Georgia Department of Transportation

D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY SR 8/US 78/US 278

Project No. STP-NH-003-1(33)

Fulton County, Georgia

Value Engineering Study Report

90% Detailed Design Submittal

September 2007

Design Consultant

Georgia Department of Transportation

Value Engineering Consultant

Lewis & Zimmerman Associates, Inc.

Lewis & Zimmerman Associates, Inc.
Taking the Chance out of Change
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Rockville, Maryland 20852-3903
301-984-9590 • Fax: 301-984-1369
info@lza.com • www.lza.com

September 27, 2007

Ms. Lisa L. Myers
Design Review Engineering Manager
State of Georgia Department of Transportation
No. 2 Capital Square, Room 266
Atlanta, Georgia 30334-1002

re: Project No. STP-NH-003-1(33), P.I. No. 720570
D.L. Hollowell Parkway/Bankhead Highway/SR 8/US 78/US 278, Fulton County
Value Engineering Study Report

Dear Ms. Myers:

Lewis & Zimmerman Associates, Inc. is pleased to submit four copies and one electronic copy of the value engineering study report on the referenced project. The objective of the VE effort was to identify opportunities that would enhance the value and constructability of the D.L. Hollowell Improvement Project.

The key cost driver on the project is $9 million in new right-of-way, so decisions made on the alignment and typical section have significant implications on the total project cost. However, much of the right-of-way has already been purchased, limiting potential alignment change opportunities. Key options developed during the VE study focused on section optimization, project limits, and improvements to off-line side streets. These and other options presented in the report will provide the GDOT design team with opportunities to meet the basic project functions at a lower total life cycle cost.

We thank you and your staff for your hospitality and for providing the information necessary for the VE team to generate creative, alternative solutions for this project.

We are available to answer any questions you may have as you review this report and determine implementation.

Sincerely yours,

LEWIS & ZIMMERMAN ASSOCIATES, INC.

David A. Hamilton, PE, CVS, CCE, LEED™ AP
Vice President

TABLE OF CONTENTS

EXECUTIVE SUMMARY

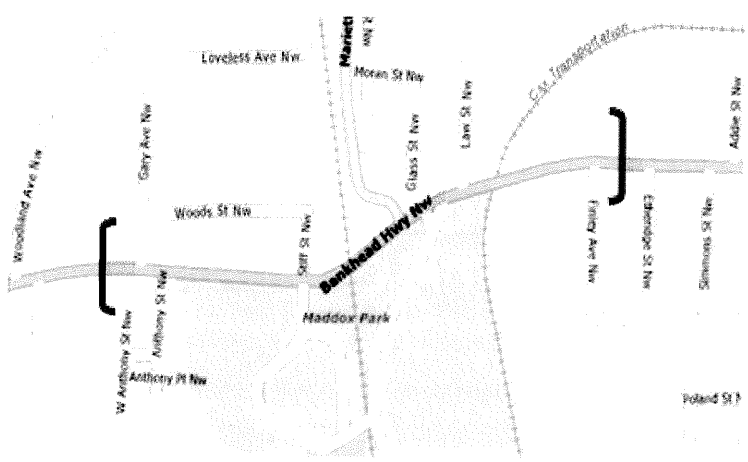
INTRODUCTION

This value engineering (VE) study report summarizes the events and results of the VE study conducted by Lewis & Zimmerman Associates, Inc. (LZA) for the Georgia Department of Transportation (GDOT). The subject of the study was the D.L. Hollowell Parkway/Bankhead Highway/SR 8/US 78/US 278 Project (D.L. Hollowell Parkway Project). The project is being designed by GDOT and is located in Atlanta, approximately one mile west of Georgia Tech.

The VE workshop was conducted September 11 - 14, 2007 at GDOT's Central Office in Atlanta under the value engineering guidelines of GDOT, FHWA, and SAVE International. VE team members consisted of a Certified Value Specialist and highway design and construction professionals from local engineering firms.

PROJECT DESCRIPTION

This project is designed to reduce accidents in the D.L. Hollowell Parkway corridor, just west of downtown Atlanta, by providing left-turn lanes, increasing lane width from 10 ft. to 12 ft., modifying the geometry at two intersections and installing two traffic signals, limiting access of secondary roads, improving sight distance, and increasing the radius of horizontal curves. These improvements will improve the Level of Service (LOS) during the first few years of the project, upgrade the aesthetics of the neighborhood, and repair the monuments at the entry to Maddox Park. The construction cost for the project is estimated at $13.8M, plus right-of-way costs of approximately $9M.



The project starts from just east of Proctor Creek to Finley Avenue for a total of 0.50 miles; it also includes realignment of Marietta Boulevard with the realigned eastern entrance of Maddox Park and replacement of the existing CSX Railroad bridge over D.L. Hollowell Parkway. Currently, the alignment within the project limits is a substandard four-lane facility. It consists of 10-ft. lanes and low vertical clearance under the CSX Railroad bridge. There are sidewalks along D.L. Hollowell Parkway, but they are non-continuous underneath the bridge, forcing pedestrians to either walk in a busy narrow street or around the bridge and through Maddox Park.

Accident and injury rates along this portion of D.L. Hollowell Parkway over the past three years are more than double the statewide average. The existing major structures consist of a MARTA rail bridge over SR 8, CSX Railroad bridge over SR 8, and a box culvert under SR 8 at the abandoned CSX Railroad line. The posted speed is 35 MPH and the design speed is 45 MPH. The proposed construction will provide a divided four-lane roadway with 12-ft. lanes, built on an urban typical section, 6-ft. sidewalks on both sides, and a 30-ft. raised median. A 4-ft. bike lane in each direction is also proposed. The project realigns D.L. Hollowell Parkway, Marietta Boulevard and Arlington Circle so that they have a common intersection and turn lanes from D.L. Hollowell Parkway onto Marietta Boulevard. The existing MARTA bridge over SR 8 has a 101-ft. span over the roadway and will not be affected by construction of this project.

The CSX Railroad bridge over SR 8 will be replaced just north of the existing structure due to the realignment of the road. The new bridge will be 20 ft. wide and 206 ft. long over three spans with a single span over the roadway. The culvert over the abandoned railroad will be replaced with a smaller 12 ft. x 12 ft. box culvert in the same location. This culvert will allow the corridor to be usable in the future as a pedestrian/bike trail.

Left-turn lanes will be placed at the following intersections: D.L. Hollowell Parkway at the Fulton County driveway, western portion of Maddox Park, and Marietta Boulevard/Maddox Park. Traffic signals will be installed at the D.L. Hollowell Parkway and Fulton County driveway and Marietta Boulevard.

CONCERNS AND CONSTRAINTS

Concerns

During the presentation by GDOT on the first day of the VE workshop, several areas of concern in the development of the project were noted. These items were identified as areas of opportunity to improve value, meet design requirements, satisfy goals, and reduce project risk:

- Most of the right-of-way has already been purchased.
- Right-of-way costs are more than $9M.
- The median width of 30 ft. and addition of bike lanes exacerbate the project right-of-way costs.
- Project start and end locations may extend beyond actual needs.
- The amount of commercial property being purchased is substantial.
- The construction on side streets appears to extend beyond that needed for the main line improvements.
- The clear height of the CSX bridge is 18 ft., more than the 17 ft. required.

Constraints

Discussions held during the VE study evolved around several key constraints that must be incorporated in the design:

- The proposed alignment is generally fixed since most of the right-of-way has already been purchased.
- The CSX Railroad line must remain open for rail traffic under all conditions during the construction period since more than 26 trains per day use this track.
- All four lanes of D.L Hollowell Parkway must remain open during construction.
- Bridge clearances must be a minimum of 17 ft.-6 in.
- No improvements are being made east or west of this project.

RESULTS

To address the concerns noted above, the VE team conducted a brainstorming session and identified ways to improve the value and constructability of the project.

A summary of the key recommendations includes:

Alignment (AL)

- The bike lanes included in the roadway section appear to be somewhat out of place since no bike facilities are located along D.L. Hollowell Parkway. The $500,000 required for the bike lanes could be better spent by lengthening the widening project beyond the current scope. Increasing the width of the travel lanes would greatly improve the safety of this corridor.
- Investments in sidewalks should be reviewed in the lightly developed areas along Stiff Street and Glass Street Connector. Combined, the capital cost of the sidewalks on these two streets totals nearly $40,000.
- Mattox Park is a highlight of this corridor, and additional street-side parking may be of some advantage. To accomplish this, the existing pavement on the south side of the Parkway could be retained instead of demolished near the park entry. Grades may require the use of short retaining walls to isolate the parking area from the busy Parkway, but the area may be workable for 3-4 cars.

Profile (P)

To reduce the amount of excavation on the project, the profile at the CSX bridge could be raised one ft. This will maintain the minimum required clearance of 17 ft. for trucks, and provide a net savings of more than $80,000 in excavation costs. These savings could be used to extend the length of the widening project.

CSX Bridge (CX)

- The current scope of work includes a temporary CSX bypass bridge to allow the construction of the permanent bridge. This temporary bridge is a $1.6M investment which is lost when the permanent bridge is completed and the temporary bridge is demolished. To protect this investment, the temporary bridge could be built as a permanent structure, allowing CSX to expand this heavily used rail route to two lines. A permanent bridge would add value to CSX, who may participate in the funding of this structure since this will become part of their rail system. Approaching CSX with this concept could save GDOT as much as $1.6M on this project. If CSX is not amenable to picking up the whole cost for this bridge, since they may not have enough traffic to justify a second line, splitting the cost would still be a huge savings to the project.
- The current design for a three-span permanent CSX bridge could be modified to use a two-span concept with a pier in the median of the D.L. Hollowell Parkway. An equally spaced two-span bridge will have smaller girders than the long span currently planned. This, coupled with the fact that one pier can be eliminated, results in a net savings in excess of $200,000.

Abandoned Railroad Right-of-Way Bridge (AB)

- Major savings can be achieved by changing the bridge design from a conventional girder system to a Con/Span® type of precast structure commonly used on DOT projects all over the country. Savings are in the range of $900,000. Con/Span® units can be used individually or coupled for double-track rail spans depending upon the distance required.
- Another option for spanning the abandoned railroad right-of-way is to divide the conventional bridge into two halves, thus eliminating the median area. The reduction in deck area could save over $125,000.

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33) Fulton County, Georgia

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
		PRESENT WORTH OF COST SAVINGS				
ALIGNMENT (AL)						
AL-2	Shift the left-turn lane at STA. 122+00 further to the west in line with the metals fabricating plant driveway.	$ 3,214	$ -	$ 3,214		$ 3,214
AL-3	Eliminate both bike lanes along D.L. Hollowell Parkway.	$ 545,736	$ -	$ 545,736		$ 545,736
AL-5	Eliminate the sidewalk on the north side of the Stiff Street access road.	$ 27,108	$ -	$ 27,108		$ 27,108
AL-7	Continue Glass Street further west to Marietta Boulevard to improve circulation.	$ -	$ 57,472	$ (57,472)		$ (57,472)
AL-8	Eliminate the sidewalks on the Glass Street Connector.	$ 12,156	$ -	$ 12,156		$ 12,156
AL-10	Shorten the project limits on the east end of the alignment from STA. 131+00 to STA. 129+50.	$ 21,601	$ -	$ 21,601		$ 21,601
AL-11	Modify the storm design to use a drain line on just one side of the street in lieu of both, where possible.	$ 7,457	$ -	$ 7,457		$ 7,457
AL-12	Review the storm drain plan and profile for accuracy and constructability.	DESIGN SUGGESTION				
AL-13	Do not demolish the existing pavement on the south side of D.L. Hollowell Parkway just west and east of the CSX bridge. Use this existing pavement for Maddox Park parking.	DESIGN SUGGESTION				

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33) Fulton County, Georgia

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	PRESENT WORTH OF COST SAVINGS: RECURRING COST SAVINGS	PRESENT WORTH OF COST SAVINGS: TOTAL PW LCC SAVINGS
PROFILE (P)						
P-2	Raise the profile of the mainline by 1 ft. under the CSX detour bridge to reduce excavation quantity and bridge length, reducing the vertical clearance from 18 ft. to the required minimum of 17 ft.	$ 80,064	$ -	$ 80,064		$ 80,064
CSX BRIDGE (CX)						
CX-1	Build the temporary railroad detour bridge as permanent and have CSX participate in the funding.	$ 1,757,449	$ 83,827	$ 1,673,622		$ 1,673,622
CX-2	Use a two-span permanent railroad bridge with a column in the roadway median in lieu of a three-span bridge.	$ 1,896,741	$ 1,692,515	$ 204,226		$ 204,226
ABANDONED RAILROAD ROW BRIDGE (AB)						
AB-1	Use a Con/Span® arched type of structure in lieu of a conventional bridge over the abandoned railroad right-of-way.	$ 2,138,216	$ 1,207,800	$ 930,416		$ 930,416
AB-2	Use two bridge structures over the abandoned railroad right-of-way in lieu of a single wider bridge.	$ 1,742,527	$ 1,620,339	$ 122,188		$ 122,188

STUDY RESULTS

INTRODUCTION

The results of the VE study represent the benefits that can be realized on the project by GDOT and the users of the D.L. Hollowell Parkway.

The recommended engineering and construction management suggestions are presented in this report as individual alternatives for specific change. These are in the form of VE alternatives with cost savings or design suggestions without associated cost. Individual comments on the current design are presented with a summary of the original design, a description of the proposed enhancements to the chosen improvement scheme, and if appropriate, an evaluation of the advantages and disadvantages. Suggested alternatives on the current project are accompanied by a brief narrative to compare the original design and the proposed modifications. Sketches, where appropriate, are also presented.

Examples of improved value include improved constructability, ease of maintenance, minimization of risk, and less disruption upon roadway operations during construction. Some ideas cannot be quantified in terms of cost with the design information provided; these are presented as design suggestions and are intended to improve the quality of the project.

Summaries of the more favorable improvements to the interchanges follow this narrative on the Summary of Potential Cost Savings table. The table is divided into major project elements and used to divide the results section. The complete documentation of the developed VE alternatives follows the Summary of Potential Cost Savings.

RESULTS OF THE STUDY

The value engineering team brainstormed 21 creative ideas that could enhance the value of the project in the areas noted by GDOT as being desirable, such as cost control, safety, durability, ease of operation, expected life, constructability, and traffic improvement. Evaluation of those ideas considered the full range of project value objectives and resulted in the development of a number of recommendations.

The alternatives are presented with the following designations to aid in organization and review:

CATEGORY	PREFIX
Alignment	AL
Typical Section	S
Profile	P
CSX Bridge	CX
Abandoned RR Bridge	AB
Construction Phasing	CS

EVALUATION OF ALTERNATIVES

When reviewing the study results, the reader should consider each part of an alternative or design suggestion on its own merit. There may be a tendency to disregard an alternative because of concern about one part of it. Each area within an alternative that is acceptable should be considered for use in the final design, even if the entire alternative is not implemented. Design variations of these alternatives are encouraged.

Cost is a primary basis of comparison for alternative designs, but other project criteria must be considered when selecting alternatives for further analysis. Negative impacts upon existing traffic is extremely critical, and design modifications that impact traffic, right-of-way, safety, or environmental elements should be selected carefully following detailed review.

The various alternatives are "mutually exclusive," so acceptance of one may preclude the acceptance of another. Multiple solutions to a single function were sought. All alternatives or design suggestions were developed independently of each other. However, some of the alternatives are interrelated so acceptance of one element may also be included in other alternatives. The reader should evaluate those alternatives carefully in order to select the combination of ideas with the greatest beneficial impact on the project.

CONSIDERATIONS AND ASSUMPTIONS

Value engineering studies by their nature identify alternate design schemes, construction methods, and project delivery options, which if accepted by the project users and design team, may impact the final scope, design documents, budget, schedule, functionality, and appearance of the D.L. Hollowell Parkway Project. The task of the VE team is to identify possible solutions, whereas the task of GDOT is to choose the most favorable of the VE alternatives for incorporation into the project. Decisions are needed on each of the alternatives presented in this report. Personnel from GDOT will accept, reject, or modify these alternatives. The new, unique, and different methods proposed in this report provide needed project functions at the lowest total life cycle (30-yr.) cost. The blending of

these challenging ideas with established procedures, norms, and protocol is the responsibility of user representatives. The project team should accept alternatives that support their construction program and similarly reject alternatives that do not optimize their goals for the D.L. Hollowell Parkway Project.

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33) Fulton County, Georgia

ALT. NO.	DESCRIPTION	PRESENT WORTH OF COST SAVINGS				
		ORIGINAL COST	ALTERNATIVE COST	INITIAL COST SAVINGS	RECURRING COST SAVINGS	TOTAL PW LCC SAVINGS
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AL-3	Eliminate both bike lanes along D.L. Hollowell Parkway.	$ 545,736	$ -	$ 545,736		$ 545,736
AL-5	Eliminate the sidewalk on the north side of the Stiff Street access road.	$ 27,108	$ -	$ 27,108		$ 27,108
AL-7	Continue Glass Street further west to Marietta Boulevard to improve circulation.	$ -	$ 57,472	$ (57,472)		$ (57,472)
AL-8	Eliminate the sidewalks on the Glass Street Connector.	$ 12,156	$ -	$ 12,156		$ 12,156
AL-10	Shorten the project limits on the east end of the alignment from STA. 131+00 to STA. 129+50.	$ 21,601	$ -	$ 21,601		$ 21,601
AL-11	Modify the storm design to use a drain line on just one side of the street in lieu of both, where possible.	$ 7,457	$ -	$ 7,457		$ 7,457
AL-12	Review the storm drain plan and profile for accuracy and constructability.	DESIGN SUGGESTION				
AL-13	Do not demolish the existing pavement on the south side of D.L. Hollowell Parkway just west and east of the CSX bridge. Use this existing pavement for Maddox Park parking.	DESIGN SUGGESTION				

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AL-2**
DESCRIPTION:	**SHIFT THE LEFT TURN ON HOLLOWELL TO THE WEST, IN LINE WITH THE ARCHITECTURAL METALS BUSINESS**	SHEET NO.:	**1 of 5**

ORIGINAL DESIGN: (Sketch attached)

Trucks coming out of the architectural metals business would turn left onto D.L. Hollowell Parkway and cross two lanes of traffic within 100 ft. to make a U-turn if they need to go west.

ALTERNATIVE: (Sketch attached)

Move the median opening to the west across from the architectural metals business so the trucks can travel perpendicular to D.L. Hollowell Parkway and make a left to go west.

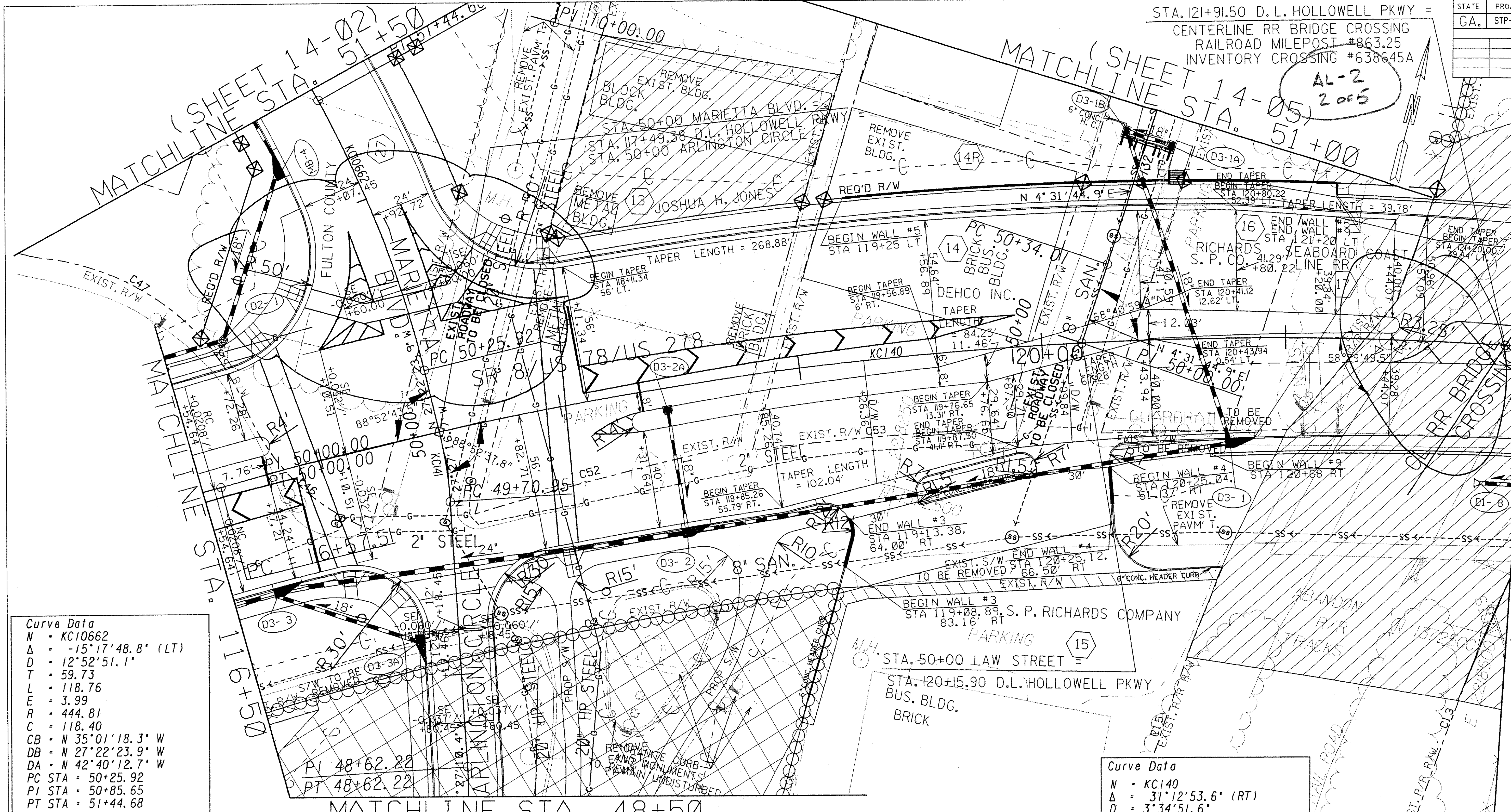
ADVANTAGES:

- Eliminates trucks from having to cross two lanes of traffic to make a U-turn
- Allows trucks to make normal left-hand turns
- Reduces amount of median required

DISADVANTAGES:

- Moves median opening close to deceleration lane for left turn at Arlington Circle

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 3,214	—	$ 3,214
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 3,214	—	$ 3,214



Curve Data

N	KC10662
Δ	-15°17'48.8" (LT)
D	12°52'51.1"
T	59.73
L	118.76
E	3.99
R	444.81
C	118.40
CB	N 35°01'18.3" W
DB	N 27°22'23.9" W
DA	N 42°40'12.7" W
PC STA	50+25.92
PI STA	50+85.65
PT STA	51+44.68

Curve Data

N	KC141
Δ	-10°00'06.3" (LT)
D	34°25'42.3"
T	14.56
L	29.05
E	0.64
R	166.42
C	29.01
CB	N 22°27'13.6" W
DB	N 17°27'10.4" W
DA	N 27°27'16.7" W
PC STA	49+70.95
PI STA	49+85.51
PT STA	50+00.00

Curve Data

N	KC140
Δ	31°12'53.6" (RT)
D	3°34'51.6"
T	446.95
L	871.68
E	61.25
R	1600.00
C	860.94
CB	N 75°59'08.5" E
DB	N 60°22'41.6" E
DA	S 88°24'24.7" E
PC STA	116+57.51
PI STA	121+04.46
PT STA	125+29.19

20 0 20 40
SCALE IN FEET

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN

CONSTRUCTION PLAN SHEET
DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8
STA 116+50 TO 122+00

8/23/2007
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STATE	PROJECT NUMBE
GA.	STP-NH-003-1 (3
REVISION D	

AL-2
3 OF 5

STA. 121+91.50 D. L. HOLLOWELL PKWY =
CENTERLINE RR BRIDGE CROSSING
RAILROAD MILEPOST #863.25
INVENTORY CROSSING #638645A

MATCHLINE STA. 51+00
(SHEET 14-05)

MATCHLINE STA. 48+50
(SHEET 14-04)

MATCHLINE STA. 122+00

MOVE U-TURN FURTHER WEST.

Curve Data	
N	KC10662
Δ	-15°17'48.8" (LT)
D	12°52'51.1"
T	59.73
L	118.76
E	3.99
R	444.81
C	118.40
CB	N 35°01'18.3" W
DB	N 27°22'23.9" W
DA	N 42°40'12.7" W
PC STA	50+25.92
PI STA	50+85.65
PT STA	51+44.68

Curve Data	
N	KC141
Δ	-10°00'06.3" (LT)
D	34°25'42.3"
T	14.56
L	29.05
E	0.64
R	166.42
C	29.01
CB	N 22°27'13.6" W
DB	N 17°27'10.4" W
DA	N 27°27'16.7" W
PC STA	49+70.95
PI STA	49+85.51
PT STA	50+00.00

Curve Data	
N	KC140
Δ	31°12'53.6" (RT)
D	3°34'51.6"
T	446.95
L	871.68
E	61.25
R	1600.00
C	860.94
CB	N 75°59'08.5" E
DB	N 60°22'41.6" E
DA	S 88°24'24.7" E
PC STA	116+57.51
PI STA	121+04.46
PT STA	125+29.19

20 0 20 40
SCALE IN FEET

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN

CONSTRUCTION PLAN SHEET
DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8
STA 116+50 TO 122+00

8/23/2007
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CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-2

SHEET NO.: 4 of 5

REMOVE 60' OF CONCRETE MEDIAN (MEDIAN 8' WIDE)

$60' \times 8' = 480\ sf \times \frac{1\ sy}{9\ sf} = 53.33\ sy$

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-2
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: SHEET NO.: 5 of 5

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
CONC. MEDIAN 6 IN	SY	53.33	54.80	2922			
Subtotal				2922			
Markup (%) at 10%				292			
TOTAL				3214.00			

VALUE ENGINEERING ALTERNATIVE

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** ALTERNATIVE NO.: **AL-3**
Project No. STP-NH-003-1(33) – *Fulton County, Georgia*

DESCRIPTION: **DELETE BIKE LANES ALONG D.L. HOLLOWELL PARKWAY** SHEET NO.: **1 of 6**

ORIGINAL DESIGN: (Sketch attached)

Four-ft. bike lanes are shown on each side of the roadway along D.L. Hollowell Parkway.

ALTERNATIVE: (Sketch attached)

Delete both of the bike lanes and reduce the roadway section by 8 ft.

ADVANTAGES:

- Reduces pavement requirements and right-of-way needs

DISADVANTAGES:

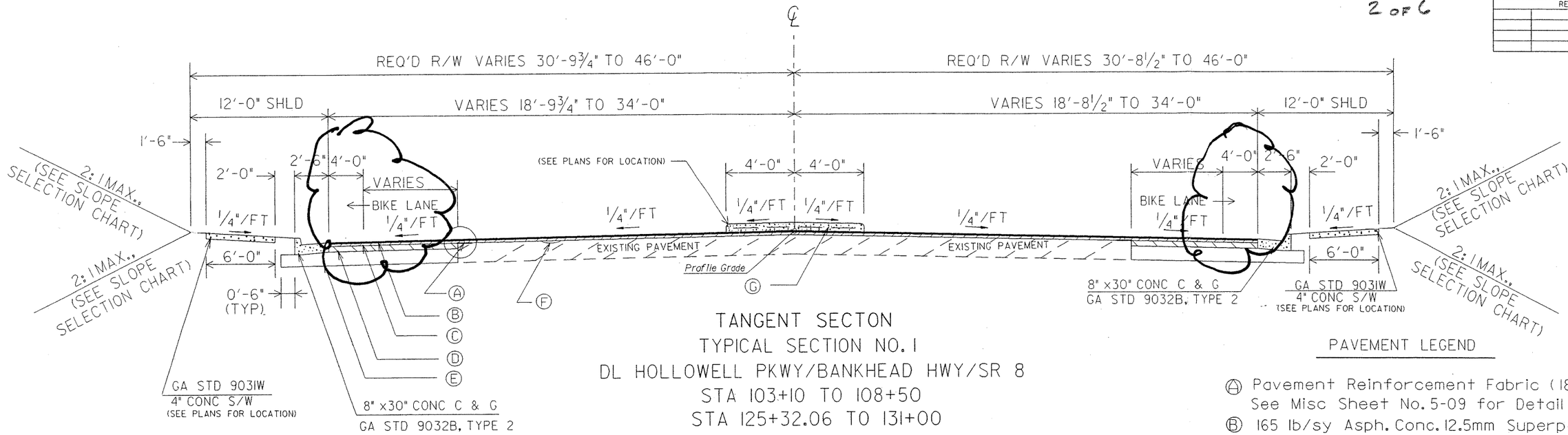
- May need to be added to the corridor at a later time

DISCUSSION:

Bike lanes are not on either side of adjacent sections, east or west, and those sections are not programmed at this time for bike lanes.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 545,736	—	$ 545,736
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 545,736	—	$ 545,736

STATE	PROJECT NUMBER
GA.	STP-NH-003-1(3
REVISION DA	

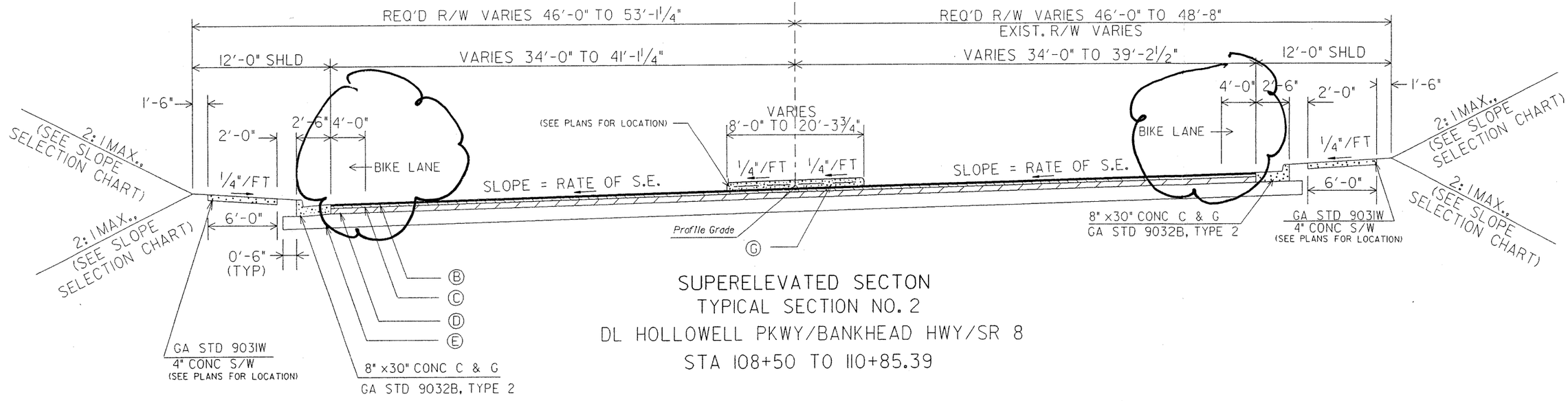


TANGENT SECTON
TYPICAL SECTION NO. I
DL HOLLOWELL PKWY/BANKHEAD HWY/SR 8
STA 103+10 TO 108+50
STA 125+32.06 TO 131+00

SLOPE CONTROLS			
FILL		CUT	
HEIGHT	SLOPE	HEIGHT	SLOPE
0-2'	6:1	6'-10'	4:1
2'-6'	4:1	OVER 6'	2:1
OVER 6'	2:1		

PAVEMENT LEGEND

Ⓐ Pavement Reinforcement Fabric (18.0") See Misc Sheet No. 5-09 for Detail
Ⓑ 165 lb/sy Asph. Conc. 12.5mm Superpave Mix Design Level "C"
Ⓒ 220 lb/sy Asph. Conc. 19mm Superpave Mix Design Level "C"
Ⓓ 1100 lb/sy Asph. Conc. 25mm Superpave Mix Design Level "B"
Ⓔ 12" Graded Aggr. Base Course
Ⓕ Asph. Conc. Leveling (Variable Depth As
Ⓖ Concrete Median GA STD. 9032B, TYPE 7



SUPERELEVATED SECTON
TYPICAL SECTION NO. 2
DL HOLLOWELL PKWY/BANKHEAD HWY/SR 8
STA 108+50 TO 110+85.39

NOT TO S

STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF URBAN DESIGN	TYPICAL SECTIONS NO. 1 & NO. 2 DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8

8/23/2007
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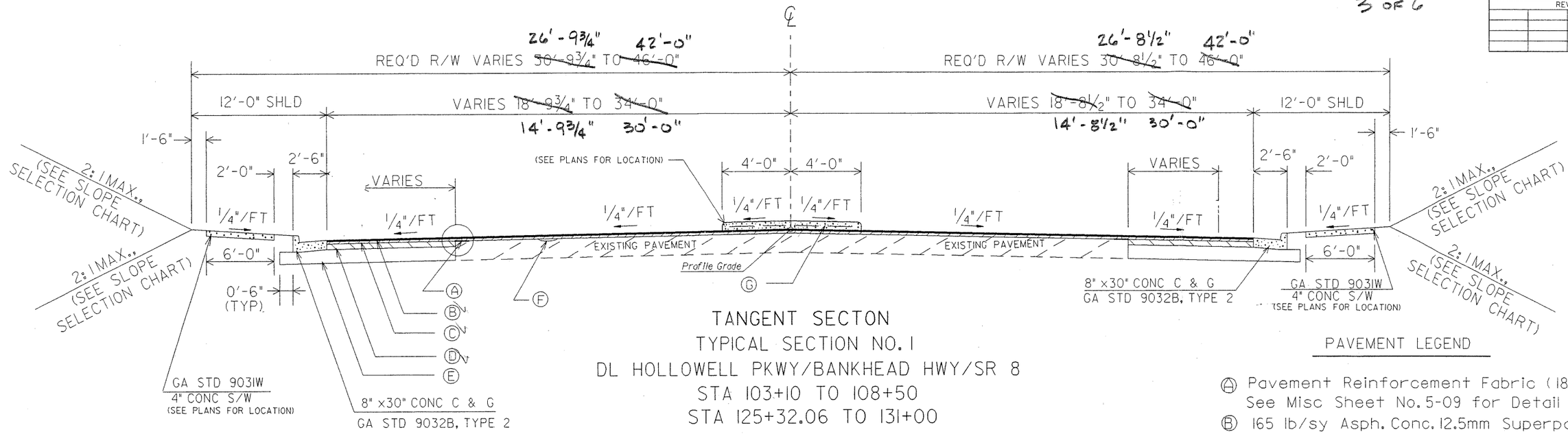
AL-3
3 OF 6

STATE	PROJECT NUMBER
GA.	STP-NH-003-1(3
	REVISION DA

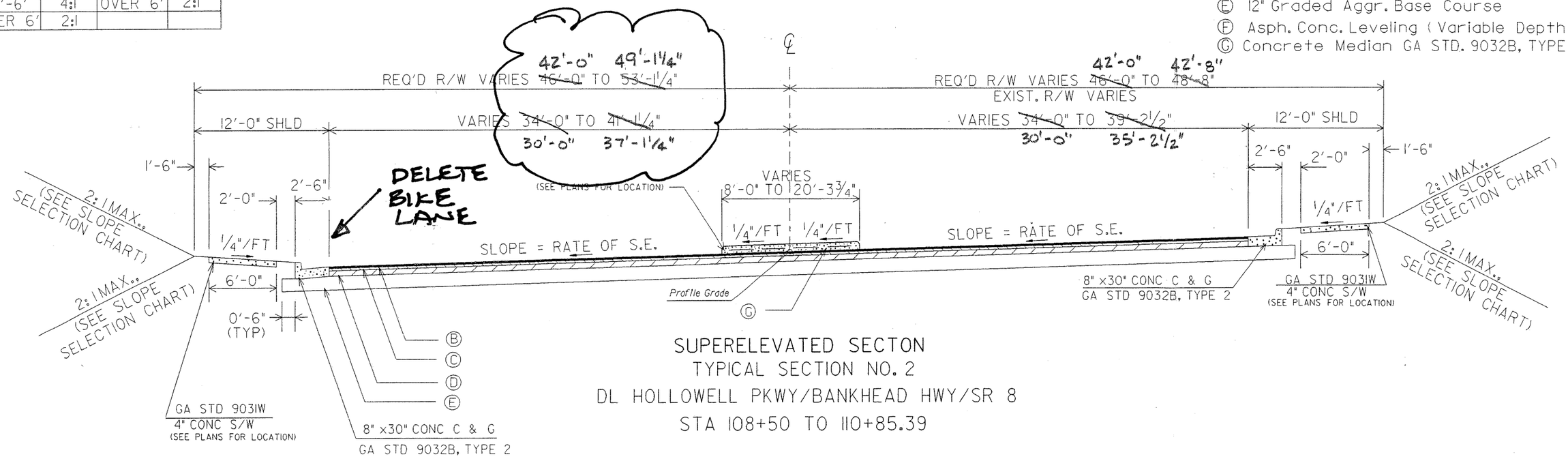


TANGENT SECTON
TYPICAL SECTION NO. 1
DL HOLLOWELL PKWY/BANKHEAD HWY/SR 8
STA 103+10 TO 108+50
STA 125+32.06 TO 131+00

SLOPE CONTROLS			
FILL		CUT	
HEIGHT	SLOPE	HEIGHT	SLOPE
0-2'	6:1	6'-10'	4:1
2'-6'	4:1	OVER 6'	2:1
OVER 6'	2:1		

PAVEMENT LEGEND

Ⓐ Pavement Reinforcement Fabric (18.0") See Misc Sheet No. 5-09 for Detail
Ⓑ 165 lb/sy Asph. Conc. 12.5mm Superpave Mix Design Level "C"
Ⓒ 220 lb/sy Asph. Conc. 19mm Superpave Mix Design Level "C"
Ⓓ 1100 lb/sy Asph. Conc. 25mm Superpave Mix Design Level "B"
Ⓔ 12" Graded Aggr. Base Course
Ⓕ Asph. Conc. Leveling (Variable Depth As
Ⓖ Concrete Median GA STD. 9032B, TYPE 7



SUPERELEVATED SECTON
TYPICAL SECTION NO. 2
DL HOLLOWELL PKWY/BANKHEAD HWY/SR 8
STA 108+50 TO 110+85.39

NOT TO S

STATE OF GEORGIA DEPARTMENT OF TRANSPORTATION OFFICE OF URBAN DESIGN	TYPICAL SECTIONS NO. 1 & NO. 2 DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8

8/23/2007
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PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-3

SHEET NO.: 4 of 6

PVMT COST

12.5MM

$\frac{\$70}{TN} \times \frac{1\,TN}{2000lb} \times \frac{165lb}{SY} = \$5.78/SY$ ←

19 MM

$\frac{\$70}{TN} \times \frac{1\,TN}{2000lb} \times \frac{220\,lb}{SY} = \$7.70/SY$ ←

25MM

$\frac{\$70}{TN} \times \frac{1\,TN}{2000lb} \times \frac{1100lb}{SY} = \$38.50/SY$ ←

GAB

$\frac{1.98TN}{CY} \times \frac{1\,CY}{27\,CF} = \frac{0.07\,TN}{CF} \times 1\,ft\ THICK = \frac{0.07TN}{SF}$

$\frac{0.07\,TN}{SF} \times \frac{\$19.80}{TN} = \frac{\$1.45}{SF} \times \frac{9\,SF}{1\,SY} = \$13.07$ ←

$\$65.05/SY$

LENGTH OF MAINLINE

START STA 103+10

END STA 131+00

2790 LF

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-3

SHEET NO.: 5 of 6

REDUCE PVMT WIDTH BY 8' FOR LENGTH OF PROJECT

$0.547 \text{ MI} \times \frac{5280 \text{ ft}}{1 \text{ MI}} \times 2790 \text{ ft}$ LENGTH OF PVMT

$2790 \text{ ft} \times 8 \text{ ft} = 22320 \text{ sf} \times \frac{1 \text{ sy}}{9 \text{ sf}} = 2480 \text{ sy}$

REDUCE ROW 8' FOR LENGTH OF PROJECT

$2790 \text{ ft} \times 8' = 22320 \text{ sf} \times \frac{1 \text{ AC}}{43560 \text{ sf}} = 0.057 \text{ AC}$

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-3
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: SHEET NO.: 6 of 6

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
PVMT	SY	2480	65.05	161324			
ROW	sf	22320	15.00	334800			
Subtotal				496124			
Markup (%) at 10%				49612			
TOTAL				545,736			

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AL-5**
DESCRIPTION:	**ELIMINATE THE SIDEWALK ON THE NORTH SIDE OF STIFF STREET**	SHEET NO.:	**1 of 5**

ORIGINAL DESIGN: (Sketch attached)

Sidewalks are currently included on the north and south sides of Stiff Street.

ALTERNATIVE: (Sketch attached)

Remove the 4-ft.-wide sidewalk on the north side of Stiff Street since it does not appear to be a location for high pedestrian traffic.

ADVANTAGES:

- Reduces amount of right-of-way
- Maintains sidewalk on south side

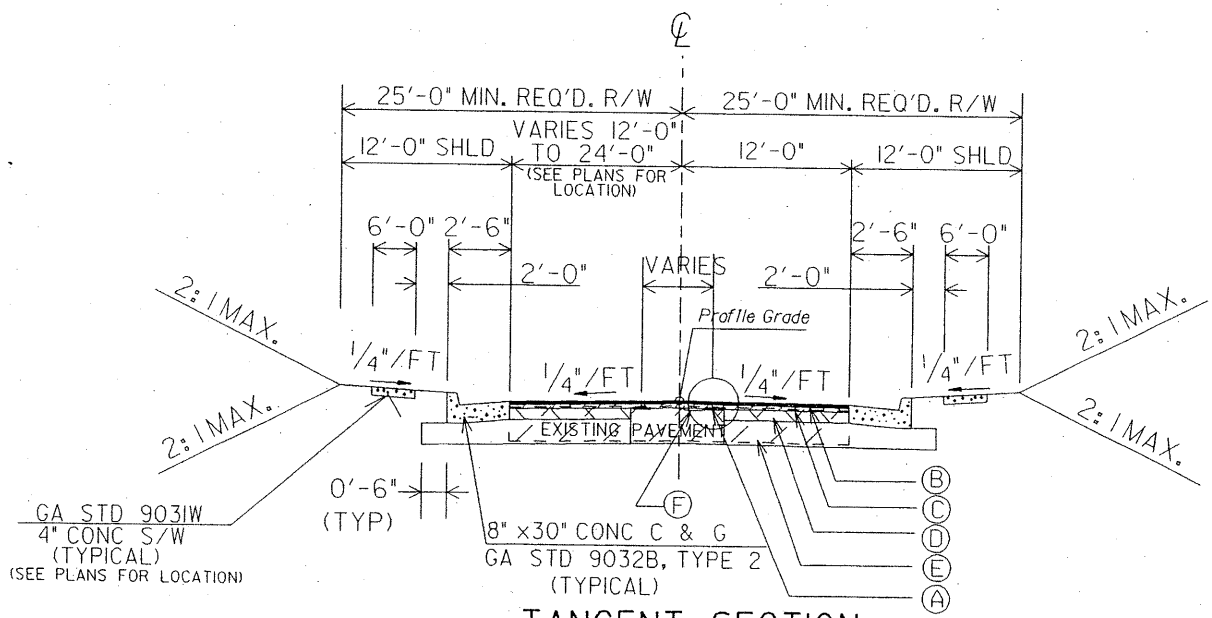
DISADVANTAGES:

- Requires minor change to the design

DISCUSSION:

The sidewalk on the north side of Stiff Street can be removed since there are only 6 or 8 houses in the area and usage would be very low.

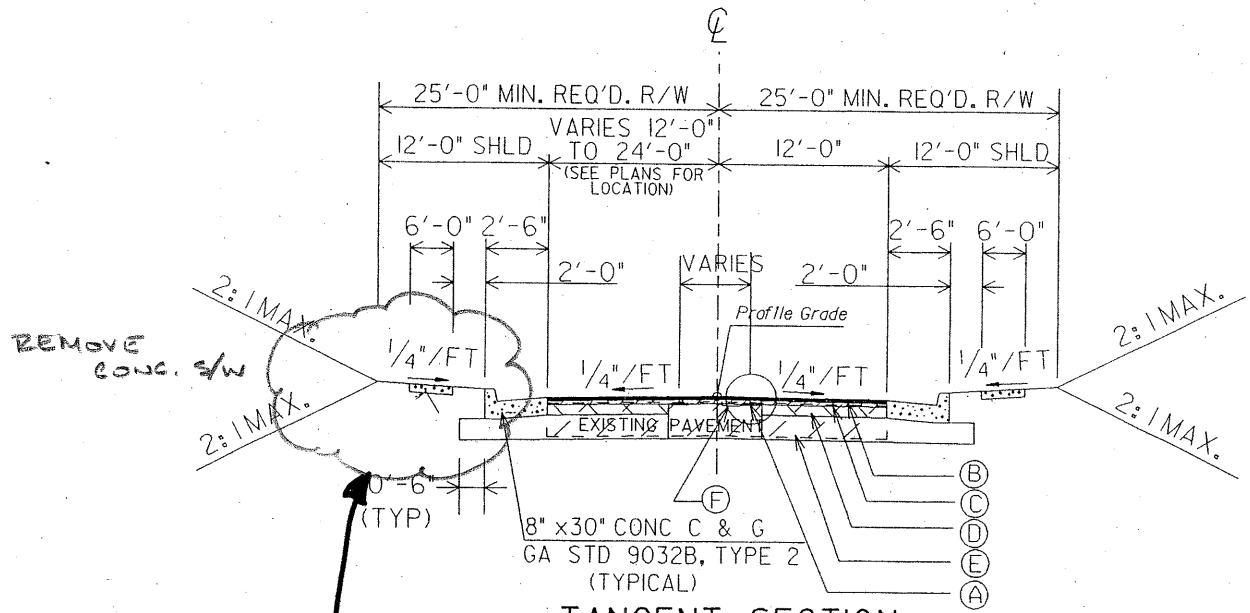
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 27,108	—	$ 27,108
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 27,108	—	$ 27,108



TANGENT SECTION

TYPICAL SECTION NO. 8
SIDE STREETS
— STIFF STREET, —
FULTON COUNTY D/W,
STIFF STREET ACCESS ROAD

AL-5
2 OF 5



TANGENT SECTION

TYPICAL SECTION NO. 8
SIDE STREETS
— STIFF STREET, —
FULTON COUNTY D/W,
STIFF STREET ACCESS ROAD

DELETE SIDEWALK

AL-5 2 OF 5

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-5

SHEET NO.: 4 of 5

LENGTH OF SIDEWALK

START 50+00
END 54+00
400 FT.

SIDEWALK 4' WIDE

$400 \times 4 = 1600\ sf \times \frac{4\ in}{0.33ft} = 533.33\ cf \times \frac{1\ cy}{27\ cf} = 19.75\ cy$

REDUCE ROW BY 4' ENTIRE LENGTH OF STIFF ST.

400 LF x 4' = 1600 SF

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-5
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 5 of 5

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
CONCRETE SIDEWALK	CY	19.75	36.60	644			
RIGHT OF WAY	SF	1600	15.00	24000			
Subtotal				24644			
Markup (%) at 10%				2464			
TOTAL				27108			

VALUE ENGINEERING ALTERNATIVE

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33) – *Fulton County, Georgia*

ALTERNATIVE NO.: **AL-7**

DESCRIPTION: **CONTINUE GLASS STREET FURTHER WEST TO MARIETTA BOULEVARD TO IMPROVE CIRCULATION**

SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

Glass Street Connector ends at Glass Street.

ALTERNATIVE: (Sketch attached)

Extend Glass Street Connector beyond Glass Street to Marietta Boulevard.

ADVANTAGES:

- Provides additional access to the few residents along Law Street and Glass Street

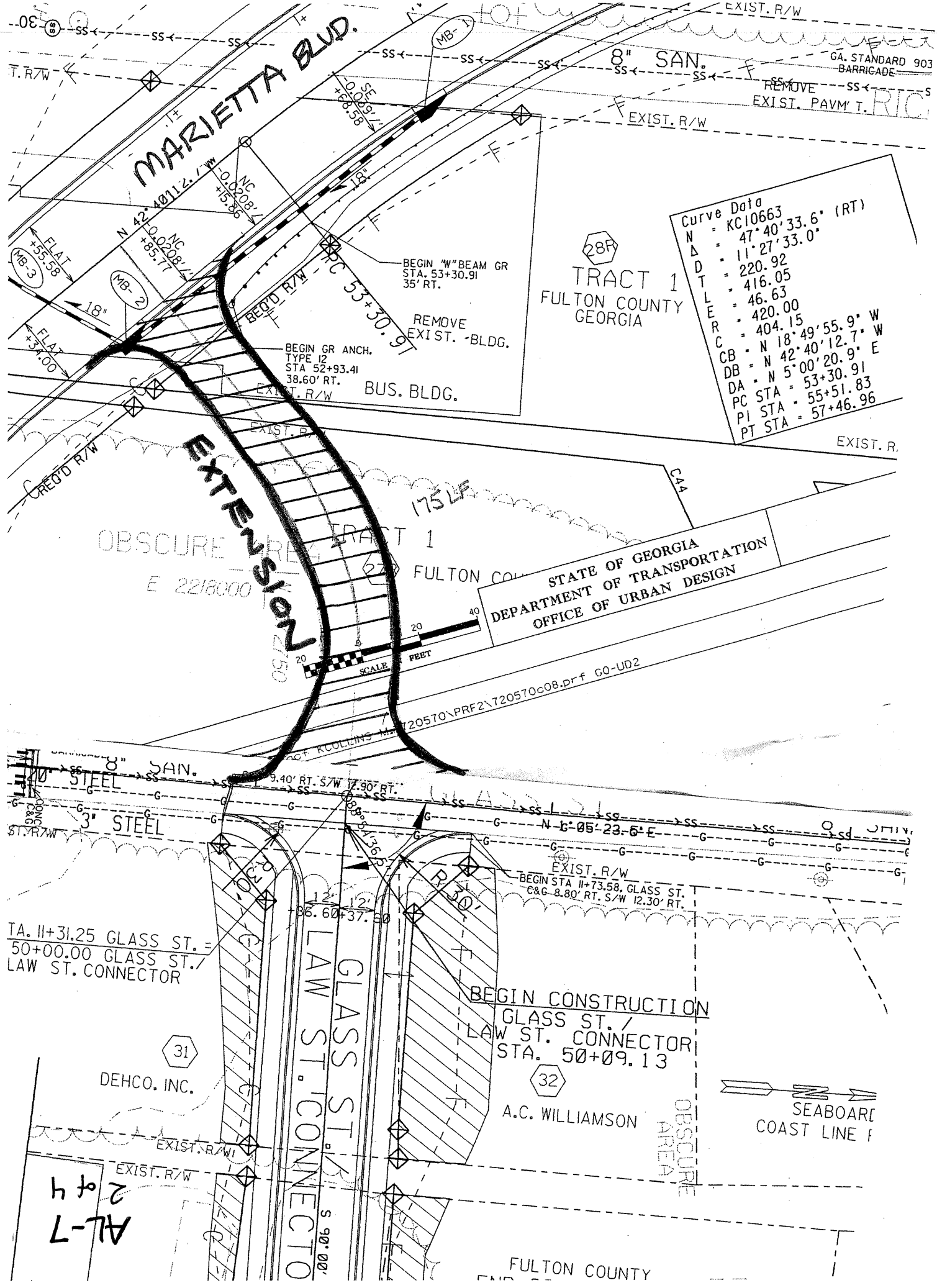
DISADVANTAGES:

- Increases construction costs due to the longer roadway

DISCUSSION:

The Glass Street/Law Street connector runs between Glass Street and Law Street. Extending the connector to Marietta Boulevard allowing access to the traffic light on D.L. Hollowell Parkway.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 0	—	$ 0
ALTERNATIVE	$ 57,472	—	$ 57,472
SAVINGS	$ (57,472)	—	$ (57,472)


MARIETTA BLVD.
EXIST. R/W
8" SAN.
GA. STANDARD 903 BARRICADE
REMOVE EXIST. PAVM'T.
EXIST. R/W
MB-1
SE +0.09/+28.58
NC +0.02/+15.86
N 42°40'12.7" W
NC +0.02/+85.77
FLAT +55.58
MB-3
MB-2
18"
FLAT +34.00
BEGIN "W" BEAM GR STA. 53+30.91 35' RT.
BEG'D R/W
PC 53+30.91
REMOVE EXIST. BLDG.
28R
TRACT 1
FULTON COUNTY GEORGIA
BEGIN GR ANCH. TYPE 12 STA 52+93.41 38.60' RT.
EXIST. R/W
BUS. BLDG.
Curve Data
N = KC10663
Δ = 47°40'33.6" (RT)
D = 11°27'33.0"
T = 220.92
L = 416.05
E = 46.63
R = 420.00
C = 404.15
CB = N 18°49'55.9" W
DB = N 42°40'12.7" E
DA = N 5°00'20.9" E
PC STA = 53+30.91
PI STA = 55+51.83
PT STA = 57+46.96
EXIST. R/W
EXTENSION
175 LF
C44
OBSCURE AREA
TRACT 1
FULTON CO
E 2218000
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN
SCALE FEET
0 20 40
20
GO-UD2
8" SAN.
40' STEEL
3" STEEL
9.40' RT. S/W 12.90' RT.
N 6°05'23.5" E
EXIST. R/W
BEGIN STA 11+73.58, GLASS ST. C&G 8.80' RT. S/W 12.30' RT.
R 30'
12' 12'
36.60+37.80
TA. 11+31.25 GLASS ST. = 50+00.00 GLASS ST./ LAW ST. CONNECTOR
GLASS ST./ LAW ST. CONNECTO
BEGIN CONSTRUCTION GLASS ST./ LAW ST. CONNECTOR STA. 50+09.13
31
DEHCO. INC.
32
A.C. WILLIAMSON
OBSCURE AREA
SEABOARD COAST LINE
EXIST. R/W
EXIST. R/W
FULTON COUNTY
AL-7
2 of 4

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-7

Continue Glass St Further West to Marietta Blvd.

SHEET NO.: 3 of 4

Asph. Pavement - 175 LF x 24 ~~ft~~ ÷ 9 = 467 SY
radius returns - 4 x 22 SY = 88 SY
(555 SY)

Sidewalk - (115 LF x 2) + (42.5 LF x 4 rad returns) = 400 LF
400 x 6 ÷ 9 =
(2675 SY)

Curb + Gutter - (400 LF)

* Right of Way - Assumes R/W is already purchased.

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-7
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 4 of 4

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Asph Pavement	SY				555	65.05	36,103
Sidewalk	SY				267	32.60	8,704
Curb + Gutter	LF				400	18.60	7,440
1							
Right of Way - Already Purchased							
Subtotal							52,247
Markup (%) at 10							5,225
TOTAL							57,472

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AL-8**
DESCRIPTION:	**ELIMINATE THE SIDEWALKS ON GLASS STREET CONNECTOR**	SHEET NO.:	**1 of 4**

ORIGINAL DESIGN:

The original design for Glass Street/Law Street connector includes six-ft. sidewalks on both sides of the road.

ALTERNATIVE: (Sketch attached)

Eliminate the sidewalks on both sides of the street.

ADVANTAGES:

- Reduces construction costs

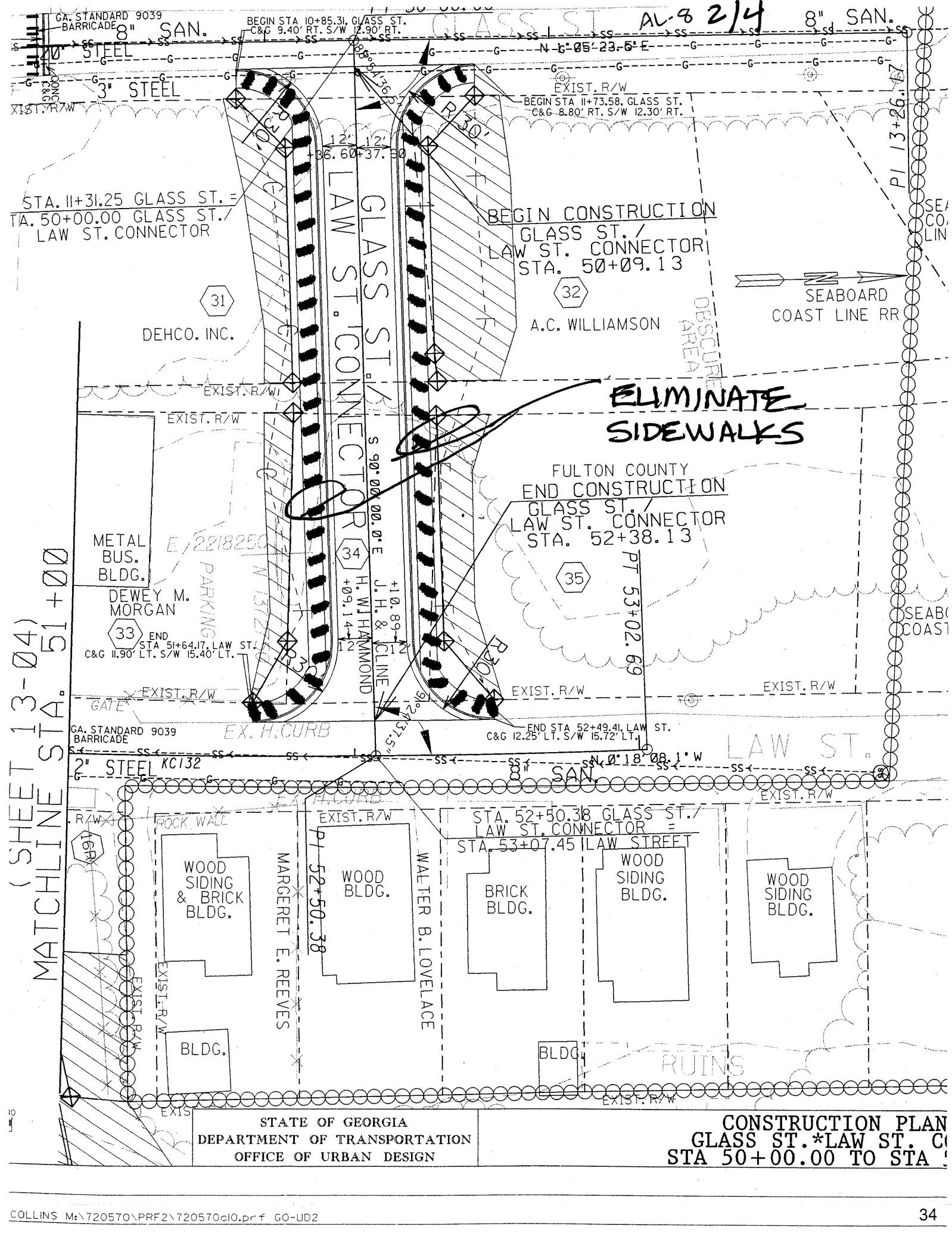
DISADVANTAGES:

- No pedestrian access

DISCUSSION:

Neither the existing Glass Street or Law Street have sidewalks. The potential for pedestrian traffic in this area is minimal.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 12,156	—	$ 12,156
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 12,156	—	$ 12,156



STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN

CONSTRUCTION PLAN
GLASS ST.*LAW ST. C
STA 50+00.00 TO STA

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-8

Remove Sidewalks from Glass St. Connector

SHEET NO.: 3 of 4

Sidewalk - (169 LF x 2) + (42.5 LF x 4 Rad Returns) = 508 LF

508 x 6 ÷ 9 = 339 SY

Right-of-Way - Clear Zone of 10' is required so R/W is not reduced.

Earthwork - Clear Zone of 10' is required so earthwork is the same.

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY**
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

ALTERNATIVE NO.: AL-8

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)**

SHEET NO.: 4 of 4

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Sidewalk	SY	339	32.60	$11,051			
Subtotal				11,051			
Markup (%) at 10%				1,105			
TOTAL				12,156			

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:**AL-10**
DESCRIPTION:	**SHORTEN THE PROJECT LIMITS ON THE EAST END**	SHEET NO.: **1 of 3**

ORIGINAL DESIGN:

The project currently ends at STA. 131+00.

ALTERNATIVE:

Move the end of the project from STA. 131+00 to STA. 129+50 and tie into existing Finley Avenue.

ADVANTAGES:

- Reduces construction costs

DISADVANTAGES:

- Requires minor change to drawings

DISCUSSION:

The west end of the project can be shortened to STA. 129+50 and tie into the existing pavement at Findley Avenue, a logical termination point for the project.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 21,601	—	$ 21,601
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 21,601	—	$ 21,601

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AL-10

Shorten the Project Limits on the East End

SHEET NO.: **2 of 3**

Asph. Overlay - 150 LF x 40 ft ÷ 9 = 667 SY

Curb & Gutter - 78.3 LF

Sidewalk - 78.3 LF x 6 ÷ 9 = 52.5 SY

Right of Way - 500 SF

12.5 mm Superpave - 1.5"/SY x 110#/in ÷ 2000#/ton x $70/ton = $5.78/SY

19 mm Superpave - 2"/SY x 110#/in ÷ 2000#/ton x $70/ton = $7.70/SY

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-10
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 3 of 3

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
12.5mm Superpave	SY	6067	$5.78	$3,855			
19mm Superpave	SY	6067	$7.70	5,136			
Curb + Gutter	LF	78	18.60	1,451			
Sidewalk	SY	52	32.60	1,695			
Right of Way	SF	500	15.00	7,500			
Subtotal				$19,637			
Markup (%) at 10%				1,964			
TOTAL				21,601			

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AL-11**
DESCRIPTION:	**MODIFY STORM DRAIN DESIGN; USE SINGLE TRUNK**	SHEET NO.:	**1 of 5**

ORIGINAL DESIGN: (Sketch attached)

The present design has storm drainage lines running along both sides of D.L. Hollowell Parkway with very little cross piping to get storm water into the 30-in. pipe on the south side of the roadway.

ALTERNATIVE: (Sketch attached)

Eliminate the 18-in. piping between D2-3 and D2-4 on the north side of D.L. Hollowell Parkway and install 100 ft. of 18-in. pipe perpendicular to the road between D2-3 and D3-5 (shown on profile sheets as D1-9).

ADVANTAGES:

- Reduces amount of storm drain to be installed

DISADVANTAGES:

- Requires minor change in plan and section

DISCUSSION:

Running one large storm drain on a single side of a street is commonly done and eliminates the duplicate piping shown in the current design. Also, look at reducing the large slopes of pipes (20% between D1-9C and D1-9); this may cause excessive scouring during high flows.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 7,457	—	$ 7,457
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 7,457	—	$ 7,457

STATE	PROJECT NUMBE
GA.	STP-NH-003-1 (
REVISION D	

REMOVE EXIST. PAVM'T.

AL-11
2 OF 5

ORIGINAL DESIGN

DELETE

BEGIN CONSTRUCTION
STIFF STREET
STA. 59+36.85

PI 59+00.00

NOTE: THIS BUILDING TO BE COMPLETELY REMOVED DURING CONSTRUCTION.

REMOVE EXIST. PAVM'T.

END WALL #1
STA 111+75 LT

REMOVE METAL BLDG.

REMOVE EXIST. BLDG.

BUS. BLDG. BRICK

STA. 113+47.19
D.L. HOLLOWELL PARKWAY
STA. 58.55 RT.

EXIST. R/R R/W

WILLIE JAMES BROOKS

TRACT 17

PLASTIC

REQ'D R/W

EXIST. R/W

REMOVE EXIST. BLDG. & BRICK SIDING BUS. BLDG.

EXIST. BROADWAY TO BE CLOSED TO TRAFFIC

EXIST. PARKING

MATCHLINE STA. 110+50

R 10.16'

R 4'

5.15'

KC102

TAPER LENGTH = 160'

TAPER LENGTH = 192'

N 60° 22' 41.6" E

2' MEDIAN OPENING
STA. 114+79.92 LT.

END TAPER
STA 114+68
16' LT.

END TAPER
STA 115+00
8' LT.

FLAT

115+00

THOMAS N. DOWNING

EXIST. R/W

24"

NOTE: REMOVE EXISTING PAVEMENT GRADE TO DRAIN TO STRUCTURE DI-9C

STA 113+75.62
D.L. HOLLOWELL PARKWAY
STA. 57+48.33 CSX RR
RAILROAD MILEPOST #J003.98
#340336J

CSX S/W TO BE REMOVED

CITY OF ATLANTA (MADDOX PARK)

SR 8/US 78/
US 278

EXIST. R/W TO BE REMOVED

REMOVE EXIST. PAVM'T. GRADE TO DRAIN

STA. 50+00 PARK ENTRANCE =
STA. 111+28.72 D.L. HOLLOWELL PKWY

8" SAN. EXIST. R/W

8" SAN.

CONC. STEPS TO BE REMOVED

EXIST. R/W TO BE REMOVED

END WALL #2
STA 49+18.86

BEGIN PROPOSED GRANITE CONC. C&G
STA 49+16.58 RT.

BEGIN WALL #1
STA 49+16.38 LT.

N 0° 32' 01.1" E

WEST PARK ENTRANCE

EXIST. S/W TO BE REMOVED

BEGIN S/W
STA 47+46.4
19.50' RT.

LL 143

LL 113

LL 114

CITY OF ATLANTA (MADDOX PARK)

HISTORIC PROPERTY

HISTORIC STEPS

CS 155+10.64

CS 154+79.61

BEGIN CONSTRUCTION
WEST PARK ENTRANCE DRIVEWAY
STA. 47+62.67

BEGIN PROPOSED GRANITE CURB
STA 47+62.67 LT & RT

BEGIN WALL #2
STA 47+68.87 LT

47+16.53

RAILROAD DETOUR CONST. C/L

CSX RAILROAD CONST

EXIST. R/R R/W

CSX RAILROAD

NOTE: GRADE RIPRAP TO DRAIN TO STRUCTURE DI-7C

PLAYGROUND
MADDOX PARK
HISTORIC PROPERTY

CITY OF ATLANTA (MADDOX PARK)

Curve Data
N = KC102
Δ = -31°43'33.6" (LT)
D = 7°29'22.7"
T = 217.38
L = 423.60
E = 30.29
R = 765.00
C = 418.21
CB = N 76°14'28.5" E
DB = S 87°53'44.7" E
DA = N 60°22'41.6" E
PC STA = 108+50.00
PI STA = 110+67.38
PT STA = 112+73.60

SCALE IN FEET
20 0 20 40

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN

CONSTRUCTION PLAN SHEET
DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8
STA 110+50 TO STA 116+50

8/23/2007
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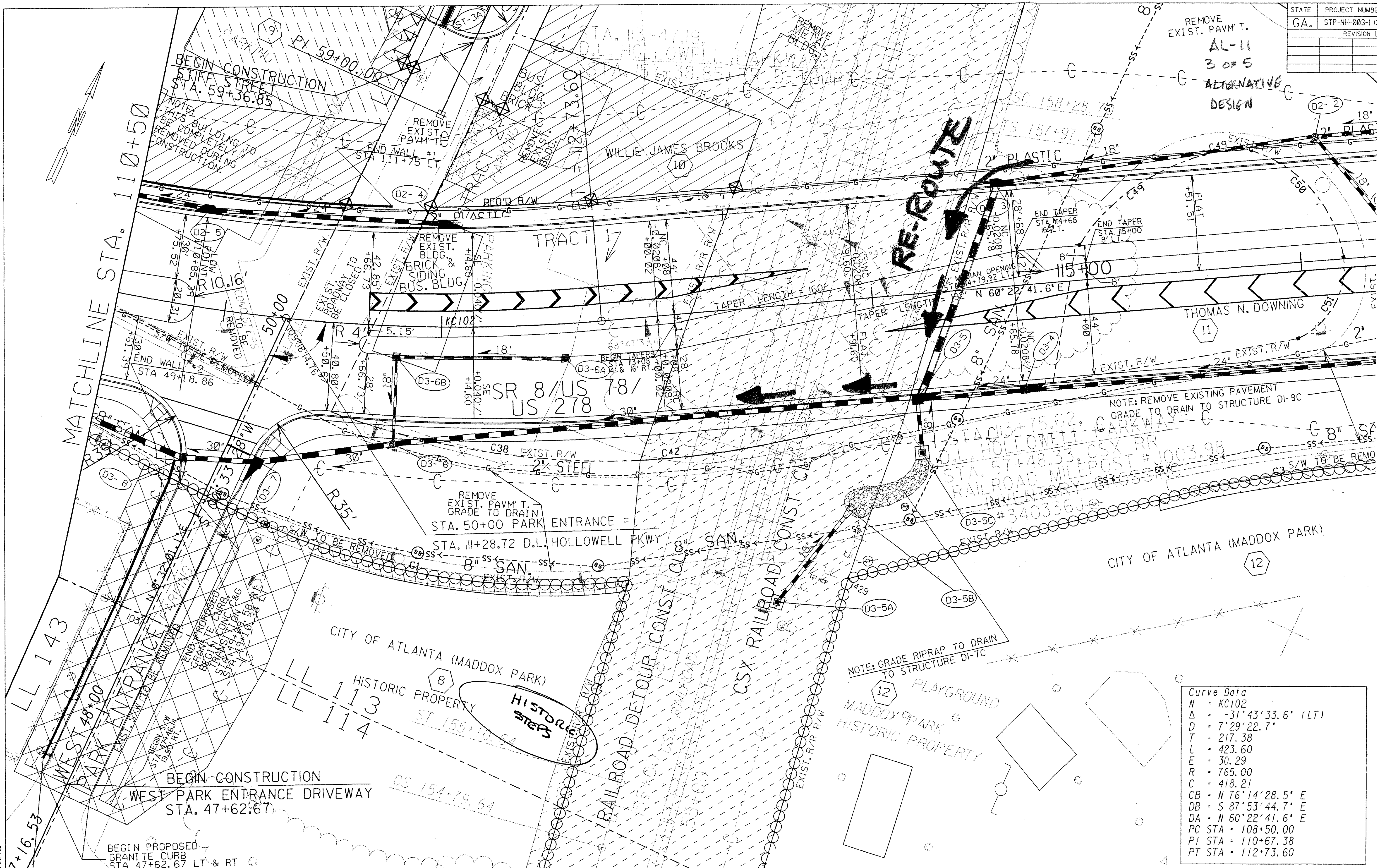
STATE	PROJECT NUMBER
GA.	STP-NH-003-1(
	REVISION D



AL-11
3 OF 5
ALTERNATIVE DESIGN
REMOVE EXIST. PAVM'T.
RE-ROUTE
HISTORIC STEPS
MATCHLINE STA. 110+50
BEGIN CONSTRUCTION STIFF STREET STA. 59+36.85
NOTE: THIS BUILDING TO BE COMPLETELY REMOVED DURING CONSTRUCTION.
PI 59+00.00
END WALL #1 STA 111+75 LT
WILLIE JAMES BROOKS
TRACT 17
REQ'D R/W
SR 8/US 78/ US 278
TAPER LENGTH = 160'
END TAPER STA 114+68 16' LT.
END TAPER STA 115+00 8' LT.
115+00
THOMAS N. DOWNING
BEGIN TAPERS STA 113+08 4' & 16' RT.
END WALL #2 STA 49+18.86
NOTE: REMOVE EXISTING PAVEMENT GRADE TO DRAIN TO STRUCTURE DI-9C
STA. 113+75.62, D.L. HOLLOWELL PARKWAY = STA. 57+48.33, CSX RR RAILROAD MILEPOST #J003.98 INVENTORY CROSSING #340336J
REMOVE EXIST. PAVM'T. GRADE TO DRAIN
STA. 50+00 PARK ENTRANCE = STA. 111+28.72 D.L. HOLLOWELL PKWY
CITY OF ATLANTA (MADDOX PARK)
NOTE: GRADE RIPRAP TO DRAIN TO STRUCTURE DI-7C
CITY OF ATLANTA (MADDOX PARK)
HISTORIC PROPERTY
LL 113
LL 114
LL 143
RAILROAD DETOUR CONST CL
CSX RAILROAD CONST CL
PLAYGROUND
MADDOX PARK HISTORIC PROPERTY
WEST PARK ENTRANCE
BEGIN CONSTRUCTION WEST PARK ENTRANCE DRIVEWAY STA. 47+62.67
BEGIN PROPOSED GRANITE CURB STA 47+62.67 LT & RT
BEGIN WALL #2 STA 47+68.87 LT
Curve Data
N = KC102
Δ = -31°43'33.6" (LT)
D = 7°29'22.7"
T = 217.38
L = 423.60
E = 30.29
R = 765.00
C = 418.21
CB = N 76°14'28.5" E
DB = S 87°53'44.7" E
DA = N 60°22'41.6" E
PC STA = 108+50.00
PI STA = 110+67.38
PT STA = 112+73.60
SCALE IN FEET

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE OF URBAN DESIGN

CONSTRUCTION PLAN SHEET
DL HOLLOWELL PKWY*BANKHEAD HWY*SR 8
STA 110+50 TO STA 116+50

8/23/2007
M:\720570\DGN\720570c03.dgn

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** ALTERNATIVE NO.: AL-11
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

SHEET NO.: 4 **of** 5

REMOVE 252 LF OF 18 IN STORM PIPING BETWEEN D2-3 AND D2-4

ADD 100 LF OF 18 IN STORM PIPING BETWEEN D2-3 AND D3-5C(D1-9)

INV. D2-3 900.92
INV. D3-5C 898.40

$$\text{SLOPE} = \frac{900.92 - 898.40}{100} = 2.52\%$$

NO REDUCTION IN NUMBER OF CATCH BASINS

DIFFERENCE IN PIPING 152 LF

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AL-11
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 5 of 5

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
18" STORM DRAIN PIPE	LF	152	44.60	6779			
Subtotal				6779			
Markup (%) at 10%				678			
TOTAL				7457.00			

SUMMARY OF POTENTIAL COST SAVINGS

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33) Fulton County, Georgia

ALT. NO.	DESCRIPTION	ORIGINAL COST	ALTERNATIVE COST	PRESENT WORTH OF COST SAVINGS: INITIAL COST SAVINGS	PRESENT WORTH OF COST SAVINGS: RECURRING COST SAVINGS	PRESENT WORTH OF COST SAVINGS: TOTAL PW LCC SAVINGS
PROFILE (P)						
P-2	Raise the profile of the mainline by 1 ft. under the CSX detour bridge to reduce excavation quantity and bridge length, reducing the vertical clearance from 18 ft. to the required minimum of 17 ft.	$ 80,064	$ -	$ 80,064		$ 80,064
CSX BRIDGE (CX)						
CX-1	Build the temporary railroad detour bridge as permanent and have CSX participate in the funding.	$ 1,757,449	$ 83,827	$ 1,673,622		$ 1,673,622
CX-2	Use a two-span permanent railroad bridge with a column in the roadway median in lieu of a three-span bridge.	$ 1,896,741	$ 1,692,515	$ 204,226		$ 204,226
ABANDONED RAILROAD ROW BRIDGE (AB)						
AB-1	Use a Con/Span® arched type of structure in lieu of a conventional bridge over the abandoned railroad right-of-way.	$ 2,138,216	$ 1,207,800	$ 930,416		$ 930,416
AB-2	Use two bridge structures over the abandoned railroad right-of-way in lieu of a single wider bridge.	$ 1,742,527	$ 1,620,339	$ 122,188		$ 122,188

VALUE ENGINEERING ALTERNATIVE

PROJECT: **D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** ALTERNATIVE NO.: **P-2**
Project No. STP-NH-003-1(33) – *Fulton County, Georgia*

DESCRIPTION: **RAISE THE ROAD PROFILE UNDER CSX BRIDGE BY 1 FT.** SHEET NO.: **1 of 4**

ORIGINAL DESIGN:

The proposed vertical clearance of the Parkway under the CSX detour bridge is 18 ft., and 18 ft.-5 in. under the replacement bridge.

ALTERNATIVE:

Revise the profile by raising the Parkway 1 ft. This will result in a 17-ft. vertical clearance under the detour bridge and 17 ft.-5 in. under the replacement bridge.

ADVANTAGES:

- Reduces earthwork costs
- Reduces export material

DISADVANTAGES:

- Reduces clearance

DISCUSSION:

The profile can be raised by 1 ft. under the CSX railroad by adjusting the VPI's at STA. 108+50 and STA. 120+26.28. The minimum vertical clearance requirements will still be met and the amount of excavation can be reduced.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 80,064	—	$ 80,064
ALTERNATIVE	$ 0	—	$ 0
SAVINGS	$ 80,064	—	$ 80,064

25

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: P-2

Raise Profiles Under CSX Bridge by 1'-0"

SHEET NO.: 2 of 4

From Sta 108+50 to Sta 120+50 the average width of the disturbed area of excavation is 155 ft.

1200' Length x 155' width x 1' depth ÷ 27 = 6,890 CY of excavation.

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: P-2

SHEET NO.: 3 of 4

REDUCTION OF BRIDGE LENGTH :

= 2 x 2 x 1' x 20' = 80 SF

TOTAL AREA = 2 x 20' x 42' + 23' x 130.5 = 4820 SFT.

UNIT COST = $1724310 / 4820 SF = $ 357.74 USE 350

SAVINGS = 80 x 350 = $ 28,000

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: P-2
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 4 of 4

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Unclassified Excav	CY	6,890	6.50	44,785			
Reduced Bridge Length	LS			28,000			
Subtotal				$72,785			
Markup (%) at 10				7,279			
TOTAL				$80,064			

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**CX-1**
DESCRIPTION:	**BUILD A PERMANENT RAILROAD BRIDGE AND ASK CSX TO PARTICIPATE IN THE FUNDING**	SHEET NO.:	**1 of 3**

ORIGINAL DESIGN:

A temporary detour bridge for CSX is to be constructed 25 ft. west of the existing railroad alignment. This temporary alignment is also the planned future alignment of the second pair of tracks.

ALTERNATIVE:

Construct the detour bridge as a permanent replacement bridge instead of temporary. Postpone the construction of the second future tracks.

ADVANTAGES:

- Reduces cost to GDOT
- Reduces construction time (only one bridge to be built and railroad traffic shifted only once)
- CSX may be inclined to participate in funding a permanent bridge

DISADVANTAGES:

- A shift in track alignment will still be needed until the second set of tracks is installed
- Additional costs for needed retaining walls in some areas

DISCUSSION:

The location of the detour alignment has been confirmed with CSX, and it was noted that this location will be reserved for a set of second tracks. Additional configuration of tracks is required to accommodate desired speed on the permanently shifted alignment. Savings to be realized are in long-term construction costs by eliminating the temporary bridge and replacing it with the permanent bridge. This may be seen as favorable enough by CSX so that they might participate in the funding.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,757,449	—	$ 1,757,449
ALTERNATIVE	$ 83,827	—	$ 83,827
SAVINGS	$ 1,673,622	—	$ 1,673,622

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: CX - 1

SHEET NO.: 2 of 3

RETAINING WALL TO BE CONSTRUCTED ADJACENT TO THE CEMETERY IN THE NORTH.

HEIGHT = APPROX. 14 FT.
LENGTH = APPROX. 114 FT.
BATTER HT = 4 FT.
W = 0.5 FT.
FTG SIZE = $8.5' \times 1.25' = 10.625$ SF
KEY = $1.25' \times (1 + 0.125 \times 1.25') = 1.27$ SF

CONC. VOLUME = $(14' \times 1' + 0.5(0.5')(4') + 10.625\text{ SF} + 1.27\text{ SF}) \times 114' / 27\text{ CF/CY} = 114$ CY

REBAR WT = $200 \times 114 = 22,800$ LBS.

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: CX-1
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 3 of 3

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
DETOUR BRIDGE	LUMP	1	1,597,680	1,597,680			
RETAINING WALLS							
CONC. CL. A	CY				114	560.22	63,865
REBAR	LB				22,800	0.94	21,432
Subtotal				1,597,680			85,297
Markup (%) at 10				159,768			8,530
TOTAL				1,757,449			93,827

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**CX-2**
DESCRIPTION:	**USE 2-SPAN RAILROAD BRIDGE IN LIEU OF THREE-SPAN REPLACEMENT BRIDGE**	SHEET NO.:	**1 of 5**

ORIGINAL DESIGN: (Sketch attached)

The proposed replacement bridge carrying CSX consists of a long span in the center and two short end spans.

ALTERNATIVE: (Sketch attached)

Construct the bridge as two identical spans and place a bent in the center of the roadway median.

ADVANTAGES:

- One less intermediate bent
- Shorter design span for the through plate girder
- Simplifies construction of two spans that are identical

DISADVANTAGES:

- Adds the intermediate bent in the median of the road

DISCUSSION:

Aside from simplifying the design and construction (three spans instead of two), reducing the two bents to one in the median frees up the toe of the end slopes to move them closer to the sidewalk which reduces the bridge length. The shorter design spans result in shallower and lighter plate girders.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,896,741	—	$ 1,896,741
ALTERNATIVE	$ 1,692,515	—	$ 1,692,515
SAVINGS	$ 204,226	—	$ 204,226

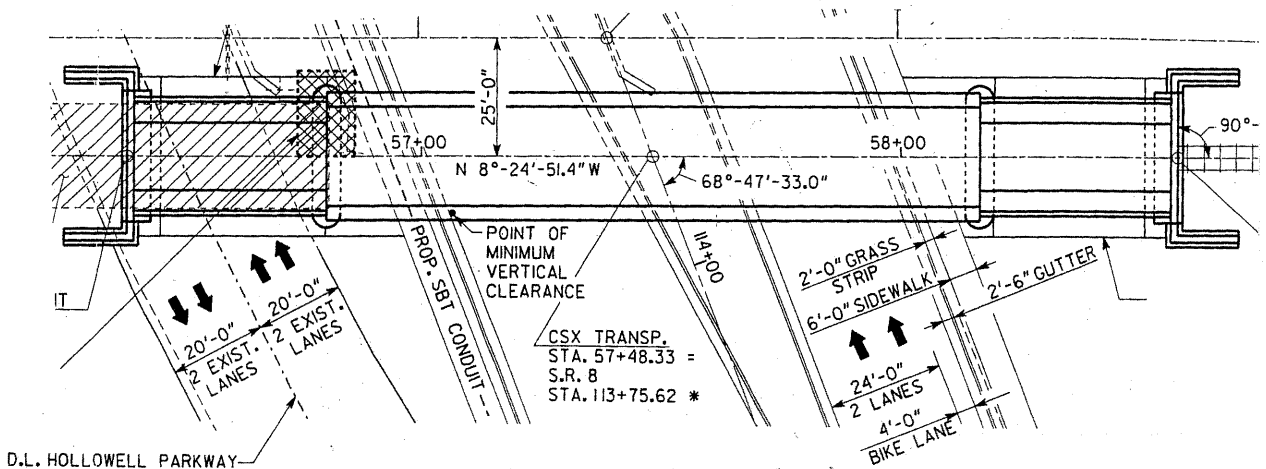
SKETCH

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: CX-2

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☐ BOTH ☑

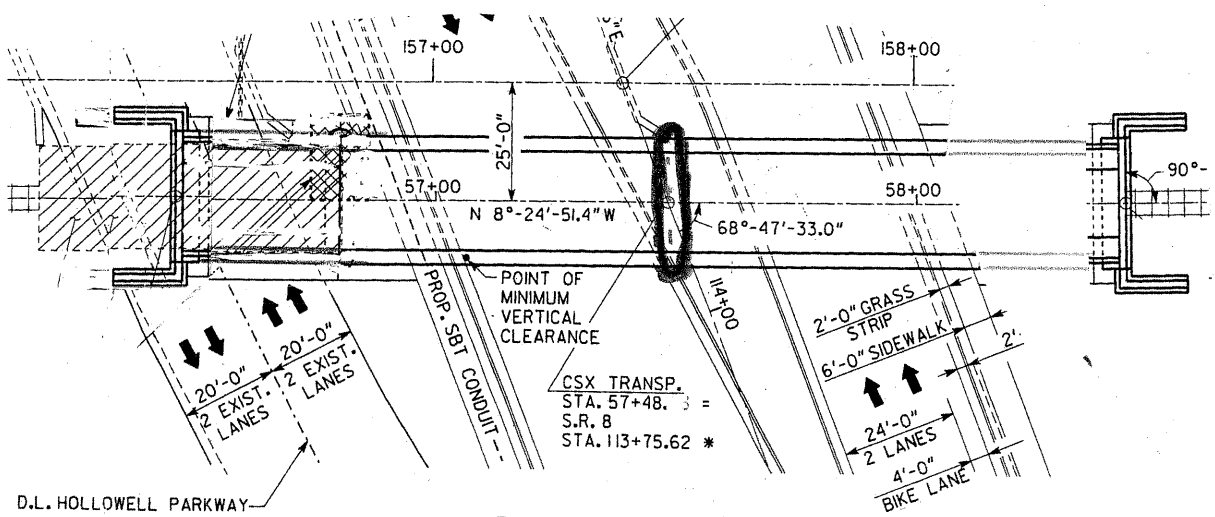
SHEET NO.: 2 of 5



PLAN - ORIGINAL DESIGN

SCALE 1" = 20'-0"

* 1267 FEET NORTH FROM MILE POST#863



PLAN - ALT. DESIGN

SCALE 1" = 20'-0"

* 1267 FEET NORTH FROM MILE POST#863

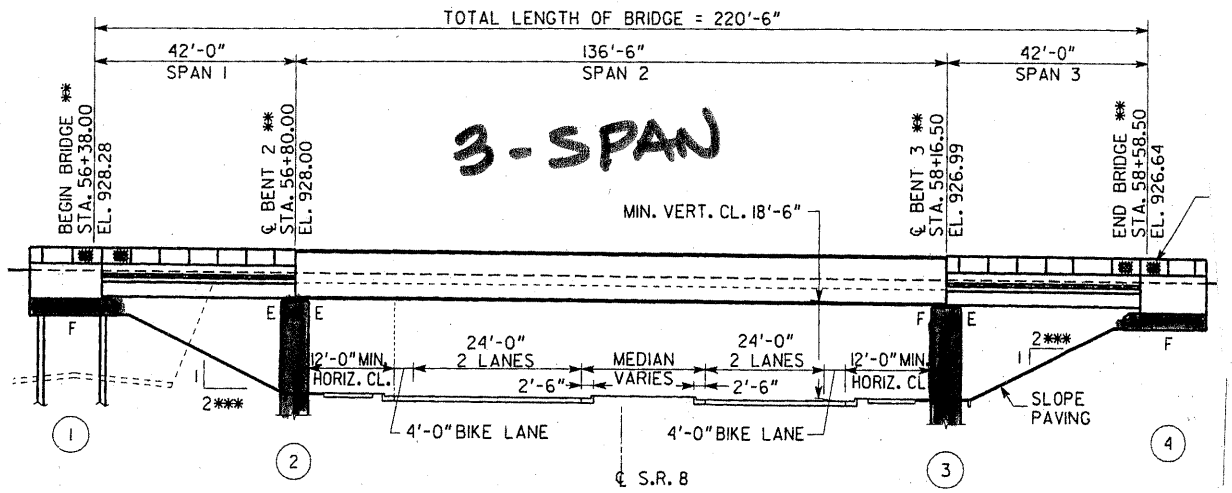
SKETCH

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: CX-2

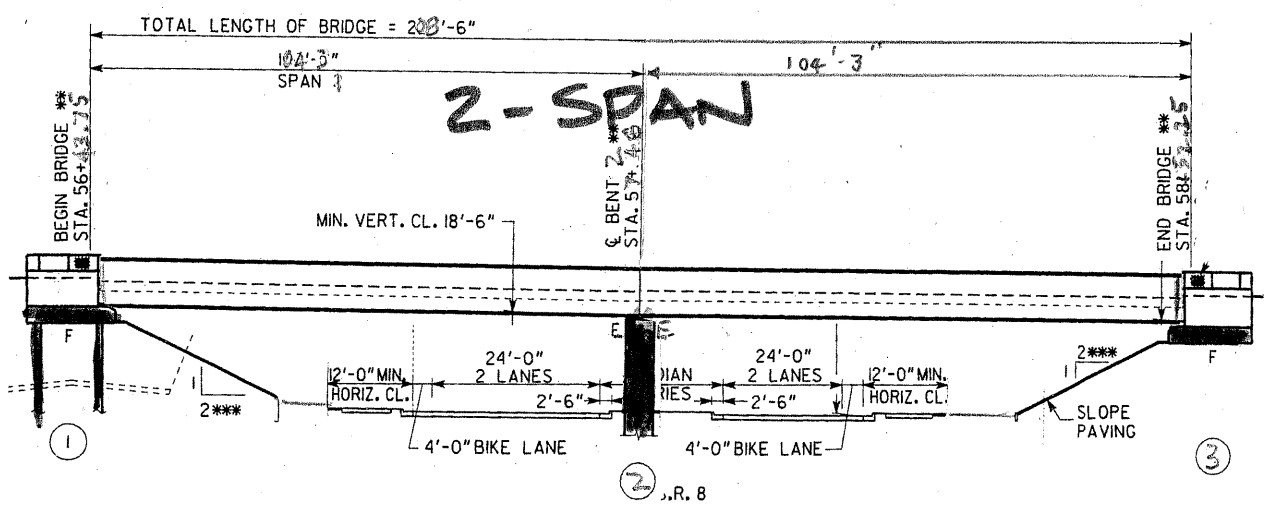
ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☐ BOTH ☑

SHEET NO.: 3 of 5



ELEVATION - REPLACEMENT BRIDGE

SCALE 1" = 20'-0"
(LOOKING BACK)



ELEVATION - ALTERNATIVE DESIGN

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: CX - 2

SHEET NO.: 4 of 5

COST OF REPLACEMENT BRIDGE = $1,724,310

ASSUMED COST OF INTERMEDIATE BENT = $100,000 EA.

COST OF SUPERSTRUCTURE:

$1,724,310 - 2x$100,000 = $1,524,310

TOTAL AREA OF BRIDGE:

2 x 20' x 42' + 23' x 130.5' = 4820. SQ. FT.

UNIT COST = $1,524,310 / 4820 SF = $316.25 / SF.

ASSUMED COST OF ALTERNATE = $300 / SF

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: CX-2
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 5 of 5

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
REPLACEMENT BRIDGE	SF	4870	316.25	1,524,310	4795.5	300	1,438,650
INTERMEDIATE BENTS	EA	2	100,000	200,000	1	100,000	100,000
Subtotal				1,724,310			1,538,650
Markup (%) at 10				172,431			153,865
TOTAL				1,896,741			1,692,515

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AB-1**
DESCRIPTION:	**BUILD A CON/SPAN® TYPE BRIDGE OVER THE ABANDONED RAILROAD RIGHT-OF-WAY**	SHEET NO.:	**1 of 4**

ORIGINAL DESIGN: (Sketch attached)

The 83-ft.-6 in. AASHTO beam bridge over the abandoned railroad is a convention construction method requiring two phases.

ALTERNATIVE: (Sketch attached)

Use a prefabricated modular system such as Con/Span® for the bridge.

ADVANTAGES:

- Simplifies and speeds up construction
- Eliminates most MSE wall

DISADVANTAGES:

- Changes bridge design

DISCUSSION:

Con/Span®-type structures have been used in all 50 states and offer many advantages over conventionally-built girder type bridges. GDOT has used these structures successfully on previous projects.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 2,138,216	—	$ 2,138,216
ALTERNATIVE	$ 1,207,800	—	$ 1,207,800
SAVINGS	$ 930,416	—	$ 930,416

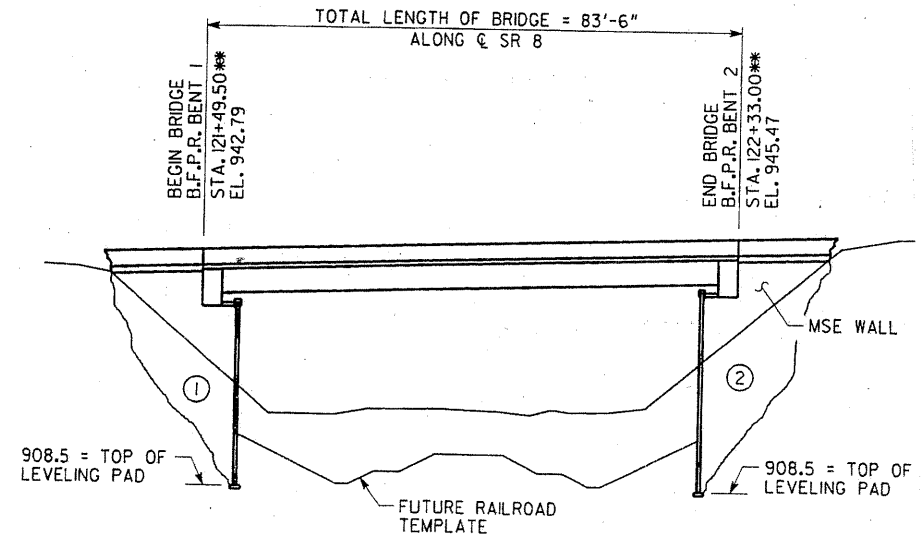
SKETCH

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

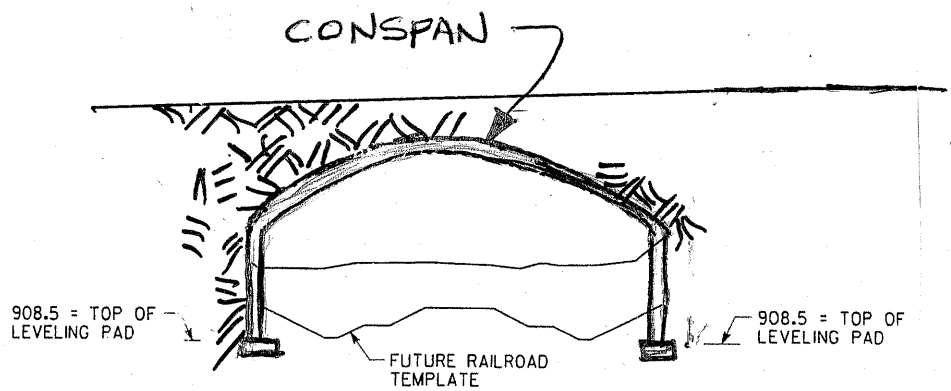
ALTERNATIVE NO.: AB-1

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☐ BOTH ☑

SHEET NO.: 2 of 4



ELEVATION



ELEVATION

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.:

SHEET NO.: 3 of 4

CLNSPAN WIDTH = $83.5' \times \sin 60° - 2 \times 6' = 60$ FT.

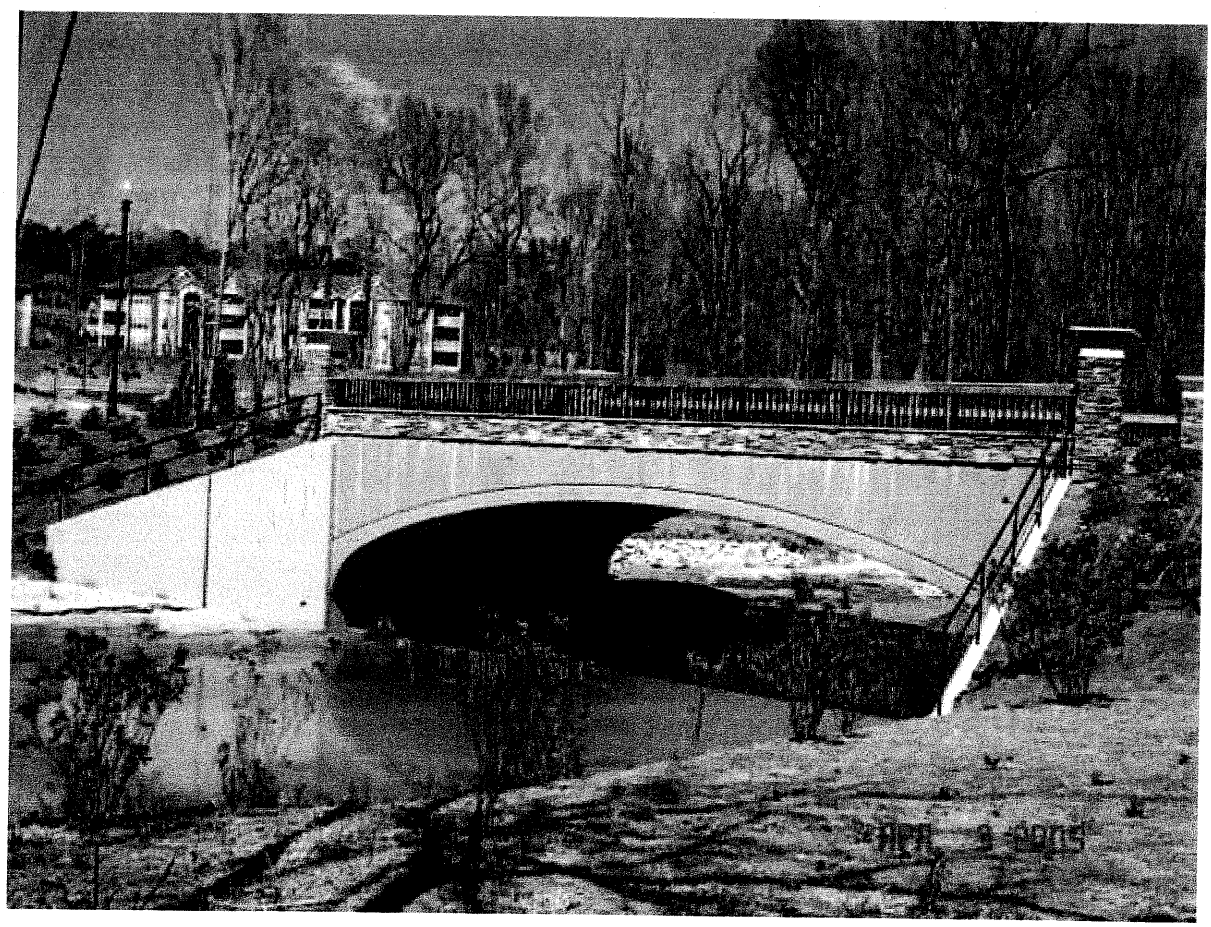
APPROXIMATE LENGTH = 150 FT.

MSE WALL HEIGHT = 25'

LENGTH = 123' + 115' = 238'

AREA = 238' x 25' = 5950 SF

COST PER LINEAR FOOT ≈ $122 x 60 = $7,320/LF



COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AB-1
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 4 of 4

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
PSC BEAM BRIDGE	1	1	1584115	1584115			
MSE WALL 20-70'	SF	5950	57.88	344,386			
LIN FT. COPING A	LF	238	64.42	15,332			
CONSPAN BRIDGE	LF				150	7320	1,098,000
Subtotal				1,943,633			1098,000
Markup (%) at 10				194383			109800
TOTAL				2138,216			1,207,800

VALUE ENGINEERING ALTERNATIVE

PROJECT:	**D.L. HOLLOWELL PARKWAY/BANKHEAD HIGHWAY** **Project No. STP-NH-003-1(33)** – *Fulton County, Georgia*	ALTERNATIVE NO.:	**AB-2**
DESCRIPTION:	**USE TWO SMALLER BRIDGE STRUCTURES OVER THE ABANDONED RAILROAD RIGHT-OF-WAY IN LIEU OF ONE**	SHEET NO.:	**1 of 5**

ORIGINAL DESIGN: (Sketch attached)

The 83-ft.-6 in. bridge over the abandoned railroad is one unit constructed in two phases. There is a striped median to separate the westbound and eastbound traffic.

ALTERNATIVE: (Sketch attached)

Construct the bridge as separate left and right bridges.

ADVANTAGES:

- Reduces cost due to smaller footprint and less bridge deck area
- Barriers keep traffic physically separated

DISADVANTAGES:

- Renders changing lane definitions in the future not viable
- Safety requires attenuators at the barrier ends

DISCUSSION:

Separating the bridge as left and right simplifies construction to building left bridge first, then right. However, introducing barriers in the median adds safety concerns due to physical obstacles. Depending on the final cost of the attenuators, savings are anticipated to be realized.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	$ 1,742,527	—	$ 1,742,527
ALTERNATIVE	$ 1,620,339	—	$ 1,620,339
SAVINGS	$ 122,188	—	$ 122,188

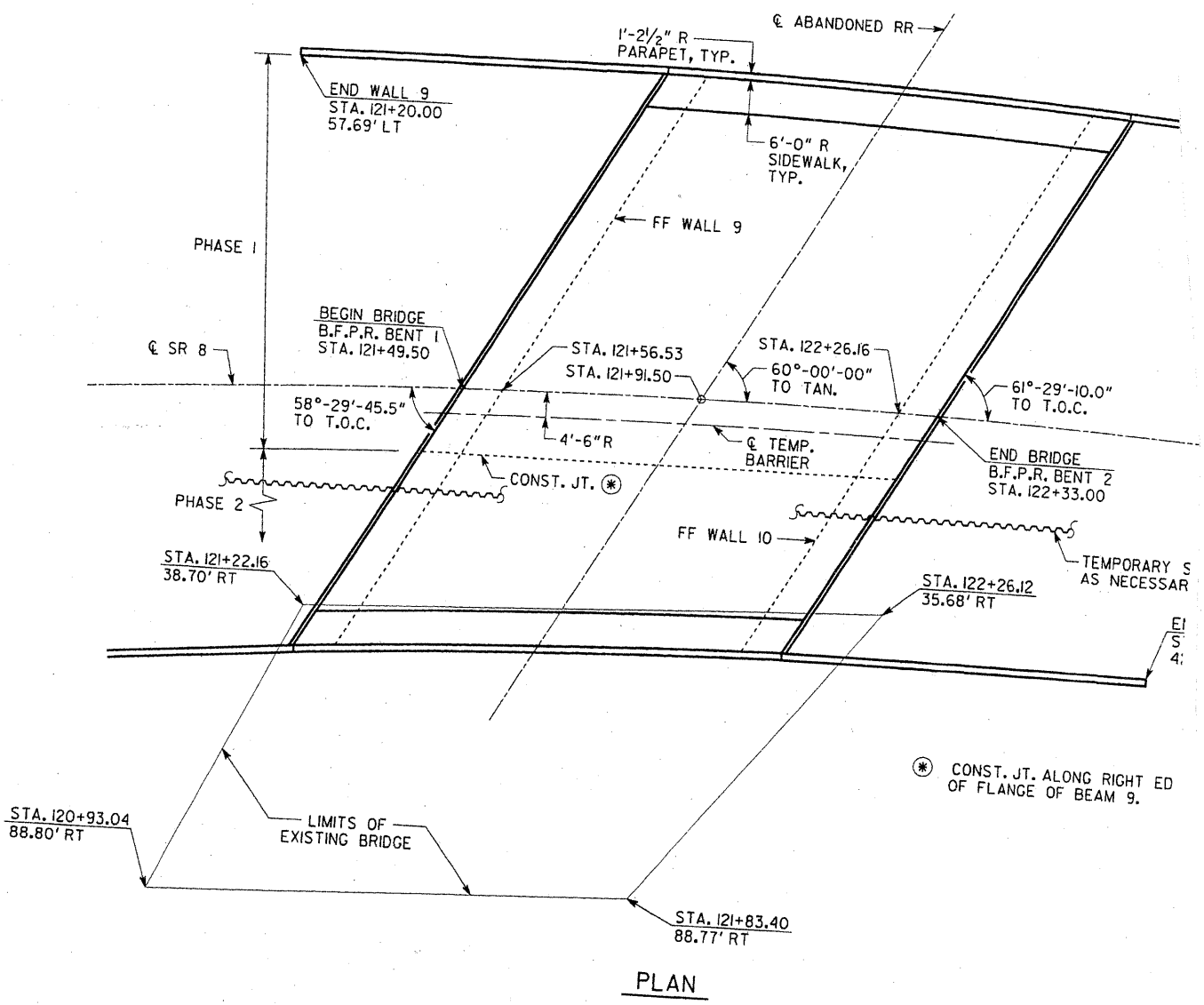
SKETCH

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AB-2

ORIGINAL DESIGN ☑ ALTERNATIVE DESIGN ☐ BOTH ☐

SHEET NO.: 2 of 5



PLAN

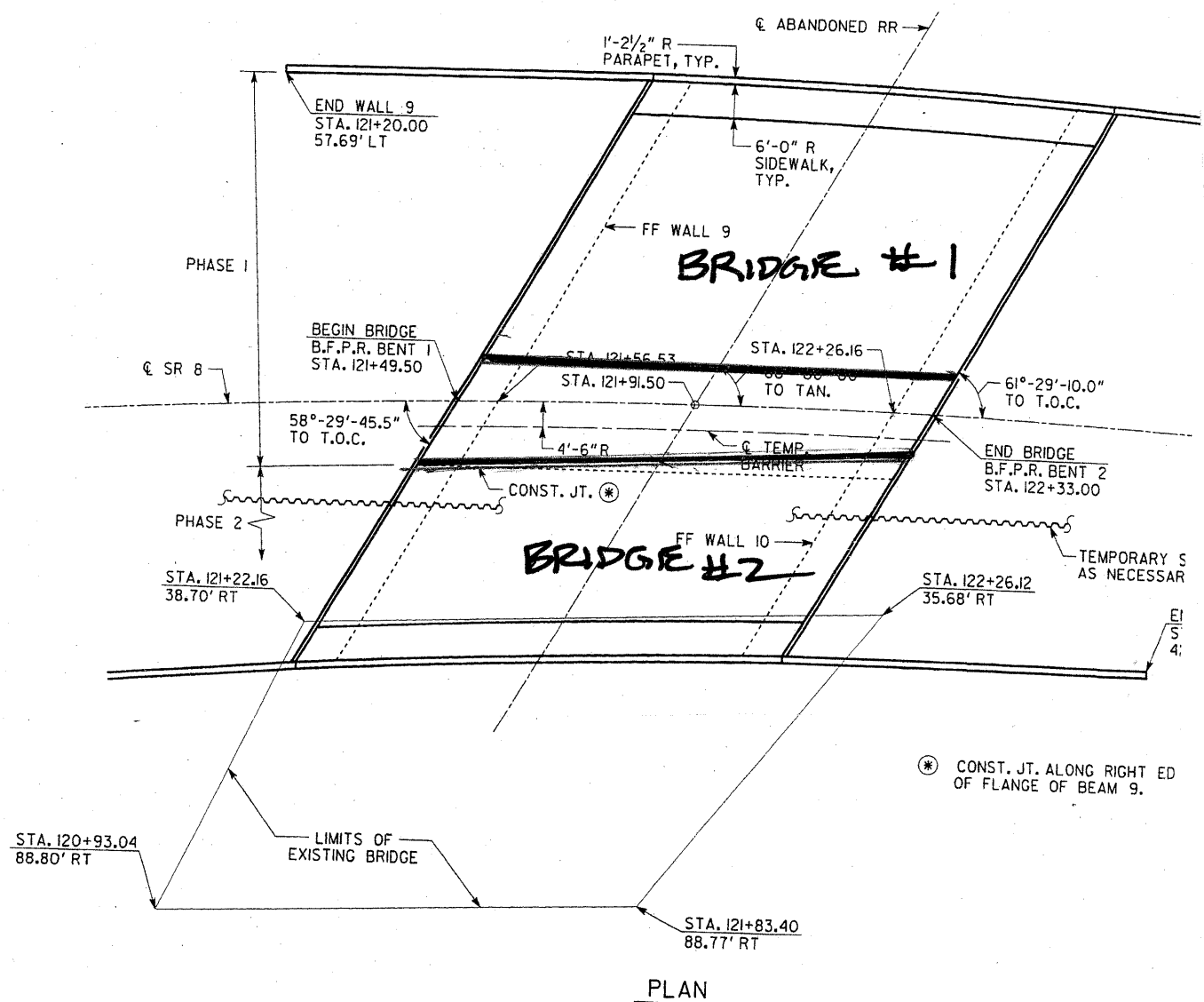
SKETCH

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AB-2

ORIGINAL DESIGN ☐ ALTERNATIVE DESIGN ☑ BOTH ☐

SHEET NO.: 3 of 5



PLAN

CALCULATIONS

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33) – Fulton County, Georgia

ALTERNATIVE NO.: AB-2

SHEET NO.: 4 of 5

BRIDGE AREA

LENGTH = 83.5'

AVG. WIDTH = $\frac{2 \times 1.2083' + 50.40' + 45.69' + 54.79' + 43.79'}{2}$ = 102.85' SF.

AREA = 83.5' x 102.85' = 8588 SF.

UNIT COST = $1584115 / 8588 SF = $184.46 / SF

MEDIAN WIDTH: $\approx \frac{19' + 16'}{2}$ = 17.5' (AVG.)

WIDTH OF GAP BETWEEN LEFT AND RIGHT BRIDGES = 17.5 - 2x1.625' = 14.25'

AREA OF GAP = 83.5' x 14.25' = 1190 SF.

AREA OF PROPOSED BRIDGES = 8588 - 1190 = 7398

LIN. FT. BARRIER = 2x 83.5' = 167'

COST WORKSHEET

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HWY** ALTERNATIVE NO.: AB-2
Project No. STP-NH-003-1(33) – Fulton Co., Georgia

DESCRIPTION: **IDEA DESCRIPTION (abbreviate if necessary to fit)** SHEET NO.: 5 of 5

PROJECT ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
ONE BRIDGE	SF	8588	184.46	1,584,115			
TWO BRIDGES	SF				7398	184.46	1,364,635
ATTENUATORS	EA				2	50,000	100,000
BARRIER	LF				167	50.29	8,400
Subtotal				1,584,115			1,473,035
Markup (%) at 10				158,412			147,304
TOTAL				1,742,527			1,620,339

PROJECT DESCRIPTION

PURPOSE AND NEED

The accident and injury rate along this portion of D.L. Hollowell Parkway over the past three years is more than double the statewide average. The goal of this project is to reduce accidents by providing left-turn lanes, increasing lane width from 10 ft. to 12 ft., modifying the geometry at two intersections and installing two traffic signals, limiting access of secondary roads, improving sight distance, and increasing the radius of horizontal curves. These improvements will improve the Level of Service (LOS) during the first few years of the project, upgrade the aesthetics of the neighborhood, and repair the monuments at the entry to Maddox Park. The construction cost for the project is estimated at $13.8M, plus right-of-way requirements of approximately $9M.

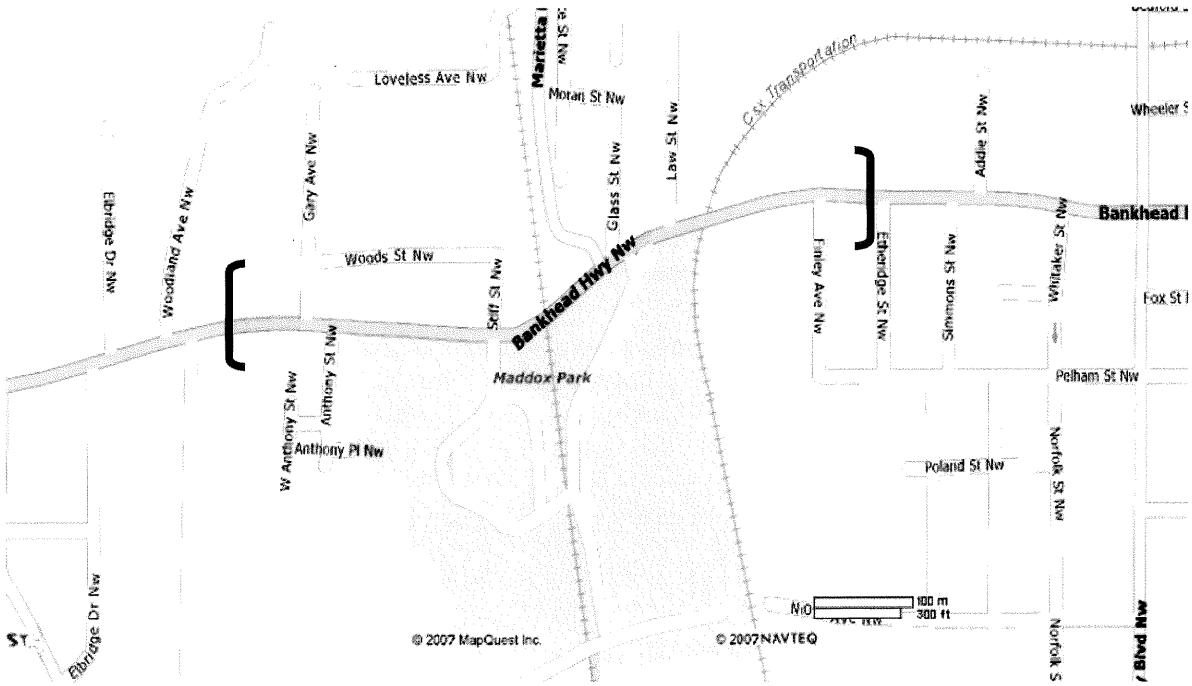
PROJECT DESCRIPTION

This project involves the widening, reconstruction and relocation of D.L. Hollowell Parkway/SR 8 from just east of Proctor Creek to Finley Avenue for a total of 0.50 miles. It includes the widening and improvements to D.L. Hollowell Parkway, realignment of Marietta Boulevard with the realigned eastern entrance of Maddox Park, and replacement of the existing CSX Railroad bridge over D.L. Hollowell Parkway. Currently, SR 8 within the project limits is a substandard four-lane facility. It consists of 10-ft. lanes and low vertical clearance under the CSX Railroad bridge. There are sidewalks along D.L. Hollowell Parkway, but they are non-continuous underneath the bridge, forcing pedestrians to either walk in a busy, narrow street or walk around the bridge and through Maddox Park.

The existing major structures consist of a MARTA rail bridge over SR 8, CSX Railroad bridge over SR 8, and a box culvert under SR 8 at the abandoned CSX Railroad line. The posted speed is 35 MPH and the design speed is 45 MPH. The proposed construction will provide a divided four-lane roadway with 12-ft. lanes, built on an urban typical section with 6-ft. sidewalks on both sides and a 30-ft. raised median. A 4-ft. bike lane in each direction is also proposed. The project realigns D.L. Hollowell Parkway, Marietta Boulevard and Arlington Circle so that they have a common intersection, and provides turn lanes from D.L. Hollowell Parkway onto Marietta Boulevard. The existing MARTA bridge over SR 8 has a 101-ft. span over the roadway and will not be affected by construction of this project.

The CSX Railroad bridge over SR 8 will be replaced just north of the existing structure due to the realignment of the road. The new bridge will be 20 ft. wide and 206 ft. long over three spans with a single span over the roadway. The culvert over the abandoned railroad will be replaced with a smaller 12-ft. x 12-ft. box culvert in the same location. This culvert will allow the corridor to be usable in the future as a pedestrian/bike trail.

Left-turn lanes will be placed at the following intersections: D.L. Hollowell Parkway at the Fulton County driveway, western portion of Maddox Park, and Marietta Boulevard/Maddox Park. Traffic signals will be installed at the D.L. Hollowell Parkway and Fulton County driveway and Marietta Boulevard.



Estimate Report for file "PI No. 720570 08-24-07 (DL HOLLOWELL PKWY)"

Section ROADWAY ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	1000000.00	TRAFFIC CONTROL - STP-NH-003-1(33)	1000000.00
153-1300	1	EA	75763.80	FIELD ENGINEERS OFFICE TP 3	75763.80
210-0100	1	LS	3286000.00	GRADING COMPLETE - STP-NH-003-1(33)	3286000.00
310-1101	17459	TN	19.80	GR AGGR BASE CRS, INCL MATL	345688.20
402-1811	513	TN	81.30	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL	41706.90
402-3121	12658	TN	70.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	886060.00
402-3190	3226	TN	70.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	225820.00
402-4510	2420	TN	70.00	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL POLYMER-MODIFIED BITUM MATL & H LIME	169400.00
413-1000	41918	GL	2.00	BITUM TACK COAT	83836.00
432-0206	6219	SY	1.80	MILL ASPH CONC PVMT, 1 1/2 IN DEPTH	11194.20
437-1571	295	LF	34.00	STRAIGHT GRANITE CURB, 5 IN X 17 IN, TP A	10030.00
441-0104	5108	SY	32.60	CONC SIDEWALK, 4 IN	166520.80
441-0748	1384	SY	54.80	CONCRETE MEDIAN, 6 IN	75843.20
441-4030	58	SY	53.60	CONC VALLEY GUTTER, 8 IN	3108.80
441-4050	1251	SY	71.60	CONC VALLEY GUTTER WITH CURB, 8 IN	89571.60
441-5002	598	LF	20.10	CONCRETE HEADER CURB, 6 IN, TP 2	12019.80
441-5003	141	LF	22.00	CONCRETE HEADER CURB, 8 IN, TP 3	3102.00
441-6222	8222	LF	18.60	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	152929.20
444-1000	1137	LF	8.70	SAWED JOINTS IN EXIST PAVEMENTS - PCC	9891.90
446-1100	1651	LF	3.30	PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	5448.30
500-3201	141	CY	481.10	CLASS B CONCRETE, RETAINING WALL	67835.10
500-9999	8	CY	164.50	CLASS B CONC, BASE OR PVMT WIDENING	1316.00
515-2015	95	LF	40.00	GALV STEEL PIPE HANDRAIL -	3800.00
550-1180	2845	LF	44.60	STORM DRAIN PIPE, 18 IN, H 1-10	126887.00
550-1240	916	LF	54.50	STORM DRAIN PIPE, 24 IN, H 1-10	49922.00
550-1300	1349	LF	70.20	STORM DRAIN PIPE, 30 IN, H 1-10	94699.80
550-4218	1	EA	664.40	FLARED END SECTION 18 IN, STORM DRAIN	664.40
550-4224	1	EA	775.40	FLARED END SECTION 24 IN, STORM DRAIN	775.40
550-4230	1	EA	942.60	FLARED END SECTION 30 IN, STORM DRAIN	942.60
620-0100	1388	LF	34.60	TEMPORARY BARRIER, METHOD NO. 1	48024.80
634-1200	112	EA	99.10	RIGHT OF WAY MARKERS	11099.20
635-1000	96	LF	109.30	BARRICADES	10492.80
641-1100	436	LF	50.10	GUARDRAIL, TP T	21843.60
641-1200	333	LF	17.20	GUARDRAIL, TP W	5727.60
641-5001	1	EA	642.30	GUARDRAIL ANCHORAGE, TP 1	642.30
641-5012	2	EA	1835.20	GUARDRAIL ANCHORAGE, TP 12	3670.40
668-1100	28	EA	2741.70	CATCH BASIN, GP 1	76767.60
668-1110	13	LF	279.60	CATCH BASIN, GP 1, ADDL DEPTH	3634.80
668-2100	14	EA	3922.40	DROP INLET, GP 1	54913.60
668-2110	14	LF	339.40	DROP INLET, GP 1, ADDL DEPTH	4751.60
668-4300	5	EA	2537.20	STORM SEWER MANHOLE, TP 1	12686.00
668-4311	5	LF	306.40	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	1532.00
668-4312	7	LF	273.50	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 2	1914.50
668-7000	1	EA	9620.00	DRIVEWAY GRATE INLET, SPECIAL DESIGN, PIPE SIZE - 18"	9620.00
				Section Sub Total:	**$7,268,097.80**

Section TRAFFIC SIGNALS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
639-2001	1500	LF	2.60	STEEL WIRE STRAND CABLE, 1/4 IN	3900.00
639-4014	8	EA	5216.20	STRAIN POLE, TP IV, INCL LUMINAIRE ARM	41729.60
647-1000	1	LS	50407.60	TRAFFIC SIGNAL INSTALLATION NO - 1	50407.60
647-1000	1	LS	50407.60	TRAFFIC SIGNAL INSTALLATION NO - 2	50407.60
647-2150	2	EA	1858.40	PULL BOX, PB-5	3716.80

935-1113	1500	LF	3.50	OUTSIDE PLANT FIBER OPTIC CABLE, LOOSE TUBE, SINGLE MODE, 24 FIBER	5250.00
935-1511	350	LF	3.00	OUTSIDE PLANT FIBER OPTIC CABLE, DROP, SINGLE MODE, 6 FIBER	1050.00
935-3203	2	EA	817.80	FIBER OPTIC CLOSURE, AERIAL (SEALED), 24 FIBER	1635.60
935-4010	4	EA	41.40	FIBER OPTIC SPLICE, FUSION	165.60
935-5050	1	EA	119.00	FIBER OPTIC PATCH CORD, SM	119.00
935-5060	4	EA	133.40	FIBER OPTIC SNOWSHOE	533.60
935-6562	3	EA	2014.80	EXTERNAL TRANSCEIVER, DROP AND REPEAT, 1310 SINGLE MODE, (SIGNAL JOBS)	6044.40
935-8000	2	LS	6355.50	TESTING	12711.00
				Section Sub Total:	**$177,670.80**

Section SIGNING & MARKING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	148	SF	15.00	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2220.00
636-1033	110	SF	19.60	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	2156.00
636-2070	154	LF	8.30	GALV STEEL POSTS, TP 7	1278.20
636-2080	426	LF	11.00	GALV STEEL POSTS, TP 8	4686.00
653-0120	18	EA	73.20	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	1317.60
653-0170	2	EA	83.50	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	167.00
653-1501	11556	LF	0.70	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	8089.20
653-1502	9782	LF	0.70	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	6847.40
653-1704	315	LF	5.00	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1575.00
653-1804	3248	LF	1.90	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	6171.20
653-1810	50	LF	1.30	THERMOPLASTIC SOLID TRAF STRIPE, 10 IN, WHITE	65.00
653-3501	6635	GLF	0.60	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	3981.00
653-6004	772	SY	2.80	THERMOPLASTIC TRAF STRIPING, WHITE	2161.60
653-6006	504	SY	3.10	THERMOPLASTIC TRAF STRIPING, YELLOW	1562.40
654-1001	122	EA	3.20	RAISED PVMT MARKERS TP 1	390.40
654-1003	123	EA	3.70	RAISED PVMT MARKERS TP 3	455.10
				Section Sub Total:	**$43,123.10**

Section EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	4	AC	703.80	TEMPORARY GRASSING	2815.20
163-0240	186	TN	165.20	MULCH	30727.20
163-0300	6	EA	1620.70	CONSTRUCTION EXIT	9724.20
163-0520	66	LF	17.20	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	1135.20
163-0550	45	EA	280.30	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	12613.50
165-0020	1339	LF	1.50	MAINTENANCE OF TEMPORARY SILT FENCE, TP B	2008.50
165-0030	119	LF	1.70	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	202.30
165-0101	6	EA	584.90	MAINTENANCE OF CONSTRUCTION EXIT	3509.40
165-0105	45	EA	96.20	MAINTENANCE OF INLET SEDIMENT TRAP	4329.00
167-1000	2	EA	1291.90	WATER QUALITY MONITORING AND SAMPLING	2583.80
167-1500	24	MO	980.40	WATER QUALITY INSPECTIONS	23529.60
171-0020	2677	LF	2.90	TEMPORARY SILT FENCE, TYPE B	7763.30
171-0030	238	LF	3.90	TEMPORARY SILT FENCE, TYPE C	928.20
603-2181	80	SY	46.00	STN DUMPED RIP RAP, TP 3, 18 IN	3680.00
603-7000	80	SY	4.70	PLASTIC FILTER FABRIC	376.00
700-6910	8	AC	1050.40	PERMANENT GRASSING	8403.20
700-7000	8	TN	59.70	AGRICULTURAL LIME	477.60

700-7010	20	GL	21.90	LIQUID LIME	438.00
700-8000	8	TN	299.50	FERTILIZER MIXED GRADE	2396.00
700-8100	400	LB	2.40	FERTILIZER NITROGEN CONTENT	960.00
716-2000	7610	SY	1.30	EROSION CONTROL MATS, SLOPES	9893.00
				Section Sub Total:	**$128,493.20**

Section BRIDGE ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
543-1000	1	Lump Sum	1597680.00	CONSTR OF BRIDGE - COMPLETE - TO BOTTOM OF CAP - DETOUR BRIDGE	1597680.00
543-1100	1	Lump Sum	1724310.00	CONSTR OF BRIDGE - COMPLETE - TO BOTTOM OF CAP - REPLACEMENT BRIDGE	1724310.00
543-1100	1	Lump Sum	1584115.00	CONSTR OF BRIDGE - COMPLETE - TO BOTTOM OF CAP - PROPOSED HIGHWAY BRIDGE	1584115.00
				Section Sub Total:	**$4,906,105.00**

Section LANDSCAPING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
643-8200	500	LF	13.00	BARRIER FENCE (ORANGE), 4 FT	6500.00
702-0030	13	EA	600.00	ACER RUBRUM OCTOBER GLORY - RED MAPLE 4" CALIPER	7800.00
702-0105	10	EA	800.00	BETULA NIGRA HERITAGE - RIVER BIRCH 4" CALIPER	8000.00
702-0575	10	EA	800.00	LIRIODENDRON TULIPIFERA - TULIP POPLAR 4" CALIPER	8000.00
702-0697	10	EA	800.00	NYSSA SYLVATICA - BLACK GUM 4" CALIPER	8000.00
702-0901	10	EA	700.00	QUERCUS RUBRA - RED OAK 4" CALIPER	7000.00
702-0905	10	EA	600.00	QUERCUS PHELLOS - WILLOW OAK 4" CALIPER	6000.00
702-9020	20	SY	22.50	MULCH	450.00
				Section Sub Total:	**$51,750.00**

Total Estimated Cost: $12,575,239.90

Subtotal Construction Cost	**$12,575,239.90**
E&C Rate 10.0 %	$1,257,523.99
Inflation Rate 0.0 % @ 0.0 Years	$0.00
Total Construction Cost	**$13,832,763.89**
Right Of Way	$0.00
ReImb. Utilities	$0.00
Grand Total Project Cost	**$13,832,763.89**

VALUE ANALYSIS AND CONCLUSIONS

INTRODUCTION

This section describes the value analysis procedures used during the value engineering study on the D.L. Hollowell Parkway Project. It is followed by separate narratives and conclusions concerning:

- Value Engineering Study Agenda
- Value Engineering Workshop Participants
- Economic Data
- Cost Model
- Function Analysis (Project Purpose and Need)
- 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) pre-study, 2) VE orientation meeting and workshop, and 3) post-study. A Task Flow Diagram, which 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 and gathering necessary project documents from the GDOT design team. Information relating to alternative analysis and phasing is also very important, as it tends to drive the construction methods. Information relating to the preliminary cost estimate prepared by GDOT was used as the basis for the comparison/analysis during the VE study.

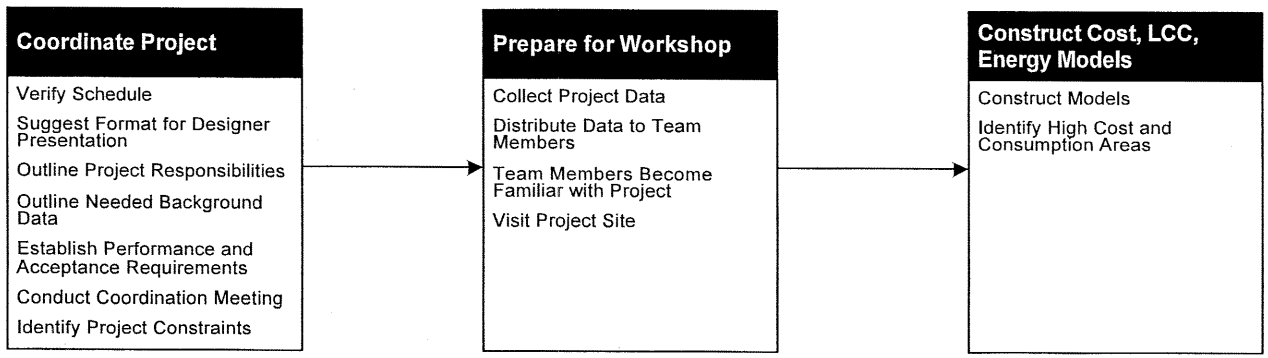
VALUE ENGINEERING WORKSHOP EFFORT

The VE workshop effort consisted of a 3.5-day workshop beginning with an orientation meeting on September 11, 2007 and the final VE presentation on September 14, 2007. During the workshop, the VE job plan was followed in compliance of FHWA and GDOT guidelines for VE studies. The job plan guided the search for alternatives to mitigate or eliminate high cost drivers and potential risk elements. It includes six phases:

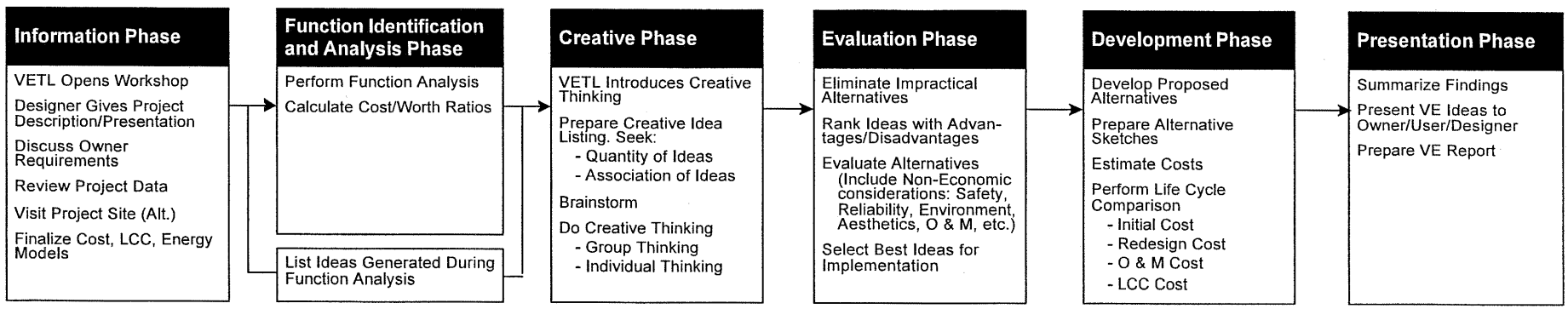
- Information Phase
- Function Identification and Analysis Phase
- Speculation Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Value Engineering Study Task Flow Diagram

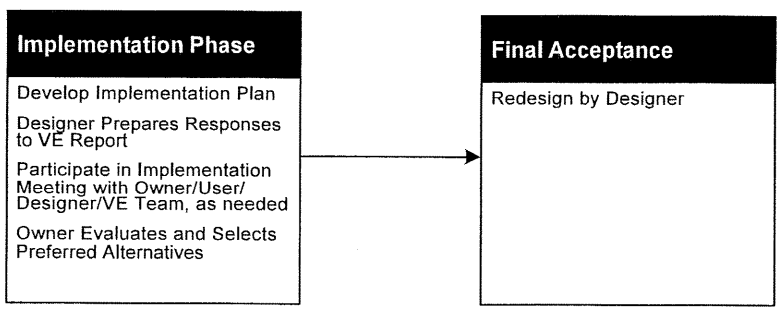
Preparation Effort



Workshop Effort



Post-Workshop Effort



Information Phase

At the beginning of the study, the decisions that have influenced the project design and proposed construction methods had to be reviewed and understood. For this reason, the GDOT design team presented information about the project to the VE team on the first day of the VE workshop. Following the presentation, the VE team spent the remainder of the first day reviewing the project documents, discussing the project purpose and need, and identifying the key elements of the project. Throughout the study, the following documents were used to establish guidelines for action and for determining cost implications for the various alternatives:

- Plan and Profile Drawings, dated August 23, 2007, prepared by GDOT
- Original Project Concept Report, dated June 1999
- Right-of-Way Project Status Report, dated September 8, 2007, prepared by GDOT
- Project Cost Estimate Report, dated August 27, 2007, prepared by GDOT

Function Identification and Analysis Phase

This VE study phase involved the analysis of the project's functions. 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. This creates a high cost-to-worth ratio and the VE team targets these areas for value improvement. A GDOT design criterion was compared to the as-designed drawings for general conformance of the typical section.

Speculation Phase

The VE team generated as many ideas as possible to provide the necessary functions within the highway project at a lower total life cycle cost, or to improve the quality of the project. Methods to improve on the maintenance of traffic plan were also discussed. Judgment of the ideas was restricted at this point. The VE team was looking for a large quantity of ideas and free association of ideas. Creative idea worksheets were organized by project elements.

Evaluation Phase

During this phase of the workshop, the VE team judged the ideas generated during the Speculation Phase in comparison to project objectives established by GDOT. The team evaluated each of the VE ideas for feasibility and incorporation into the project. Advantages and disadvantages of each idea were discussed to find the best ideas for development. Ideas which represented the greatest potential for cost savings or improvement to the project were developed further to be presented during the presentation phase.

The VE team would have liked to have developed all of the ideas that were generated, but time constraints limited the number of ideas that could be developed. Therefore, each idea was compared with the present design concept in terms of how well it met the design criteria. Advantages and disadvantages were discussed and the ideas were rated on a scale of 1 to 5, with the best ideas rated 5. Ideas rated 4 or 5 were generally developed into written VE alternatives.

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 an evaluation of the advantages and disadvantages. 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. Analysis compared each new alternative with others presented in the design report.

Presentation Phase

The last phase of the VE team's workshop was to present the recommendations. The presentation was held on September 14, 2007 and included representatives from the GDOT design team. During the meeting, a hand out was distributed that included a summary listing of the VE study alternatives and design suggestions. These documents were presented to give the attendees an executive summary of the proposals and the key findings of the VE team.

POST STUDY PROCEDURES

Report

The post-study portion of the VE study includes the preparation of this Value Engineering Study Report. Personnel from 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. LZA 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.

Implementation

Following distribution of the VE report and collection of written comments from all parties, a VE implementation phase meeting is typically scheduled. At this time, each VE alternative will be considered, and a final disposition made. During this process, a VE alternative may be accepted as written, rejected for cause, modified to improve the idea, or in some cases, the idea may need further study to establish its merits.

VALUE ENGINEERING STUDY AGENDA

Lewis & Zimmerman Associates, Inc. (LZA) will facilitate a 30-hour value engineering (VE) study on the 90% Design Submittal of the D.L. Hollowell Parkway/Bankhead Highway/SR 8/US 78/US 278, Fulton County, Georgia. The Georgia Department of Transportation (GDOT) design team will be available to formally present the project at the beginning of the workshop; attend a presentation of the VE alternatives at the conclusion of the VE study; and be available to answer questions during the VE study effort.

The VE study will follow the outline described below and be conducted September 11 - 14, 2007 at the offices of:

GDOT
2 Capital Square, SW
Atlanta, Georgia 30334-9003
Conference Room 264

The point-of-contact is Ms. Lisa Meyers, GDOT Value Engineering Coordinator, who may be reached at 404-651-7468.

VE STUDY AGENDA

Tuesday, September 11, 2007

8:00 am - 9:00 am **VE Team Members Review Documents**

9:00 am – 12:00 noon **Owner's/Designer's Presentation**

GDOT and the design consultants will present information concerning the project including, but not limited to: the Purpose and Need for the project, rationale for design; criteria for specific areas of study, project constraints and the reasons for design decisions.

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

1:00 pm - 2:00 pm **Information Phase**

The VE team will continue their familiarization with the cost models and project data for each area of study. The cost models will be refined, as necessary. The VE team will 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 projects' Purpose and Need.

Tuesday, September 11, 2007

2:00 pm – 3:00 pm **Function Analysis**

The team will identify all project functions required to meet the established purpose and need. Functions will be identified as to basic, required secondary, secondary, or project goals.

3:00 pm - 5:00 pm **Speculation 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.

Wednesday, September 12, 2007

8:00 am - 10:00 am **Speculation Phase (cont.)**

The VE team will continue the brainstorming exercise to capture ideas to improve the project in terms of initial and life cycle cost, technical aspects, schedule, and constructibility issues.

10:00 am – 12:00 noon **Analysis Phase**

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

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

1:00 pm - 5:00 pm **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.

Thursday, September 13, 2007

8:00 am – 12:00 noon **Development Phase (cont.)**

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

1:00 pm - 5:00 pm **Development Phase (cont.)**

Upon completion of the Development Phase, the VE team leader will prepare the summary worksheets based on the alternatives developed by the VE team. The summary worksheets form the basis of the informal oral presentation to be made to GDOT, local representatives, and the GDOT design team representatives. The team will review all documentation and prepare for the presentation.

Friday, September 14, 2007

8:00 am - 9:00 am **Development Phase and Preparation for Presentation**

9:00 am – 12:00 noon **Presentation Phase**

Upon completion of the Development Phase, the VE team leader will prepare the summary worksheets based on the alternatives developed by the VE team. The summary worksheets form the basis of the informal oral presentation to be made to GDOT, local representatives, and the GDOT design team representatives. The team will review all documentation and prepare for the presentation.

Noon - Adjourn

POST-STUDY PHASE

Upon completion of the value engineering study, the VE team leader will prepare the Value Engineering Study Report and submit it to GDOT. The report will include the following material:

- Project description and design concept of project
- Cost models and graphic function analysis worksheets
- Value engineering alternatives: original design and proposed alternatives, including sketches, design calculations and initial and life cycle estimates
- Potential contract savings (capital construction and life cycle costs)

GDOT and the design team will independently review the VE alternatives and classify them as accepted, accepted with modifications, needs further study, or rejected—accompanied by the reasons for rejection. A meeting with all stakeholders will then be convened to decide which VE alternatives to implement.

VE TEAM MEMBERS

David Hamilton, PE, CVS, CCE, LEED ^{AP}	VE Team Leader/Civil	Lewis & Zimmerman Assoc.
Dominic Saulino	Highway Design Engineer	HNTB Corporation
Alex Pascaul, PE	Structural Engineer	HNTB Corporation
Dion Moten, PE	Construction Engineer	Delon Hampton & Assoc.

VALUE ENGINEERING WORKSHOP PARTICIPANTS

The VE team was organized by GDOT and Lewis & Zimmerman Associates, Inc. to provide specific expertise on the unique project elements involved. Team members consisted of a multi-disciplined group with professional design experience and a working knowledge of highway and bridge design, construction, environmental permitting, and VE procedures:

VE Team

David Hamilton, PE, CVS, CCE, LEED® AP	VE Team Leader/Civil	Lewis & Zimmerman Assoc.
Dominic Saulino	Highway Design Engineer	HNTB Corporation
Alex Pascual, PE	Structural Engineer	HNTB Corporation
Dion Moten, PE	Construction Engineer	Delon Hampton & Associates

Project Designer

Keith Collins, PE	Urban Design	GDOT
Neal O'Brien, PE	Urban Design	GDOT
Jill Franks, PE	Urban Design	GDOT
Jack Muirhead, PE	Bridge Design	GDOT

GDOT

Lisa L. Myers	VE Coordinator	GDOT

DESIGNER'S PRESENTATION

An overview of the project was presented on Tuesday September 11, 2007, by the GDOT design team. 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 specifics including traffic projections, accident history, bridge design elements, construction phasing, local permitting issues, and estimated project cost. Additionally, the meeting afforded the design staff the opportunity to highlight in greater detail those areas of the project requiring additional or special attention. An attendance list for the meeting is attached.

VALUE ENGINEERING TEAM'S PRESENTATION

A VE presentation was conducted on Friday, September 14, 2007 to review the VE alternatives with the design team. The attendees received a copy of the presentation outline and Summary of Potential Cost Savings. An attendance list for the meeting is attached.

VE STUDY SIGN-IN SHEET

Project No.: STP-NH-003-1(33) County: Fulton PI No.: 720570 Date: Sept. 11-14, 2007

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VE PRESENTATION

PROJECT: **D.L. HALLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33), Fulton County, Georgia
90% Design Submittal - Value Engineering Study

DATE: **14 SEPTEMBER 2007**

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VE PRESENTATION

PROJECT: **D.L. HALLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No. STP-NH-003-1(33), Fulton County, Georgia
90% Design Submittal - Value Engineering Study

DATE: **14 SEPTEMBER 2007**

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ECONOMIC DATA

Economic criteria used for evaluation were developed by the VE team with information gathered from the Federal Office of Management & Budget. To express costs in a meaningful manner, the VE team alternatives are presented on the basis of discounted present worth. Criteria for the planning project period and interest rates are based on the following parameters:

Year of Analysis:	2007
Construction Dollars Based Upon:	2007
Economic Planning Life:	30 years starting in 2008
Inflation/Escalation Rate:	0.0%
Net Discount Rate:	3.1%
Uniform Present Worth (UPW) Factor:	19.3495
Cost of Power/Electricity (Average without Demand Charge)	$0.10/kwh
Cost of Labor ($/hr)	$60/hr

Work Schedule

The project is planned to begin construction in the spring of 2008 and be completed by the fall of 2010. The project should be completed within a 30-month construction duration depending upon award date, shop drawing approval, and material availability.

VE Alternatives Mark-up

Cost estimates were prepared for each of the VE alternatives using unit prices contained in the project cost estimate prepared by the GDOT design team. The unit prices contained in the estimate are considered to include all contractor mark-ups, mobilization, overhead, and profit. A mark-up of 10% was added to account for engineering and construction services.

COST MODEL

The D.L. Hollowell Parkway Project will greatly improve safety and capacity along the alignment in this area west of downtown Atlanta while reducing accidents caused by deficiencies in the corridor. To achieve these benefits, a considerable investment in the infrastructure is required, including construction of the four-lane section and two bridges, and acquisition of the needed right-of-way. The total construction cost of the project is estimated at approximately $13.8M, plus right-of-way in the amount of $9M.

The data used to analyze costs by design element are presented on the attached Cost Histogram. From the cost models, the following areas showed potential for further discussion and value improvement:

Roadway Section

- Minimize right-of-way if possible
- 26-ft. median instead of 30-ft.
- Eliminate bike lanes

Profile

- Raise, reduce excavation requirements
- Keep alignment south if possible

Maintenance of Traffic

- Reduce number of stages

Bridges

- Reuse the temporary railroad bridge

Construction Management

- Minimize temporary bridge structure
- Add cost for escalation

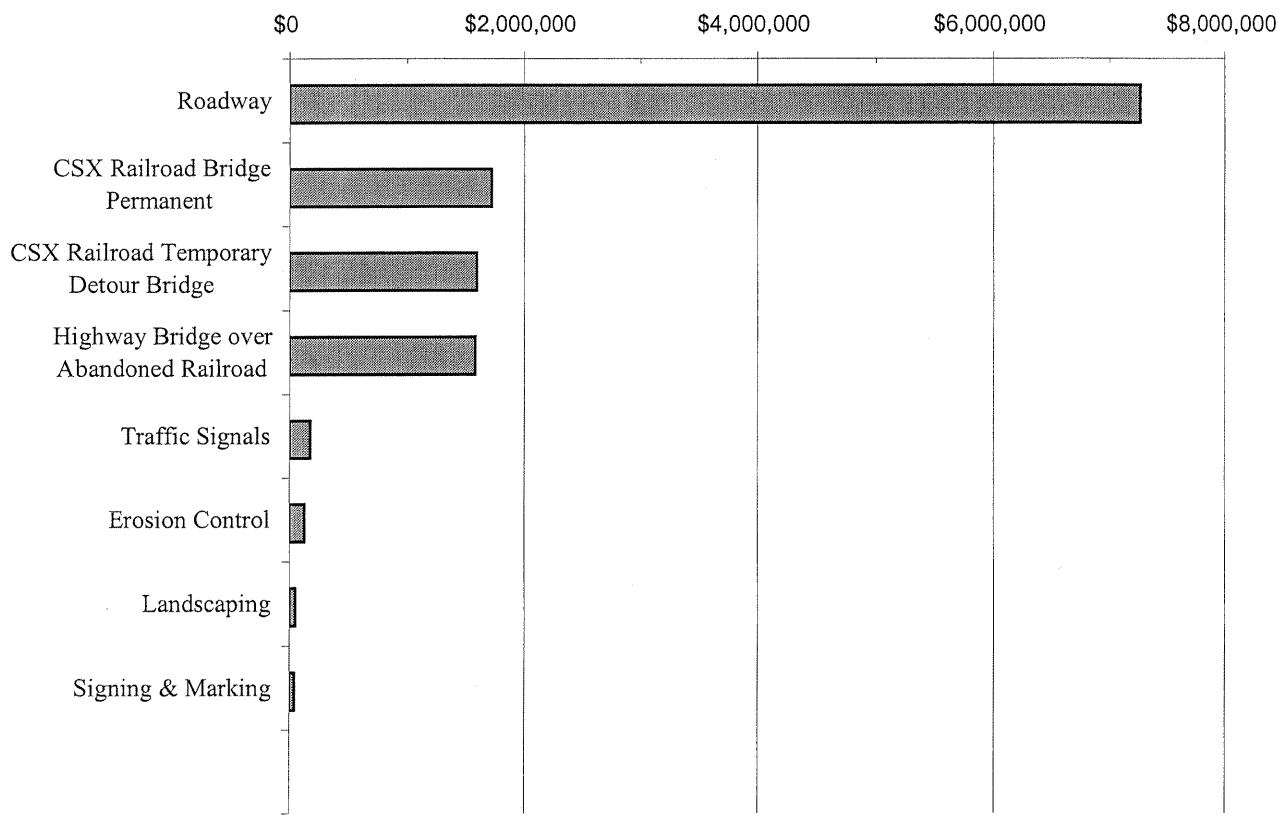
Abandoned Railroad Bridge

- Use Con/Span® type of bridge

COST HISTOGRAM

PROJECT: **DL HOLLOWELL PARKWAY/BANKHEAD HIGHWAY**
Project No.: STP-NH-003-1(33), *Fulton County, Georgia*

TOTAL PROJECT		COST	PERCENT	CUM. PERCENT
Roadway		7,268,098	57.80%	57.80%
CSX Railroad Bridge Permanent	**80%**	1,724,310	13.71%	71.51%
CSX Railroad Temporary Detour Bridge		1,597,680	12.70%	84.21%
Highway Bridge over Abandoned Railroad		1,584,115	12.60%	96.81%
Traffic Signals		177,671	1.41%	98.22%
Erosion Control		128,493	1.02%	99.25%
Landscaping		51,750	0.41%	99.66%
Signing & Marking		43,123	0.34%	100.00%
Construction and Right of Way Subtotal		***12,575,240***	100.00%	
E&C Rate	10.00%	1,257,524		
Right of Way (Approximately)		9,000,000		
TOTAL CONSTRUCTION & RIGHT OF WAY		**$ 22,832,764**	Comp Markup:	



FUNCTION ANALYSIS

Function Analysis of the D.L. Hollowell Parkway project was performed to understand the project purpose and need, define the requirements for each project element, ensure a complete and thorough understanding by the VE team of the basic function(s), and identify other public goals through the corridor. A Random Function Analysis Worksheet for the project elements is attached. 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 support elements add cost to the final product, but may have a relatively low worth to the basic function. This creates a high cost-to-worth ratio.

The Function Analysis worksheet includes verb and noun function definition of the element, and the VE team's identification of basic or secondary functions. This exercise stimulated the VE team members to think in terms of the areas in which to channel their creative idea development.

The key issues that evolved from the Function Analysis session were the concurrence of the project needs and purpose. The basic function of the project is to "Reduce Accidents." Adding turn lanes, redesigning the intersections, and improving the sight stopping distance will greatly improve safety, reduce delays in the corridor, and help to meet other required project goals. Limiting access to the Parkway by terminating several of the side streets will be a great help in reducing the many uncontrolled left turns which are currently taking place on the north side of the alignment.

The goals as established for the project appear consistent with the functions identified by the VE team. Therefore, the function analysis justifies the project need and purpose and will greatly improve driving conditions along this corridor. However, similar conditions exist both east and west of the project site and will require additional funding to have a significant affect on the corridor. This project, though, is a marked improvement in the aesthetics of the neighborhood and enhances the Maddox Park entry.

RANDOM FUNCTION ANALYSIS

PROJECT: **D.L. HOLLOWELL/BANKHEAD HIGHWAY IMPROVEMENTS** SHEET NO.: **1 of 1**
Project No. STP-NH-003-1(33), Fulton County, Georgia

DESCRIPTION	FUNCTION		
	VERB	NOUN	KIND
Total Project Purpose and Need	Improve	LOS	RS
	Accommodate	Development	G
	Move	Cars	HO
	Reduce	***Accidents***	***B***
	Increase	Capacity	B
	Allow	Movements	RS
	Meet	Standards	G
	Improve	Intersections	RS
	Control	Traffic	RS
	Improve	Geometrics	RS
	Relocate	Utilities	RS
	Control	Budget	G
	Meet	Schedule	G
	Protect	Environment	RS
	Minimize	R/W	G
	Manage	Drainage	RS
	Manage	Construction	RS
	Control	Traffic	RS
	Maximize	Safety	HO
	Span	Railroad	RS
	Protect	Vegetation/Trees	RS
	Upgrade	Bridges	RS
	Protect	Park/Historical	RS
	Accommodate	Growth	S
	Lengthen	Bridge	RS
	Allow	Bikes/Peds	RS

Function defined as: Action Verb, Measurable Noun

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

CREATIVE IDEA LISTING AND JUDGMENT OF IDEAS

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

The creative session yielded a total of 42 ideas for further consideration by the team. These ideas were grouped into the following categories with letter prefixes to identify the area of study:

CATEGORY	PREFIX
Alignment	AL
Typical Section	S
Profile	P
CSX Bridge	CX
Abandoned RR Bridge	AB
Construction Staging	CS

These ideas were discussed between the VE team members to identify the advantages and disadvantages of each. The VE team compared each of the ideas with the as-designed solution determining whether it improved value, was equal in value, or lessened the value of the presented solution in terms of capital cost, schedule, functionality/safety, maintainability, durability and, life cycle costs.

To assist the team in ranking the creative ideas, each of the criteria were discussed, and the following criteria definitions were developed from the statement of project need as presented by GDOT on the first day of the VE study:

- Construction Cost – The initial cost of the material is important and should be considered.
- Safety – Safety is very important and must control all decision-making.
- Level of Service – The projected LOS must be achieved to meet the purpose and need.
- Impact Upon Trucks – There is a high percentage of trucks in the area.
- Life Cycle Costs – The costs of operating and maintaining the highway are extremely important. These costs would include labor and materials over the next 30 years.
- Right of Way Cost – It is important to minimize right-of-way purchase if possible.

The ideas were ranked on a qualitative scale of 1 (poor) to 5 (excellent) on how well the VE team believed the idea met the project purpose and need criteria shown above. The higher rated ideas, with scores of 4 or 5, were developed into formal alternatives and included in the Study Report. Some ideas were judged to have minimal cost impacts on the project but provided enhancements in the form of improved safety, accident reduction, constructability or potential to save unknown or hidden costs.

These were given the designation "DS" which indicates a design suggestion. This designation is also used when an idea increases cost resulting from improving the functionality of the project or system, and is deemed by the VE team to be of significant value to the owner or designer.

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: **D.L. HOLLOWELL/BANKHEAD PARKWAY** SHEET NO.: **1 of 2**
Project No. STP-NH-003-1(33), *Fulton County, Georgia*

NO.	IDEA DESCRIPTION	RATING
ALIGNMENT (AL)		
AL-1	Eliminate the U-turn at STA 121	Drop
AL-2	Shift the U-turn further west, in line with the architectural metals company	4
AL-3	Remove both bike lanes from the project	5
AL-4	Delete both of the bike lanes and replace with one multi-use path	3
AL-5	Remove the sidewalk on the north side of the Stiff St. access road	5
AL-6	Use only one sidewalk on the south or north side of Bankhead Highway, delete the other	2
AL-7	Continue Glass Street further west to Marietta St.	4
AL-8	Remove both sidewalks on Glass Street Connector	4
AL-9	Reduce the sidewalk on Marietta from 8 ft.-wide to 6 ft.-wide	4
AL-10	Shorten the project limits if funds become limited	4
AL-11	Modify storm drain design; place drain line on only one side of road in lieu of both	4
AL-12	Review the storm drain design for accuracy and constructability	DS
TYPICAL SECTION (S)		
S-1	Reduce the median from 30 ft. to 26 ft.	2
S-2	Use 11-ft. lanes in lieu of 12-ft. lanes	Drop
PROFILE (P)		
P-1	Use an elevated roadway over the CSX railroad line in lieu of under	Drop
P-2	Raise the mainline profile under the CSX bridge by 1 ft.	5
CSX BRIDGE (CX)		
CX-1	Build the temporary railroad bridge as permanent	5
CX-2	Use a two-span railroad bridge in lieu of a three-span; place column in middle of median	5

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done

CREATIVE IDEA LISTING

PROJECT: **D.L. HOLLOWELL/BANKHEAD PARKWAY** SHEET NO.: **2 of 2**
Project No. STP-NH-003-1(33), *Fulton County, Georgia*

NO.	IDEA DESCRIPTION	RATING
ABANDONED RAILROAD ROW BRIDGE (AB)		
AB-1	Build a Con/Span® type of structure in lieu of conventional steel or concrete bridge	5
AB-2	Use two bridge structures in lieu of a single larger bridge	4
CONSTRUCTION STAGING (CS)		
CS-1	Build the CSX bridge adjacent to the bridge and lift into final position	DS

Rating: 1→2 = Not to be developed 3→4 = Varying degrees of development potential 5 = Most likely to be developed
DS = Design suggestion ABD = Already being done