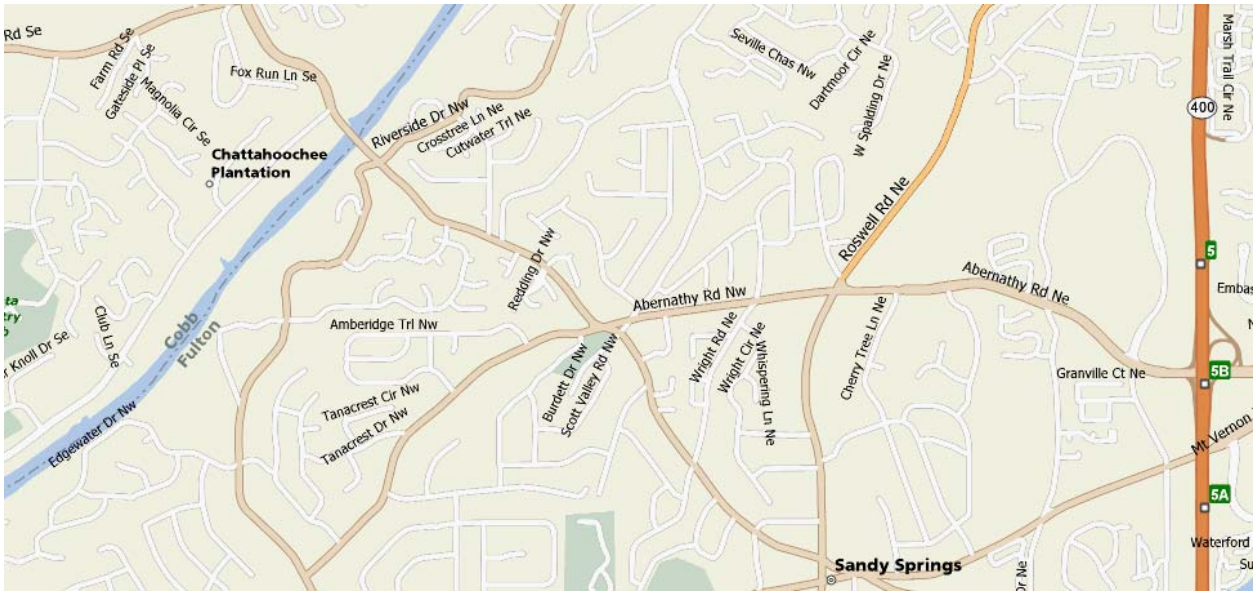
Georgia Department of Transportation

Value Engineering Report
Design Development Stage

STP-9252(6) and STP-9250(1)
JOHNSON FERRY AND ABERNATHY ROADS WIDENING FROM THE CHATTAHOOCHEE RIVER TO ROSWELL ROAD
P. I. Nos. 751300 and 715310
Cobb and Fulton Counties, Georgia

December 2006

Georgia Department of Transportation
District 7



Designer
Georgia Department of Transportation

Value Engineering Consultant
Lewis & Zimmerman Associates, Inc.

Lewis & Zimmerman Associates, Inc.
Taking the Chance out of Change
2849 Paces Ferry Road, SE, Suite 400
Atlanta, Georgia 30339-3769
770-992-3032 • Fax: 770-435-2666
info@lza.com • www.lza.com

January 2, 2007

Ms. Lisa L. Myers
Design Review Engineer Manager
Georgia Department of Transportation, General Office
No. 2 Capitol Square, Room 266
Atlanta, Georgia 30334-1002

Re: Project Numbers STP-9592(6), P. I. No. 751300, Widen Johnson Ferry Road from Columns Drive to Abernathy Road and STP-9590(1), P. I. No. 751310, Widen Abernathy Road from Johnson Ferry Road to East of Roswell Road/SR 9, Cobb and Fulton Counties
Value Engineering Study Report

Dear Ms. Myers:

Lewis & Zimmerman Associates, Inc. is pleased to submit four hard copies and one CD-ROM of the referenced report.

At nearly 100% complete, the project is at an advanced stage of design. Therefore, no major re-design efforts were anticipated. However, the Department seeks logical cost reductions for its entire roadwork program, so the VE team concentrated on those areas where minimal impact would occur for redesign effort while producing potential cost savings without adversely impacting the functionality and intent of the projects.

We thank you and the Georgia Department of Transportation for your hospitality, the use of your office space, and in providing the information necessary for the VE team to generate creative, alternative solutions for this project.

Please feel free to contact us with any questions you may have as you review this report and determine implementation.

Sincerely yours,

LEWIS & ZIMMERMAN ASSOCIATES, INC.

Luis M. Venegas, PE, CVS
Vice President

TABLE OF CONTENTS

EXECUTIVE SUMMARY

INTRODUCTION

This value engineering (VE) study report summarizes the events of the VE study conducted by Lewis & Zimmerman Associates, Inc. (LZA) for the Georgia Department of Transportation (GDOT), Atlanta, Georgia. The subjects of the study were the Johnson Ferry and Abernathy Roads Widening from the Chattahoochee River to Roswell Road/SR 9, projects STP-9252(6) and STP-9250(1), P. I. Nos. 751300 and 715310, respectively in Cobb and Fulton Counties. The projects are sbeing designed by GDOT.

PROJECT DESCRIPTION

The purpose of this project is to improve both the operation and safety of the roadway due to high traffic volumes. This roadway is heavily used by commuters from Cobb County who are trying to access US Interstate 285 and downtown Atlanta. Raised medians will limit access and create turn bays to allow safer movement of vehicles on Johnson Ferry and Abernathy Roads. The addition of one through lane in each direction on Abernathy Road will provide added capacity for safer operating conditions. Turn lanes in the corridor will provide safer operating conditions for the through traffic. The bike lanes and sidewalks will provide a link between the commercial district on Roswell Road, the Chattahoochee River National Recreational Area, a planned linear park on Abernathy Road, and the neighborhoods on Johnson Ferry Road. The design for this project was influenced by the Citizen's Action Committee (CAC), which was formed to help determine the locally preferred alternative. The project will provide local and through traffic with a facility that will serve current and future travel demand and provide the public with a safer driving, walking and bicycling environment.

The combined probable cost of construction for the two projects is noted to be $78,846,627. This figure is distributed as follows:

- STP-9252(6), P.I. No. 751300, Johnson Ferry Road: $30,230,640 in construction costs, 10% Engineering and Construction (E&C) costs at $3,023,064, $8,168,350 in ROW costs, and $124,500 in Reimbursable Utilities costs for a total of $41,546,554.
- STP-9250(1), P.I. No. 751310, Abernathy Road: $11,130,293 in construction costs, 10% E&C costs at $1,130,529, $24,739,750 in ROW costs, and $124,500 in Reimbursable Utilities costs for a total of $37,300,073.

CONCERNS AND OBJECTIVES

The Atlanta Regional Commission (ARC) adopted the 2025 Regional Transportation Plan (RTP) for the 13-county Atlanta Metropolitan area in April 2000. The RTP addresses travel needs through the year 2025 and is the direct result of a comprehensive, cooperative, and continuous planning process conducted by the ARC, local governments and GDOT in cooperation with the Federal Highway Administration and Federal Transit Administration. The Transportation Improvement Program (TIP)/RTP recommends: (a) roadway improvements along Johnson Ferry Road from the

Chattahoochee River to Abernathy Road under ST-9252(6), P.I. 751300; and (b) widening Abernathy Road from two lanes to four through lanes from Johnson Ferry Road to Roswell Road under STP-9250(1), P.I. No. 751310. While this corridor is not shown on a designated state bike route, Fulton County commits to updating ARC's and their Bike Route Plan.

The most immediate concern was the fact the project is at the 100% design completion stage with an expected let date of May 2007. This situation coupled with the lateness of the VE study may preclude some functionally and logical alternatives that would result in a delay of the letting process – a circumstance GDOT would prefer to avoid/eliminate from consideration. However, it is noted that the Department has a fiduciary shortfall in its six-year Construction Work Program and has expressed serious consideration for logically reducing the costs associated with its current on-going projects.

Therefore, the objective of the effort was to identify opportunities to improve the value of the project in terms of fulfilling the basic functions of alleviating congestion, increasing capacity and improving traffic flow while ultimately reducing capital cost.

HIGHLIGHTS OF THE STUDY

Listed below are some of the ideas developed.

As previously noted, this corridor is not shown on a designated state bicycle route, but Fulton County commits to updating ARC's and their Bike Route Plan incorporating this corridor within those boundaries. Project savings could be realized if the proposed bicycle lanes on Abernathy Road between Brandon Mill Road and east of Wright Road were converted into bicycle paths within the City of Sandy Springs contemplated Green Space/Horizontal Park. This is discussed in Alternative No. 7, which initially saves close to $770,000; and a safety improvement is garnered on this portion of Abernathy Road by not mixing vehicle and bicycle traffic.

The current project proposes the use of 16-foot shoulders throughout the corridor. Alternative No. 27 narrows the shoulder width to 12 feet by reducing the width of the sidewalks to 5 feet and minimizing the right-of-way takes resulting in a cost reduction of nearly $1,400,000. If the shoulders remain as designed and the sidewalks widths were reduced to 5 feet, then savings would amount to about $280,000, as noted on Alternative No. 1.

Sidewalk systems promote pedestrian traffic in close-knit residential and commercial communities such as the area on the east end of the project where existing commercial properties already exist or at Columns Drive on the west end of the project due to the Chattahoochee River National Recreation Area. This project has a unique location for sidewalk and multi-use trails along Johnson Ferry and Abernathy Roads. However, the location on Johnson Ferry Road between Station (STA) 123+00 to STA 145+00 (right and left) is questionable due to the existence and proposed grades exceeding 9.00% and is not conducive to pedestrian traffic. This is evident from the lack of use of the existing sidewalks on the Cobb County side of the river. As such, elimination of the concrete sidewalk paving on this section of the project is appropriate. The sidewalk paving along River Valley Road can also be eliminated, as it would have to be demolished after the project's completion in order to allow the City of Sandy Springs to make the final intersection configuration. Therefore, eliminate the concrete paving

only at the locations noted above but retain all earthwork and shoulder configurations as indicated on Alternative No. 8, and realize initial savings of almost $670,000.

Another significant sidewalk related savings is noted on Alternative No. 21. This alternative would eliminate the proposed underpass walkways connecting the Chattahoochee River National Recreation Area and Columns Drive on the north side of the Chattahoochee River. Not only would the ramps be eliminated, but the drainage piping can be modified and relocated to be maintained within the existing right-of-way on the right side and within a smaller portion of the required right-of-way on the left side of the bridge. Furthermore, the amount of right-of-way to be taken from the Cobb County Water System is reduced. Overall initial savings can amount to nearly $452,000. It is noted the proposed pedestrian underpass will not provide a significant advantage due to the nearness of the Columns Drive and Johnson Ferry Road intersection that already has an at-grade pedestrian crossing that provides safe passage for pedestrians and recreational area users.

Numerous ideas were developed associated with the widening of the Johnson Ferry Road bridge that ranged from using 11-foot travel lanes rather than 12-foot lanes and initially save nearly $95,000 as noted on Alternative No. 14 to eliminating three structural bents and initially saving close to $155,000 as indicated on Alternative No. 15. One alternative, No. 26, would eliminate one northbound lane completely yielding initial savings of about $161,000.

The Summary of Potential Cost Savings worksheet follows this narrative outlining all of the alternatives and design suggestion developed by the VE team. Some of the alternatives are mutually exclusive or interrelated so that the addition of all project cost savings does not equal total savings for the project. A full listing of all of the ideas considered by the VE team can be found on the Creative Idea Listing worksheets in this report.

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD. Cobb and Fulton Counties, Georgia Department of Transportation, District 7**

Pre-Final Field Plan Review Design Stage

			PRESENT WORTH OF COST SAVINGS			
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
1	Use 5-foot sidewalks instead of 8-foot sidewalks	$915,453	$631,653	$283,800		$283,800
7	Provide a separate bicycle path in the Green Space along Abernathy Road between Brandon Mill Road and east of Wright Road instead of a bicycle lane on Abernathy Road	$3,606,525	$2,837,978	$768,547		$768,547
8	Eliminate sidewalk paving only on portions of Johnson Ferry Roa and on River Valley Road	$811,602	$144,573	$667,029		$667,029
14	Use 11-foot lanes on Johnson Ferry Road bridge in lieu of 12-foot lanes	$422,574	$327,470	$95,104		$95,104
15	Eliminate Bents Nos. 2, 4 and 6 on the Johnson Ferry Road bridge and use longer spans	$1,259,199	$1,105,012	$154,187		$154,187
16	Selectively eliminate intersections	D E S I G N S U G G E S T I O N				
17	Eliminate the Wright Road signal	$99,000	$0	$99,000		$99,000
18	Use concrete parapet and aluminum handrails in lieu of the Texas handrails	$208,032	$116,314	$91,718		$91,718
19	Replace cast-in-place wall with soil nail wall	$355,542	$187,264	$168,278		$168,278
21	Eliminate pedestrian ramps below the Johnson Ferry Road bridge	$451,972	$0	$451,972		$451,972
26	Delete one northbound lane from Johnson Ferry Road bridge	$431,869	$270,985	$160,884		$160,884
27	Reduce shoulder to 12-feet	$36,023,552	$34,638,074	$1,385,478		$1,385,478
28	Use wireless connectivity for intersection synchronization	D E S I G N S U G G E S T I O N				
29	Evaluate quantity of concrete median in the Johnson Ferry Road portion of the project	$5,445,704	$384,076	$5,061,628		$5,061,628
30	Use a retaining wall system to eliminate the need for the box culvert on Abernathy Road	$438,418	$305,778	$132,640		$132,640

STUDY RESULTS

INTRODUCTION

The results are the major feature of a value engineering study since they represent the benefits that can be realized on the project by the owner, users and designer. The results will directly affect the project design and will require coordination among the designer, the user and the owner to determine the ultimate acceptance of each alternative.

The creative ideas are organized according to the order in which they were originally generated by the VE team during their function analysis and creative sessions.

RESULTS OF THE STUDY

The VE team generated 30 ideas for change during the Function Analysis and Creative Ideas phases of the VE Job Plan. The evaluation of these ideas was based upon their potential for capital cost savings, probability of acceptance, availability of information to properly develop an idea, compliance with perceived quality, adherence to universally-accepted standards and procedures, life cycle cost efficiency, safety, maintainability, constructibility and soundness of the idea.

Of the 30 ideas generated, 17 were sufficiently rated to warrant further investigation. Continued research and development of these ideas yielded 13 alternatives for change with an impact on project costs and 2 design suggestions that will enhance the value of the project in terms of long-term maintenance, reduced labor effort, and improved constructability. All of these alternatives and design suggestions are presented in detail following this narrative and on the Summary of Potential Cost Savings worksheets.

EVALUATION OF ALTERNATIVES

It is important to consider each part of an individual alternative on its own merit. There may be a tendency to disregard an alternative because of concern about one portion of it. Separate consideration should be given to each of the areas within an alternative that are acceptable and those parts should be considered in the final design, even if the entire alternative is not implemented.

Cost is the primary basis of comparison for alternative designs. To ensure that costs are comparable within the alternatives proposed by the VE team, the designer's cost estimates, where possible, is used as the pricing basis.

Some of the alternatives are interrelated, so acceptance of one may preclude the acceptance of another. The reader should evaluate those alternatives carefully to select the ideas with the greatest beneficial impact to the project.

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD. Cobb and Fulton Counties, Georgia Department of Transportation, District 7**

Pre-Final Field Plan Review Design Stage

			PRESENT WORTH OF COST SAVINGS			
ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
1	Use 5-foot sidewalks instead of 8-foot sidewalks	$915,453	$631,653	$283,800		$283,800
7	Provide a separate bicycle path in the Green Space along Abernathy Road between Brandon Mill Road and east of Wright Road instead of a bicycle lane on Abernathy Road	$3,606,525	$2,837,978	$768,547		$768,547
8	Eliminate sidewalk paving only on portions of Johnson Ferry Roa and on River Valley Road	$811,602	$144,573	$667,029		$667,029
14	Use 11-foot lanes on Johnson Ferry Road bridge in lieu of 12-foot lanes	$422,574	$327,470	$95,104		$95,104
15	Eliminate Bents Nos. 2, 4 and 6 on the Johnson Ferry Road bridge and use longer spans	$1,259,199	$1,105,012	$154,187		$154,187
16	Selectively eliminate intersections	D E S I G N S U G G E S T I O N				
17	Eliminate the Wright Road signal	$99,000	$0	$99,000		$99,000
18	Use concrete parapet and aluminum handrails in lieu of the Texas handrails	$208,032	$116,314	$91,718		$91,718
19	Replace cast-in-place wall with soil nail wall	$355,542	$187,264	$168,278		$168,278
21	Eliminate pedestrian ramps below the Johnson Ferry Road bridge	$451,972	$0	$451,972		$451,972
26	Delete one northbound lane from Johnson Ferry Road bridge	$431,869	$270,985	$160,884		$160,884
27	Reduce shoulder to 12-feet	$36,023,552	$34,638,074	$1,385,478		$1,385,478
28	Use wireless connectivity for intersection synchronization	D E S I G N S U G G E S T I O N				
29	Evaluate quantity of concrete median in the Johnson Ferry Road portion of the project	$5,445,704	$384,076	$5,061,628		$5,061,628
30	Use a retaining wall system to eliminate the need for the box culvert on Abernathy Road	$438,418	$305,778	$132,640		$132,640

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 1

DESCRIPTION: **USE 5-FOOT SIDEWALKS INSTEAD OF 8-FOOT SIDEWALKS**

ORIGINAL DESIGN:

Eight-foot sidewalks will be on both sides of Abernathy, Johnson Ferry, Roswell/SR 9 Roads and Columns Drive.

ALTERNATIVE:

Use 5-foot sidewalks in lieu of the proposed 8-foot sidewalks at the locations noted above.

ADVANTAGES:

- Initial cost savings
- Reduces City of Sandy Springs maintenance cost
- Matches sidewalks widths at Breakwater Ridge, Bridgewood Valley, Burdett, Lauran Woods, Long Acres, North Harbor, North Mill, Redding, and Riverside Drives; Cherry Tree Lane, Bernard Place, and Wright Road
- Common practice
- Increases green space

DISADVANTAGES:

- CAC requested 8-foot sidewalks and GDOT approved
- Loss of a perceived amenity

DISCUSSION:

Acknowledging that this alternative challenges an agreement between the CAC and GDOT, the need for 8-foot sidewalks appears excessive. The portion of Johnson Ferry Road that has a grade steeper then 6% will not be conducive to pedestrian traffic even though it leads to the Chattahoochee River National Recreation Area in Cobb County. This is evident from the lack of use of the existing sidewalks on the Cobb County side of the river. The small amount of pedestrian traffic to either the Sandy Springs Christian Church or he Abernathy Art Center and Park is better served with a 5-foot sidewalk to increase/retain the amount of green space.

The area along Abernathy Road between Brandon Mill and Wright Roads, where the City of Sandy Springs will develop the Abernathy Green Space north and south of the road, will incorporate meandering walkways encouraging pedestrians to move away from the roadway. Eight-foot sidewalks would be counter-productive to this theme. (See related Alternative Nos. 8 and 27.)

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 915,453**	**$**	**$ 915,453**
ALTERNATIVE	**$ 631,653**	**$**	**$ 631,653**
SAVINGS	**$ 283,800**	**$**	**$ 283,800**

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 1

Johnson ferry Rd

·) JF @ 110+50 to 115+16 = 466
119+10 to 123+50 = 440
115+16 to 119+10 = 394
123+50 to 187+89 = 6439
7739 @ 8'

·) Columns : 430 LF @ 8'
·) Bridge woodvalley : 250 LF @ 5'
·) North Mill Rd : 501 LF @ 5'
·) Burdette Dr : 366 LF @ 5'
·) Riverside Dr (west) : 405 LF @ 5'
·) Riverside Dr (East) : 200 LF @ 5'
·) Laurian Woods Drive : 173 LF @ 5'
·) North Harbor Drive : 300 LF @ 5'
·) Bernard Place : 81 LF @ 5'
·) Breakwater Ridge Dr : 180 LF @ 5'
·)

8' Total	5' total
8169	2456

$S/W = [(8169)(8)(2) + (2456)(5)(2)]/9 = 17,251$ SY

$(17,251\ SY)(\$30) = \$517,530$

VS.

$S/W_{5'} = [(8169)(5)(2) + (2456)(5)(2)]/9 = 11,806$

$(11,806\ SY)(\$30) = 354,180$

$\Delta = \$163,350$

Abernathy Rd

·) Abernathy : 200+00 to 247+25 = 4725 LF @ 8'
·) Brandon Mill : 670 LF @ 5'
·) Wright Rd : 224 LF @ 5'
·) Long Access : 113+60 = 173 LF @ 5'
·) Cherry Tree Lane : 310 LF @ 5'

8' total	5' total
4725	1877

$S/W = [(4725)(8)(2) + 1877(5)(2)] = 10,490$ SY

$(10,490\ SY)(\$30) = \$314,700$

$S/W_{5'} = [(4725)(5)(2) + 1877(5)(2)]/9 = 7335$ SY

$(7335\ SY)(\$30) = \$220,066$

$\Delta = \$94,634$

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 1

SHEET NO.: 3 of 3

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
441-0104 Concrete Sidewalk, 4"	SY	17,251	30.00	517,530	11,806	30.00	354,180
441-0104 Concrete Sidewalk, 4"	SY	10,490	30.00	314,700	7,335	30.00	220,050
Note: The Johnson Ferry Road estimate indicates 24,594 SY of sidewalks vs. a calculate area of 17,251 SY. The Abernathy Road estimate shows 11,831 SY of sidewalks vs. a calculate 10,490 SY. This discrepancy needs to be resolved.							
	Sub-total			832,230			574,230
Mark-up at	10.00%			83,223			57,423
	TOTAL			915,453			631,653

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 7

DESCRIPTION: **PROVIDE A SEPARATE BICYCLE PATH IN THE GREEN SPACE ALONG ABERNATHY ROAD BETWEEN BRANDON MILL ROAD AND EAST OF WRIGHT ROAD INSTEAD OF BICYCLE LANES ON ABERNATHY ROAD**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The current design calls for the use of 4-foot bicycle lanes on both sides of project from Columns Drive to Cherry Tree Lane Road along Johnson Ferry and Abernathy Roads.

ALTERNATIVE:

Provide a separate bicycle path through the Abernathy Green Space instead of on Abernathy Road between Brandon Mill and east of Wright Roads.

ADVANTAGES:

- Initial cost savings
- Removes bicyclists from the roadway
- Promotes more use of the proposed Green Space
- Increases green space
- Improves bicycle safety

DISADVANTAGES:

- Challenges a CAC recommendation
- Some bicyclists may chose to stay on the roadway

DISCUSSION:

Acknowledging that this alternative challenges a CAC recommendation, this alternative fosters safer riding conditions along this stretch of Abernathy Road and promotes more use of the proposed Green Space.

The construction savings indicated only covers the cost of removing the bicycle lanes from this portion of Abernathy Road and assumes the City of Sandy Springs would include the bicycle path in the Green Area contract. Should the City not fund the bicycle path, the cost to provide the path is about $58,000.

The potential right-of-way savings for GDOT is about $436,000; however, this cost may have to be borne by the City of Sandy Springs.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 3,606,525**	**$**	**$ 3,606,525**
ALTERNATIVE	**$ 2,837,978**	**$**	**$ 2,837,978**
SAVINGS	**$ 768,547**	**$**	**$ 768,547**

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 7

Approximately length: 175+00 to 223+00 = 4800LF

Area = $\frac{(8')(4800\,LF)}{9}$ = 4267 SY

Pavement Sections:

Amt to be reduced

A) (165 #/SY)(4267 SY) ÷ 2000 * $80/TN = $28,162 (352 TN)
B) (220 #/SY)(4267 SY) ÷ 2000 * $80/TN = $37,550 (469 TN)
C) (820 #/SY)(4267 SY) ÷ 2000 * $80/TN = $150,198 (1897 TN)
D) (8')(4800LF)(1")($\frac{150\,\#}{CF}$) ÷ 2000 * $30/TN = $86,400 (2880 TN)

Total = $302,310

Amt needed to reconstruct bike lane outside Roadway.

Assumptions:

1) 4' wide bike 'path' on N. & S. side of Abernathy
2) L = 4850 LF on N & S side
3) Pvt section 165 #/SY of 12.5mm Superpave
   4" GAB
4) This cost to be incurred by Sandy Springs when constructing the Park

A) (165 #/SY)[(2 * 4850LF)(4')/9] / 2000 * $80/TN = $28,453
D) (2 * 4850 LF)(4')($\frac{1"}{12}$)($\frac{150\,\#}{CF}$)/2000 * $30/TN = $29,100

Total = 57,553

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 7

SHEET NO.: 3 of 4

ROW Consideration:

1) Parcels through this area noted by [#W] are being acquired by GDOT. Parcel noted w/ [#P] are being acquired by Sandy Springs for development of the park.

2) Length of frontage on N side = (201+50 to 223+50) - 70LF = 2130 LF

3) Length of frontage on S. side = (200+50 - 201+70) + (220+70 - 226+60) = 1010 LF

4) Assuming 4' of ROW can be removed from GDOT cost & added to remnant cost for Sandy Springs to acquire.

5) Assuming $10/SF of residential + 247.20% mark-up

Area = (2130 + 1010)(4') = 12,560 SF

Base Cost = (12,560)($10/SF) = $125,000

Mark-up = $125,000 * 2.472 = $310,483

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 7

SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
402-4510, 12.5 mm Superpave	TN	4,448	80.00	355,840	4,096	80.00	327,680
402-4510, 19 mm Superpave	TN	7,182	80.00	574,560	6,713	80.00	537,040
402-4510, 25 mm Superpave	TN	10,774	80.00	861,920	8,897	80.00	711,760
310-1101, GAB	TN	36,330	30.00	1,089,900	33,450	30.00	1,003,500
Subtotal				2,882,220			2,579,980
Construction Mark-up at 10%				288,222			257,998
Construction Total				3,170,442			2,837,978
Right-of-Way Cost (ROW)							
(Net difference of 12,560 SF)	SF	12,560	10.00	125,600			
ROW Mark-up at 247.20%				310,483			
ROW Total				436,083			
Note: Unit cost of ROW is assumed at $10.00/SF							
	Sub-total			3,606,525			2,837,978
Mark-up at	INCL			INCL			INCL
	TOTAL			3,606,525			2,837,978

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 8

DESCRIPTION: **ELIMINATE SIDEWALK PAVING ONLY ON PORTIONS OF JOHNSON FERRY ROAD AND ON RIVER VALLEY ROAD**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN: (Sketch attached)

The current design calls for the use of 8-foot wide sidewalks on both sides of Johnson Ferry and River Valley Roads.

ALTERNATIVE: (Sketch attached)

Eliminate the concrete paving only at the locations noted above but retain all earthwork and shoulder configurations. It is noted that additional savings can be obtained by providing sidewalks on one side of selected side streets such as: North Harbor Drive, Breakwater Ridge, Lauran Woods Drive, and Bernard Place.

ADVANTAGES:

- Initial cost savings
- Reduces City of Sandy Springs effort for final intersection completion
- Increases green space
- Strategically places sidewalks where needed
- Decreases construction duration
- Sidewalks on grades steeper than 5% are extremely difficult for the disabled to use

DISADVANTAGES:

- Does not follow original project scope
- Does not provide a continuous system for pedestrian traffic in either direction
- Loss of a perceived amenity

DISCUSSION:

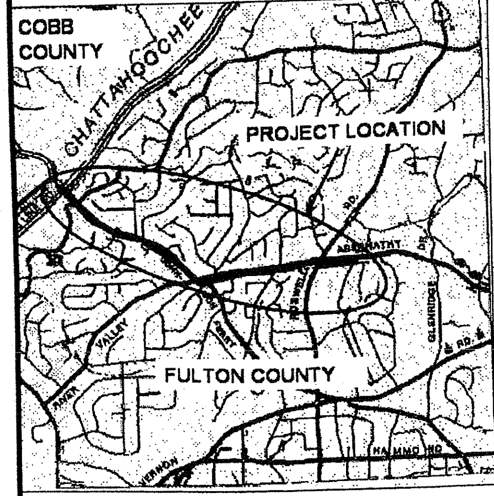
Sidewalk systems promote pedestrian traffic in close-knit residential and commercial communities such as the area on the east end of the project where existing commercial properties already exist or at Columns Drive on the west end of the project due to the Chattahoochee River National Recreation Area. This project has a unique location for sidewalk and multi-use trails along Johnson Ferry and Abernathy Roads; however, the location on Johnson Ferry Road between Station (STA) 123+00 to STA 145+00, right and left is questionable due to the existence and proposed grades exceeding 5.00% and are not conducive to pedestrian traffic. This is evident from the lack of use of the existing sidewalks on the Cobb County side of the river. As such, elimination the concrete sidewalk paving on this section of the project is appropriate.

The sidewalk paving along River Valley Road can also be eliminated, as it would have to be demolished after the project's completion in order to allow the City of Sandy Springs to make the final intersection configuration. (See related Alternative Nos. 1 and 27.)

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 811,602**	**$**	**$ 811,602**
ALTERNATIVE	**$ 144,573**	**$**	**$ 144,573**
SAVINGS	**$ 667,029**	**$**	**$ 667,029**

c:\temp\000\751300CV01.prf
\\gdot-dsnl\gocfg\resources\Gdot98half_GOK1p8000.tbl

mreltz



LOCATION SKETCH

NOTE: THE CO-ORDINATES LISTED ARE GA WEST ZONE GRID CO-ORDINATES BASED ON THE GA. STATE PLANE CO-ORDINATE SYSTEM OF 1988
HORIZONTAL DATUM : NAD 83/94 HARN
VERTICAL DATUM : NAVD 1988

MIDPOINT COORDINATE	MIDPOINT COORDINATE
STATION 147+00.00 N 1433060.1319 E 2226679.9710	STATION 223+62.5 N 1432077.2938 E 2231353.715
JOHNSON FERRY ROAD	ABERNATHY ROAD

P.I. 751300 IS LOCATED 100 % IN FULTON CO. AND CONGRESSIONAL DISTRICT 6.
P.I. 751310 IS 70% IN CONGRESSIONAL DISTRICT 6 AND 30% IN CONGRESSIONAL DISTRICT 5

PROJECT IS ON LOCAL BIKE PATH

PROJECT DESIGNATION : EXEMPT
PDP CLASSIFICATION : MAJOR
FUNCTIONAL CLASSIFICATION : URBAN PRINCIPAL ARTERIAL JFR
FUNCTIONAL CLASSIFICATION : URBAN COLLECTOR ABERNATHY

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

8

SHEET 2 OF 4

PLAN AND PROFILE OF PROPOSED
JOHNSON FERRY ROAD AND ABERNATHY ROAD WIDENING FROM THE CHATTAHOOCHEE RIVER TO ROSWELL ROAD

STATE AID PROJECT

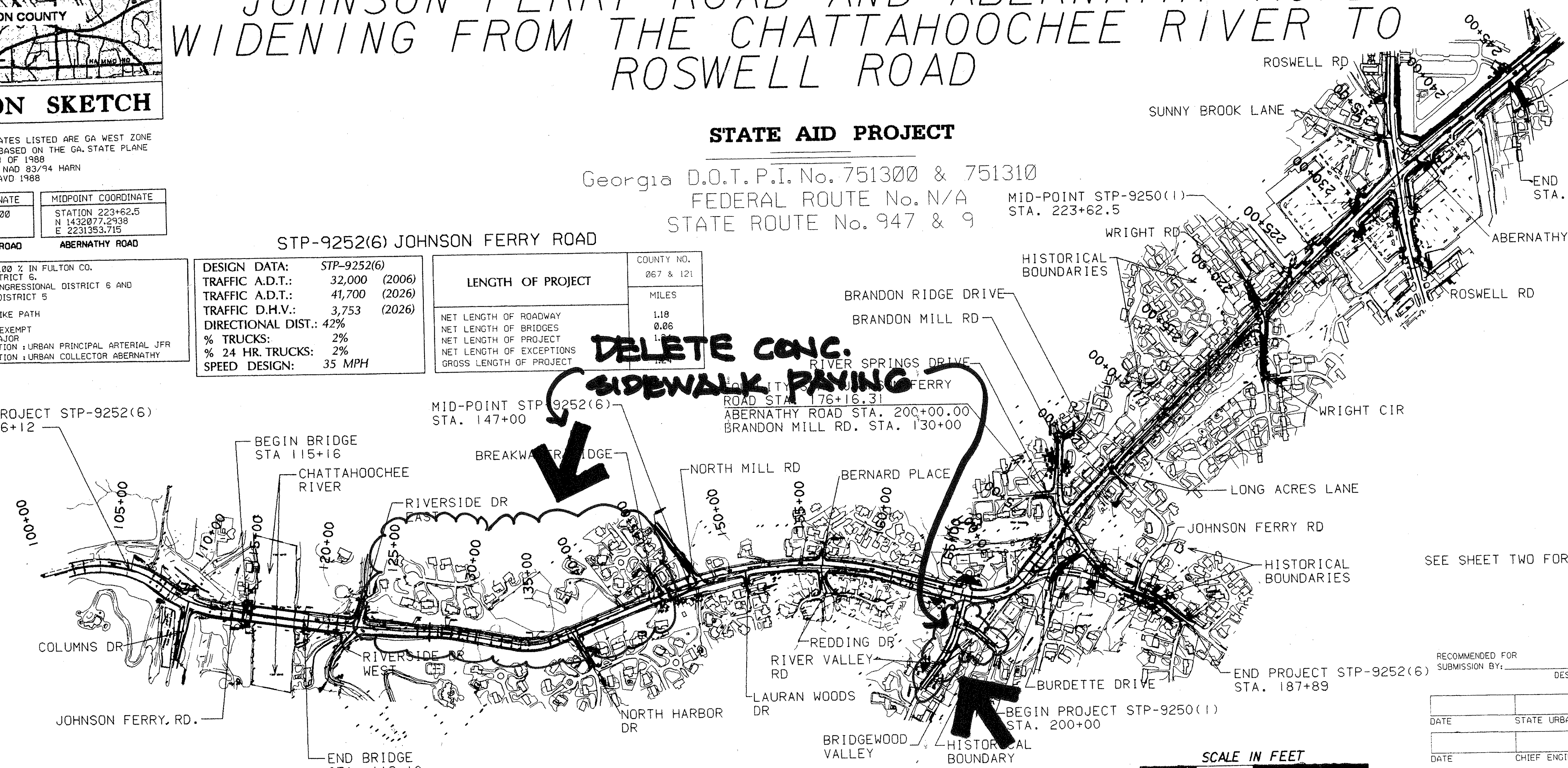
Georgia D.O.T. P.I. No. 751300 & 751310
FEDERAL ROUTE No. N/A
STATE ROUTE No. 947 & 9

STP-9252(6) JOHNSON FERRY ROAD

DESIGN DATA:	STP-9252(6)	
TRAFFIC A.D.T.:	32,000	(2006)
TRAFFIC A.D.T.:	41,700	(2026)
TRAFFIC D.H.V.:	3,753	(2026)
DIRECTIONAL DIST.:	42%	
% TRUCKS:	2%	
% 24 HR. TRUCKS:	2%	
SPEED DESIGN:	35 MPH	

LENGTH OF PROJECT	COUNTY NO. 067 & 121
	MILES
NET LENGTH OF ROADWAY	1.18
NET LENGTH OF BRIDGES	0.06
NET LENGTH OF PROJECT	1.24
NET LENGTH OF EXCEPTIONS	
GROSS LENGTH OF PROJECT	1.24

DELETE CONC. SIDEWALK PAVING



SEE SHEET TWO FOR INDEX

SCALE IN FEET
0 400 800 1600

STP-9250(1) ABERNATHY ROAD

DESIGN DATA:	STP-9250(1)	
TRAFFIC A.D.T.:	23,000	(2006)
TRAFFIC A.D.T.:	34,600	(2026)
TRAFFIC D.H.V.:	3,114	(2026)
DIRECTIONAL DIST.:	50%	
% TRUCKS:	2%	
% 24 HR. TRUCKS:	2%	
SPEED DESIGN:	35 MPH	

LENGTH OF PROJECT	COUNTY NO. 121
	MILES
NET LENGTH OF ROADWAY	0.93
NET LENGTH OF BRIDGES	N/A
NET LENGTH OF PROJECT	0.93
NET LENGTH OF EXCEPTIONS	0
GROSS LENGTH OF PROJECT	0.93

RECOMMENDED FOR SUBMISSION BY: ______ DESIGN GROUP MANAGER

DATE — STATE URBAN DESIGN ENGINEER

DATE — CHIEF ENGINEER

LOCATION AND DESIGN APPROVAL DATE

PLANS COMPLETED DATE

REVISION DATES:

NOTE:
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS DRAWINGS, OF PHOTOGRAPHS USED, OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO 'STATE HIGHWAY DEPARTMENT OF GEORGIA', 'STATE HIGHWAY DEPARTMENT', 'GEORGIA STATE HIGHWAY DEPARTMENT', 'HIGHWAY DEPARTMENT', OR 'DEPARTMENT' WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA MEAN, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS, OR IN ANY WAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF THE BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

COBB COUNTY STP-9252(6)
FULTON COUNTY STP-9252(6) & STP-9250(6)

COVERS

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 8

SHEET NO.: 3 of 4

ESTIMATED LENGTH OF SIDEWALK:

STA. 123+00 TO STA. 145+00 RT & LT.

3800 LF x 8.00' = 30,400 FT.²

= 30,400 FT²/9

= 3377.77 SY

SIDEWALK AREA = 3378 SY x .10%

= 337.8 = 338 + 3378 = 3716 SY x $30.00

= $111,480 REDUCTION

RIVER VALLEY ROAD:

STA. 1198+50 TO STA. 1207+52.65

ESTIMATED LENGTH OF SIDEWALK = 1806.00 LF x 5'/9

AREA = 1003.00 SY (10%) = 100.3 + 1003 = 1103.3

INSTALLED COST = 1103.00 x $30.00

= $33,090

* RIVER VALLEY IS A CITY OF SANDY SPRINGS SCHEDULED FOR CONSTRUCTION. CONSIDERATION MAY GIVEN TO ALLOW THIS INTERSECTION TO BE LET BY THE CITY OF SANDY SPRINGS, THUS A COST REDUCTION TO THIS PROJECT. BOTH CONSTRUCTION AND RIGHT-OF-WAY.

OTHER SIDE STREET LOCATIONS WITH SIDEWALK MAY ONLY BE NEEDED ON ONE SIDE!

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 8

SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
441-0104 Concrete Sidewalk, 4"	SY	24,594	30.00	737,820	4,381	30.00	131,430
Note: The Johnson Ferry Road estimate indicates 24,594 SY of sidewalks vs. a calculate area of 17,251 SY. This discrepancy needs to be resolved.							
	Sub-total			737,820			131,430
Mark-up at	10.00%			73,782			13,143
	TOTAL			811,602			144,573

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 14

DESCRIPTION: **USE 11-FOOT LANES ON JOHNSON FERRY ROAD BRIDGE IN LIEU OF 12-FOOT LANES**

SHEET NO.: **1 of 5**

ORIGINAL DESIGN: (Sketch attached)

The current design denotes the Johnson Ferry Road bridge width to be 120 feet from parapet face-to-face. Each side of the bridge consists of one 10-foot sidewalk, two 2-foot gutters, three 12-foot lanes, and a 6-foot raised median.

ALTERNATIVE: (Sketch attached)

Use three 11-foot lanes on each side of the Johnson Ferry Road bridge resulting in a 6-foot reduction in overall bridge width.

ADVANTAGES**:**

- Initial cost savings
- Eliminates one line of beams
- Matches lane width on south side of Riverside Drive

DISADVANTAGES:

- Perceived loss of safety due to narrower lanes
- Does not match lane width on the north side of Columns Drive

DISCUSSION:

One line of beams can be omitted by increasing beam spacing from 8'-2" to 8'-7". Since 11-foot lanes are used from Riverside Drive to Roswell Road/SR 9, they should be acceptable on the bridge.

The change in travel lane width on Johnson Ferry Road occurs on the south side of the Riverside Road intersection. Since the far right southbound lane on Johnson Ferry Road drops off at Columns Drive, the transition to 11-foot lanes on the bridge would be imperceptible to the commuting traffic. (See related Alternative No. 26.)

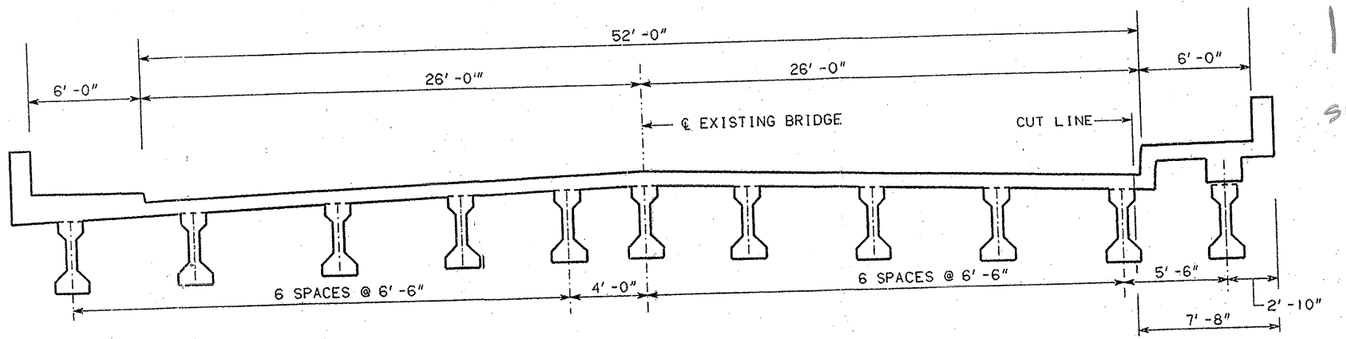
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 422,574**	**$**	**$ 422,574**
ALTERNATIVE	**$ 327,470**	**$**	**$ 327,470**
SAVINGS	**$ 95,104**	**$**	**$ 95,104**

14

SHEET 2 OF 5

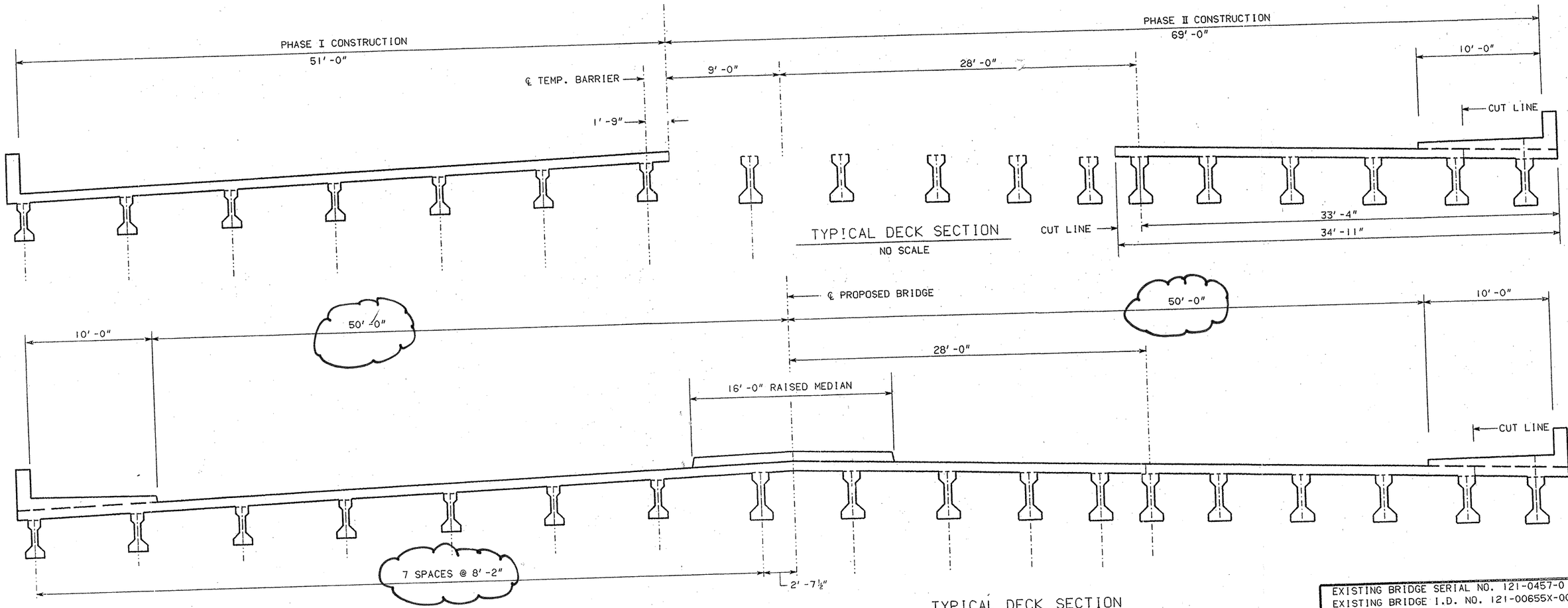
----CONSTRUCTION SEQUENCE----

1. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE I CONSTRUCTION.
2. CONSTRUCT PHASE I PORTION OF BRIDGE, EXCLUDING SIDEWALK.
3. PLACE TEMPORARY BARRIER ON PHASE I SECTION. SHIFT AND MAINTAIN FOUR LANES OF TRAFFIC ON PHASE I SECTION.
4. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE II CONSTRUCTION.
5. REMOVE PORTION OF EXISTING BRIDGE DECK AND APPROACH SLABS AS PER THE SPECIFICATIONS. REMOVE EXISTING PARAPET.
6. JACK BEAMS TO CORRECT CROSS SLOPE ON EXISTING PORTION OF BRIDGE.
7. CONSTRUCT PHASE II PORTION OF DECK AND HANDRAIL.
8. RELOCATE TEMPORARY BARRIER AS NECESSARY TO CONSTRUCT SIDEWALK ON PHASE I SECTION.
9. REMOVE TEMPORARY BARRIER FROM BRIDGE. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON NEW BRIDGE.



TYPICAL DECK SECTION

NO SCALE



TYPICAL DECK SECTION

NO SCALE

TYPICAL DECK SECTION

NO SCALE

ORIGINAL DESIGN

EXISTING BRIDGE SERIAL NO. 121-0457-0
EXISTING BRIDGE I.D. NO. 121-00655X-002.16N
P.I. NO. 751300

TYPICAL DECK SECTIONS
PROJECT : STP-9252(6)
NAME: WIDENING C.R. 655 (JOHNSON FERRY RD.) OVER THE CHATTAHOOCHEE RIVER
COBB-FULTON CO.

DRAWN BY : ELS
DATE : APRIL 26, 2005
SCALE : AS SHOWN
PREPARED BY : STB

2 OF 2

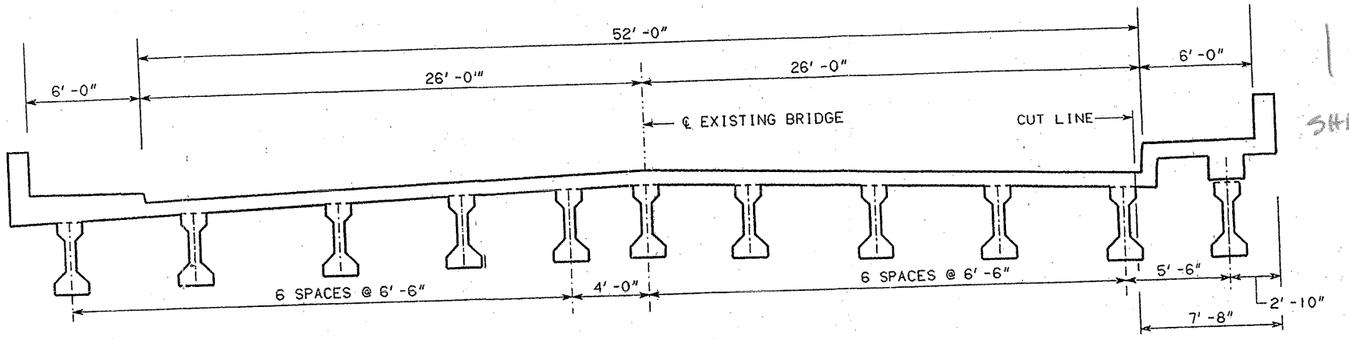
B751300A.DG

14

SHEET 3 OF 5

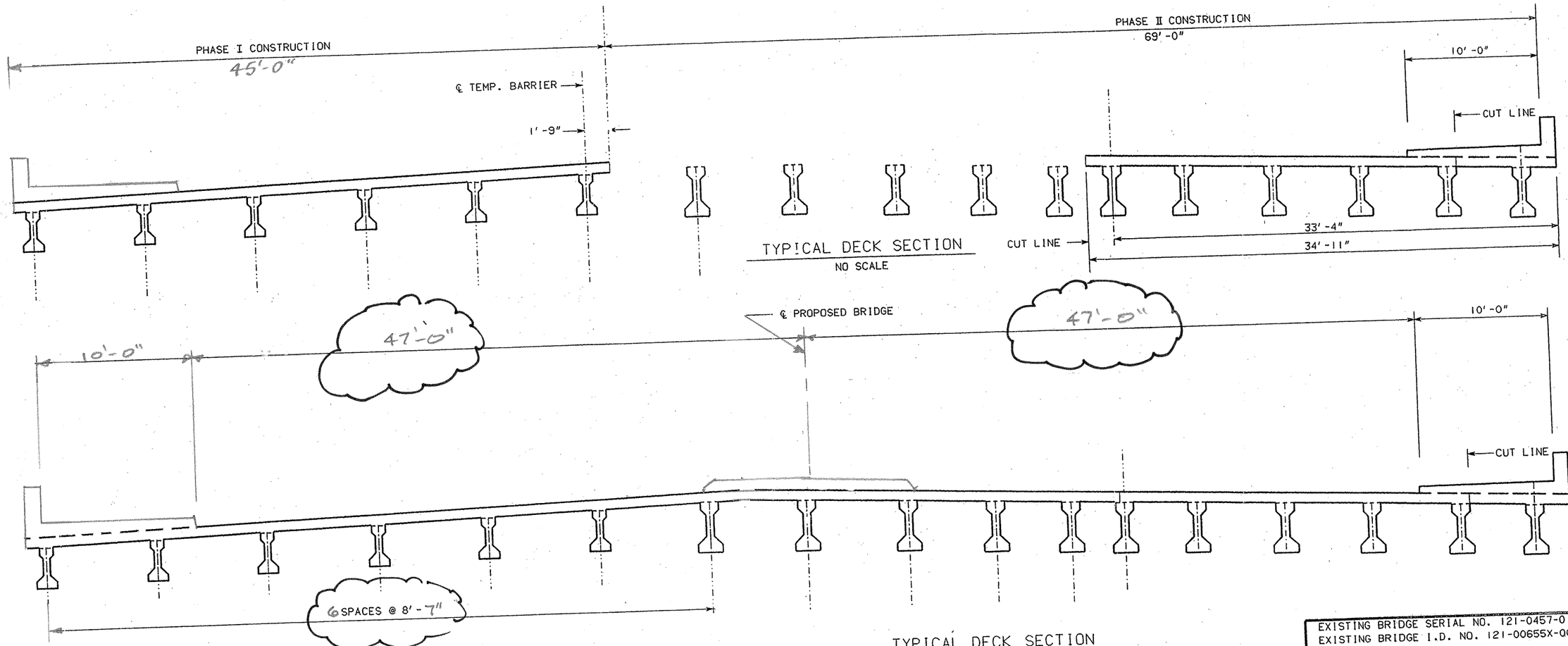
----CONSTRUCTION SEQUENCE----

1. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE I CONSTRUCTION.
2. CONSTRUCT PHASE I PORTION OF BRIDGE, EXCLUDING SIDEWALK.
3. PLACE TEMPORARY BARRIER ON PHASE I SECTION. SHIFT AND MAINTAIN FOUR LANES OF TRAFFIC ON PHASE I SECTION.
4. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE II CONSTRUCTION.
5. REMOVE PORTION OF EXISTING BRIDGE DECK AND APPROACH SLABS AS PER THE SPECIFICATIONS. REMOVE EXISTING PARAPET.
6. JACK BEAMS TO CORRECT CROSS SLOPE ON EXISTING PORTION OF BRIDGE.
7. CONSTRUCT PHASE II PORTION OF DECK AND HANDRAIL.
8. RELOCATE TEMPORARY BARRIER AS NECESSARY TO CONSTRUCT SIDEWALK ON PHASE I SECTION.
9. REMOVE TEMPORARY BARRIER FROM BRIDGE. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON NEW BRIDGE.



TYPICAL DECK SECTION

NO SCALE



TYPICAL DECK SECTION

NO SCALE

TYPICAL DECK SECTION

NO SCALE

ALTERNATIVE DESIGN

EXISTING BRIDGE SERIAL NO. 121-0457-0
EXISTING BRIDGE I.D. NO. 121-00655X-002.16N
P.I. NO. 751300

TYPICAL DECK SECTIONS
PROJECT : STP-9252(6)
NAME: WIDENING C.R. 655 (JOHNSON FERRY RD.) OVER THE CHATTAHOOCHEE RIVER
COBB-FULTON CO.
DRAWN BY : ELS
DATE : APRIL 26, 2005
PREPARED BY : STB
SCALE : AS SHOWN

2 OF 2

B751300A.DG

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 14

DECK CONCRETE:

ORIGINAL $51' \times 394' \times (8\frac{1}{8}"/12)/27 = 504$ CY

ALTERNATIVE: DECK $t = 8\frac{3}{8}"$ DUE TO INCREASED BEAM SPACING.

INCREASE IN DECK REINFORCING IS NEGLIGIBLE.

$45' \times 394' \times (8\frac{3}{8}"/12)/27 = 458$ CY

REDUCE BEAM QUANTITY BY DELETING ONE LINE OF BEAMS.

REDUCTION = $5(55.33) + 2(56.17) = 389$ LF

BEAM UNIT PRICE FROM GEORGIA DOT ITEM MEAN SUMMARY

REDUCE CAP CONCRETE BY REMOVING ONE BEAM

CHANGE IN CAP LENGTH = $5(8.5833) - 6(8.1667)$
$= -6.0833'$

ASSUME CAP IS $3' \times 3'-6"$, 6 CAPS

REDUCTION = $6(3)(3.5)(6.0833)/27 = 14$ CY

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 14

SHEET NO.: 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Deck Concrete	CY	504	650	327,600	458	650	297,700
Cap Concrete	CY	14	650	9,100			
Type II PSC Beam	LF	389	122	47,458			
	Sub-total			384,158			297,700
Mark-up at	10.00%			38,416			29,770
	TOTAL			422,574			327,470

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

DESCRIPTION: **ELIMINATE BENT NOS. 2, 4, AND 6 ON JOHNSON FERRY ROAD AND USE LONGER SPANS**

SHEET NO.: **1 of 7**

ORIGINAL DESIGN:

The current design for the Johnson Ferry Road bridge calls for the end spans to be 57 feet with intermediate spans at 56 feet. Concrete bents are used throughout and all the beams are Type II prestressed concrete (PSC) beams.

ALTERNATIVE:

Eliminate Bent Nos. 2, 4, and 6 and lengthen the spans. The end spans would be 113 feet at the north end and remain 57 feet at the south end. Two intermediate spans at 112 feet would be used.

ADVANTAGES:

- Initial cost savings
- Easier to construct due to less construction in the River

DISADVANTAGES:

- Requires deeper beams
- Results in differential deflections
- Affects appearance from the downstream side of the River

DISCUSSION:

63-inch Bulb-T beams would be used in lieu of the Type II (36-inch deep) beams of the original design. While these beams would decrease the clearance over the water, there would still be approximately 1.3 feet of clearance at the 100-year flood.

At the midspan point of the alternative longer spans, the existing beams would be supported on intermediate bents. At this location, the maximum live load deflection on the new portion would occur with no deflection on the existing portion. As the truck traffic is only 2%, few trucks traverse this route. In addition, the live load deflection due to passenger vehicles would be minimal and anyone crossing the joint between the long and short spans would experience a very small bump.

The remaining bents will line up with the existing bents so as not to affect the hydraulics or boat traffic on the River.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 1,259,199**	**$**	**$ 1,259,199**
ALTERNATIVE	**$ 1,105,012**	**$**	**$ 1,105,012**
SAVINGS	**$ 154,187**	**$**	**$ 154,187**

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

SHEET NO.: 2 of 7

CALCULATIONS ARE BASED ON THE FOLLOWING ASSUMPTIONS:

1) SAME NUMBER OF LINES OF BEAMS ON ORIGINAL AND ALTERNATIVE DESIGNS

2) 63" BULB-T PSC BEAMS WILL BE USED IN THE ALTERNATIVE 113' AND 112' SPANS. TYPE II BEAMS WILL BE USED IN THE SOUTH END SPAN FOR EACH OPTION.

3) SUBSTRUCTURE CONSISTS OF CAST-IN-PLACE CONCRETE BENTS WITH 3' SQUARE COLUMNS AND 7'-6" SQUARE BY 2'-6" FOOTINGS WITH SEALS AND COFFERDAMS.

4) ALL UNIT PRICES EXCEPT FOR SUPERSTRUCTURE AND SUBSTRUCTURE CONCRETE ARE FROM THE LATEST GEORGIA DOT ITEM MEAN SUMMARY. UNIT PRICE FOR STRUCTURAL CONCRETE IS $650 FROM THE PROJECT COST ESTIMATE.

5) BECAUSE OF REDUCED EFFECTIVE SPAN, THE DECK THICKNESS FOR THE ALTERNATIVE BRIDGE IS 7 7/8" VERSUS 8 1/8" ON THE ORIGINAL DESIGN.

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

SHEET NO.: 3 of 7

QUANTITY CALCULATIONS:

DECK CONCRETE:

ORIGINAL $394(51)(8.125/12)/27 = 504$ CY

ALTERNATIVE $394(51)(7.875/12)/27 = 488$ CY

PSC BEAMS

ORIGINAL: TYPE II BEAMS

$7[5(55.33)+2(56.17)] = 2723$ LF

ALTERNATIVE:

63" BULB-T ON LONG SPANS

$7[112.17+2(111.33)] = 2344$ LF

TYPE II IN SOUTH END SPAN

$7(56.17) = 393$ LF

SUBSTRUCTURE:

BASED ON PLANS FOR PREVIOUS WIDENING, USE CONCRETE BENTS WITH SPREAD FOOTINGS WITH COFFERDAMS AND SEAL CONCRETE. USE BOTTOM OF SEAL ELEVATIONS FROM PREVIOUS WIDENING. ASSUME WATER SURFACE ELEVATION IS 800. USE P/G ELEVATIONS FROM PREVIOUS WIDENING PLANS.

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

SHEET NO.: 4 of 7

BENT CAP IS 3'-6" DEEP BY 3'-0" WIDE, 53' LONG
COLUMNS ARE 3' SQUARE, 2 PER BENT
FOOTINGS ARE 7'-6" SQUARE x 2'-6", 2 PER BENT
SEALS ARE 10'-6" SQUARE. SEAL H_T, H_S, IS
0.4X(WATER SURFACE ELEV. - BOTTOM OF SEAL ELEV.)

FOR ORIGINAL DESIGN, BOTTOM OF CAP IS
$0.83_{\text{SLAB}} + 3_{\text{BEAM}} + .17_{\text{BRNG}} + 3.5_{\text{CAP}} = 7.5'$ BELOW P/G

FOR ALTERNATIVE DESIGN, BOTTOM OF CAP IS
$0.83 + 5.25_{\text{BEAM}} + .17 + 3.5 = 9.75'$ BELOW P/G

QUANTITIES PER BENT (Hc = COLUMN HEIGHT)

CAP $53 \times 3 \times 3.5/27 = 20.6$ CY
COLUMNS $2(3^2)(H_c)/27 = 2H_c/3$ CY
FOOTINGS $2(7.5^2)(2.5)/27 = 10.4$ CY
$\Sigma = 31 + 2H_c/3$

SEAL $2(10.5^2)(H_S)/27 = 8.2H_S$ CY

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

ORIGINAL DESIGN

BENT	PROFILE GRADE ELEV.	BOTTOM OF CAP ELEV.	BOTTOM OF SEAL ELEV.	Hs	Hc	BENT QUANTITY	SEAL QUANTITY
2	815.2	807.7	791	3.6	10.6	38	30
3	815.7	808.2	790	4.0	11.7	39	33
4	816.6	809.1	790	4.0	12.6	39	33
5	818.0	810.5	790	4.0	14.0	40	33
6	819.8	812.3	791	3.6	15.2	41	30
7	822.0	814.5	791	3.6	17.4	43	30
					Σ	240	189

COFFERDAMS 2(6) = 12

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 15

ALTERNATIVE DESIGN

COLUMN HEIGHT IS (9.75 - 7.5) = 2.25' LESS THAN ORIGINAL DESIGN

BENT	Hc	BENT QUANTITY	SEAL QUANTITY
2	—	—	—
3	9.45	37	33
4	—	—	—
5	11.75	39	33
6	—	—	—
7	15.15	41	30
	Σ	117	96

COFFERDAMS 3(2) = 6

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 15

SHEET NO.: 7 of 7

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Deck Concrete	CY	504	650	327,600	488	650	317,200
Type II PSC Beam	LF	2,723	122	332,206	393	122	47,946
63" Bulb-T Beams	LF				2,344	170	398,480
Substructure Concrete	CY	240	650	156,000	117	650	76,050
Seal Concrete	CY	189	280	52,920	96	280	26,880
Cofferdams	EA	12	23,000	276,000	6	23,000	138,000
	Sub-total			1,144,726			1,004,556
Mark-up at	10.00%			114,473			100,456
	TOTAL			1,259,199			1,105,012

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 16

DESCRIPTION: **SELECTIVELY ELIMINATE INTERSECTIONS**

SHEET NO.: **1 of 3**

ORIGINAL DESIGN: (Sketch attached)

The current design calls for multiple intersections along the Johnson Ferry Road and Abernathy Road corridor. These intersections are Johnson Ferry Road with Columns Drive, Riverside Drive, North Harbor Drive, Breakwater Ridge, North Mill Road, Lauran Woods Drive, Redding Drive, Bernard Place, River Valley Road and Brandon Mill Road; and Abernathy Road with Brandon Mill Road, Long Acres Road, Wright Road, and finally Roswell Road / SR 9.

ALTERNATIVE:

The following intersections could be eliminated by providing cul-de-sacs at the corresponding roadways: North Harbor Road, North Mill Road, Burdett Drive at Johnson Ferry Road South, and Long Acres Drive.

ADVANTAGES:

- Improves traffic flow
- Reduces travel time
- Alleviates congestion
- Increases capacity of the travel lanes
- Improves safety

DISADVANTAGES:

- Increases distance residents must travel to access Johnson Ferry and Abernathy Roads
- Possibly challenges pre-approved CAC recommendations
- Loss of perceived amenities
- Increases initial cost due to additional paving and possible right-of-way takes

DISCUSSION:

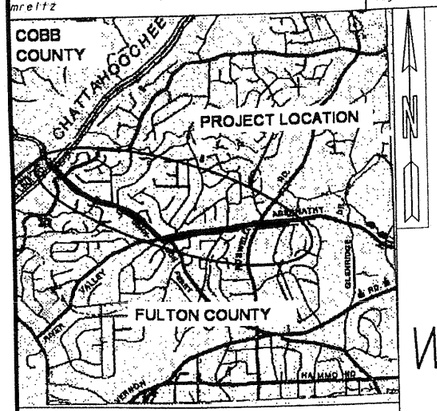
Eliminating selected intersections greatly improves the safety and operational aspects of the proposed widening of Johnson Ferry and Abernathy Roads corridor. Although some residents would oppose such closings and an increase in cost would most likely occur, the added benefits appear to warrant a second visit.

Furthermore, residential cut-through traffic would be eliminated if these intersections were closed providing added security and safety at the corresponding subdivisions.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS			

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

PLAN AND PROFILE OF PROPOSED
JOHNSON FERRY ROAD AND ABERNATHY ROAD
WIDENING FROM THE CHATTAHOOCHEE RIVER TO ROSWELL ROAD



LOCATION SKETCH

NOTE: THE CO-ORDINATES LISTED ARE GA WEST ZONE GRID CO-ORDINATES BASED ON THE GA. STATE PLANE CO-ORDINATE SYSTEM OF 1988
HORIZONTAL DATUM : NAD 83/94 HARN
VERTICAL DATUM : NAVD 1988

MIDPOINT COORDINATE	MIDPOINT COORDINATE
STATION 147+00.00	STATION 223+62.5
N 1433060.1319	N 1432077.2938
E 2226679.9710	E 2231353.715
JOHNSON FERRY ROAD	ABERNATHY ROAD

STATE AID PROJECT

Georgia D.O.T. P.I. No. 751300 & 751310
FEDERAL ROUTE No. N/A
STATE ROUTE No. 947 & 9

P.I. 751300 IS LOCATED 100 % IN FULTON CO. AND CONGRESSIONAL DISTRICT 6.
P.I. 751310 IS 70% IN CONGRESSIONAL DISTRICT 6 AND 30% IN CONGRESSIONAL DISTRICT 5

PROJECT IS ON LOCAL BIKE PATH

PROJECT DESIGNATION : EXEMPT
PDP CLASSIFICATION : MAJOR
FUNCTIONAL CLASSIFICATION : URBAN PRINCIPAL ARTERIAL JFR
FUNCTIONAL CLASSIFICATION : URBAN COLLECTOR ABERNATHY

STP-9252(6) JOHNSON FERRY ROAD

DESIGN DATA:	*STP-9252(6)*	
TRAFFIC A.D.T.:	*32,000*	*(2006)*
TRAFFIC A.D.T.:	*41,700*	*(2026)*
TRAFFIC D.H.V.:	*3,753*	*(2026)*
DIRECTIONAL DIST.:	*42%*	
% TRUCKS:	*2%*	
% 24 HR. TRUCKS:	*2%*	
SPEED DESIGN:	*35 MPH*	

LENGTH OF PROJECT	COUNTY NO. 067 & 121
	MILES
NET LENGTH OF ROADWAY	1.18
NET LENGTH OF BRIDGES	0.06
NET LENGTH OF PROJECT	1.24
NET LENGTH OF EXCEPTIONS	0
GROSS LENGTH OF PROJECT	1.24

SEE SHEET TWO FOR INDEX

SCALE IN FEET
0 400 800 1600

NOTE:
ALL REFERENCES IN THIS DOCUMENT, WHICH INCLUDES ALL PAPERS, WRITINGS, DOCUMENTS DRAWINGS, OF PHOTOGRAPHS USED. OR TO BE USED IN CONNECTION WITH THIS DOCUMENT, TO 'STATE HIGHWAY DEPARTMENT OF GEORGIA', 'STATE HIGHWAY DEPARTMENT', 'GEORGIA STATE HIGHWAY DEPARTMENT', 'HIGHWAY DEPARTMENT', OR 'DEPARTMENT' WHEN THE CONTEXT THEREOF MEANS THE STATE HIGHWAY DEPARTMENT OF GEORGIA MEAN, AND SHALL BE DEEMED TO MEAN THE DEPARTMENT OF TRANSPORTATION.

THE DATA, TOGETHER WITH ALL OTHER INFORMATION SHOWN ON THESE PLANS, OR IN ANY WAY INDICATED THEREBY, WHETHER BY DRAWINGS OR NOTES, OR IN ANY OTHER MANNER, ARE BASED UPON FIELD INVESTIGATIONS AND ARE BELIEVED TO BE INDICATIVE OF ACTUAL CONDITIONS. HOWEVER, THE SAME ARE SHOWN AS INFORMATION ONLY, ARE NOT GUARANTEED, AND DO NOT BIND THE DEPARTMENT OF TRANSPORTATION IN ANY WAY. THE ATTENTION OF THE BIDDER IS SPECIFICALLY DIRECTED TO SUBSECTIONS 102.04, 102.05, AND 104.03 OF THE SPECIFICATIONS.

COBB COUNTY STP-9252(6)
FULTON COUNTY STP-9252(6) & STP-9250(6)

STP-9250(1) ABERNATHY ROAD

DESIGN DATA:	*STP-9250(1)*	
TRAFFIC A.D.T.:	*23,000*	*(2006)*
TRAFFIC A.D.T.:	*34,600*	*(2026)*
TRAFFIC D.H.V.:	*3,114*	*(2026)*
DIRECTIONAL DIST.:	*50%*	
% TRUCKS:	*2%*	
% 24 HR. TRUCKS:	*2%*	
SPEED DESIGN:	*35 MPH*	

LENGTH OF PROJECT	COUNTY NO. 121
	MILES
NET LENGTH OF ROADWAY	0.93
NET LENGTH OF BRIDGES	N/A
NET LENGTH OF PROJECT	0.93
NET LENGTH OF EXCEPTIONS	0
GROSS LENGTH OF PROJECT	0.93

RECOMMENDED FOR SUBMISSION BY: _____ DESIGN GROUP MANAGER

DATE _____ STATE URBAN DESIGN ENGINEER

DATE _____ CHIEF ENGINEER

LOCATION AND DESIGN APPROVAL DATE

PLANS COMPLETED DATE

REVISION DATES:

COVERS

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 16

SHEET NO.: 3 of 3

POSSIBLE TO DELETE	INTERSECTIONS	OTHER ACCESS	MAJOR STREET
NO	COLUMNS DRIVE	NONE DIRECT	YES
NO	RIVERSIDE DRIVE	NONE DIRECT	YES
YES	NORTH HARBOR DRIVE	YES	NO
NO	BREAKWATER RIDGE	YES	YES
YES	NORTH MIM ROAD	YES	NO
NO	LAURIAN WOODS DRIVE	NO	—
NO	REDDING DRIVE	NO	—
NO	BARNARD PLACE	NO	—
NO	RIVER VALLEY ROAD	NONE DIRECT	YES
NO	JOHNSON FERRY RD SOUTH	YES	YES
NO	BRANDON MIM ROAD	NONE DIRECT	YES
YES	BUNDETT DRIVE @ JFRD SOUTH	NONE DIRECT	NO
YES	LONG ACRES DRIVE	YES	NO
NO	WRIGHT ROAD	NONE DIRECT	YES
NO	ROSWELL ROAD	NO	YES

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 17

DESCRIPTION: **ELIMINATE THE WRIGHT ROAD SIGNAL**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

The intersection of Wright and Abernathy Roads is indicated to be signalized.

ALTERNATIVE:

Remove the signal and crosswalks at this intersection.

ADVANTAGES:

- Initial cost savings
- Improves traffic flow
- Eliminates three signalized intersections in close proximity
- Reduces vehicular travel time

DISADVANTAGES:

- Challenges a CAC request
- Eliminates a pedestrian crosswalk
- Potential safety problems with crossing traffic

DISCUSSION:

Due to the close proximity of signalized intersections at Roswell Road/SR 9 east of Wright Road and at Johnson Ferry Road South/Brandon Mill Road, this signal may not be required. While requested by the CAC, traffic volumes do not justify a signal at this intersection. Driver expectation is not to have back-to-back signalized intersection.

Should this intersection remain signalized, the project would have six signalized intersections within its 2.17-mile length, which is approximately one every 1,900 feet within a residential area. This appears to be excessive.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 99,000**	**$**	**$ 99,000**
ALTERNATIVE	**$ 0**	**$**	**$ 0**
SAVINGS	**$ 99,000**	**$**	**$ 99,000**

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 17

SHEET NO.: 2 of 2

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Signal Installation	EA	1	90,000	90,000			
Sub-total				90,000			
Mark-up at 10.00%				9,000			
TOTAL				99,000			

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 18

DESCRIPTION: **USE CONCRETE PARAPET AND ALUMINUM HANDRAILS IN LIEU OF TEXAS HANDRAILS**

SHEET NO.: **1 of 5**

ORIGINAL DESIGN: (Sketch attached)

The current design calls for the use of "Texas Handrails" (cast-in-place concrete handrails with openings) on both sides of the Johnson Ferry Road bridge.

ALTERNATIVE: (Sketch attached ü)

Use a 13" wide x 2'-3" high (above the sidewalk) cast-in-place concrete parapet with a Georgia Standard 3626 aluminum handrail in lieu of the proposed Texas Handrail at the Johnson Ferry Road bridge.

ADVANTAGES**:**

- Initial cost savings
- Matches existing handrail system; although it is to be removed due to new sidewalks
- Simplifies design and construction

DISADVANTAGES:

- Changes the appearance of the bridge
- Affects aesthetics – less attractive

DISCUSSION:

The Texas Handrail system is considered more attractive than the standard Georgia handrail system; however, it costs more.

Bridges, particularly the Johnson Ferry Road bridge, are utilitarian in nature. Although this one is in close proximity to the Chattahoochee River National Recreation Area, its aesthetic value may not be appreciated due to the heavy volume of vehicular traffic on the bridge.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 208,032**	**$**	**$ 208,032**
ALTERNATIVE	**$ 116,314**	**$**	**$ 116,314**
SAVINGS	**$ 91,718**	**$**	**$ 91,718**

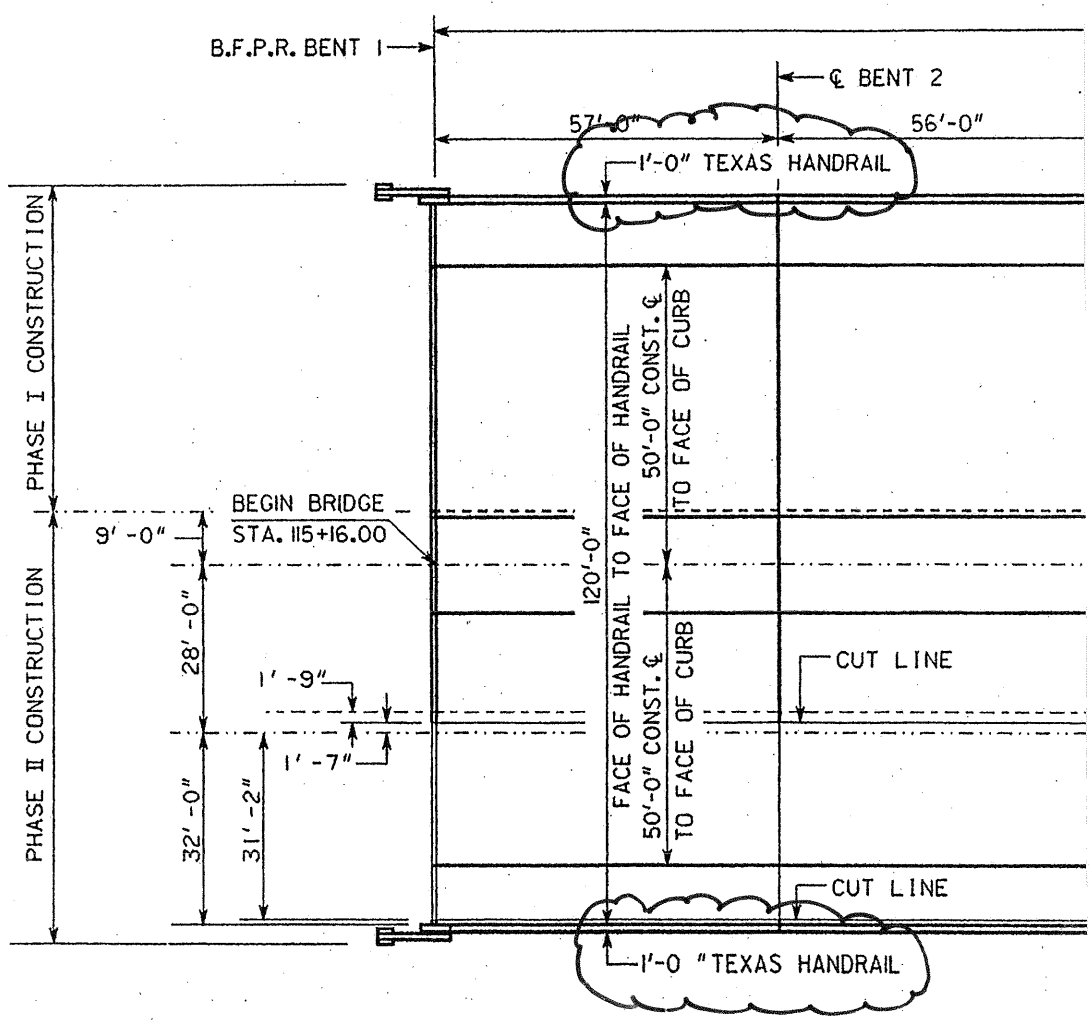
SKETCHES

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 18

☑ AS DESIGNED ☐ ALTERNATIVE

SHEET NO.: 2 of 5



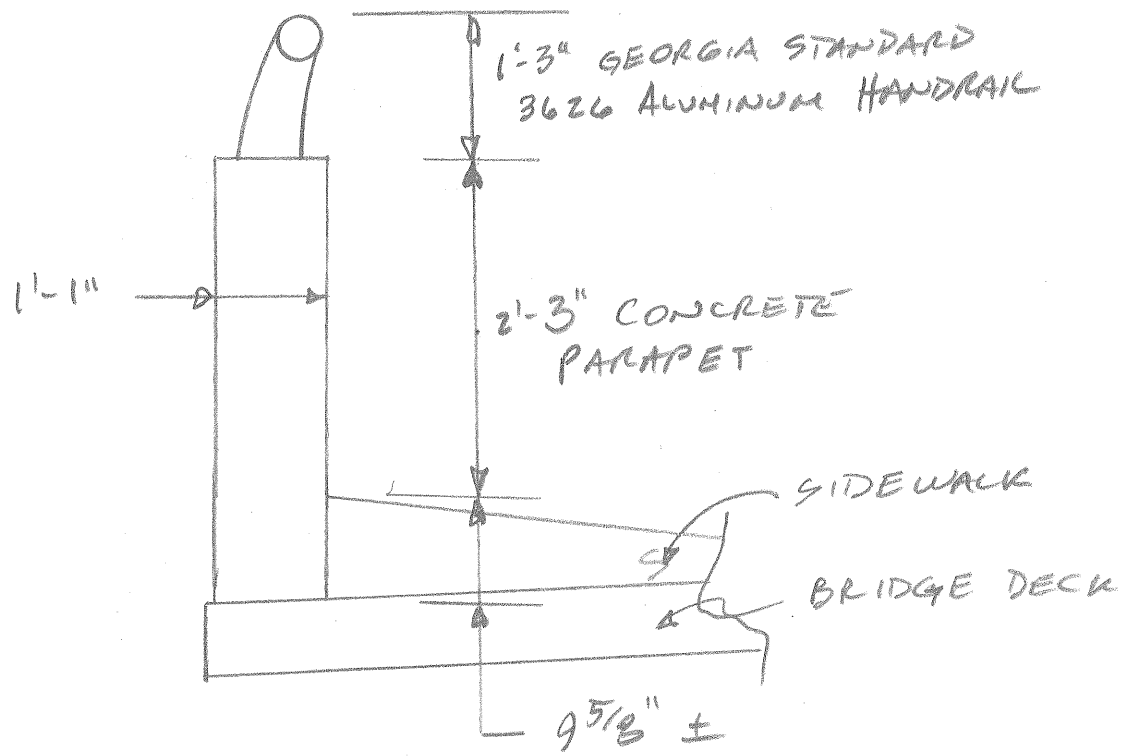
SKETCHES

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 18

☐ AS DESIGNED ☒ ALTERNATIVE

SHEET NO.: 3 of 5



PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 18

LIN FT TEXAS RAIL = 2(394) = 788 LF

PARAPET VOLUME = 2(394)(13/12)(2.25+.80)/27
= 96 CY

LIN FT ALUM. RAIL = 2(394) = 788 LF

ALUMINUM HANDRAIL PRICE PER L.F.
FROM GEORGIA DOT MEAN ITEM SUMMARY

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 18

SHEET NO.: 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Texas Handrail	LF	788	240	189,120			
Concrete Parapet	CY				96	650.00	62,400
Std 3626 Aluminum Handrail	LF				788	55.00	43,340
	Sub-total			189,120			105,740
Mark-up at	10.00%			18,912			10,574
	TOTAL			208,032			116,314

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 19

DESCRIPTION: **REPLACE CAST-IN-PLACE WALL WITH SOIL NAIL WALL**

ORIGINAL DESIGN:

The current design calls for the use of a cast-in-place cantilever reinforced concrete retaining wall between STA 127+29 and STA 129+85 on Johnson Ferry Road.

ALTERNATIVE: (Sketch attached)

Construct a soil nail retaining wall and retain only existing slopes.

ADVANTAGES:

- Initial cost savings
- Reduces impact on adjacent property
- More trees retained
- Quicker construction
- Increases/retains green space

DISADVANTAGES:

- Construction requires specialty contractor
- Leaves existing slopes in place

DISCUSSION:

Soil nail walls are constructed from the top down so the only excavation required is for the thickness of the wall facing. As such, soil nail walls can be constructed to retain the existing soil only so the wall area can be greatly reduced.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 355,542**	**$**	**$ 355,542**
ALTERNATIVE	**$ 187,264**	**$**	**$ 187,264**
SAVINGS	**$ 168,278**	**$**	**$ 168,278**

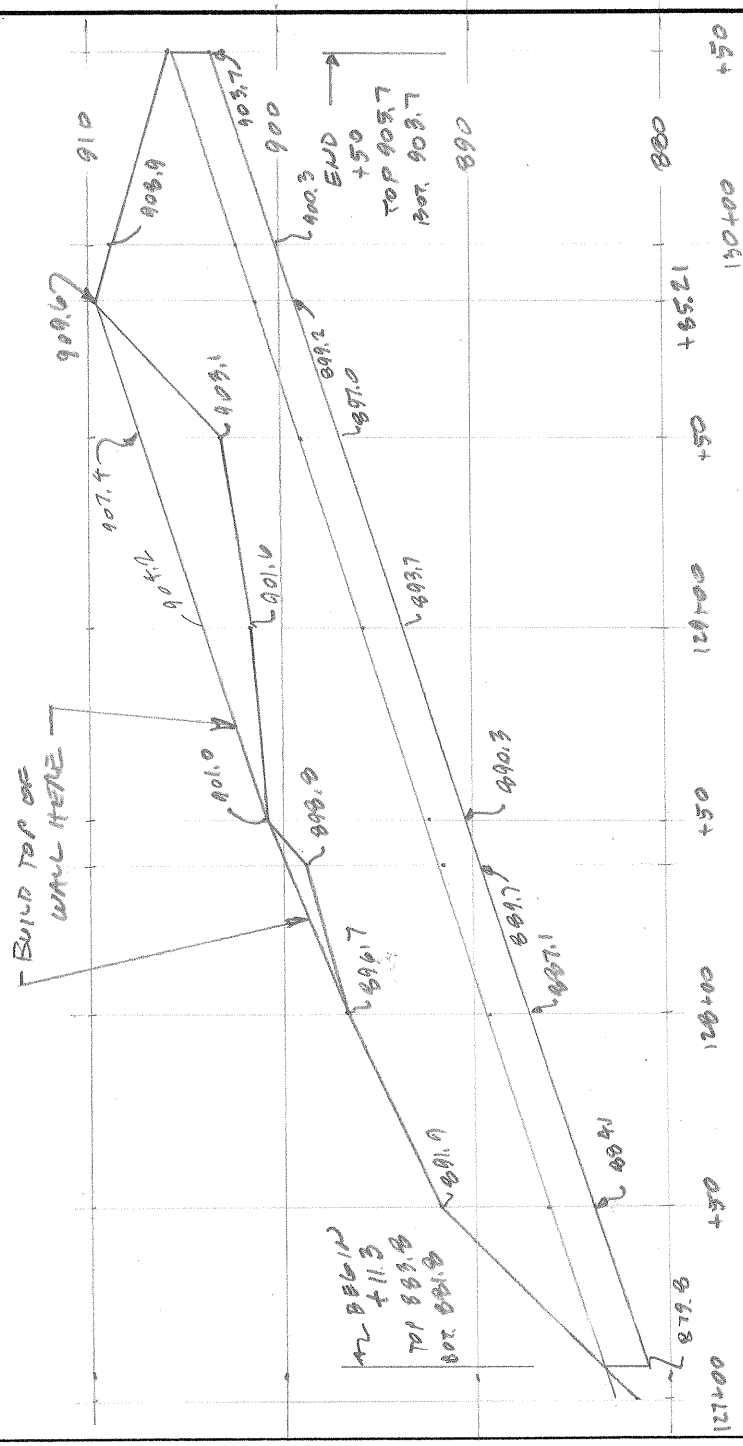
SKETCHES

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 19

☐ AS DESIGNED ☑ ALTERNATIVE

SHEET NO.: 2 of 5



CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 19

SHEET NO.: 3 of 5

ORIGINAL DESIGN WALL AREA:

$21(.5)(9.91 + 17.39) = 287$

$50(.5)(17.39 + 24.21) = 1040$

$50(.5)(24.21 + 25.05) = 1232$

$50(.5)(25.05 + 23.80) = 1221$

$50(.5)(23.80 + 18.36) = 1054$

$35.21(.5)(18.36 + 13.05) = 553$

$\Sigma = 5387$

C-I-P WALL UNIT PRICE OF $60/SF FROM STEVE WYCHE OF GEORGIA D.O.T. BRIDGE DESIGN OFFICE.

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 19

SHEET NO.: 4 of 5

SOIL NAIL WALL AREA

$39.7(.5)(2+7.8) = 190$
$50(.5)(7.8+9.6) = 435$
$50(.5)(9.6+10.7) = 508$
$50(.5)(10.7+10.4) = 527$
$35.21(.5)(10.4+10.4) = 366$
$14.79(.5)(10.4+8.6) = 141$
$50(.5)(8.6+2.0) = 265$

$\Sigma = 2432$

SOIL NAIL WALL UNIT PRICE OF $70/SF
FROM STEVE WYCHE OF GEORGIA DOT
BRIDGE DESIGN OFFICE

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 19

SHEET NO.: 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Cast-in-Place Conc. Retaining Wall	SF	5,387	60	323,220			
Soil Nail Wall	SF				2,432	70.00	170,240
	Sub-total			323,220			170,240
Mark-up at	10.00%			32,322			17,024
	TOTAL			355,542			187,264

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 21

DESCRIPTION: **ELIMINATE PEDESTRIAN RAMPS BELOW THE JOHNSON FERRY ROAD BRIDGE**

SHEET NO.: **1 of 6**

ORIGINAL DESIGN: (Sketch attached)

The current design indicates the use of pedestrian ramps on both the left and right sides of the roadway to cross beneath the Johnson Ferry Road bridge on the north side pf the River. The plan also proposes a pipe to be located under each ramp well.

ALTERNATIVE: (Sketch attached)

Eliminate the underpass walkway connecting the Chattahoochee River National Recreation Area and Columns Drive on the north side of the Chattahoochee River. The proposed pipe underneath the pedestrian ramps are to be modified and relocated to be maintained within the existing right-of-way on the right side and within a smaller portion of the required right-of-way on the left side of the bridge.

ADVANTAGES:

- Initial cost savings
- Reduces impacts of both cut and fill areas
- Reduces required right-of-way
- Reduction of sidewalk installation
- Promotes the use of the at-grade crossing at the intersection of Columns Drive and Johnson Ferry Road

DISADVANTAGES:

- Does not accommodate previously agreed-to CAC request for 8-foot sidewalks
- Loss of a perceived amenity
- Perceived reduction in pedestrian safety

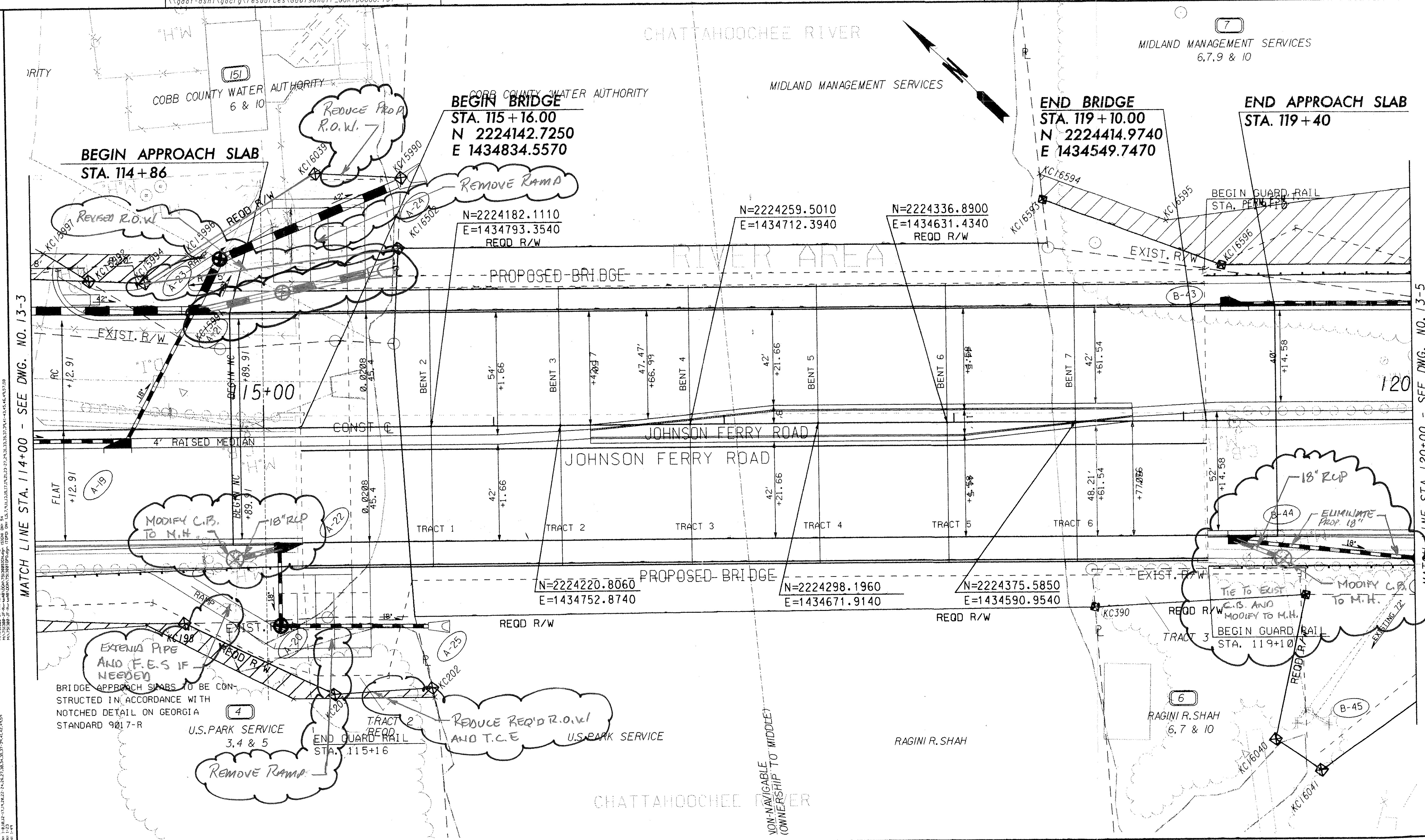
DISCUSSION:

The Johnson Ferry Road bridge is being designed with wider sidewalks on both sides. The proposed pedestrian underpass will not provide a significant advantage with the nearness of the Columns Drive and Johnson Ferry Road intersection that already has an at-grade pedestrian crossing that provides safe passage for pedestrians and recreational area users.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 451,972**	**$**	**$ 451,972**
ALTERNATIVE	**$ 0**	**$**	**$ 0**
SAVINGS	**$ 451,972**	**$**	**$ 451,972**

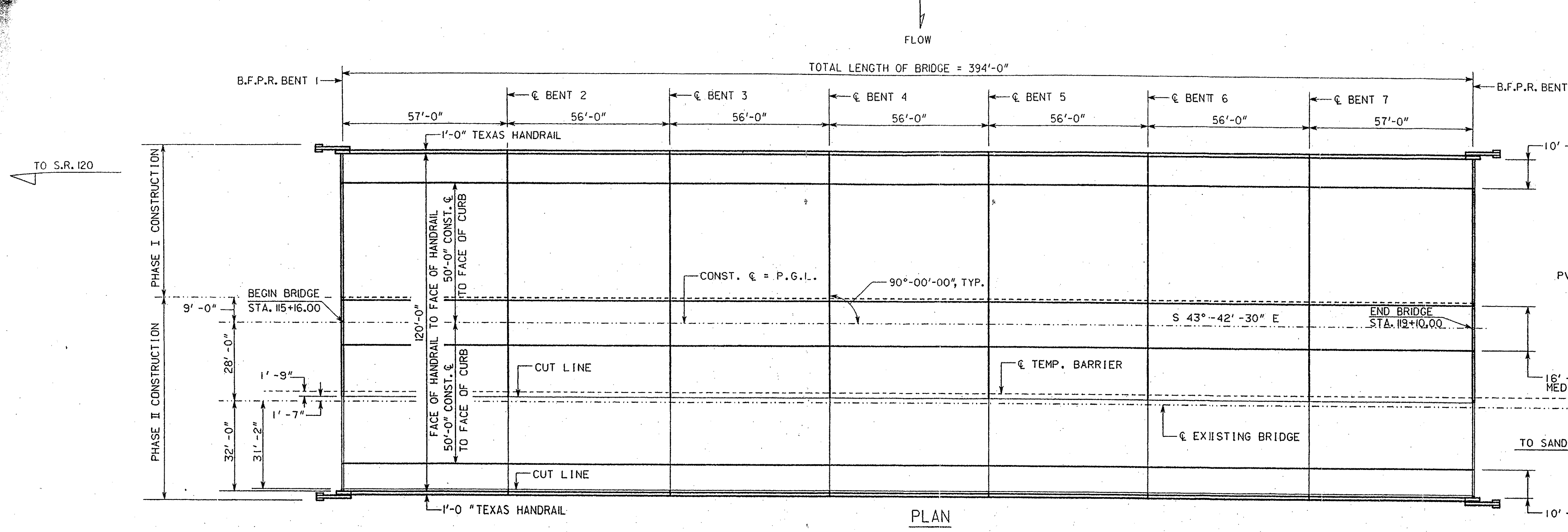
c:\temp\001\751300CP04.prf
\\gdot-dsnl\gocfg\resources\Gdot98half_GOKlp8000.tbl
M:\751300-JF-RvrtoAB\DGN\751300CP04.dgn ON 1-63

COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB / FULTON	STP-9250(1) / STP-9252(6)		

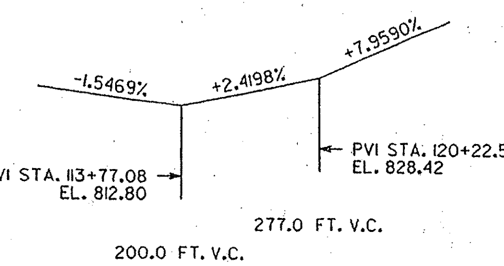

CHATTAHOOCHEE RIVER
COBB COUNTY WATER AUTHORITY 6 & 10
COBB COUNTY WATER AUTHORITY
MIDLAND MANAGEMENT SERVICES
MIDLAND MANAGEMENT SERVICES 6,7,9 & 10
BEGIN APPROACH SLAB
STA. 114+86
BEGIN BRIDGE
STA. 115+16.00
N 2224142.7250
E 1434834.5570
END BRIDGE
STA. 119+10.00
N 2224414.9740
E 1434549.7470
END APPROACH SLAB
STA. 119+40
Reduce Prop R.O.W.
Remove Ramp
Revised R.O.W.
REQD R/W
N=2224182.1110
E=1434793.3540
N=2224259.5010
E=1434712.3940
N=2224336.8900
E=1434631.4340
BEGIN GUARD RAIL
EXIST. R/W
RIVER AREA
PROPOSED BRIDGE
MATCH LINE STA. 114+00 - SEE DWG. NO. 13-3
MATCH LINE STA. 120+00 - SEE DWG. NO. 13-5
EXIST. R/W
BENT 2
BENT 3
BENT 4
BENT 5
BENT 6
BENT 7
15+00
120
CONST ℄
4' RAISED MEDIAN
JOHNSON FERRY ROAD
JOHNSON FERRY ROAD
TRACT 1
TRACT 2
TRACT 3
TRACT 4
TRACT 5
TRACT 6
Modify C.B. To M.H.
18" RCP
Eliminate Prop. 18"
Modify C.B. To M.H.
Tie To Exist C.B. And Modify To M.H.
N=2224220.8060
E=1434752.8740
N=2224298.1960
E=1434671.9140
N=2224375.5850
E=1434590.9540
BEGIN GUARD RAIL
STA. 119+10
Extend Pipe And F.E.S If Needed
BRIDGE APPROACH SLABS TO BE CONSTRUCTED IN ACCORDANCE WITH NOTCHED DETAIL ON GEORGIA STANDARD 9017-R
U.S. PARK SERVICE 3,4 & 5
END GUARD RAIL
STA. 115+16
Reduce Req'd R.O.W And T.C.E
U.S. PARK SERVICE
RAGINI R. SHAH 6,7 & 10
RAGINI R. SHAH
NON-NAVIGABLE (OWNERSHIP TO MIDDLE)
Remove Ramp

PROPERTY AND EXISTING R/W LINE	BEGIN LIMIT OF ACCESS............BLA	STATE OF GEORGIA	REVISION DATES
REQUIRED R/W LINE	END LIMIT OF ACCESS............ELA	DEPARTMENT OF TRANSPORTATION	
CONSTRUCTION LIMITS	LIMIT OF ACCESS	SCALE IN FEET	
EASEMENT FOR CONSTR	R/W AND LIMIT OF ACCESS		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
MAINLINE PLAN



PLAN



PROPOSED GRADE DATA
(ALONG PROPOSED CONST. ℄)

-----DRAINAGE DATA (FROM EXISTING PLANS)-----

DRAINAGE AREA ------------------------------------ 1380 SQ MI

FLOOD FREQUENCY	TOTAL DISCHARGE	AREA OF OPENING BELOW HIGHWATER	MEAN VELOCITY
50 YEAR	22700 CFS	3510 SQ FT	4.90 FPS
100 YEAR	29100 CFS	N/A	N/A

-----TRAFFIC DATA-----

TRAFFIC------------------ ADT = 23000(2006)
ADT = 34600(2026)
DHV ---------------------------------- 3114
DIRECTIONAL DISTRIBUTION ------------- 50%
% TRUCKS ----------------------------- 2%
% 24 HR TRUCKS ------------------------ 2%
SPEED DESIGN ----------------------- 35 MPH

-----DESIGN DATA-----

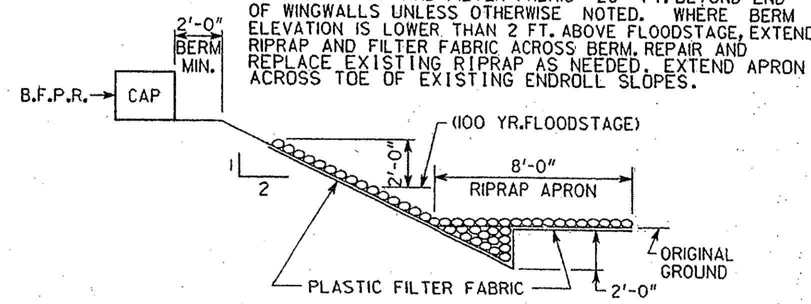
TYPICAL HS20-44 AND/OR MILITARY LOADING ------ IMPACT ALLOWED

-----BRIDGE CONSISTS OF-----

2 - WIDENED 57'-0" TYPE II PSC BEAM SPANS ------------- SPECIAL DESIGN
5 - WIDENED 56'-0" TYPE II PSC BEAM SPANS ------------- SPECIAL DESIGN
6 - WIDENED CONCRETE INTERMEDIATE BENTS --------------- SPECIAL DESIGN
2 - WIDENED PILE END BENTS ---------------------------- SPECIAL DESIGN
TEXAS HANDRAIL -- SPECIAL DESIGN
24" TYPE I RIPRAP

NOTES:
- THE PROPOSED BRIDGE DECK IS TO BE BUILT ON A NORMAL CROWN OF ¼"/FT.
- MINIMUM BOTTOM OF BEAM ELEVATION FOR PROPOSED BRIDGE SHALL BE NO LOWER THAN THE EXISTING BOTTOM OF BEAM.
- TRAFFIC TO BE MAINTAINED BY STAGE CONSTRUCTION. SEE CONSTRUCTION SEQUENCE FOR DETAILS.
- CLEAN AND SEAL ALL BRIDGE JOINTS WITH EVAZOTE.
- CLEAN AND PAINT STEEL BEARING ASSEMBLIES UNDER EXISTING PSC BEAMS 1-6 THROUGHOUT BRIDGE.
- REPAIR FILL SETTLEMENT (UP TO 6 INCHES) AT BOTH END BENTS TO RECOVER FOUNDATION PILES.
- REPLACE APPROACH SLAB AT BENT 1. ADJUST APPROACHES AND DROP INLETS AT NORTH END AS NEEDED TO PROVIDE A SMOOTH TRANSITION ONTO BRIDGE.

PLACE RIPRAP AND FILTER FABRIC FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE FLOODSTAGE ELEVATION. EXTEND RIPRAP AND FILTER FABRIC 20 FT. BEYOND END OF WINGWALLS UNLESS OTHERWISE NOTED. WHERE BERM ELEVATION IS LOWER THAN 2 FT. ABOVE FLOODSTAGE, EXTEND RIPRAP AND FILTER FABRIC ACROSS BERM. REPAIR AND REPLACE EXISTING RIPRAP AS NEEDED. EXTEND APRON ACROSS TOE OF EXISTING ENDROLL SLOPES.

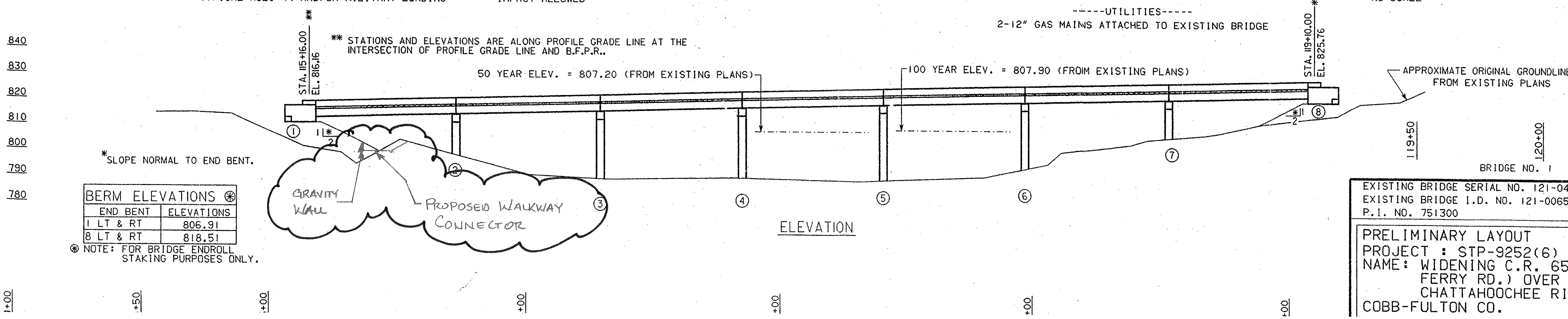


RIPRAP DETAIL
NO SCALE

-----UTILITIES-----

2-12" GAS MAINS ATTACHED TO EXISTING BRIDGE

** STATIONS AND ELEVATIONS ARE ALONG PROFILE GRADE LINE AT THE INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R..



*SLOPE NORMAL TO END BENT.

ELEVATION

BERM ELEVATIONS ⊛	
END BENT	ELEVATIONS
1 LT & RT	806.91
8 LT & RT	818.51

⊛ NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

BRIDGE NO. 1

EXISTING BRIDGE SERIAL NO. 121-0457-0
EXISTING BRIDGE I.D. NO. 121-00655X-002.16N
P.I. NO. 751300

PRELIMINARY LAYOUT
PROJECT : STP-9252(6)
NAME: WIDENING C.R. 655 (JOHNSON FERRY RD.) OVER THE CHATTAHOOCHEE RIVER
COBB-FULTON CO.

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 21

SHEET NO.: 4 of 6

LENGTH OF PEDESTRIAN WALKWAY
537 LF 537' x $30 = $16,110.00

HEIGHT OF WALL (OUTSIDE SUPPORT)
27.50 FT.

LENGTH OF FOOTING
42 LF + 40 LF = 82

WALL WIDTH = 4' (2' RECESSED TOTAL HT. 6')

-USE 55.00 SF FOR WALL ESTIMATION COST.

82-LF WALL LENGTH x 27.50' HEIGHT
=2255 SF x $ 55.00 = $124,025.00

INTERMEDIATE WALLS - USE $55.00 SF FOR COST ESTIMATE
1824' x $55 = $100,320.00

WALL FOOTING - USE $55.00 SF FOR COST ESTIMATE
82' x 8' = 656 SF x $55
= $36,080.00

TOTAL REDUCTION $276,535.00

DROP 1.80'

INTERMEDIATE WALL LENGTH
304 LF TOTAL

INTERMEDIAT WALL HEIGHT
6' (2' WALL RECESSED)

304' x 6' = 1824 SF

RIGHT OF WAY REDUCTION
$10.00 SF
MARK-UP 247%

$AREA_1$ RT. SIDE OF BRIDGE $= \frac{L_1 + L_2}{2} \cdot S$
$= \frac{100 + 43}{2} \cdot 33'$
$= 2359.50$ SF / 43560 SF/ACS
$= .0541$ ACS

2359.50($10) · 247% = $58,279.65

$AREA_2$ LT. SIDE OF BRIDGE $A = \frac{1}{2} b \cdot h$
$= \frac{1}{2}(30')(110')$
$= 1650$ SF / 43560 SF/ACS
$= 0.0378$ ACS
$10.00 (1650) · 2.47 = $40,755.00

TOTAL R.O.W. REDUCTION COST: $99,034.65
* SEE PLAN SHEET FOR REDUCTION AREAS

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 21

SHEET NO.: 5 of 6

REDUCTIONS FOR STRUCTURES AND PIPE

STRUCTURE : A-20

REINF. CONC. PIPE :

REDUCTION FOR A-20 TO A-25 = 57' x $47 (18" RCP)
= $2679.00

REDUCTION FOR A-23 TO A-24 = 26' x 87.64' (42" RCP)
= $2278.64

REDUCTION FOR B-44 TO B66 = 60' x $47.00 (18" RCP)
= $2820.00

TOTAL COST FOR PIPE REDUCTION:
$7777.64

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 21

SHEET NO.: 6 of 6

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
441-0104 Sidewalk (Ramps)	SY	537	30	16,110			
Walls and Footings for Ramps	SF	4,735	55	260,425			
Pipe Reduction	LS	1	7,778	7,778			
Construction Subtotal				284,313			
Construction Mark-Up at 10%				28,431			
Construction Total				312,744			
Abernathy Road Right-of-Way	SF	4,010	10.00	40,100			
ROW Subtotal				40,100			
ROW Mark-Up at 247.20%				99,127			
ROW Total				139,227			
	Sub-total			451,972			
Mark-up at	INCL			INCL			
	TOTAL			451,972			

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 26

DESCRIPTION: **DELETE ONE NORTHBOUND LANE FROM JOHNSON FERRY ROAD BRIDGE**

ORIGINAL DESIGN: (Sketch attached)

The current design denotes the Johnson Ferry Road bridge to have three 12-foot travel lanes. The outside southbound lane must turn right at Riverside Drive. The outside northbound lane provides for a free-flow right turn from Riverside Drive to Johnson Ferry Road northbound.

ALTERNATIVE: (Sketch attached)

On the Johnson Ferry Road bridge, provide only two northbound through lanes to match the roadway section south of Riverside Drive.

ADVANTAGES**:**

- Initial cost savings
- Reduces the size of the Johnson Ferry Road bridge
- Simplifies design and construction
- Slight reduction in construction time

DISADVANTAGES:

- Requires stop or yield for traffic on Riverside Drive turning right to go north on Johnson Ferry Road
- Could create staging or traffic maintenance problems

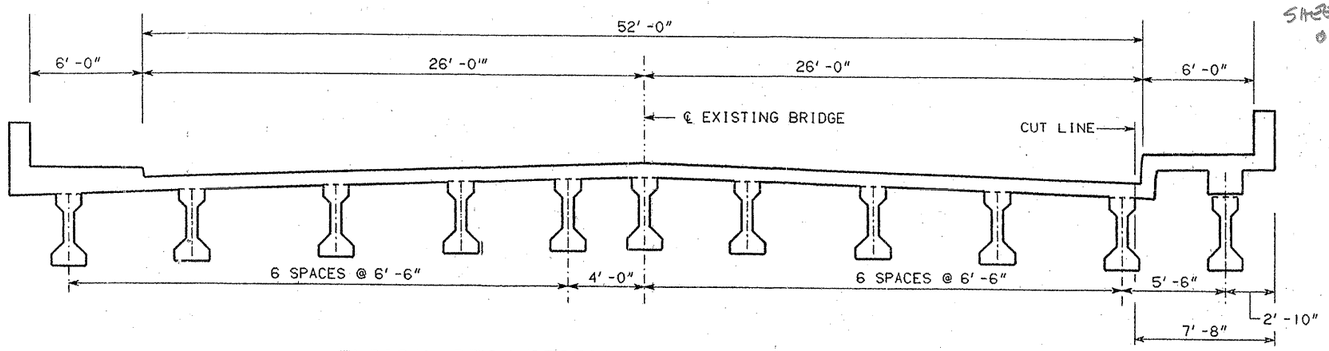
DISCUSSION:

At each intersection south of the Johnson Ferry Road bridge, there is a short acceleration lane. The same can be built at Riverside Drive and it would taper out before the Johnson Ferry Road bridge resulting in reduced deck area and one fewer line of beams. (See related Alternative No. 14.)

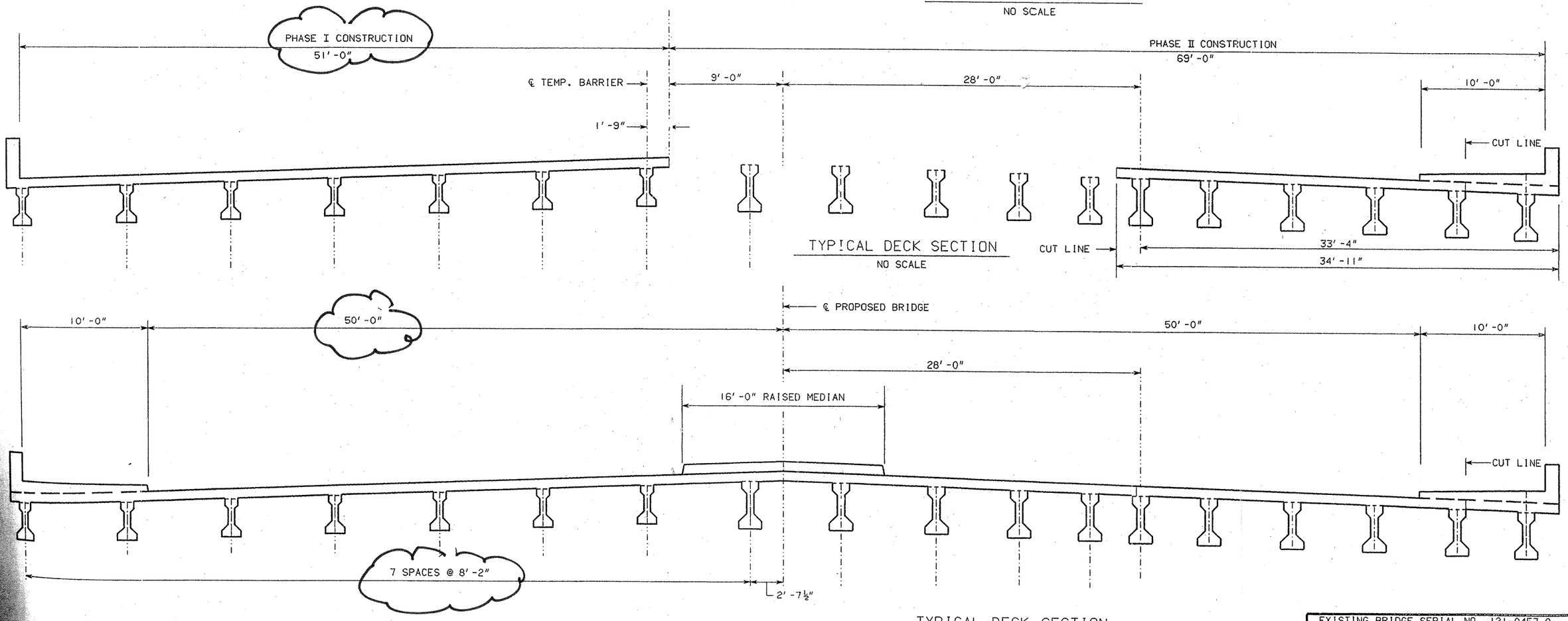
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 431,869**	**$**	**$ 431,869**
ALTERNATIVE	**$ 270,985**	**$**	**$ 270,985**
SAVINGS	**$ 160,884**	**$**	**$ 160,884**

----CONSTRUCTION SEQUENCE----

1. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE I CONSTRUCTION.
2. CONSTRUCT PHASE I PORTION OF BRIDGE, EXCLUDING SIDEWALK.
3. PLACE TEMPORARY BARRIER ON PHASE I SECTION. SHIFT AND MAINTAIN FOUR LANES OF TRAFFIC ON PHASE I SECTION.
4. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE II CONSTRUCTION.
5. REMOVE PORTION OF EXISTING BRIDGE DECK AND APPROACH SLABS AS PER THE SPECIFICATIONS. REMOVE EXISTING PARAPET.
6. JACK BEAMS TO CORRECT CROSS SLOPE ON EXISTING PORTION OF BRIDGE.
7. CONSTRUCT PHASE II PORTION OF DECK AND HANDRAIL.
8. RELOCATE TEMPORARY BARRIER AS NECESSARY TO CONSTRUCT SIDEWALK ON PHASE I SECTION. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON PHASE II SECTION.
9. REMOVE TEMPORARY BARRIER FROM BRIDGE. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON NEW BRIDGE.



TYPICAL DECK SECTION
NO SCALE



TYPICAL DECK SECTION
NO SCALE

TYPICAL DECK SECTION
NO SCALE

TYPICAL DECK SECTION
NO SCALE

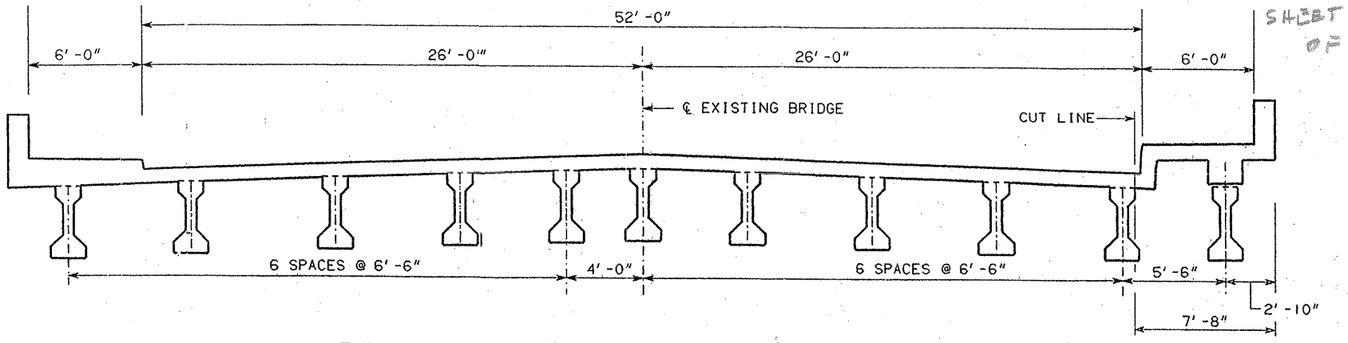
ORIGINAL DESIGN

EXISTING BRIDGE SERIAL NO. 121-0457-0
EXISTING BRIDGE I.D. NO. 121-00655X-002.16N
P.I. NO. 751300

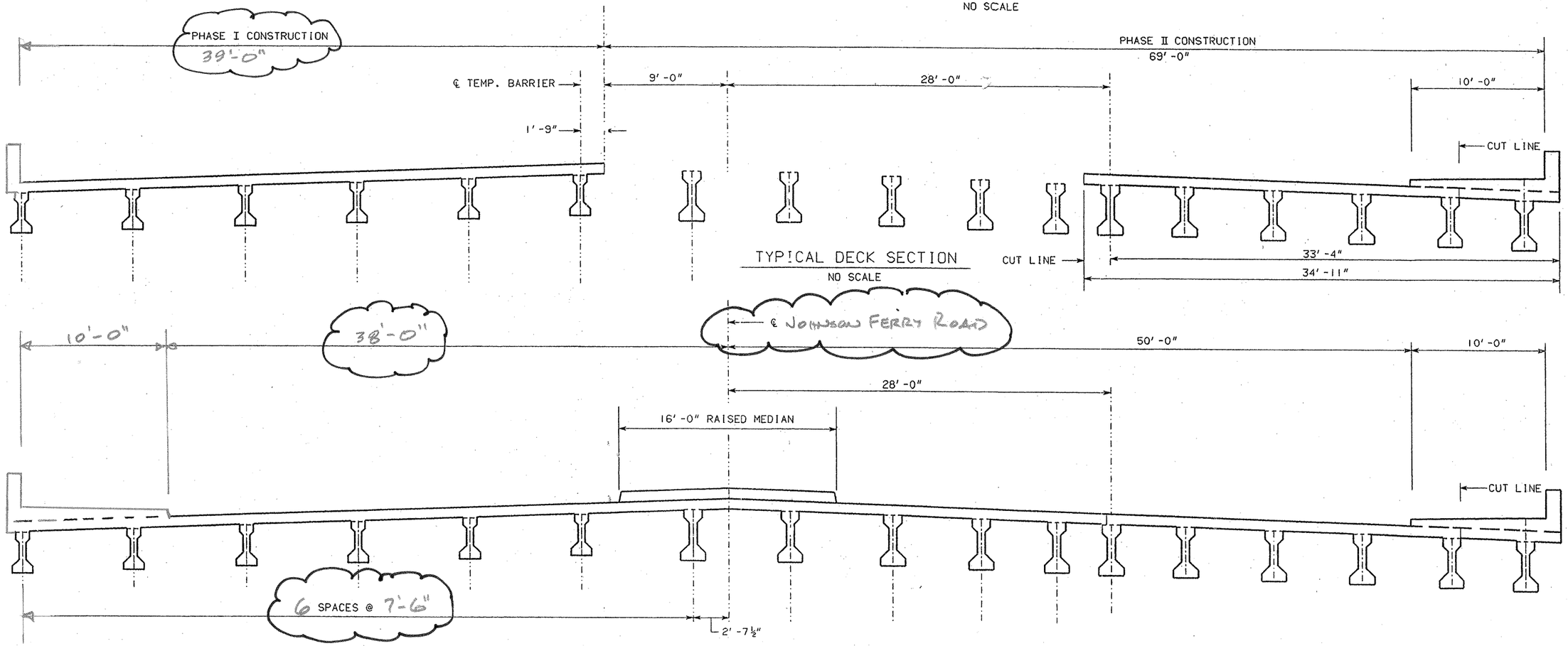
TYPICAL DECK SECTIONS
PROJECT : STP-9252(6)
NAME: WIDENING C.R. 655 (JOHNSON FERRY RD.) OVER THE CHATTAHOOCHEE RIVER
COBB-FULTON CO.
DRAWN BY : ELS

----CONSTRUCTION SEQUENCE----

1. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE I CONSTRUCTION.
2. CONSTRUCT PHASE I PORTION OF BRIDGE, EXCLUDING SIDEWALK.
3. PLACE TEMPORARY BARRIER ON PHASE I SECTION. SHIFT AND MAINTAIN FOUR LANES OF TRAFFIC ON PHASE I SECTION.
4. PROVIDE TEMPORARY SHORING AS NECESSARY FOR PHASE II CONSTRUCTION.
5. REMOVE PORTION OF EXISTING BRIDGE DECK AND APPROACH SLABS AS PER THE SPECIFICATIONS. REMOVE EXISTING PARAPET.
6. JACK BEAMS TO CORRECT CROSS SLOPE ON EXISTING PORTION OF BRIDGE.
7. CONSTRUCT PHASE II PORTION OF DECK AND HANDRAIL.
8. RELOCATE TEMPORARY BARRIER AS NECESSARY TO CONSTRUCT SIDEWALK ON PHASE I SECTION. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON PHASE II SECTION.
9. REMOVE TEMPORARY BARRIER FROM BRIDGE. SHIFT AND MAINTAIN SIX LANES OF TRAFFIC ON NEW BRIDGE.



TYPICAL DECK SECTION
NO SCALE



TYPICAL DECK SECTION
NO SCALE

TYPICAL DECK SECTION
NO SCALE

ALTERNATIVE DESIGN

EXISTING BRIDGE SERIAL NO. 121-0457-0
EXISTING BRIDGE I.D. NO. 121-00655X-002.16N
P.I. NO. 751300

TYPICAL DECK SECTIONS
PROJECT : STP-9252(6)
NAME: WIDENING C.R. 655 (JOHNSON FERRY RD.) OVER THE CHATTAHOOCHEE RIVER
COBB-FULTON CO.
DRAWN BY : ELS

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 26

ORIGINAL DESIGN: SLAB t = 8 1/8"

SLAB VOLUME = 394(51)(0.125/12)/27 = 504 CY

ALTERNATIVE: BEAM SPACING = 7'-6" SO

SLAB t = 8"

DECREASE IN SLAB REINFORCING IS NEGLIGIBLE

SLAB VOLUME = 394 (51-12)(8/12)/27 = 379 CY

REDUCE BEAM QUANTITY BY DELETING ONE LINE OF BEAMS

REDUCTION = 5(55.33) + 2(56.17) = 389 LF

REDUCE CAP LENGTH BY REMOVING ONE BEAM

CHANGE IN CAP LENGTH = 5(7.5) - 6(0.1667)
= -11.50

ASSUME CAP IS 3' x 3'-6" 6 CAPS

REDUCTION = 6(3)(3.5)(11.50)/27 = 27 CY

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 26

SHEET NO.: 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Deck Concrete	CY	504	650	327,600	379	650	246,350
Cap Concrete	CY	27	650	17,550			
Type II PSC Beam	LF	389	122	47,458			
	Sub-total			392,608			246,350
Mark-up at	10.00%			39,261			24,635
	TOTAL			431,869			270,985

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 27

DESCRIPTION: **REDUCE SHOULDERS TO 12 FEET**

ORIGINAL DESIGN: (Sketch attached)

The current design calls for the use 16-foot shoulders that include 30-inch curb and gutters, three-foot grass strip and 8-foot sidewalks.

ALTERNATIVE: (Sketch attached)

Reduce the shoulders from 16 feet to 12 feet to include 30-inch curb and gutters, two-foot grass strip and 5-foot sidewalks.

ADVANTAGES**:**

- Initial cost savings
- Reduces impacts of both cut and fill areas
- Reduces required right-of-way
- Reduces maintenance costs
- Reduction of sidewalk installation

DISADVANTAGES:

- Does not accommodate previously agreed-to CAC request for 8-foot sidewalks
- Does not allow additional area to accommodate an increased safety area
- Political fallout could be detrimental
- Loss of a perceived amenity

DISCUSSION:

The reduction of the proposed shoulder will reduce material and land acquisition costs. This alternative will provide a cost savings to the project construction and the schedule. (See related Alternative Nos. 1 and 8)

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 36,023,552**	**$**	**$ 36,023,552**
ALTERNATIVE	**$ 34,638,074**	**$**	**$ 34,638,074**
SAVINGS	**$ 1,385,478**	**$**	**$ 1,385,478**

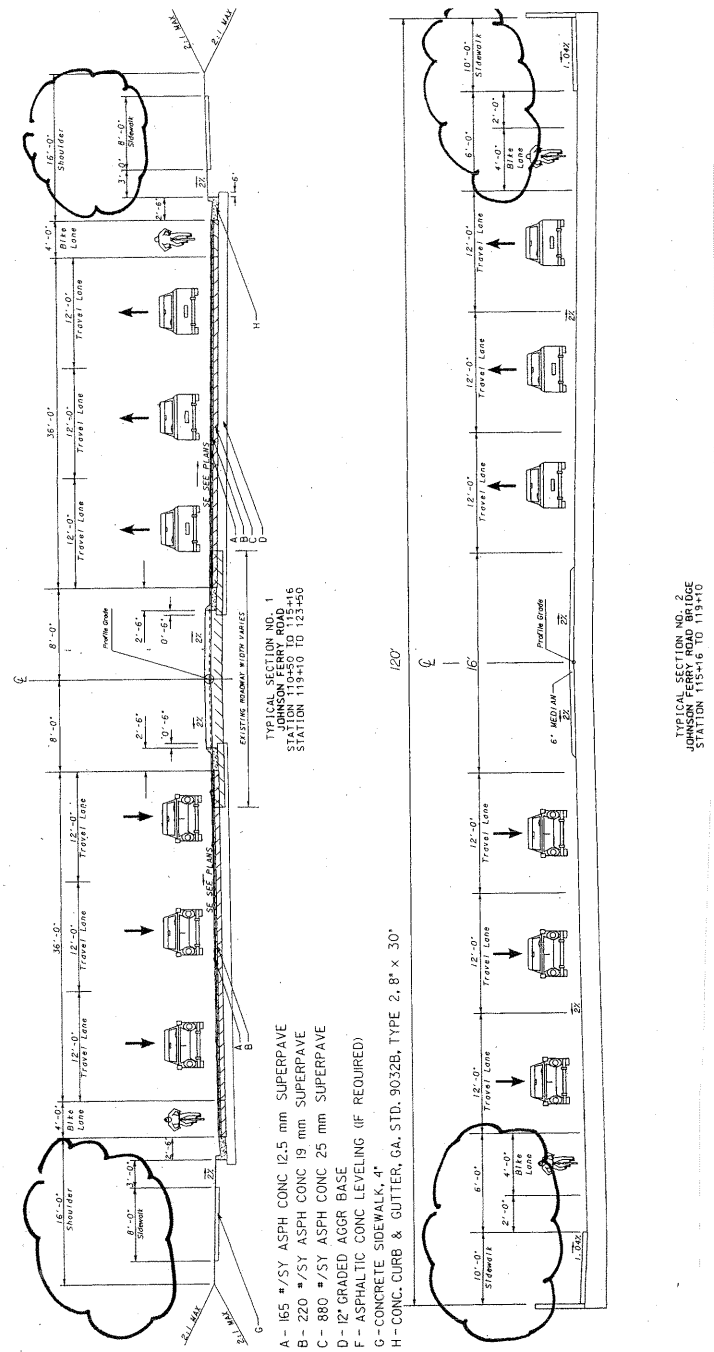
SKETCHES

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 27

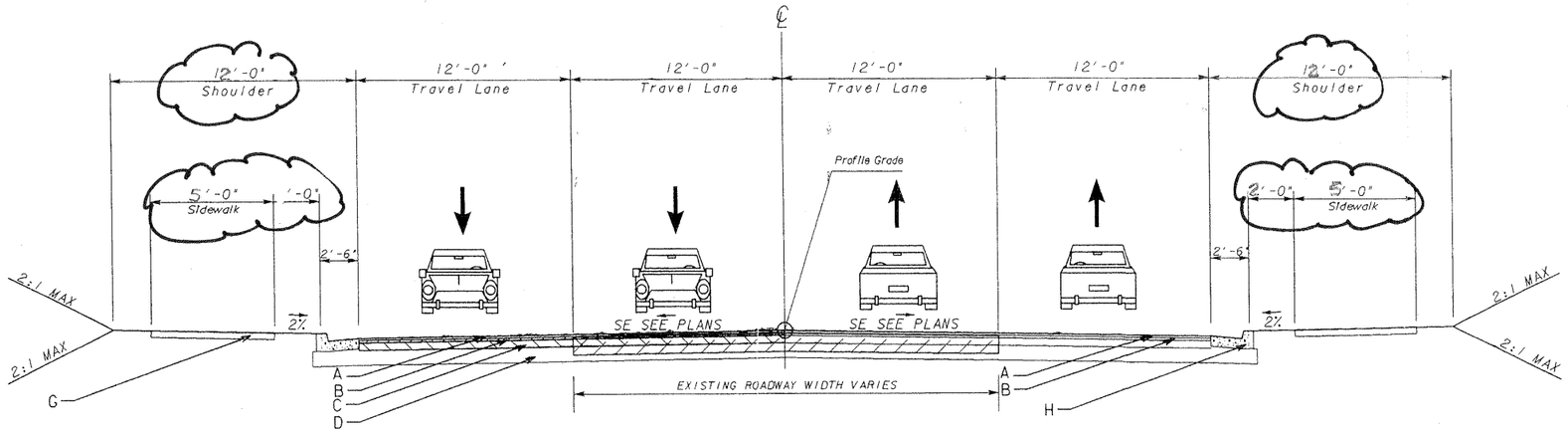
☑ AS DESIGNED ☐ ALTERNATIVE

SHEET NO.: 2 of 5



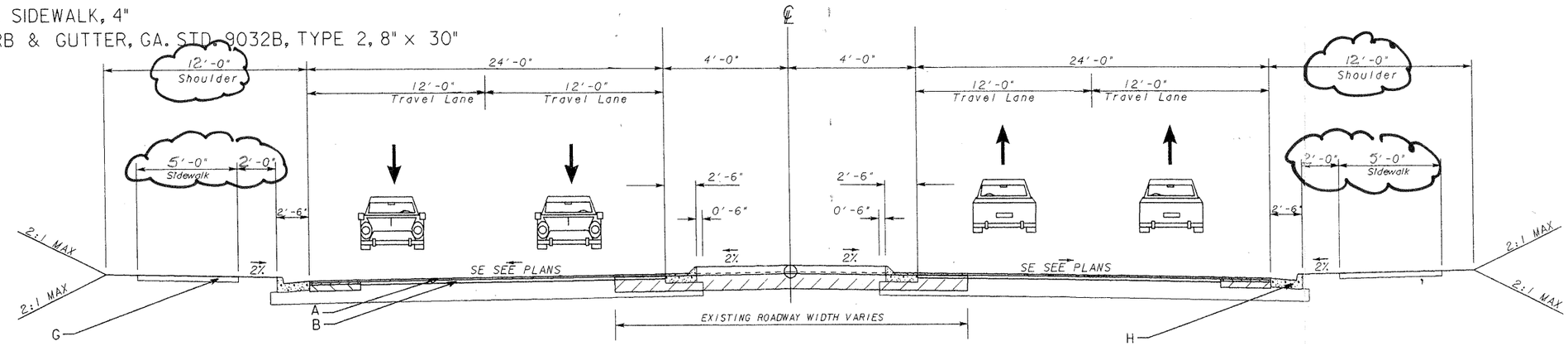
27
SHEET 3 OF 5

c:\temp\001\751300TY05.prf \\gdot-dsni\geocfg\resources\Gdot98half_GOK1p8000.tbl	M:\751300-JF-RvrtoAB\DGN\751300TY05.dgn ON= 5, 45-49, 60-62	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
		COBB / FULTON	STP-9252(6) & STP-9250(1)		



TYPICAL SECTION NO. 11
RIVER VALLEY DRIVE
STATIONS 1200+00 TO 1207+30.57

A - 165 #/SY ASPH CONC 12.5 mm SUPERPAVE
B - 220 #/SY ASPH CONC 19 mm SUPERPAVE
C - 880 #/SY ASPH CONC 25 mm SUPERPAVE
D - 12" GRADED AGGR BASE
F - ASPHALTIC CONC LEVELING (IF REQUIRED)
G - CONCRETE SIDEWALK, 4"
H - CONC. CURB & GUTTER, GA. STD. 9032B, TYPE 2, 8" x 30"



Also check side streets

TYPICAL SECTION NO. 6
ROSWELL ROAD
STATION 182+50 TO 197+50
STATION 197+50 TO 202+82.15

ALTERNATIVE

GEORGIA
DEPARTMENT

REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION
	OFFICE: URBAN DESIGN
	TYPICAL SECTIONS

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 27

SHEET NO.: 4 of 5

- S/W savings from 1 is $283,000

- ROW savings
  - Assume $10/SF
  - Length = (1.18 + 0.93) mi = 11,141 ft JF = AB =
  - Assume a constant with reduction of 4' on either side.
  - ROW markup = 247.20%
  - Savings =
  - Wetland displacements frontage length = (205+10 - 219+00) = 1390 LF

Total ROW area = (11,141 - 1390)4' = 39,004 SF

Base Cost = (39,004 SF) * $10/SF = $390,040

Markup = $964,179

Grading assumption: $200,000

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 27

SHEET NO.: 5 of 5

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
441-0104 Sidewalk - Johnson Ferry Road (See Alt No. 1 for quantity calculations)	SY	17,251	30	517,530	11,806	30	354,180
441-0104 Sidewalk - Abernathy Road (See Alt No. 1 for quantity calculations)	SY	10,490	30	314,700	7,335	30	220,050
210-0100 Grading Complete - Johnson Ferry Road	LS	1	1,000,000	1,000,000	1	925,000	925,000
210-0100 Grading Complete - Abernathy Road	LS	1	1,000,000	1,000,000	1	950,000	950,000
Construction Subtotal				2,832,230			2,449,230
Construction Mark-Up at 10%				283,223			244,923
Construction Total				3,115,453			2,694,153
Johnson Ferry Road Right-of-Way				2,352,635			2,283,705
Abernathy Road Right-of-Way				7,125,504			6,916,733
ROW Subtotal				9,478,139			9,200,438
ROW Mark-Up at 247.20%				23,429,960			22,743,483
ROW Total				32,908,099			31,943,921
Sub-total				36,023,552			34,638,074
Mark-up at	INCL			INCL			INCL
TOTAL				36,023,552			34,638,074

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 28

DESCRIPTION: **USE WIRELESS CONNECTIVITY FOR INTERSECTION SYNCHRONIZATION**

SHEET NO.: **1 of 1**

ORIGINAL DESIGN:

The cost estimate for the Johnson Ferry Road portion of the project indicates quantities but no assignment of dollars associated with a fiber optic wiring/cabling system that is assumed to be for intersection connectivity and synchronization and an Intelligent Transportation System (ITS).

ALTERNATIVE:

Use a wireless and/or Global Positioning System (GPS) communication / signaling system for the proposed intersection connectivity and synchronization.

ADVANTAGES**:**

- Precludes underground or overhead wiring conduits/ductbanks
- Easier to operate and maintain
- Easier to make upgrades and updates to the selected system
- Uses state-of-the-art technology
- Improves compatibility with existing systems

DISADVANTAGES:

- Signal could be tapped/compromised
- May be more affected by climactic conditions

DISCUSSION:

Although initial cost savings would be minimal from an equipment point of view, construction savings would be immediate in terms of earthwork and ductbanks / conduit systems. Furthermore, maintenance and operational costs could result in savings associated with the ease of updating and upgrading both software and hardware configurations.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN			
ALTERNATIVE	DESIGN SUGGESTION		
SAVINGS			

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 29

DESCRIPTION: **EVALUATE QUANTITY OF CONCRETE MEDIAN IN THE JOHNSON FERRY ROAD PORTION OF THE PROJECT**

SHEET NO.: **1 of 2**

ORIGINAL DESIGN:

The current design calls for the use of a 16-foot wide, 4-inch concrete raised median along Johnson Ferry Road for the entire length (1.24 miles) of this portion of the project with appropriate tapers for turning lanes, median openings at selected intersections, and raised islands, where required, between Columns Drive and Abernathy Road. Additionally, the medians are grassed in accordance with GDOT standards and details.

ALTERNATIVE:

Reevaluate the quantity in the cost estimate associated with the proposed concrete 16-foot wide concrete raised median.

ADVANTAGES**:**

- Correctly assigns cost of a construction element
- Precludes misinterpretation of bids

DISADVANTAGES:

- None apparent

DISCUSSION:

This is a cost avoidance item. At first glance, it appears the quantity in the cost estimate is too high for the intended application. For example, the estimate indicates a quantity of 123,766 square yards (SY) for this component; however, multiplying the length of the project times the width of the median and converting to SY results in quantity of 8,729 SY. [(1.24 miles x 5,280 feet / mile = 6,547 LF); 6,547 LF x (16 FT wide median less the 4 LF grass strip) = 78,564 SF; 78,564 SF / 9 SF / SY = 8,729 SY.] Furthermore, this does not take into account median openings, tapers or raised islands – all leading to even further reductions in the quantity of this construction element.

Although possibly a quantity take-off or arithmetic mistake, the dollar value warrants a closer look at this item.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 5,445,704**	**$**	**$ 5,445,704**
ALTERNATIVE	**$ 384,076**	**$**	**$ 384,076**
SAVINGS	**$ 5,061,628**	**$**	**$ 5,061,628**

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 29

SHEET NO.: 2 of 2

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
441-0740, Concrete Median, 4"	SY	123,766	40	4,950,640	8,729	40	349,160
	Sub-total			4,950,640			349,160
Mark-up at	10.00%			495,064			34,916
	TOTAL			5,445,704			384,076

VALUE ENGINEERING ALTERNATIVE

PROJECT: **STP-9252(6), `P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 30

DESCRIPTION: **USE A RETAINING WALL SYSTEM TO ELIMINATE THE NEED FOR THE BOX CULVERT ON ABERNATHY ROAD**

SHEET NO.: **1 of 8**

ORIGINAL DESIGN: (Sketch attached)

The current design calls for the use of a 10' x 10' concrete box culvert on the south side of Abernathy Road just east of Roswell Road/SR 9.

ALTERNATIVE: (Sketch attached)

Use a retaining wall system along the outside of the proposed sidewalk to eliminate the need for the box culvert and allow water to flow in the existing ditch.

ADVANTAGES:

- Reduces maintenance costs
- Initial cost savings
- Facilitates construction
- Simplifies design and construction
- Reduces the amount of required grading

DISADVANTAGES:

- None apparent

DISCUSSION:

Using a retaining wall system would reduce the need for a permanent easement – the cost associated with this action has not been calculated.

It is noted that the cross sections and plans do not match in the provided documentation. The cross sections show the box culvert ending at STA 244+50 right and the plans show the culvert ending at STA 247+00. For the purposes of this alternative, it was assumed the cross section length was correct at 320 LF vs. the 510 LF indicated on the plans. This discrepancy needs to be corrected before project is bid.

There do not appear to be any issues with staging.

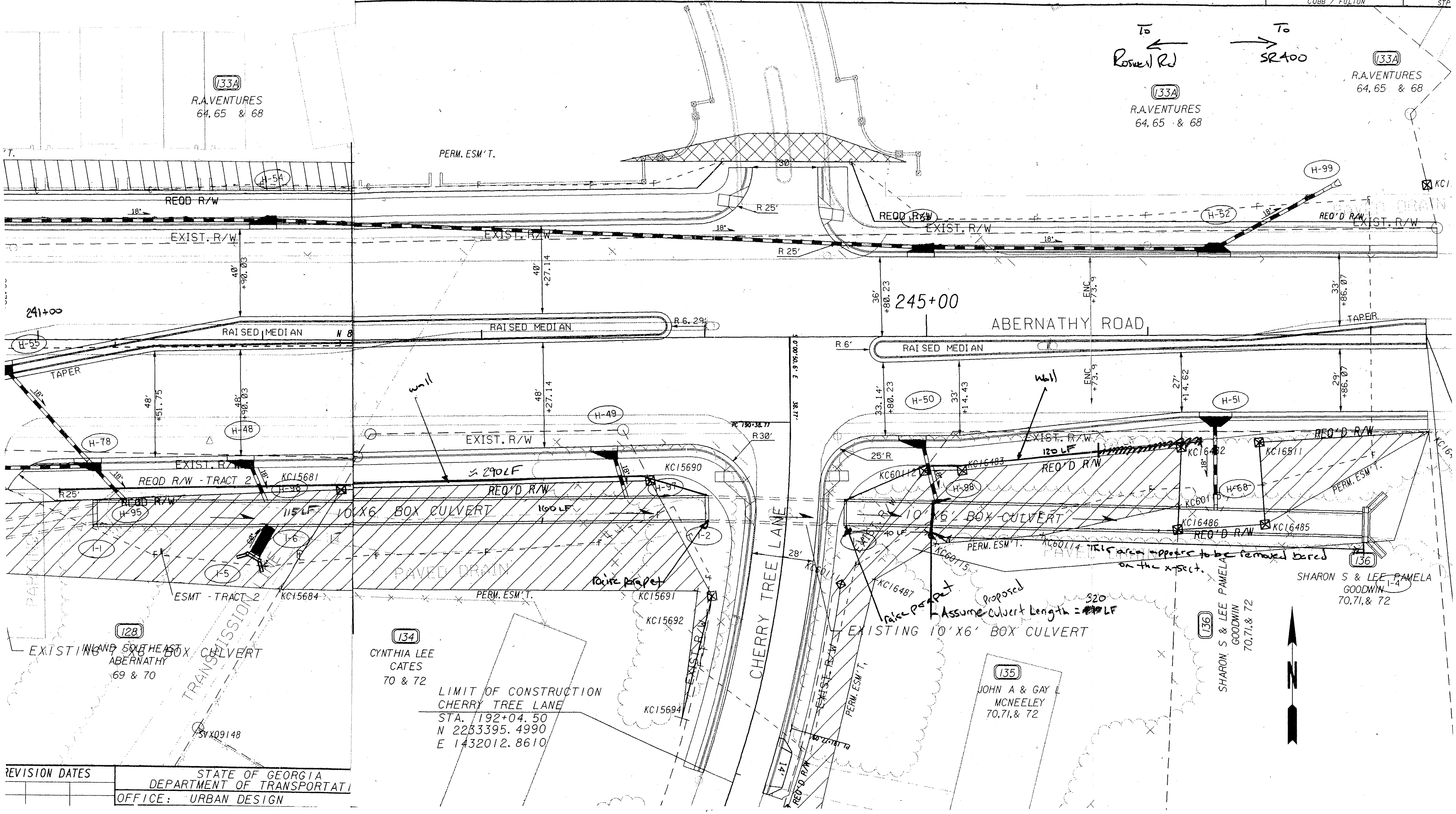
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	**$ 438,418**	**$**	**$ 438,418**
ALTERNATIVE	**$ 305,778**	**$**	**$ 305,778**
SAVINGS	**$ 132,640**	**$**	**$ 132,640**

COUNTY	PROJECT NUMBER	SHEET NO.	TOT
COBB / FULTON	STP-9250(1) / STP-9252(6)		

30
SHEET 12 OF 8

c:\temp\001\751300CP27.prf
\\gdot-dsnl\gocfg\resources\Gdot98half_GOKlp8000.tbl
M:\751300-JF-RvrfoAB\DGN\751300CP27.dgn ON- 1-63

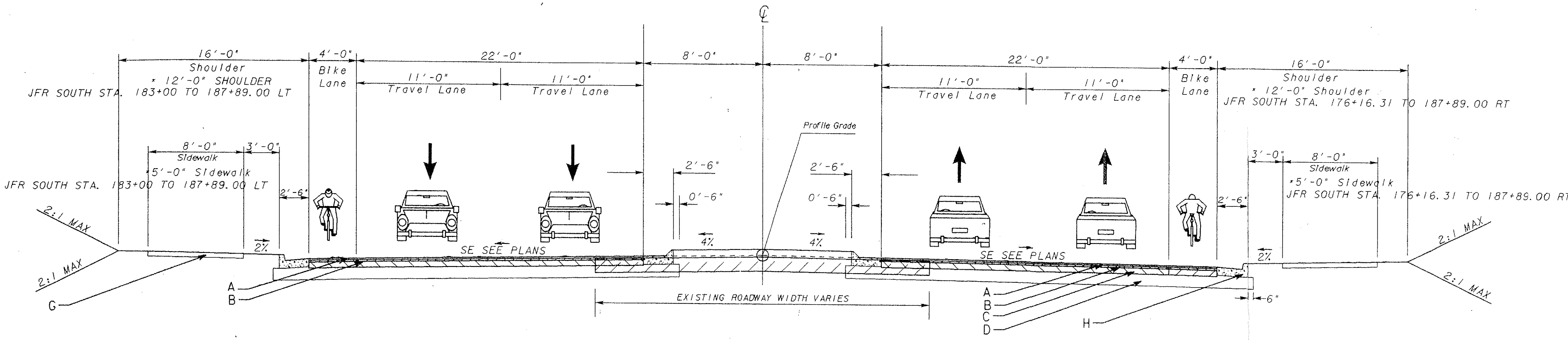
COUNTY	STP
COBB / FULTON	



REVISION DATES	STATE OF GEORGIA DEPARTMENT OF TRANSPORTATI
	OFFICE: URBAN DESIGN

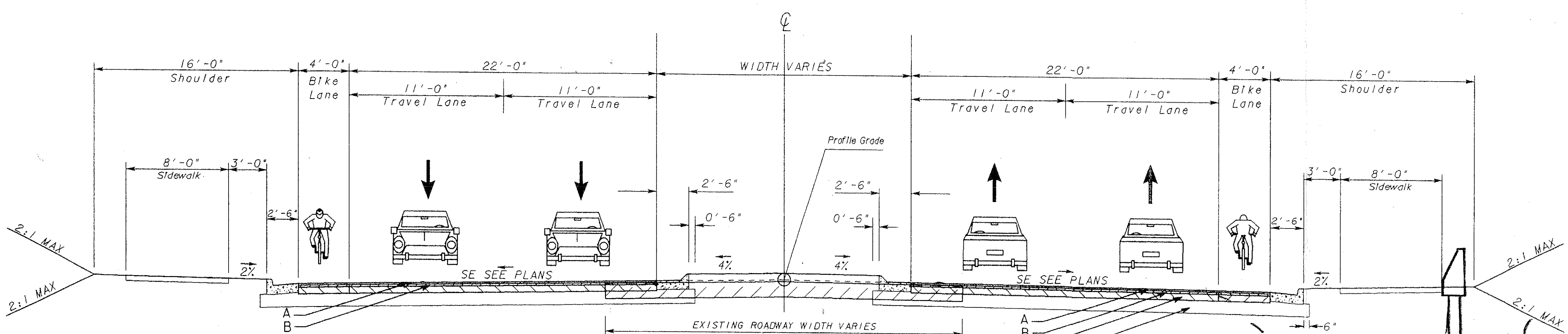
30
SHEET 3 OF 8

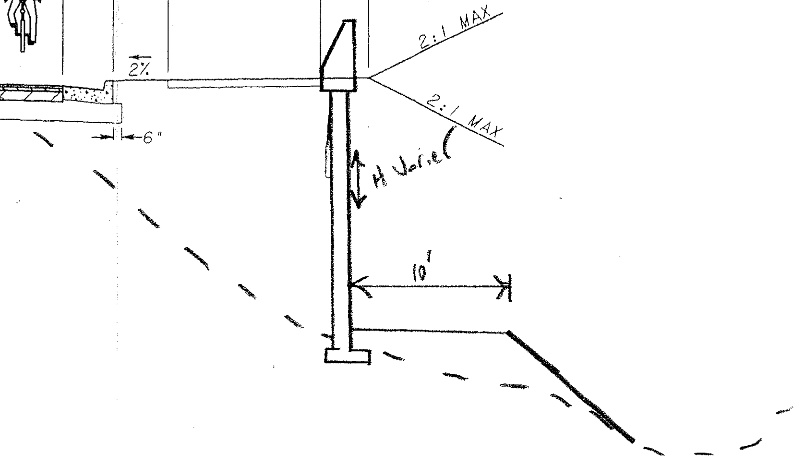
eitz	c:\temp\002\751300TY02.prf \\gdot-dsnl\gocfg\resources\Gdot98half_GOKlp8000.tbl	M:\751300-JF-RvrtoAB\DGN\751300TY02.dgn ON: 5,45-49,60-62	COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
				STP-9250(1)		



TYPICAL SECTION NO. 3
JOHNSON FERRY ROAD
STATION 123+50 TO 187+89

13.5





A - 165 #/SY ASPH CONC 12.5 mm SUPERPAVE
B - 220 #/SY ASPH CONC 19 mm SUPERPAVE
C - 880 #/SY ASPH CONC 25 mm SUPERPAVE
D - 12" GRADED AGGR BASE
F - ASPHALTIC CONC LEVELING (IF REQUIRED)
G - CONCRETE SIDEWALK, 4"
H - CONC. CURB & GUTTER, GA. STD. 9032B, TYPE 2, 8" × 30"

TYPICAL SECTION NO. 4
ABERNATHY ROAD
STATION 200+00 TO 247+25

GEORGIA
DEPARTMENT

NOT TO SCALE

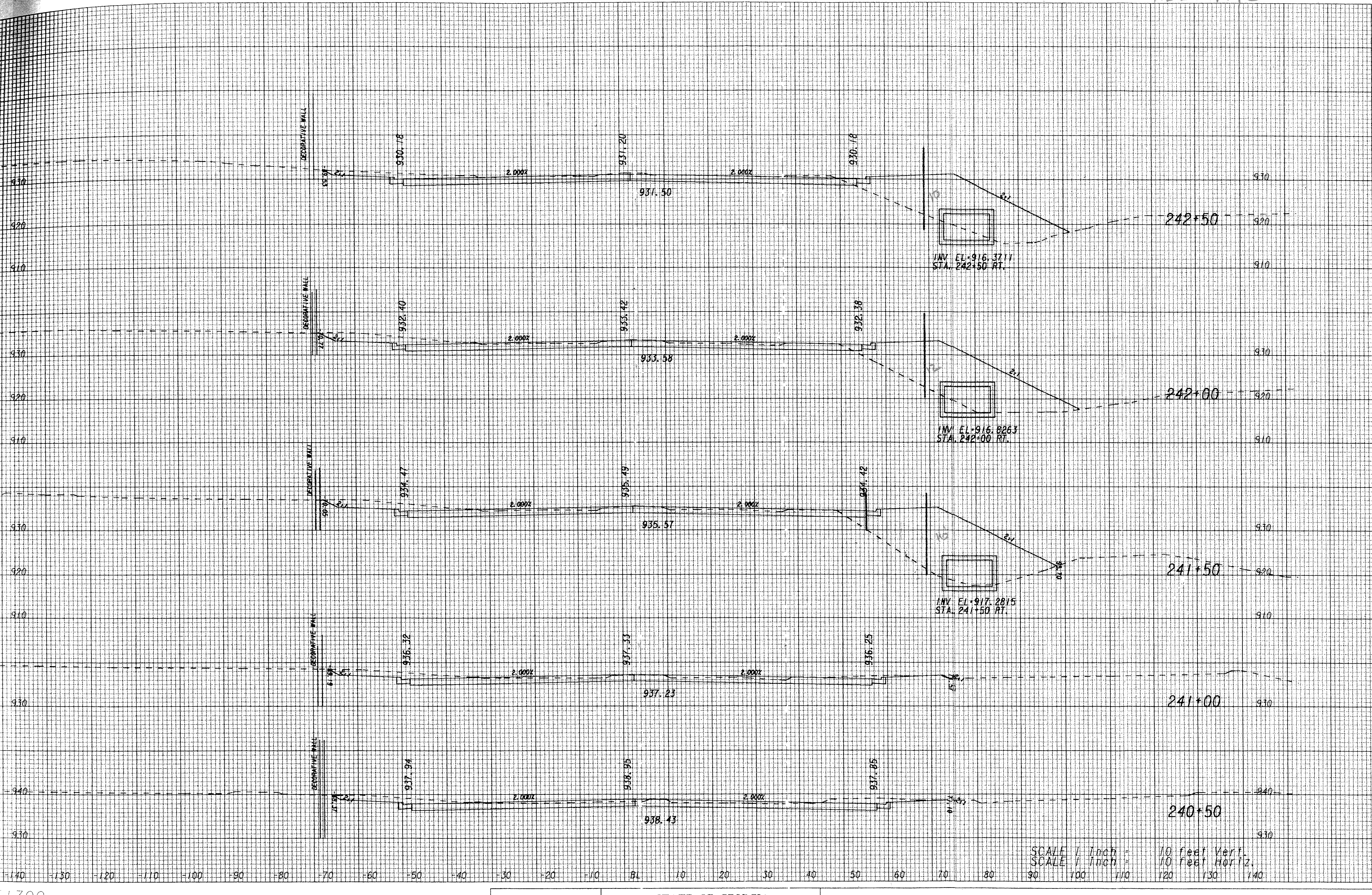
REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

30
SHEET 4 of 8

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-9250(1)		

REVISION DATES



61300

STATE OF GEORGIA

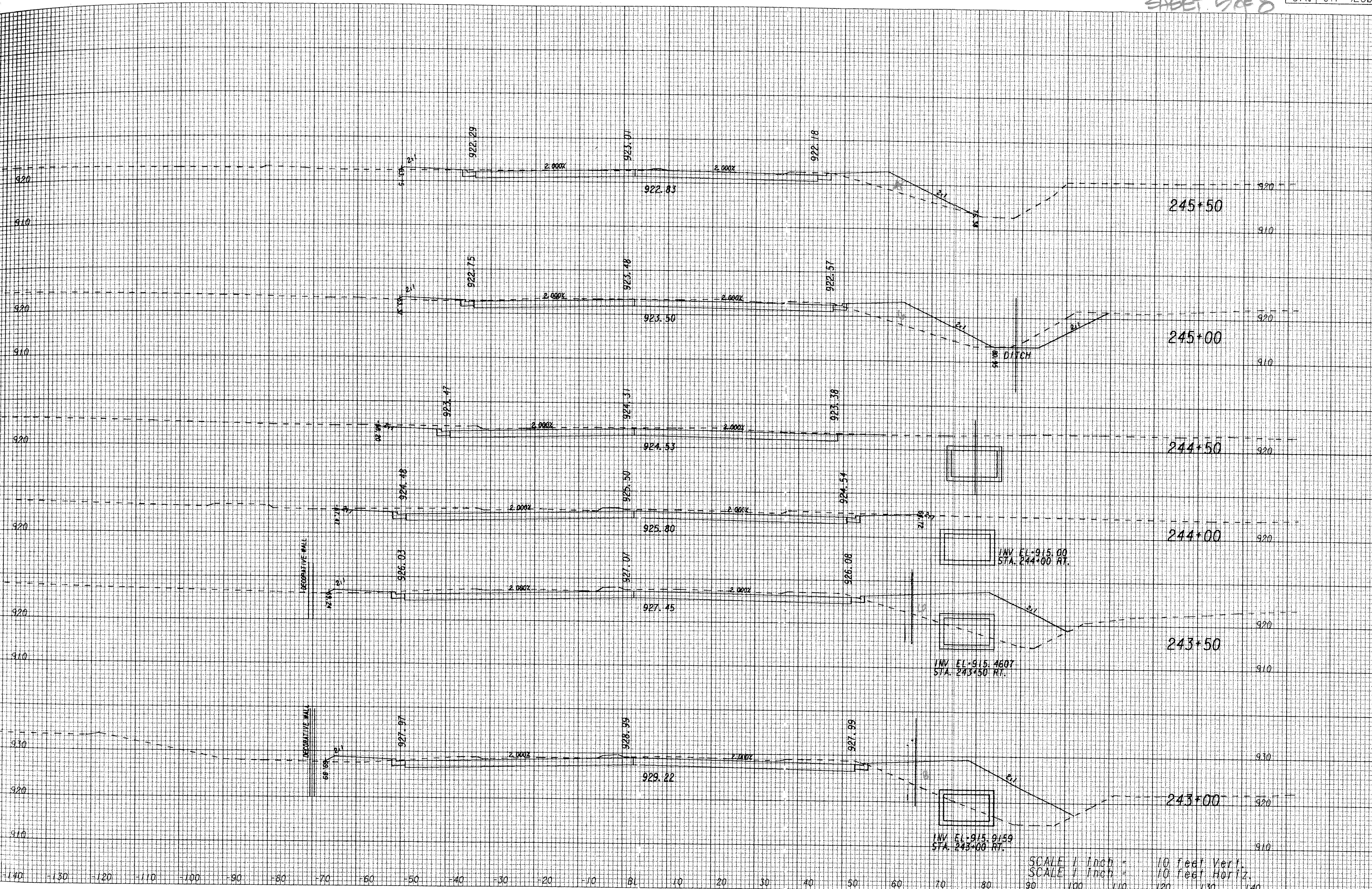
ABERNATHY ROAD

DRAWING No.

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.	STP-9250(1)		

REVISION DATES

30
SHEET 5 OF 8



1300

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION

ABERNATHY ROAD

DRAWING No.

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 30

SHEET NO.: 6 of 8

Assumptions:

1) Culvert Length = 320 LF
   - This assumes the plan is wrong, and the X-sections are right. Currently plan show length of 510LF.

- Retaining wall length = 290 + 120 LF = 410 LF
- Avg wall height = 9 Ft
- I have no idea of exist. circumstances which warrent a box culvert.

Quant.:

10x6 Culvert Design #A

	Conc.	Steel
Barrel	$(1.224 \frac{CY}{LF})(320\ LF) = 392\ CY$	$(163 \frac{lb}{LF})(320\ LF) =$
Wing Wall Precast (4)	21.20 CY	915 lb
Apron	5.06 CY	383 lb
total	418 CY	53,458 lb

Found Backfill = $\frac{(320\ LF)(10ft)(1ft)}{27 \frac{SF}{CY}} = 120\ CY$ (Length, width, depth)

Rip Rap = assume 10x10sf = 100 SF = 11 SY

Plastic Filter fabric = 11 SY

CALCULATIONS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO.: 30

SHEET NO.: 7 of 8

Quant cont...

Retaining Wall:

Avg cost for matl + installing is appox. $55/SF based on GDOT Bridge est.

Wall Area = (410 LF)(9 ft) = 3690 sf
(Avg Ht)

Cost = (3690 sf)($55/sf) = $202,950

barrier = 410 LF

COST WORKSHEET

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD. & STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb & Fulton Counties, GA Dept. of Transportation, District 7
Pre-Final Field Plan Review Design Stage

ALTERNATIVE NO: 30

SHEET NO.: 8 of 8

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Box Culvert System							
500-3101 Class A Concrete	CY	418	650	271,700			
511-1000 Bar Reinforcing Steel	LB	53,458	1.25	66,823			
207-0203 Found Backfill	CY	120	59.50	7,140			
603-2180 Standard Dumped Riprap, TP 3, 12"	SY	11	54.54	600			
603-7000 Plastic Filter Fabric	SY	11	5.07	56			
210-0100 Grading Complete	LS	1	50,000	50,000			
550-1600 Storm Drain Pipe, 60", H 1-10	LF	17	132	2,244			
627-1000 MSE Wall Face, 0-10 FT HT - Complete	SF				3,690	55	202,950
672-1140 Traffic Barrier V	LF				410	183	75,030
Note: Right-of-way shown at back of sidewalk; however, there is no need for the permanent easement shown. This would result in some savings.							
	Sub-total			398,562			277,980
Mark-up at	10.00%			39,856			27,798
	TOTAL			438,418			305,778

PROJECT DESCRIPTION

BACKGROUND

The Atlanta Regional Commission (ARC) adopted the 2025 Regional Transportation Plan for the 13-county Atlanta Metropolitan area in April 2000. The RTP addresses travel needs through the year 2025. The RTP is the direct result of a comprehensive, cooperative, and continuous planning process conducted by the ARC, local governments and the Georgia Department of Transportation in cooperation with the Federal Highway and Federal Transit Administrations. The Transportation Improvement Program/RTP recommends: (a) roadway improvements along Johnson Ferry Road from the Chattahoochee River to Abernathy Road under ST-9252(6), P.I. 751300; and (b) widening Abernathy Road from two lanes to four through lanes from Johnson Ferry Road to Roswell Road under STP-9250(1), P.I. No. 751310. While this corridor is not shown on a designated state bike route, Fulton County commits to updating ARC's and their Bike Route Plan.

PROPOSED IMPROVEMENTS

STP-9252(6), P.I. No. 751300: The project proposes construction of one turn lane in each direction on Johnson Ferry Road from the Chattahoochee River to Riverside Drive and roadway improvements for the length of the project. The proposed design would include turning lanes as needed. The total length of the project will be approximately 1.24 miles.

The existing roadway on Johnson Ferry Road consists of four 12-foot travel lanes with substandard urban shoulders with intermittent sidewalks. The beginning of the project at the Chattahoochee River, with the additional lane extending to the immediate west of the bridge to Columns Drive for lane continuity with the existing Johnson Ferry Road in Cobb County to the end of the project at Abernathy Road, Johnson Ferry Road will be widened to six 12-foot lanes (including bridge) from Riverside Drive. Johnson Ferry Road drops down to four 11-foot lanes from Riverside Drive to Abernathy Road with a 16-foot raised grassed center median and with 4-foot bike lanes, 16-foot urban shoulders, and 8-foot sidewalks on both sides.

Major structures on the proposed project include the Johnson Ferry Road bridge over the Chattahoochee River and possible retaining walls on Johnson Ferry Road. The 656-foot wide bridge over the Chattahoochee River will be widened to the east to accommodate six 12-foot travel lanes and a 16-foot raised median, 4-foot bike lanes and 10-foot sidewalks. The retaining wall may begin southeast of the Riverside Drive intersection on Johnson Ferry Road on the southwest side to underneath the north side of the existing bridge over the Chattahoochee River.

STP-9250(1), P.I. No. 751310: The project proposes construction of one additional through travel lane in each direction on Abernathy Road from Johnson Ferry Road to Roswell Road and roadway improvements for the length of the project. The proposed design would include turning lanes as needed. The total length of the project will be approximately 0.93 miles

The existing roadway on Abernathy Road consists of two 12-foot travel lanes with substandard shoulders and intermittent sidewalks. From the beginning of the project at Johnson Ferry Road to the end of the project at Roswell Road, Abernathy Road will be widened to four 11-foot travel lanes, two in each direction, with variable 16-foot to 32-foot raided medians and with 4-foot bike lanes, 16-foot urban shoulders, and 8-foot sidewalks on both sides. The Abernathy Road at Roswell Road intersection will be

improved by adding dual left lane turns and a median on Abernathy Road and Roswell Road for all approaches.

PROJECTS IN THE AREA IN THE SIX-YEAR CONSTRUCTION WORK PLAN

- STP-9250(1), P.I. No. 75310. Abernathy Road from Johnson Ferry Road to Roswell Road, Preliminary Engineering (PE) is authorized, Right-of-Way is scheduled for 2004 and construction is scheduled for 2004. This project will intersect the Johnson Ferry Road project (P.I. No. 751300). Also, this project will widen Abernathy Road from the existing two 12-foot travel lanes with substandard shoulders to four 11-foot lane travel lanes, two in each direction with variable 16-foot to 32-foot raised grassed median and with 4-foot bike lanes, 16-foot urban shoulders and 8-foot sidewalks on both sides.
- STP-9252(6), P.I. No. 75300. Johnson Ferry Road from Chattahoochee River Abernathy Road, PE is authorized, ROW is scheduled for 2004 and construction is scheduled for 2004. This project is a roadway improvement project and will intersect Abernathy Road project (P.I. No. 751310).
- CM-0000-00(640), P.I. No. 0000640. River Valley Road from Abernathy Road to Riverside Drive in Fulton County, PE is local, ROW is local and construction is scheduled for 2005. This is a bicycle pedestrian project.
- STP-9250(2), P.I. No. 751640, Abernathy Road fro State Route (SR) 9 / Roswell Road to SR 400 in Fulton County. All phases are scheduled in long range. This project is a widening project.
- STP-7532-00(9400), P.I. No. 753240. Johnson Ferry Road from Abernathy Road to Hildebrand Road. This project is under construction. This project is the construction of new sidewalks.
- PRP-8540-1(121), P.I. No. 761970. Morgan Falls Bridge crossing from Lower Roswell Road to SR 400. This project is in long range. This project is new construction of a bridge and roadway linking Lower Roswell Road to SR 400.

TRAVEL DEMAND AND OPERATIONAL CHARACTERISTICS

STP-9252(6), P.I. No. 751300: Johnson Ferry Road has an Average Annual Daily Traffic (AADT) 32,000. It is anticipated that the AADT will increase to 41,700 in the design year of 2026. This is an increase of approximate 30% for this section of roadway. Johnson Ferry Road is classified as an Urban Principal Arterial. The current Level of Service (LOS) ranges from LOS D and LOS E. The projected LOS for 2026 on Johnson Ferry Road with improvements is LOS C in the six-lane section and LOS E in the four-lane section. The projected LOS without this improvement is LOS F.

STP-9250(1), P.I. No. 751310: Abernathy Road has an AADT of 23,000. It is anticipated that the AADT will increase to 34,600 in the design year of 2026. This is an increase of approximate 50% for this section of roadway. Abernathy Road is classified as an Urban Collector. The current LOS is LOS E. The projected LOS for 2026 on Abernathy Road with improvements is LOS C. The projected LOS without this improvement is LOS F.

COMMUNITY ISSUES

Fulton County is part of the Atlanta metropolitan area and is a rapidly growing residential area. The 2000 Census listed the population in Fulton County as 816,006. During the 1990 Census year, Fulton County had a population of 648,951. Between 1990 and 2000, Fulton County gained 167,055 residents, a 25.7% increase, which ranked second in the region in net population increase. Fulton County is the largest

county in Georgia in both land area and population and is the region's most densely populated area. The 2010 population projection for Fulton County is 860,797.

SAFETY

In 2000 and 2001, the last two years accident data was available, there were 79 accidents reported along Johnson Ferry Road and 86 accidents were reported on Abernathy Road. The Johnson Ferry Road accident rate is below the statewide accident rate per million vehicle miles traveled (MVMT) and exceeding the statewide accident rate per MVMT. For 2000, the number of accidents on Johnson Ferry was 42 with three injuries and no fatalities, and on Abernathy Road there were 41 accidents with eight injuries and no fatalities. In 2001, Johnson Ferry Road experienced 37 accidents with six injuries and no fatalities while Abernathy Road had 45 accidents with six injuries and no fatalities. Below are accident data and comparable statewide averages:

Johnson Ferry Road	2000	2001
Total Accidents	42	37
Accidents per 100 MVMT	387	336
Statewide Accidents per 100 MVTM	*	547

Abernathy Road	2000	2001
Total Accidents	41	45
Accidents per 100 MVMT	638	726
Statewide Accidents per 100 MVTM	*	550

** This information is not available at this time.*

The above accident data indicates Johnson Ferry Road, for the proposed location, experiences accidents rates that are below statewide averages but still at unacceptable levels, while Abernathy Road experiences accident rates exceeding the statewide average for similar classified facilities. The majority of accidents for both roadways were classified as "angle intersecting" and "rear end." The addition of turn lanes on Johnson Ferry Road and one through lane in each direction with turn lanes on Abernathy Road and a median on both roads will provide a safer operation, increase capacity, and reduce the number of accidents on this roadway.

NEED AND PURPOSE

The purpose of this project is to improve both the operation and safety of the roadway. The need and purpose of the proposed improvements are due to high traffic volumes. This roadway is heavily used by commuters from Cobb County who are trying to access I-285 and downtown Atlanta. The raised medians will limit access and create turn bays to allow safer movement of vehicles on Johnson Ferry and Abernathy Roads. The addition of one through lane in each direction on Abernathy Road will provide added capacity for safer operating conditions. Turn lanes in the corridor will provide safer operating conditions for the through traffic. The bike lanes and sidewalks will provide a link between the commercial district on Roswell Road, the Chattahoochee River National Recreational Area, a planned linear park on Abernathy Road, and the neighborhoods on Johnson Ferry Road. The design for this project was influenced by the Citizen's Action Committee formed to help determine the locally preferred alternative. This project will provide local and through traffic with a facility that will serve current and future travel demand and provide the public with a safer driving, walking and biking environment.

CONSTRUCTION COSTS

The combined probable cost of construction for the two projects is noted to be $78,846,627. This figure is distributed as follows:

- STP-9252(6), P.I. No. 751300, Johnson Ferry Road: $30,230,640 in construction costs; 10% Engineering and Construction (E&C) costs at $3,023,064; $8,168,350 in ROW costs; and $124,500 in Reimbursable Utilities costs for a grand total of $41,546,554.
- STP-9250(1), P.I. No. 751310, Abernathy Road: $11,130,293 in construction costs; 10% E&C costs at $1,130,529; $24,739,750 in ROW costs; and $124,500 in Reimbursable Utilities costs for a grand total of $37,300,073.

VALUE ANALYSIS AND CONCLUSIONS

INTRODUCTION

This section describes the procedures used during the VE study. It is followed by separate narratives and conclusions concerning:

- Value Engineering Study Agenda
- Value Engineering Workshop Participants
- Economic Data
- Cost Model
- Function Analysis
- Creative Idea Listing and Judgment of Ideas

A systematic approach was used in the VE study and the key procedures involved were organized into three distinct parts: 1) preparation; 2) VE workshop; and 3) post-study. A Task Flow Diagram that outlines each of the procedures included in the VE study is attached for reference.

PREPARATION EFFORT

Pre-study preparation for the VE effort consisted of scheduling study participants and tasks; gathering necessary background information on the facility; and compiling project data into a cost model and graphic cost histogram. Information relating to the design, construction, and operation of the facility is important as it forms the basis of comparison for the study effort. Information relating to funding, project planning operating needs, systems evaluations, basis of cost, soil conditions, and construction of the facility was also a part of the analysis.

VALUE ENGINEERING WORKSHOP EFFORT

The VE workshop was a three-day effort (see attached agenda). During the workshop, the VE job plan was followed. The job plan guided the search for high cost areas in the project and included procedures for developing alternative solutions for consideration. It includes six phases:

- Information Phase
- Function Identification and Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Information Phase

At the beginning of the study, the conditions and decisions that have influenced the development of the project must be reviewed and understood. For this reason, the development manager presented information about the

Value Engineering Study Task Flow Diagram

Preparation Effort

Coordination Project
- Verify Schedule
- Suggest Format for Designer Presentation
- Outline Project Responsibilities
- Outline Needed Background Data
- Define *Project Value Objectives*
- Identify Project Constraints

→

Prepare for Workshop
- Collect Project Data
- Distribute Data to Team Members
- Team Members Become Familiar with Project

→

Construct Cost Models
- Construct Cost Models
- Construct Graphic Function Analysis
- Outline High Cost Areas

→

LCC Model
- Roadway
- Bridges
- MOT
- Energy
- User Impact

Workshop Effort

Information Phase
- Introduction by VETL
- Project Description and Presentation by Designer
- Outline Owner Requirements
- Review Project Data
- Visit Project Site (Alt.)

→

Function Identification and Analysis Phase
- Analyze Project Costs and Energy Usage
- Perform Function Analysis and FAST Diagram
- Identify High Cost and Energy Areas
- Calculate Cost/Worth Ratios
- Identify Paradigms

List Ideas Generated During Function Analysis

→

Speculation Phase
- Introduction by VETL
- Creative Idea Listing:
  - Quantity of ideas
  - Association of Ideas
- Brainstorm
- Do Creative Thinking
  - Group Thinking
  - Individual Thinking
- Use Checklist for Ideas

→

Evaluation Phase
- Eliminate Impractical Ideas
- Rank Ideas with Advantages/ Disadvantages
- Evaluate Alternatives
  (Include Non-Economic considerations: Safety, Reliability, Environment, Aesthetics, O&M, etc.)
- Select Best Ideas for Implementation

→

Development Phase
- Develop Proposed Alternatives
- Prepare Alternative Design Sketches
- Estimate Costs
- Perform Life Cycle Comparison
  - Initial Cost
  - Redesign Cost
  - O&M Cost
  - LCC Cost

→

Presentation Phase
- Summarize Findings
- Present VE Ideas to Owner/ User/Designer
- Oral Presentation

Post-Workshop Effort

VE Study Report
- Develop Implementation VE Report
- Designer Prepares Responses to VE Report
- Owner Evaluates Recommendations

→

Implementation Phase
- Participate in Implementation Meeting with Owner/User/ Designer/ VE Team, as needed
- Prepare Final VE Report

→

Final Acceptance
- Redesign by Designer

project to the VE team on first day of the session. Following the presentation, the VE team discussed the project using the following documents:

- ***Project Concept Report*** prepared by the Department of Transportation, State of Georgia, Office of Urban Design for Project Number STP-9252(6) and STP-9250(1); County: Fulton and Cobb; P. I. Number 751300 and 751310; Federal Route No.: N/A; State Route Number: Johnson Ferry and Abernathy Roads: 947; Roswell Road: 9; dated September 9, 2003; Containing: (1) Need and Purpose, (2) Cost Estimates, (3) Project Location Maps, (4) Typical Sections, (5) Accident Summaries, (6) Traffic Analysis, (7) Existing Bridge Information, (8) Meeting Minutes, and (9) Local Agreements;
- ***Half Size Drawings of Plan and Profile*** entitled Plan and Profile of Proposed Johnson Ferry Road and Abernathy Road Widening from the Chattahoochee River to Roswell Road; State Aid Project; Georgia DOT P. I. No. 751300 and 751310; Federal Route No. N/A; State Route No. 947 and 9; prepared for the Department of Transportation, State of Georgia by the Department of Transportation, State of Georgia, undated;
- ***General Highway Map***, Cobb County, Georgia, prepared by the Department of Transportation, Division of Planning and Programming, Planning Data Services in cooperation with the U.S. Department of Transportation, Federal Highway Administration, dated 1985;
- ***Traffic Count Map***, Fulton County, Georgia, prepared by the Department of Transportation, Division of Planning and Programming, Planning Data Services in cooperation with the U.S. Department of Transportation, Federal Highway Administration, Revised 1983; and
- ***Atlanta Aero Atlas***, Metropolitan Series, prepared by Aero Surveys of Georgia, Inc., dated October 1994 to October 1995.

Function Identification and Analysis Phase

Based on historical and background data, a cost model and graphic function analysis were developed for this project by major construction elements. They were used to distribute costs by project element; serve as a basis for alternative functional categorization; and to assign worth to the categories, where worth is the least cost to provide the required function, as determined by the VE team. The VE team identified the functions of the various project elements and subsystems by using random function generation techniques resulting in the attached Random Function Analysis worksheet and / or Function Analysis Systems Technique (F.A.S.T.) diagram.

Creative Phase

This VE study phase involved the creation and listing of ideas. Creative idea worksheets were organized by project element. During this phase, the VE team developed as many ideas as possible to provide the necessary functions within the project at a lower cost to the owner, or to improve the quality of the project. Judgment of the ideas was restricted at this point. The VE team was looking for a large quantity of ideas and association of ideas.

The Georgia Department of Transportation representatives may wish to review the creative list since it may contain ideas that can be further evaluated for potential use in the design.

Evaluation Phase

During this phase of the workshop, the VE team judged the ideas generated during the creative phase. Advantages and disadvantages of each idea were discussed to find the best ideas for development. Ideas found to

be irrelevant or not worthy of additional study were discarded. Those that represented the greatest potential for cost savings or improvement to the project were then developed further.

The VE team would like to develop all ideas, but time constraints usually limit the number that can be developed. Therefore, each idea was compared with the present schematic design concepts, in terms of how well it met the design intent. Advantages and disadvantages were discussed, and each team member rated the ideas on a scale of zero to five, with the best ideas rated five. Total scores were summed for each idea and only highly-rated ideas were developed into alternatives. In cases where there was little cost impact, but an improvement to the project was anticipated, the designation DS, for design suggestion, was used. The design team should review this listing for possible incorporation of ideas into the project.

The creative listing was re-evaluated frequently during the process of developing alternatives. As the relationship between creative ideas became more clearly defined, their importance and ratings may have changed, or they may have been combined into a single alternative. For these reasons, some of the originally high-rated items may not have been developed into alternatives.

Development Phase

During the development phase, each highly rated idea was expanded into a workable solution. The development consisted of a description of the alternative, life cycle cost comparisons, where applicable, and a descriptive evaluation of the advantages and disadvantages of the proposed alternatives. Each alternative was written with a brief narrative to compare the original design to the proposed change. Sketches and design calculations, where appropriate, were also prepared in this part of the study. The VE alternatives are included in the section entitled Study Results.

Presentation Phase

The last phase of the VE study was the presentation of the findings. The VE alternatives were screened by the VE team before draft copies of the Summary of Potential Cost Savings worksheets were provided to GDOT representatives. The VE alternatives were arranged in the same order as the idea listing sheets to facilitate cross-referencing.

POST-WORKSHOP EFFORT

The post-study portion of the VE study includes the preparation of this Value Engineering Study Report. Personnel from GDOT will analyze each alternative and prepare a short response, recommending either incorporating the alternative into the project, offering modifications before implementation, or presenting reasons for rejection. Lewis & Zimmerman Associates, Inc. is available at your convenience as you review the alternatives. Please do not hesitate to call on us for clarification or further information as you consider an implementation approach.

VALUE ENGINEERING STUDY AGENDA

Lewis & Zimmerman Associates, Inc. (LZA) will conduct a 28-hour Value Engineering (VE) study on the **STP-9252(6), P. I. No. 751300: Widen Johnson Ferry Road from Columns Drive to Abernathy Road, and STP-9250(1), P. I. No. 751310: Widen Abernathy Road from Johnson Ferry Road to east of Roswell Road** projects located in Cobb and Fulton Counties, Georgia. It is expected the owner / designer, the Georgia Department of Transportation (GDOT) will be available to make a formal presentation concerning the project at the beginning of the workshop and be available to answer questions during the VE study effort.

VE Study Agenda

The VE study will follow the outline described below and be conducted December 10 - 14, 2006. The study will be conducted in Personnel's Conference Room, Room 274B of GDOT's General Office located at No. 2 Capitol Square Street, Atlanta, Georgia 30334. The point-of-contact is Ms. Lisa L. Myers, Design Review Engineer Manager, who can be reached at 404-651-7468.

Monday, December 10th

9:00 am – 9:15 am **General Introduction of all Parties and review of the VE Process**

9:15 am - 11:15 am **Owner's / Designer's Presentation**

GDOT is to present information concerning the project including, but not necessarily limited to: rationale for design, criteria for specific areas of study, project constraints, and the reasons for design decisions.

11:15 am - 12:00 noon **Commence Function Analysis Phase**

The VE team will continue their familiarization with the cost models and project data for each area of study. The cost model(s) will be refined, as necessary; define the function of each project element or system in the cost model, select the primary or basic functions, and determine the worth, or least cost, to provide the function. Cost / worth or value index ratios will be calculated, and high cost / low worth areas for study identified. In addition, the VE team will continue defining the function of each element / system to gain a thorough understanding of the project's needs and requirements.

12:00 noon - 1:00 pm **Lunch**

1:00 pm - 5:00 pm **Conclude the Function Analysis Phase and Commence the Creative Phase**

The VE team will conduct a brainstorming session and list as many ideas as possible for consideration. The aim is to obtain a large quantity of ideas through free association, by eliminating roadblocks to creativity and deferring judgment.

Tuesday, December 11th

8:30 am - 10:00 am **Conclude Creative Phase and Complete Evaluation / Analytical Phase**

The VE team will analyze the ideas listed in the creative phase and select the best ideas for further development.

10:00 am - 12:00 noon **Development Phase**

VE team will develop creative ideas into alternate design solutions. Initial and life cycle cost estimates comparing original and proposed alternatives will be prepared. Selected alternatives for change will be developed and supported with sketches, calculations and written substantiation.

12:00 noon - 1:00 pm **Lunch**

1:00 pm - 5:00 pm **Continue Development Phase**

Wednesday, December 12th

8:30 am - 12:00 am **Continue Development Phase**

12:00 noon - 1:00 pm **Lunch**

1:00 pm - 4:00 pm **Conclude Development Phase**

4:00 pm – 5:00 pm **Commence Summary Worksheets for Information oral Presentation**

Upon completion of the Development Phase, the VE facilitator will commence preparation of the summary worksheets based on the alternatives developed by the VE team. The summary worksheets will form the basis of the informal oral presentation.

Thursday, December 13th

8:00 am - 9:00 am **Finalize Summary Worksheets and Prepare for Oral Presentation Strategies**

9:00 am – 11:00 am **Informal Oral Presentation**

The VE team presents its alternatives to the owner / design team representatives and is available to clarify any points. The process for accepting / rejecting VE alternatives is described and a target schedule for meeting to finalize implementation decisions is established.

11:00 am **Adjourn**

VALUE ENGINEERING WORKSHOP PARTICIPANTS

The VE team was organized to provide specific expertise on the unique project elements involved. Team members consisted of a multidisciplinary group with professional design experience and a working knowledge of VE procedures. The VE team included the following professionals:

John P. Tiernan, PE	Bridge / Structural Engineer	ARCADIS G&M, Inc.
Robert T. Lewis, PE	Transportation Engineer	HNTB
Harley G. Griffin	Construction Specialist/ Transportation Engineer	Delon Hampton and Associates
Luis M. Venegas, PE, CVS	Value Engineering Facilitator	LZA

OWNER'S / DESIGNER'S PRESENTATION

The Georgia Department of Transportation both the owner and design team, presented an overview of the project on Monday, December 11, 2006. The purpose of this meeting, in addition to being an integral part of the Information Gathering Phase of the VE Study, was to bring the VE team "up-to-speed" regarding the overall project. Additionally, the meeting afforded the design team the opportunity to highlight in greater detail, those areas of the project requiring additional or special attention.

VALUE ENGINEERING TEAM'S FINAL PRESENTATION

The VE team conducted a final, informal oral presentation on Thursday, December 14, 2006 to GDOT where copies of the draft Summary of Potential Cost Savings worksheets were provided for interim use by GDOT personnel.

A copy of the meeting participants is attached for reference.

VALUE ENGINEERING ATTENDEES

MEETING PARTICIPANTS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD** **Cobb and Fulton Counties, Georgia Department of Transportation, District 7** ***Pre-Final Field Plan Review Design Stage***	Date: **December 11 – 14, 2006**

NAME & E-MAIL (PLEASE PRINT)	ORGANIZATION/TITLE	PHONE/FAX
Name: Nicoc Alexander, EIT GDOT Employee No.: 00344258 em: nicoc.alexander@dot.state.ga.us	Organization: State of Georgia, Department of Transportation (GDOT), Office of Urban Design Title: Assistant Design Group Manager	ph: 404-656-5440 cell: fx: 404-657-7921
Name: James “Lonnie” Jones GDOT Employee No.: 00195484 em: lonnie.jones@dot.state.ga.us	Organization: GDOT, Office of Construction Title: Construction Liaison Engineer	ph: 404-656-5306 cell: 404-326-6235 fx: 404-656-3507
Name: Todd Long, PE GDOT Employee No.: em: todd.long@dot.state.ga.us	Organization: GDOT, Pre-Construction Division Title: Pre-Construction Division Diretor	ph: 404-656-5187 cell: fx:
Name: Jennifer E. Mathis GDOT Employee No.: 00818263 em: jennifer.mathis@dot.state.ga.us	Organization: GDOT, Office of Environmental / Location Title: Senior Environmental Planner / NEPA Planner	ph: 404-699-4408 cell: fx: 404-699-4440
Name: Gerald (Jerry) A. Milligan GDOT Employee No.: em: jerry.milligan@dot.state.ga.us	Organization: GDOT, Office of Right of Way Title: Supervisor Appraisal Estimator	ph: 770-986-1541 cell: fx: 770-986-1558
Name: Lisa L. Myers GDOT Employee No.: 00244168 em: lisa.myers@dot.state.ga.us	Organization: GDOT, General Office Title: Design Review Engineer Manager, Value Engineering Coordinator	ph: 404-651-7468 cell: fx: 404-463-6131
Name: Sam Panah GDOT Employee No.: 00907586 em: sam.parah@dot.state.ga.us	Organization: GDOT, Office Bridge Design Title: Civil Engineering Technologist	ph: 404-656-5302 cell: fx: 404-651-7076
Name: Margaret Reitz GDOT Employee No.: 00833607 em: margaret.reitz@dot.state.ga.us	Organization: GDOT, Office of Urban Design Title: Design Engineer 2	ph: 404-656-5440 cell: fx: 404-657-7921
Name: Albert V. Shelby, III GDOT Employee No.: em: albert.shelby@dot.state.ga.us	Organization: GDOT, Office of Urban Design Title: Design Group Manager	ph: 404-656-5440 cell: fx: 404-657-7921
Name: Brian Summers, PE GDOT Employee No.: em: brian.summers@dot.state.ga.us	Organization: GDOT, Engineering Services Title: Project Review Engineer	ph: 404-656-6843 cell: fx: 404-464-6131

VALUE ENGINEERING ATTENDEES

MEETING PARTICIPANTS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD** **Cobb and Fulton Counties, Georgia Department of Transportation, District 7** ***Pre-Final Field Plan Review Design Stage***	Date: **December 11 – 14, 2006**

NAME & E-MAIL (PLEASE PRINT)	ORGANIZATION/TITLE	PHONE/FAX
Name: Ken Werho GDOT Employee No.: em: ken.werho@dot.state.ga.us	Organization: GDOT, Office of Traffic and Design Title: Traffic Operations Design Review and Concept Engineer	ph: 404-635-8144 cell: Fx: 404-635-8116
Name: Vince Wilson GDOT Employee No.: 00335190 em: vince.wilosn@dot.state.ga.us	Organization: GDOT, Office of Bridge Design Title: Assistant Group Leader	ph: 404-656-5302 cell: fx: 404-651-7076
Name: Jeff Woodward GDOT Employee No.: 00244213 em: jeff.woodward@dot.state.ga.us	Organization: GDOT, District 7 Construction Title: Area Engineer	ph: 770-528-3238 cell: 404-326-5104 fx: 770-528-5506
Name: John P. Tiernan, PE GDOT Employee No.: em: jtiernan@arcadis-us.com	Organization: ARCADIS G&M, Inc. Title: Senior Bridge Engineer	ph: 770-432-8666 cell: fx: 770-435-2666
Name: Robert (Rob) T. Lewis, PE GDOT Employee No.: em: rtlewis@hntb.com	Organization: HNTB Corporation Title: Transportation Project Manager	ph: 404-946-5735 cell: 404-983-1421 fx: 404-841-2820
Name: Harley G. Griffin GDOT Employee No.: em: hgriffin@delonhampton.com	Organization: Delon Hampton & Associates, Chartered Title: Project Manager	ph: 404-524-8030 cell: fx: 404-524-2575
Name: Luis M. Venegas, PE, CVS-Life, LEED® AP GDOT Employee No.: em: lvenegas@lza.com	Organization: Lewis & Zimmerman Associates, Inc. Title: Value Engineering Facilitator	ph: 770-992-3032 cell: 678-488-4287 fx: 770-435-2666
Name: GDOT Employee No.: em:	Organization: Title:	ph: cell: fx:
Name: GDOT Employee No.: em:	Organization: Title:	ph: cell: fx:
Name: GDOT Employee No.: em:	Organization: Title:	ph: cell: fx:

ECONOMIC DATA

The VE team developed economic criteria to evaluate information gathered from GDOT. To express costs in a meaningful manner, the VE team alternatives are presented on the basis of discounted present worth. Criteria for planning project period interest rates are based on the following parameters:

Year of Analysis:	**2006**
Construction Start Up:	**2007**
Construction Duration:	±**24 - 36** Months (2009 - 2010)
Economic Planning Life:	**35** years for Pavement
Economic Planning Life:	**50** years for Bridges
Discount Rate / Interest:	**2.50%** (Extrapolated from latest United States Office of Management and Budget Circular A-94, Appendix C – January 2006)
Inflation / Escalation Rate:	**5.00%** (Per GDOT)
Uniform Present Worth (UPW) Factor:	**23.1452** for 35 years **28.3623** for 50 years
Cost of Power:	**$0.07 / kWHr** (kilowatt hour) (assumed)

Operation and Maintenance Costs *(Industry Norms)*:

Equipment - With Many Moving Parts	**5.00%-5.50%+ of Capital Cost**
Equipment - With Minimal Moving Parts	**3.50%-4.00% of Capital Cost**
Equipment - Electronic	**3.00% of Capital Cost**
Structural	**1.00%-2.00%** (or less) **of Capital**

Cost

Composite Mark-Up (Construction): *(Composed of: Engineering and Construction at 10.00%.)*	**10.00%** (0.1000)
Composite Mark-Up (Right-of-Way): *(Composed of: Scheduling Contingency at 55.00%; Administration / Court Costs at 60.00%; and Inflation Factor at 40.00 %.)*	**247.20%** (2.4720)

COST MODEL

The VE team prepared several cost models for the project that is included following this page. The cost models are arranged in the Pareto Chart/Cost Histogram format to aid in identifying high cost areas and are based on estimate reports for Project Nos. STP-9252(6), P.I. No. 751300 and STP-9250(1), P.I. No. 751310, which were prepared by GDOT Office of Road and Airport Design, dated December 4, 2006. As can be expected, judgments at this stage of the study are based on experience and intuition rather than facts, which are not uncovered until well along in the analysis of function. As a result of these qualified hypotheses, there appears to be a potential for initial savings in the following areas:

- Roadway
  - § Concrete Median
  - § Recycled Asphaltic Concrete
  - § Traffic Control
  - § Aggregate Base Course
  - § Concrete Curb and Gutter
- Major Structures
- Drainage and Culvert

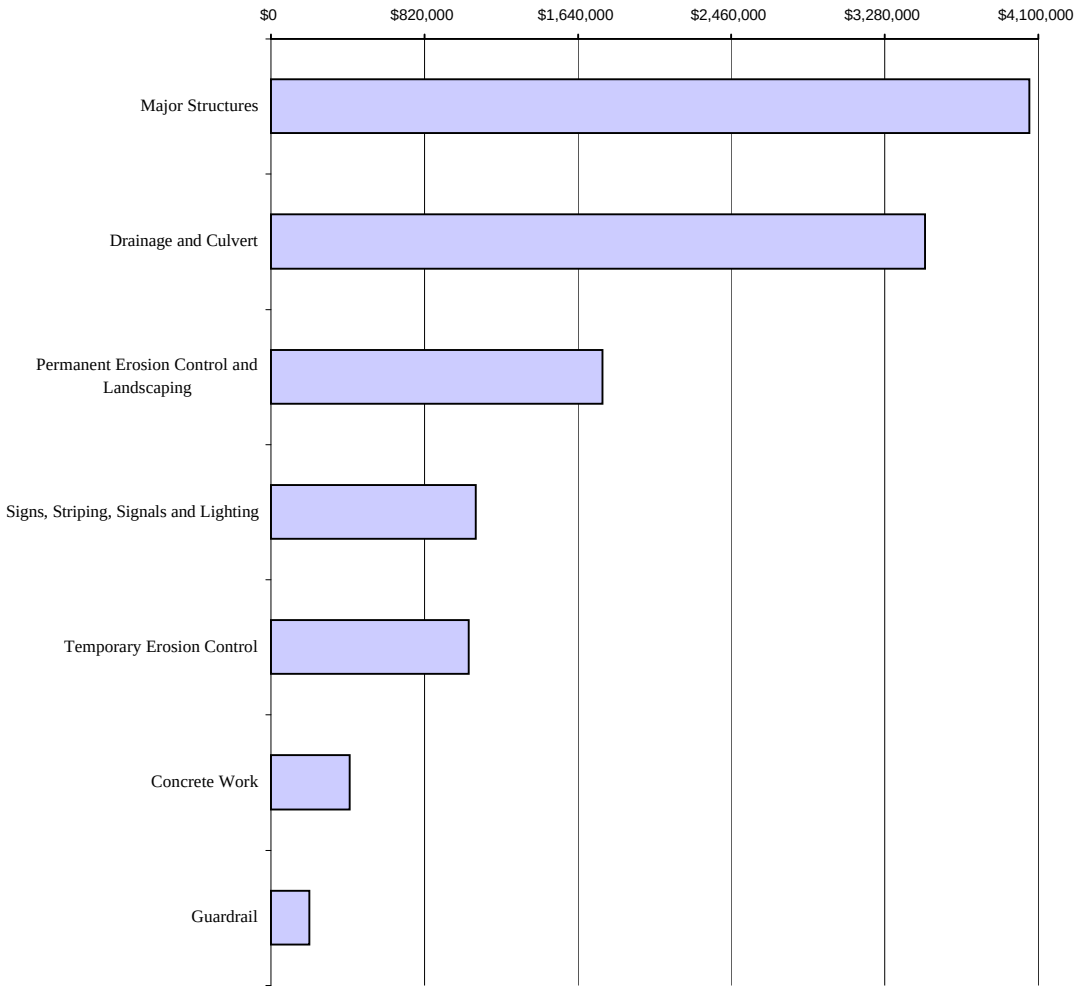
DESIGNER'S COST ESTIMATE

The cost estimates, as described above, did contain sufficiently detailed information to perform a VE when considering the current pre-final, field review, level of design.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

TOTAL PROJECT		COST	PERCENT	CUM. PERCENT
Roadway		29,447,132	70.90%	70.90%
Major Structures		4,050,506	9.75%	80.65%
Drainage and Culvert		3,494,064	8.41%	89.06%
Permanent Erosion Control and Landscaping		1,770,738	4.26%	93.32%
Signs, Striping, Signals and Lighting		1,093,721	2.63%	95.96%
Temporary Erosion Control		1,056,746	2.54%	98.50%
Concrete Work		419,021	1.01%	99.51%
Guardrail		204,005	0.49%	100.00%
Construction Subtotal		**$ 41,535,933**	**100.00%**	
Engineering and Construction @	10.00%	$ 4,153,593		
Inflation Based on 0.00% per annum for Three Years	0.00%	$ -	**Construction**	
Construction Total		**$ 45,689,526**	Mark-Up:	10.00%
Net Right-of-Way		$ 9,478,139		
Right-of-Way Scheduling Contingency	55.00%	$ 5,212,976		
Right-of-Way Administration / Court Costs	60.00%	$ 8,814,669		
Right-of-Way Inflation Factor	40.00%	$ 9,402,315	**ROW**	
Right of Way Total		**$ 32,908,100**	Mark-Up:	247.20%
Reimbursable Utilities		$ 249,000		
GRAND TOTAL		**$ 78,846,626**		

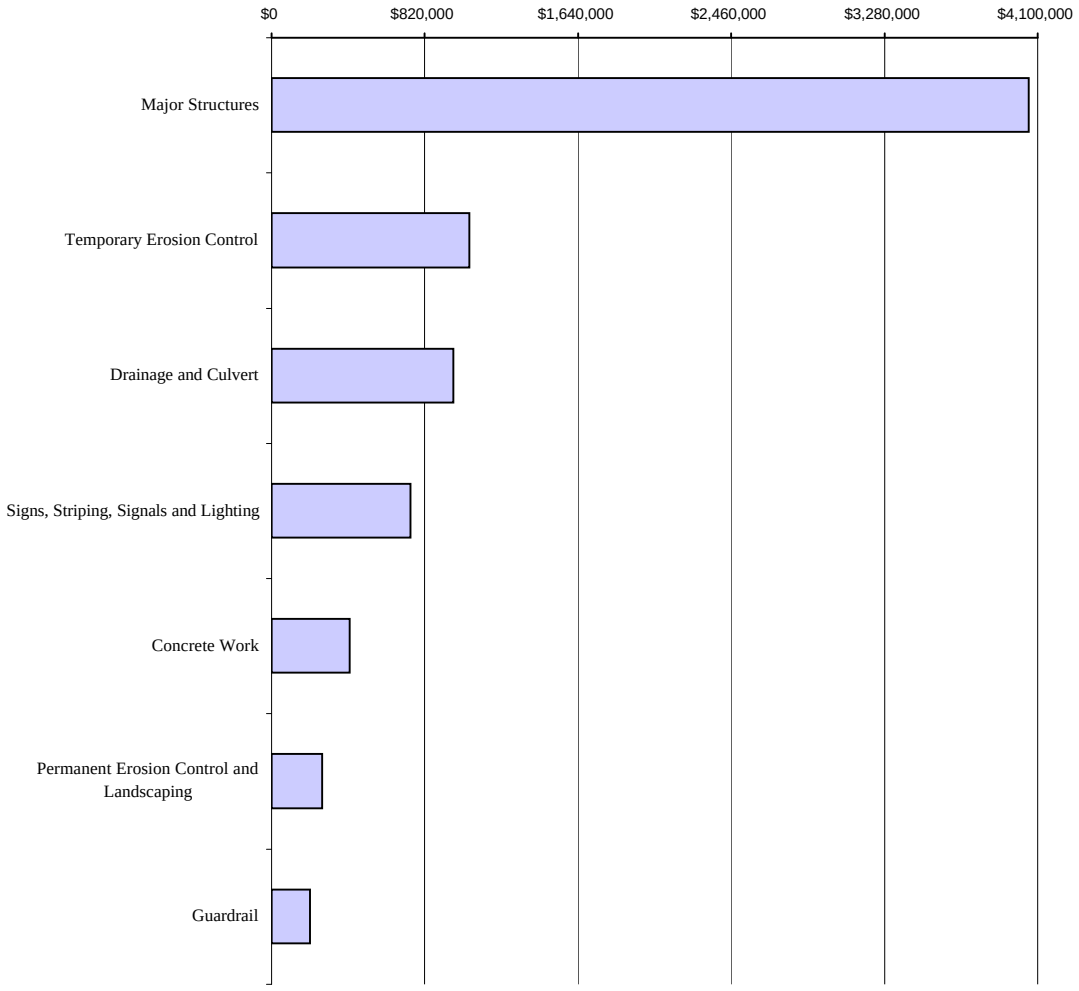


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

JOHNSON FERRY ROAD TO ABERNATHY ROAD		COST	PERCENT	CUM. PERCENT
Roadway		22,515,648	74.48%	74.48%
Major Structures		4,050,506	13.40%	87.88%
Temporary Erosion Control		1,056,746	3.50%	91.37%
Drainage and Culvert		972,173	3.22%	94.59%
Signs, Striping, Signals and Lighting		741,803	2.45%	97.04%
Concrete Work		419,021	1.39%	98.43%
Permanent Erosion Control and Landscaping		270,738	0.90%	99.33%
Guardrail		204,005	0.67%	100.00%
Construction Subtotal		**$ 30,230,640**	**100.00%**	
Engineering and Construction @	10.00%	$ 3,023,064		
Inflation Based on 0.00% per annum for Three Years	0.00%	$ -	**Construction**	
Construction Total		**$ 33,253,704**	Mark-Up:	10.00%
Net Right-of-Way		$ 2,352,635		
Right-of-Way Scheduling Contingency	55.00%	$ 1,293,949		
Right-of-Way Administration / Court Costs	60.00%	$ 2,187,951		
Right-of-Way Inflation Factor	40.00%	$ 2,333,815	**ROW**	
Right of Way Total		**$ 8,168,350**	Mark-Up:	247.20%
Reimbursable Utilities		$ 124,500		
GRAND TOTAL		**$ 41,546,554**		

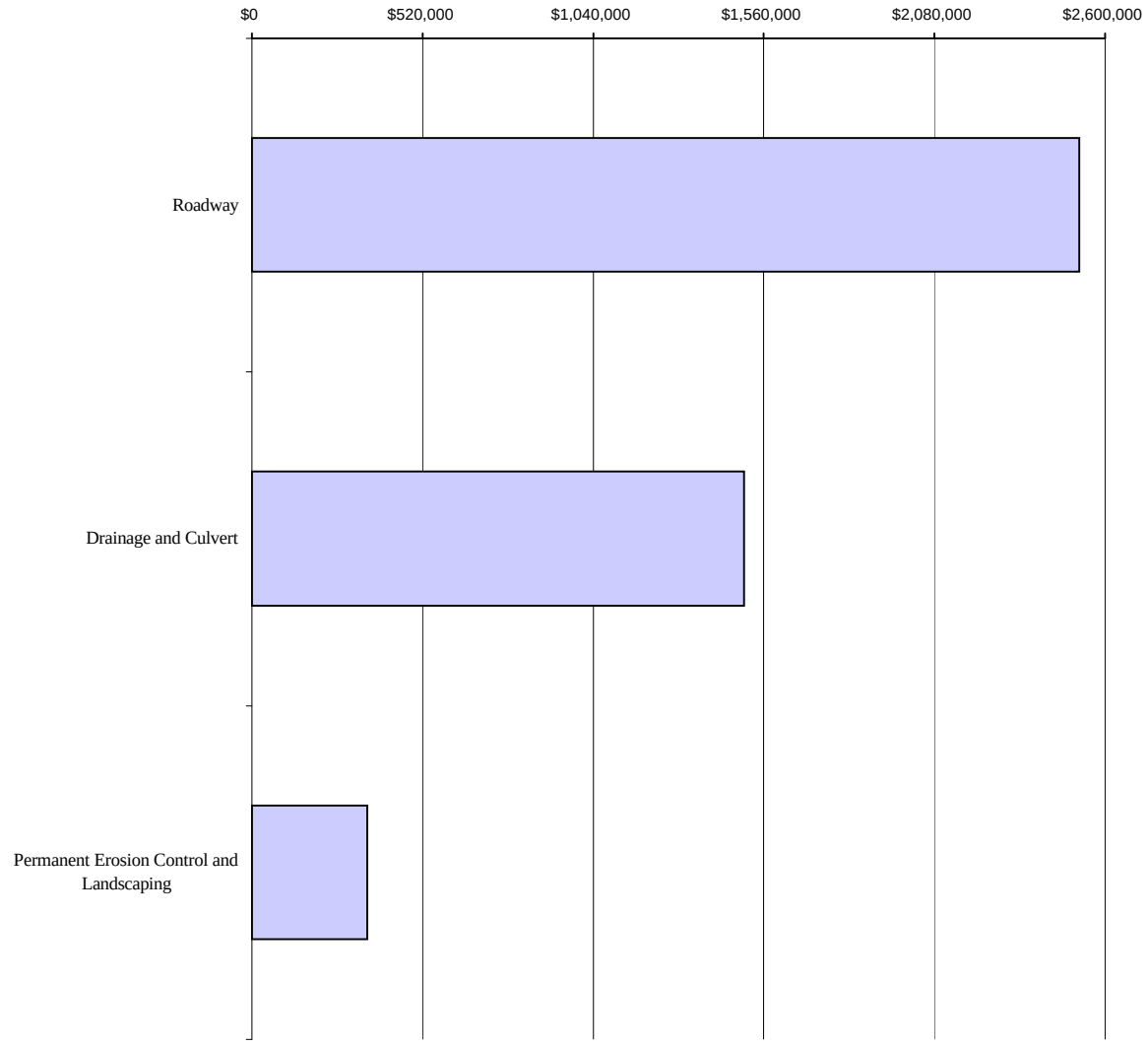


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

ABERNATHY ROAD TO ROSWELL ROAD		COST	PERCENT	CUM. PERCENT
Roadway		6,931,484	61.31%	61.31%
Drainage and Culvert		2,521,891	22.31%	83.62%
Permanent Erosion Control and Landscaping		1,500,000	13.27%	96.89%
Signs, Striping, Signals and Lighting		351,918	3.11%	100.00%
Construction Subtotal		**$ 11,305,293**	**100.00%**	
Engineering and Construction @	10.00%	$ 1,130,529		
Inflation Based on 0.00% per annum for Three Years	0.00%	$ -	**Construction**	
Construction Total		**$ 12,435,822**	Mark-Up:	10.00%
Net Right-of-Way		$ 7,125,504		
Right-of-Way Scheduling Contingency	55.00%	$ 3,919,027		
Right-of-Way Administration / Court Costs	60.00%	$ 6,626,719		
Right-of-Way Inflation Factor	40.00%	$ 7,068,500	**ROW**	
Right of Way Total		**$ 24,739,750**	Mark-Up:	247.20%
Reimbursable Utilities		$ 124,500		
GRAND TOTAL		**$ 37,300,072**		

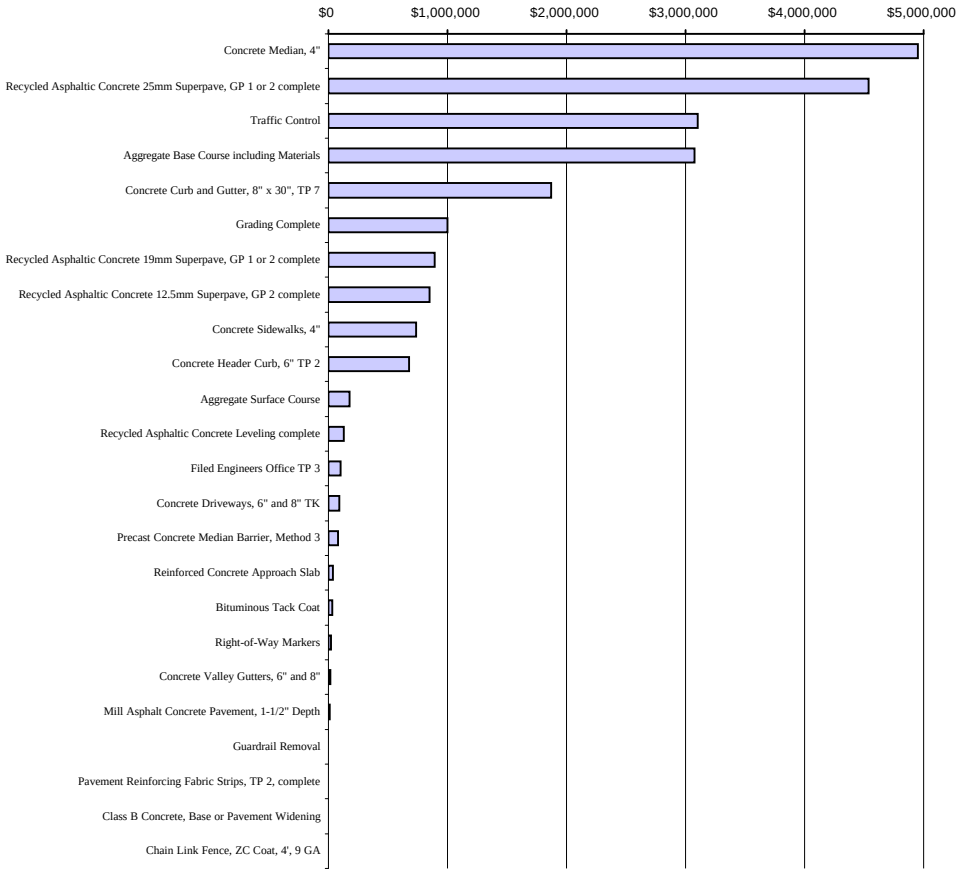


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

JOHNSON FERRY ROAD - ROADWAY	COST	PERCENT	CUM. PERCENT
Concrete Median, 4"	4,950,640	22.10%	22.10%
Recycled Asphaltic Concrete 25mm Superpave, GP 1 or 2 complete	4,538,560	20.26%	42.36%
Traffic Control	3,100,000	13.84%	56.19%
Aggregate Base Course including Materials	3,075,690	13.73%	69.92%
Concrete Curb and Gutter, 8" x 30", TP 7	1,872,745	8.36%	78.28%
Grading Complete	1,000,000	4.46%	82.75%
Recycled Asphaltic Concrete 19mm Superpave, GP 1 or 2 complete	894,160	3.99%	86.74%
Recycled Asphaltic Concrete 12.5mm Superpave, GP 2 complete	850,960	3.80%	90.54%
Concrete Sidewalks, 4"	737,820	3.29%	93.83%
Concrete Header Curb, 6" TP 2	676,050	3.02%	96.85%
Aggregate Surface Course	175,000	0.78%	97.63%
Recycled Asphaltic Concrete Leveling complete	130,000	0.58%	98.21%
Filed Engineers Office TP 3	100,000	0.45%	98.65%
Concrete Driveways, 6" and 8" TK	89,465	0.40%	99.05%
Precast Concrete Median Barrier, Method 3	80,000	0.36%	99.41%
Reinforced Concrete Approach Slab	35,700	0.16%	99.57%
Bituminous Tack Coat	30,944	0.14%	99.71%
Right-of-Way Markers	23,430	0.10%	99.81%
Concrete Valley Gutters, 6" and 8"	17,210	0.08%	99.89%
Mill Asphalt Concrete Pavement, 1-1/2" Depth	12,000	0.05%	99.94%
Guardrail Removal	5,566	0.02%	99.97%
Pavement Reinforcing Fabric Strips, TP 2, complete	4,000	0.02%	99.99%
Class B Concrete, Base or Pavement Widening	2,100	0.01%	99.99%
Chain Link Fence, ZC Coat, 4', 9 GA	1,160	0.01%	100.00%
Construction Subtotal	**$ 22,403,200**	**100.00%**	
Engineering and Construction @ 10.00%	$ 2,240,320		
Inflation Based on 0.00% per annum for Three Years 0.00%	$ -	**Construction**	
Construction Total	**$ 24,643,520**	Mark-Up:	10.00%
GRAND TOTAL	**$ 24,643,520**		

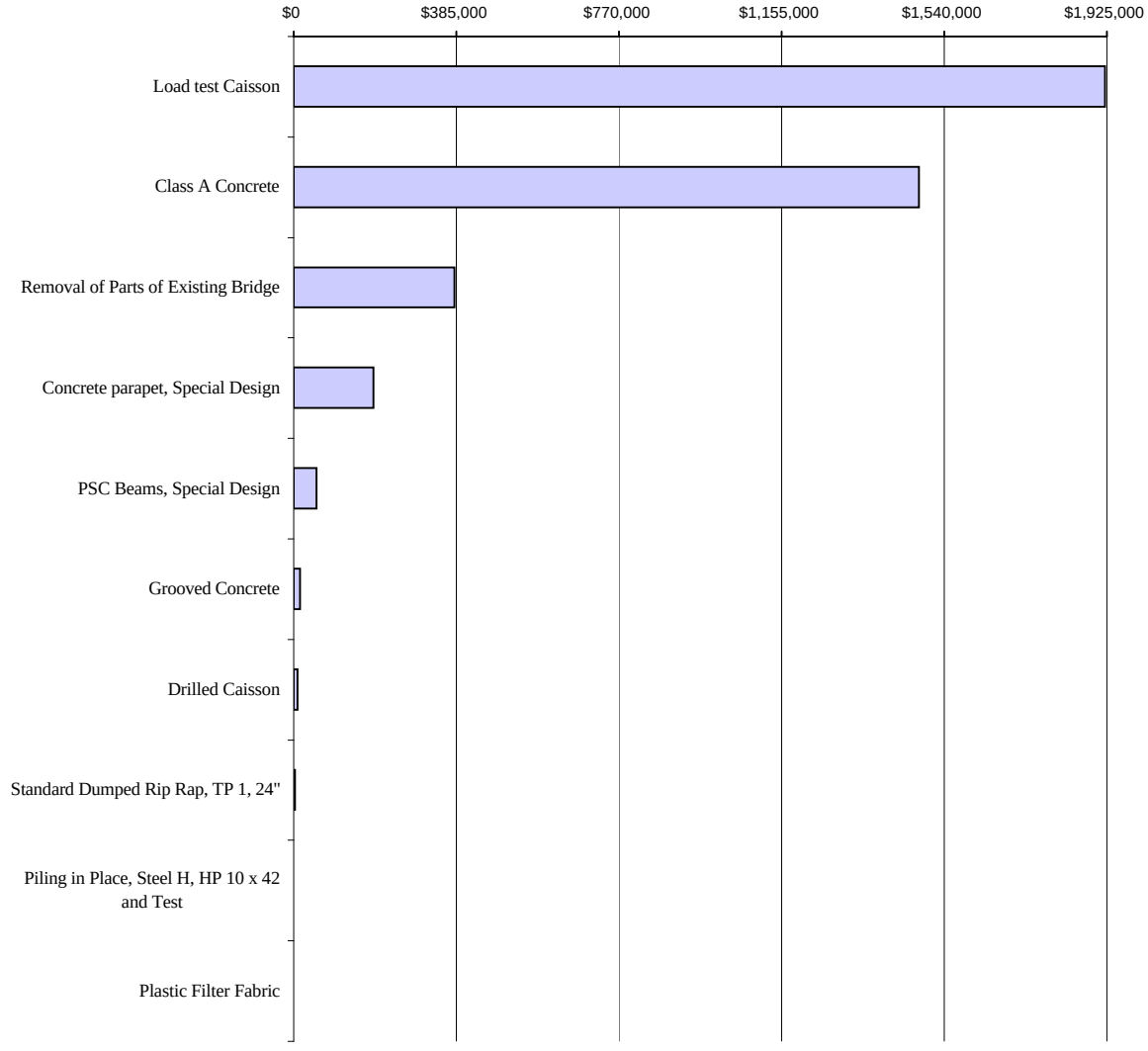


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

JOHNSON FERRY ROAD - MAJOR STRUCTURE	COST	PERCENT	CUM. PERCENT
Load test Caisson	1,920,000	47.40%	47.40%
Class A Concrete	1,480,700	36.56%	83.96%
Removal of Parts of Existing Bridge	380,000	9.38%	93.34%
Concrete parapet, Special Design	189,412	4.68%	98.02%
PSC Beams, Special Design	54,065	1.33%	99.35%
Grooved Concrete	14,391	0.36%	99.71%
Drilled Caisson	9,000	0.22%	99.93%
Standard Dumped Rip Rap, TP 1, 24"	2,444	0.06%	99.99%
Piling in Place, Steel H, HP 10 x 42 and Test	257	0.01%	99.99%
Plastic Filter Fabric	238	0.01%	100.00%
Construction Subtotal	**$ 4,050,507**	**100.00%**	
Engineering and Construction @ 10.00%	$ 405,051		
Inflation Based on 0.00% per annum for Three Years 0.00%	$ -	**Construction**	
Construction Total	**$ 4,455,558**	Mark-Up:	10.00%
GRAND TOTAL	**$ 4,455,558**		

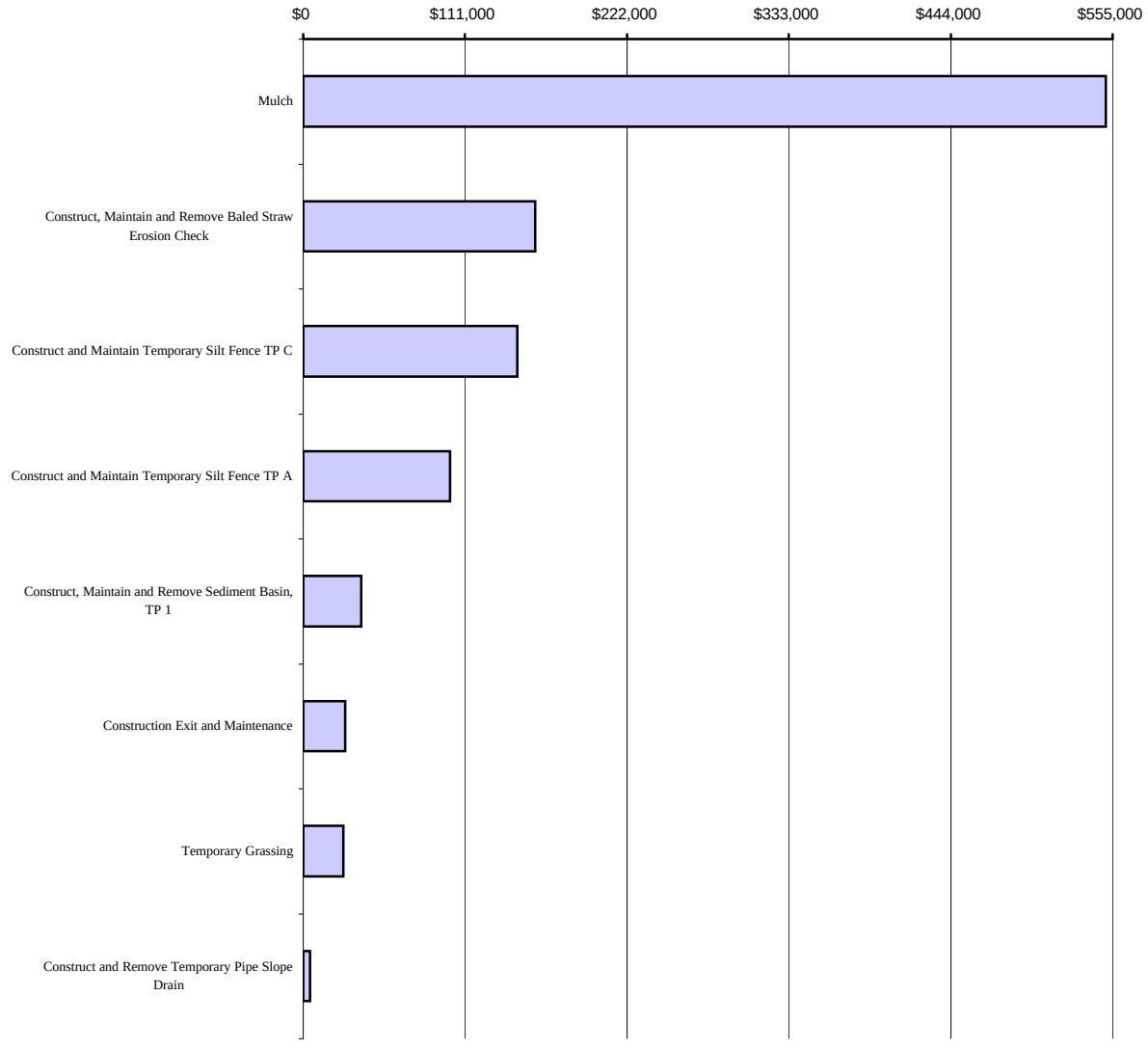


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

JOHNSON FERRY ROAD - TEMPORARY EROSION CONTROL		COST	PERCENT	CUM. PERCENT
Mulch		550,420	52.09%	52.09%
Construct, Maintain and Remove Baled Straw Erosion Check		158,846	15.03%	67.12%
Construct and Maintain Temporary Silt Fence TP C		146,677	13.88%	81.00%
Construct and Maintain Temporary Silt Fence TP A		100,659	9.53%	90.52%
Construct, Maintain and Remove Sediment Basin, TP 1		39,606	3.75%	94.27%
Construction Exit and Maintenance		28,602	2.71%	96.98%
Temporary Grassing		27,456	2.60%	99.58%
Construct and Remove Temporary Pipe Slope Drain		4,480	0.42%	100.00%
Construction Subtotal		**$ 1,056,746**	**100.00%**	
Engineering and Construction @	10.00%	$ 105,675		
Inflation Based on 0.00% per annum for Three Years	0.00%	$ -	**Construction**	
Construction Total		**$ 1,162,421**	Mark-Up:	10.00%
GRAND TOTAL		**$ 1,162,421**		

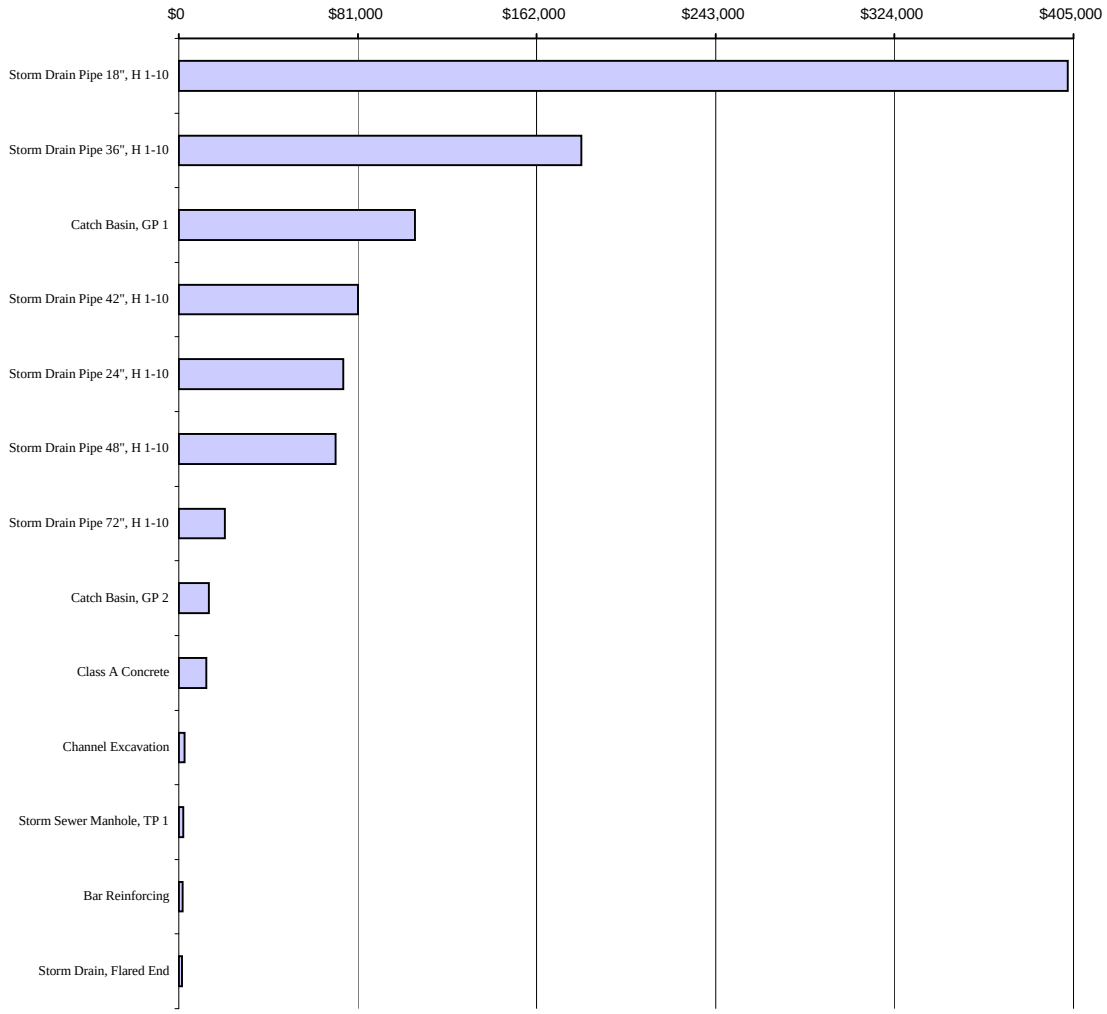


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

JOHNSON FERRY ROAD - DRAINAGE AND CULVERT		COST	PERCENT	CUM. PERCENT
Storm Drain Pipe 18", H 1-10		402,320	41.38%	41.38%
Storm Drain Pipe 36", H 1-10		182,252	18.75%	60.13%
Catch Basin, GP 1		106,800	10.99%	71.12%
Storm Drain Pipe 42", H 1-10		80,979	8.33%	79.45%
Storm Drain Pipe 24", H 1-10		74,340	7.65%	87.09%
Storm Drain Pipe 48", H 1-10		71,048	7.31%	94.40%
Storm Drain Pipe 72", H 1-10		20,753	2.13%	96.54%
Catch Basin, GP 2		13,625	1.40%	97.94%
Class A Concrete		12,350	1.27%	99.21%
Channel Excavation		2,583	0.27%	99.47%
Storm Sewer Manhole, TP 1		2,063	0.21%	99.69%
Bar Reinforcing		1,656	0.17%	99.86%
Storm Drain, Flared End Section 18"		1,404	0.14%	100.00%
Construction Subtotal		**$ 972,173**	**100.00%**	
Engineering and Construction @	10.00%	$ 97,217		
Inflation Based on 0.00% per annum for Three Years	0.00%	$ -	**Construction**	
Construction Total		**$ 1,069,390**	Mark-Up:	10.00%
GRAND TOTAL		**$ 1,069,390**		

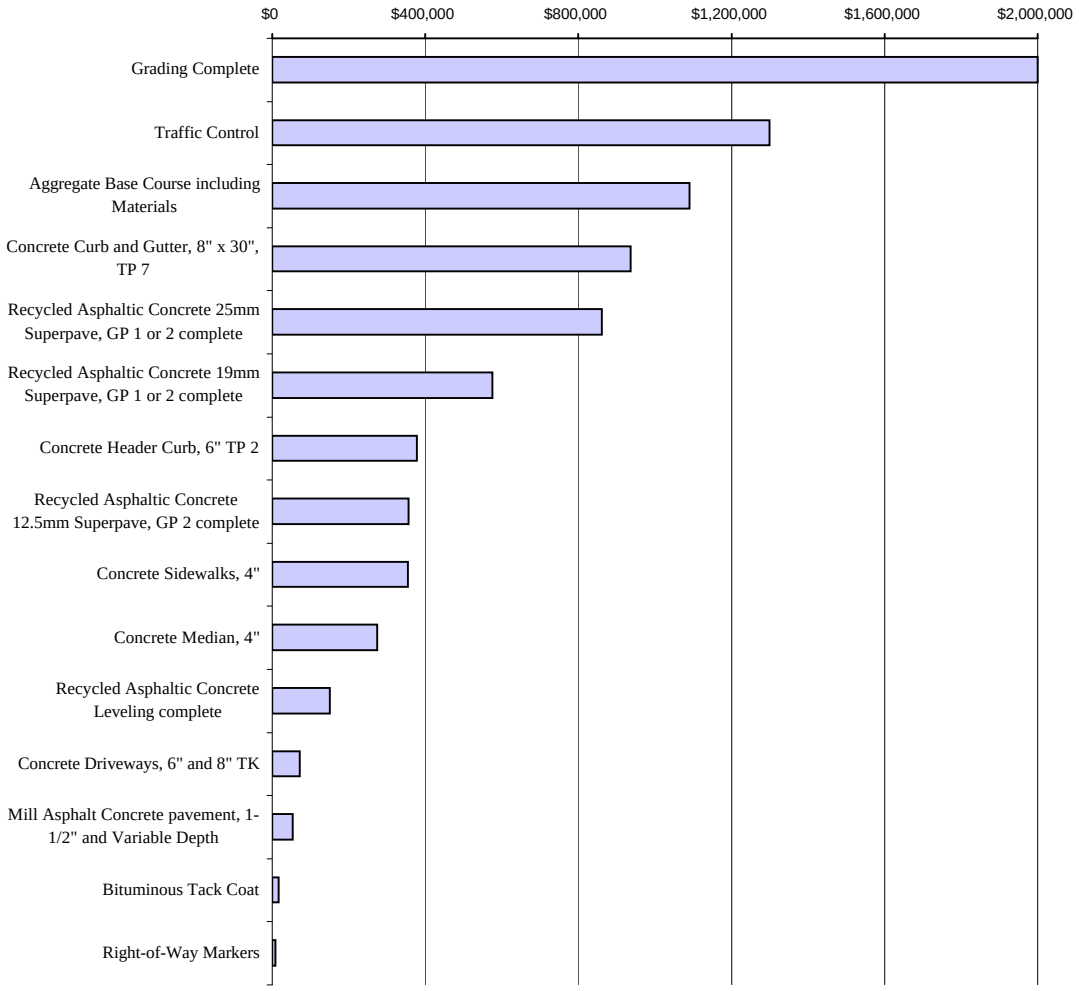


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

ABERNATHY ROAD - ROADWAY	COST	PERCENT	CUM. PERCENT
Grading Complete	2,000,000	23.73%	23.73%
Traffic Control	1,300,000	15.43%	39.16%
Aggregate Base Course including Materials	1,089,900	12.93%	52.09%
Concrete Curb and Gutter, 8" x 30", TP 7	936,355	11.11%	63.20%
Recycled Asphaltic Concrete 25mm Superpave, GP 1 or 2 complete	861,920	10.23%	73.43%
Recycled Asphaltic Concrete 19mm Superpave, GP 1 or 2 complete	574,560	6.82%	80.25%
Concrete Header Curb, 6" TP 2	377,760	4.48%	84.73%
Recycled Asphaltic Concrete 12.5mm Superpave, GP 2 complete	355,840	4.22%	88.95%
Concrete Sidewalks, 4"	354,930	4.21%	93.17%
Concrete Median, 4"	275,040	3.26%	96.43%
Recycled Asphaltic Concrete Leveling complete	150,000	1.78%	98.21%
Concrete Driveways, 6" and 8" TK	72,500	0.86%	99.07%
Mill Asphalt Concrete pavement, 1-1/2" and Variable Depth	53,754	0.64%	99.71%
Bituminous Tack Coat	16,860	0.20%	99.91%
Right-of-Way Markers	7,700	0.09%	100.00%
Construction Subtotal	**$ 8,427,119**	**100.00%**	
Engineering and Construction @ 10.00%	$ 842,712		
Inflation Based on 0.00% per annum for Three Years 0.00%	$ -	**Construction**	
Construction Total	**$ 9,269,831**	Mark-Up:	10.00%
GRAND TOTAL	**$ 9,269,831**		

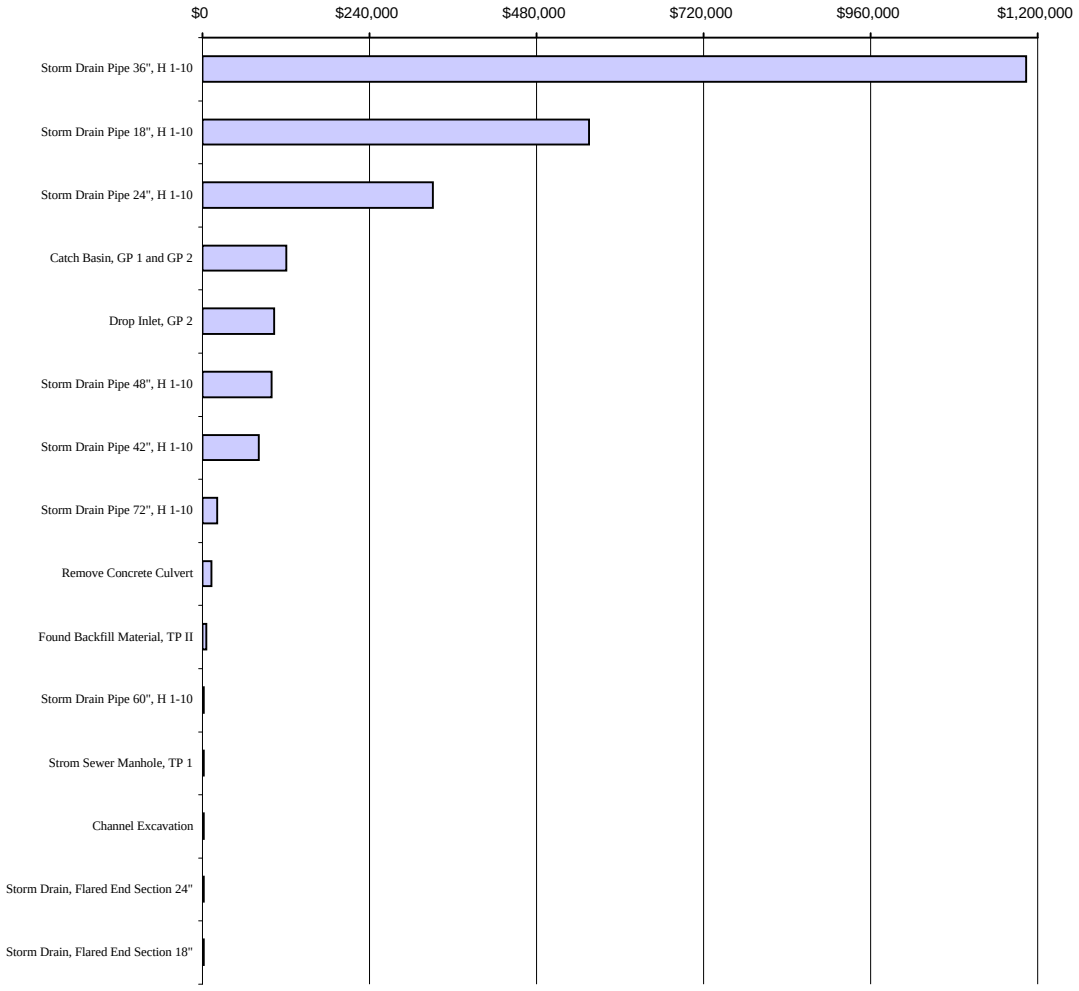


Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

COST HISTOGRAM

Project: **STP-9252(6), P.I. NO. 751300, WIDEN JOHNSON FERRY RD. FROM COLUMNS DR. TO ABERNATHY RD and STP-9250(1), P.I. NO. 751310, WIDEN ABERNATHY RD. FROM JOHNSON FERRY RD. TO EAST OF ROSWELL RD.**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Review Design Stage

ABERNATHY ROAD - DRAINAGE AND CULVERT	COST	PERCENT	CUM. PERCENT
Storm Drain Pipe 36", H 1-10	1,183,212	46.92%	46.92%
Storm Drain Pipe 18", H 1-10	555,211	22.02%	68.93%
Storm Drain Pipe 24", H 1-10	331,140	13.13%	82.06%
Catch Basin, GP 1 and GP 2	120,425	4.78%	86.84%
Drop Inlet, GP 2	103,292	4.10%	90.93%
Storm Drain Pipe 48", H 1-10	99,144	3.93%	94.87%
Storm Drain Pipe 42", H 1-10	80,979	3.21%	98.08%
Storm Drain Pipe 72", H 1-10	20,753	0.82%	98.90%
Remove Concrete Culvert	12,872	0.51%	99.41%
Found Backfill Material, TP II	5,750	0.23%	99.64%
Storm Drain Pipe 60", H 1-10	2,244	0.09%	99.73%
Strom Sewer Manhole, TP 1	2,063	0.08%	99.81%
Channel Excavation	1,702	0.07%	99.88%
Storm Drain, Flared End Section 24"	1,700	0.07%	99.94%
Storm Drain, Flared End Section 18"	1,404	0.06%	100.00%
Construction Subtotal	**$ 2,521,891**	**100.00%**	
Engineering and Construction @ 10.00%	$ 252,189		
Inflation Based on 0.00% per annum for Three Years 0.00%	$ -	**Construction**	
Construction Total	**$ 2,774,080**	Mark-Up:	10.00%
GRAND TOTAL	**$ 2,774,080**		



Costs in graph are not marked-up and excludes the "Roadway and Drainage" elements.

FUNCTION ANALYSIS

Function Analysis was performed to: (1) define the requirements for each project element, and (2) to ensure a complete and thorough understanding by the VE team of the basic function(s) needed to attain a given requirement. Random Function Analysis worksheets for the project are attached. This part of the function analysis stimulated the VE team members to think in terms of the areas in which to channel their creative idea development.

Function Analysis is a means of evaluating a project to see if the expenditures actually perform the requirements of the project, or if there are disproportionate amounts of money spent on support functions. These elements add cost to the final product, but have a relatively low worth to the basic function.

In addition to the random function analysis, the VE Facilitator worked with members of the study team to develop a Function Analysis System Technique (F.A.S.T.) diagram for each phase. The F.A.S.T. diagrams were used to show the flow of function within the phases. It helps to confirm the project is addressing those issues that have been voiced by the owner as being important. The diagrams were generated by asking the key question: "What is the most important function to be accomplished by this phase?" The answer is characterized by a verb/noun pair. In turn, another question is asked: "Why?" The answer is again listed in a verb/noun pair, and the process continued from left to right. If the result is a true F.A.S.T. diagram, the flow of functions from right to left will answer the question "Why?" No F.A.S.T. diagram is ever completed. The readers of this report may wish to challenge themselves to see how far they can carry the construction of the F.A.S.T. diagram.

This F.A.S.T diagram notes the critical function paths and identifies the project's basic functions as IMPROVE/TRAFFIC FLOW by REDUCING/TRAVEL TIME by Alleviating/Congestion, Improving/Intersection Configuration, and Increasing/Capacity. The F.A.S.T. diagram is included at the end of this section of the report.

RANDOM FUNCTION ANALYSIS

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

SHEET NO.: 1 of 1

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
WIDENING OF JOHNSON FERRY AND ABERNATHY ROADS IN COBB AND FULTON COUNTIES, GEORGIA	**Alleviate**	**Congestion**	**B**
	Improve	Safety	RS
	Increase	Pedestrian Accessibility	S
	Comply	Americans with Disability Act	RS
	Address	Citizens Concerns	RS / B_1
	Increase	**Capacity**	**B**
	Improve	**Traffic Flow**	**B_1**
	Improve	**Intersection Configuration**	**B_1**
	Reduce	Travel Time	S
	Eliminate	Bottleneck	RS
	Improve	Accessibility	S

Function defined as: Action Verb, Measurable Noun

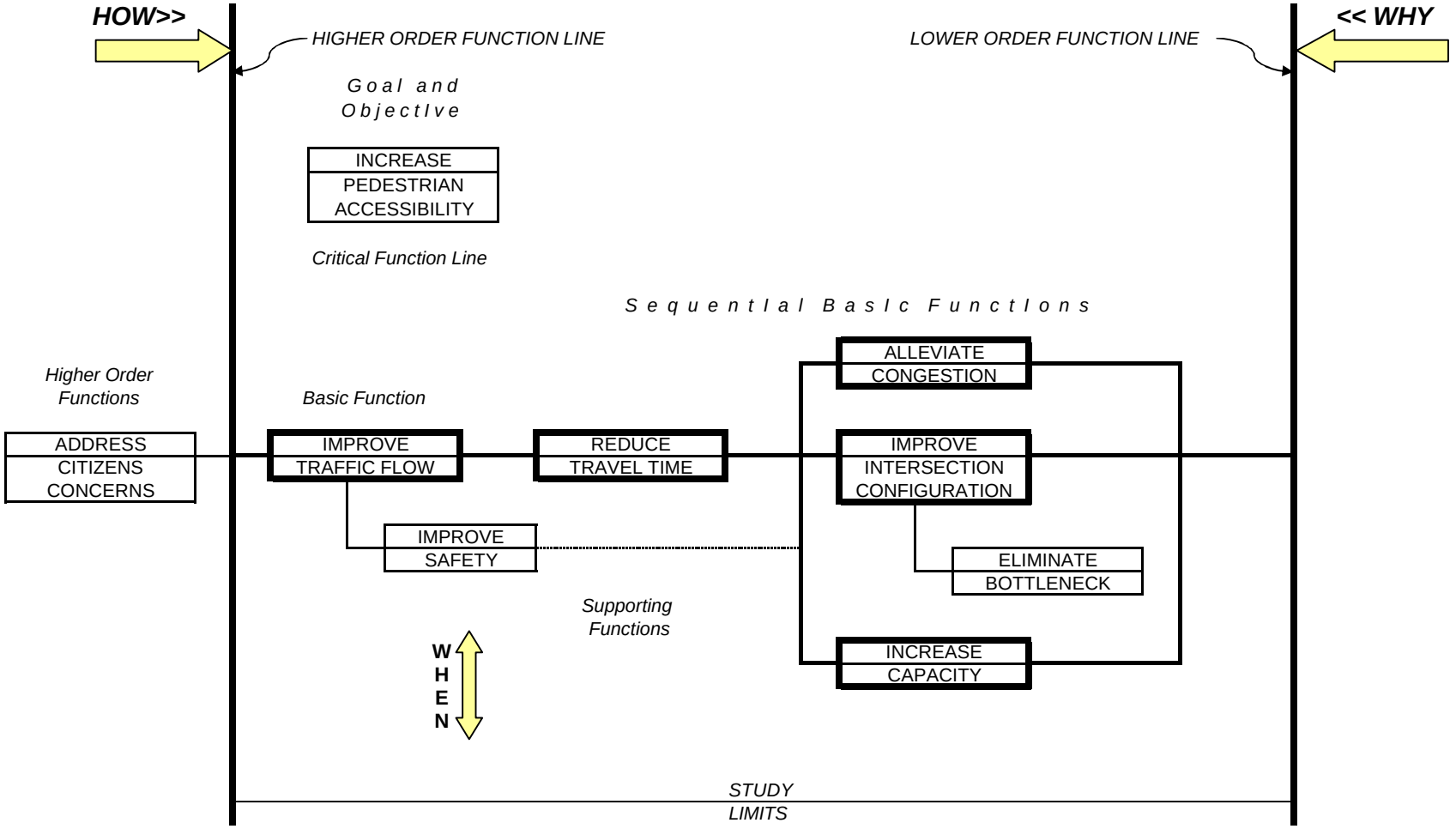
Kind: B = Basic; S = Secondary; RS = Required Secondary; HO = Higher Order; LO = Lower Order; O = Objective; G = Goal; U = Unwanted

FUNCTION ANALYSIS SYSTEMS TECHNIQUE (F. A. S. T.)

WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD and WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD

STP-9252(6), P.I. No. 751300 and STP-9250(1), P.I. No. 751310

Georgia Department of Transportation, District 7
Cobb and Fulton Counties, Georgia



CREATIVE IDEA LISTING AND JUDGMENT OF IDEAS

During the creative phase, numerous ideas, alternative proposals and/or recommendations were generated using conventional brainstorming techniques as recorded on the following pages.

These ideas were then discussed and the advantages/disadvantages of each listed. The VE design team compared each of the ideas with the concept solution determining whether it improved value, was equal in value, or lessened the value of the solution.

The ideas were then ranked on a scale of 1 to 5 on how well the VE design team believed the idea met necessary criteria and program needs. The higher rated ideas were then developed into formal alternatives and included in the VE workshop. Some ideas were judged to have minimal cost impacts on the project but provided enhancements in the form of improved operations, efficiency, constructibility or potential to save unknown or hidden costs. These were given the designation "DS" which indicates a design suggestions. This designation is also used when an idea is difficult to price but improves the functionality of the project or system, and is deemed to be of significant value to the owner, user, operator or designer.

Typically, all ideas rate 4 or above are included in the Study Report. When this is not the case, an idea was combined with another related idea or discarded, as a result of additional research that indicated the concept as not being cost-effective or technically feasible.

All readers are encouraged to review the Creative Idea Listing and Evaluation worksheets since they may suggest additional ideas that can be applied to the design.

CREATIVE IDEA LISTING

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

SHEET NO.: 1 of 2

NO.	IDEA DESCIRPTION	RATING
1	Use five-foot wide sidewalks in lieu of eight-foot wide sidewalks	4
2	Eliminate all sidewalks	1
3	Use unpaved shoulders	2
4	Use sidewalks on one side only	2
5	Eliminate the bicycle lanes	1
6	Place bicycle lanes on one side only	2
7	Provide a separate bicycle path only between Brandon Mill Road and Wright Road	4
8	Selectively reduce the use of sidewalks	4
9	Selectively reduce the use of bicycle lanes	2
10	Use only 16-foot medians	4
11	Use 10-foot medians	3
12	Use 8-foot medians	2
13	Use a 14-foot continuous turn lane; i.e., five lanes	2
14	Use 11-foot lanes on the Johnson Ferry Road bridge in lieu of 12-foot lanes	5
15	Eliminate “X” number of bents on the north side of the Johnson Ferry Road bridge	4
16	Selectively eliminate intersections	3
17	Eliminate the signalization of Wright Road intersection	4
18	Use concrete parapets and aluminum handrails in lieu of Texas handrails	4
19	Shorten height of retaining walls	4
20	Use Mechanically Stabilized Earth (MSE) walls in lieu of cast-in-place retaining walls	2
21	Eliminate the pedestrian path underneath the Johnson Ferry Road bridge	5
22	Add / explore utility costs	DS
23	Remove video detection and use loops	4
24	Selectively shut down the facility during construction	1
25	Consider the use of a rural section on Abernathy Road	2
26	Drop a westbound lane on the Johnson Ferry Road bridge	4

Rating: 1 → 2 = Not to be Developed; 3 – 4 = Varying Degree of Development Potential; 5 = Most Likely to be Developed;
ABD = Already Being Done; N/A = Not Applicable

CREATIVE IDEA LISTING

PROJECT: **STP-9252(6), P. I. NO. 751300, WIDEN JOHNSON FERRY ROAD FROM COLUMNS DRIVE TO ABERNATHY ROAD AND STP-9250(1), P. I. NO. 751310, WIDEN ABERNATHY ROAD FROM JOHNSON FERRY ROAD TO EAST OF ROSWELL ROAD**
Cobb and Fulton Counties, Georgia Department of Transportation, District 7
Pre-Final Field Plan Review Design Stage

NO.	IDEA DESCIRPTION	RATING
27	Reduce shoulders to 12-feet	4
28	Eliminate Intelligent Transportation System (ITS) and use wireless Global Positioning System (GPS) signals	4
29	Evaluate quantity of 4-inch concrete median for P.I. 751310	4
30	Eliminate the 10-foot x 6-foot box culvert and use retaining wall	4

Rating: 1 → 2 = Not to be Developed; 3 – 4 = Varying Degree of Development Potential; 5 = Most Likely to be Developed;
ABD = Already Being Done; N/A = Not Applicable