanes		✓
2.	Use 16 ft median		✓
3.	Use 8 ft median at south section of project to minimize displacements	See RW 4	✓
4.	Use 8 ft median at select locations; future development		✓
5.	Eliminate on-street bike lanes		✓
6.	Construct multi-use trail on NB side		✓
7.	Use rural section; eliminate C & G		✓
8.	Use 14 ft flush median for northern section	See RW-4	✓
9.	Use 5-lane section; future development can be controlled		✓

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
10.	Consider asphalt pavement		✓
11.	Use thinner asphalt section	Final pavement design will determine thickness	
12.	Review profile, especially at large grade difference	See E-1	✓
13.	Shift roundabout south for added constructability		✓
14.	Use 8 ft median at southern section	Not adequate room for turn lane	X
15.	Adjust horizontal alignment so roadway and bridge PGL are on lane line; coordinate bridge and roadway	See B-2	✓
16.	Use signal not roundabout		DC
B	Bridge		✓
1.	Raise profile	Set by flood elevation	✓
2.	Combine bridges; various options		✓
3.	Jack existing bridge		✓
✓ = Will be considered further; X = will be dropped; DC = design consideration –written for consideration by design team			

PI# 0007494; Douthit Ferry Road Widening

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
4.	Eliminate 0% grade	See B-2	✓
5.	Use scuppers for bridge drainage	Allowable based on latest environmental guidelines	DC
6.	Follow GDOT bridge policies and standards for layout	See B-2	✓
E	Earthwork		
1.	Review profiles, especially at roundabout		✓
2.	Raise profile at bridge	See B-2	✓
3.	Review/minimize ditches		✓
4.	Use variable slopes (4:1) to reduce guard rail		✓
5.	Put gradient on bridge; jacking	See B-3	✓
6.	Raise new bridge profile over flood elevation	See B-1	✓
7.	Eliminate 0% grade	See B-2	✓
✓ Will be considered further; X = will be dropped; DC = design consideration –written for consideration by design team			

VE STUDY SIGN-IN SHEET

Project No.: CSSTP-0007-00(494)

County: Bartow

PI No.: 0007494

Date: October 29 - November 1, 2012

Days

FIRST	LAST	NAME	GDOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
✓	O	Lisa L. Myers	Engineering Services	404-631-1770	lmyers@dot.ga.gov
✓	✓	Matt Sanders	Engineering Services	404-631-1752	msanders@dot.ga.gov
✓	✓	Bill DuVall	Bridge Design	404-631-1883	bduvall@dot.ga.gov
✓	O	Ken Werho	Traffic Operations	404-635-8144	kwerho@dot.ga.gov
✓	O	Melissa Harper	G.O. Construction	404-631-1971	mharper@dot.ga.gov
✓	✓	Joel P. Bowers	D#6 Construction	770-387-3609	pbowers@dot.ga.gov
✓	O	Crystal Ives-Powell	TEA Trainee		civespowell@dot.ga.gov
✓	O	Carla Benton-Hooks	Environmental Services	404-631-1415	cbenton-hooks@dot.ga.gov
✓	✓	Leonora Leigh	Program Delivery	678-580-8798	lleigh@dot.ga.gov
✓	✓	Greg Grant	RS&H	678-429-7501	greg.grant@rsandh.com
✓	✓	Jeff VanDyke	RS&H	678-528-7234	jeff.vandyke@rsandh.com
✓	✓	Peng Zhang	AMEC	770-421-7053	peng.zhang@amec.com
✓	✓	George Obaranec	AMEC	770-421-3346	george.obaranec@amec.com
✓	O	Karl Lutjens	Southland Engineering	770-387-0440	Karl@southlandengineers.com
✓	✓	David Moore	Southland Engineering	770-387-0440	Dmoore@southlandengineers.com
✓	✓	Janis Steinbrennar	Southland Engineering	770-387-0440	jsteinbrenner@southlandengineers.com
✓	✓	Tommy Sanders	City of Cartersville	678-855-1734	tsanders@cityofcartersville.org

Check all that attend
 Did Not Attend
 17 Attended Project Overview (Day 1)
 11 Attended Project Presentation (Day 4)

