VALUE ENGINEERING REPORT

Project No. BHF00-0052-02(020)

SR 15A from Storey Street to SR 82 with new bridges
PI No. 122510
Jackson County

June 11, 2010

OWNER AND DESIGN TEAM:

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

VALUE ENGINEERING CONSULTANT:

MACTEC

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

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Executive Summary

Value Engineering Study

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SR 15A from Storey Street to SR 82 with new bridges

PI No. 122510

Jackson County

Introduction

This report presents the results of a value engineering (VE) study conducted on the proposed design for the reconstruction of SR 15A/SR82 and Kissam Street as a one way pair in Jefferson, Ga. The City of Jefferson is built around the junction of five major state routes, including SR 11/US 129 and SR 82, which provide direct access to I-85. Jefferson is located about 60 miles northeast of Atlanta.

The project is being built to address high volumes of traffic, a large proportion of turning traffic and a poor intersection design geometry. This has produced a high accident rate and a low level of service for the area.

This project is located in Jackson County, beginning just west of the Storey Street and SR15A/SR82 (Sycamore Avenue) intersection and ending just east of the existing SR15A and SR82 intersection. The project length is approximately 0.7 miles and is located entirely within the city limits of Jefferson. Starting from the west end of the project, the roadway will consist of 2-way operation with one 12' lane in each direction and a 16' flush median. At Storey Street, the flush median will transition to start a one-way pair consisting of a two lane roadway traveling eastbound on existing SR15A/SR82 and will transition back to a bi-directional two lane roadway east of the SR15 and SR82 intersection. From the east end of the project between SR82 and Kissam Street, the westbound leg of the one-way pair will require a new single 12' lane facility across Curry Creek. The new roadway will continue one-way operation and transition to 2-12' lanes along the existing segment of Kissam Street running east/west and Storey Street. The westbound lanes of the one-way pair will tie back in to match the existing 2-way operation at the intersection of Storey Street and SR15/SR82, and proceed back to the beginning of the project.

The total estimated project cost is $8,998,000 including $4,476,000 in right of way, $120,000 in utilities, $3,854,000 in construction costs, $355,000 in fuel and AC price adjustments and $193,000 in E & I. No cost has been included for contingencies.

The study took place May 24-27, 2010, at the Georgia DOT headquarters Office in Atlanta using a four person VE team. It was conducted at the 70% level design of these capacity and safety related improvements.

The current letting date for this project is June 2013. The right of way plans are almost 100% complete and purchasing will begin in the near future. The Environmental Document was approved in 2007, but a re-evaluation will be required to account for some changes that have occurred and the time delay.

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

Considerations

The VE team was advised of several restrictions to consider when developing their recommendations. The first was the Curry Street Bridge. This bridge is eligible for the National Register of Historic Places and cannot be altered without completing a 4F procedure, which could add 6 months or more to the project schedule. The bridge itself was built in 1929 and has a current sufficiency rating of 53. The other major consideration is with Curry Street Park. In the park is a Georgia Heritage Tree that is significant to the City of Jefferson. Impacting this tree would more than likely result in not acquiring a *de minimis* determination for the park, which in turn would necessitate a separate 4F procedure.

Results Obtained

The VE team focused their efforts on the high cost items of the project. Through the use of functional analysis and "brain storming" techniques, the team generated 14 ideas with 10 being identified for additional evaluation as possible recommendations or design suggestions. The VE team developed 8 recommendations for consideration by the design team. Neglecting the overlapping nature of the recommendations as much as possible, the net total of all the recommendations have the potential to reduce project costs by as much as $5,065,000 in capital cost savings while continuing to provide the required functionality. This is shown in the last column of the Summary Tables that follows the summary description below.

A brief presentation of these recommendations was conducted on May 27th with the following in attendance: Matt Sanders from GDOT Engineering Services; David Henry from Long Engineering; Hiral Patel from GDOT OPD and the VE Team: Dave Wohlscheid, Lenore Bromberg, Greg Grant and George Obaranec as MACTEC PM. A summary of the recommendations follows.

Recommendation Highlights

A-1: Tighten limits on right of way acquisition. This recommendation proposes reviewing the plans to verify the right of way needs vs. permanent easement needs. An example is presented in item A-2. Savings is estimated only as a percent reduction.

The total potential savings if accepted is $976,000

A-2: Reduce right of way north of E-W Connector and west of Curry Creek. Changing a portion of the area taken from purchase to easement results in a savings in right of way costs.

The savings potential for this item is $70,000

B - 1: Narrow the width of Bridge No. 1 – new Kissam Street bridge. This idea reduces the bridge width by reducing the shoulder width. Use a 4 foot inside and an 8 foot outside shoulder in lieu of 2-10 foot shoulders. It is based on using a rural section of a multi-lane divided highway

The potential savings if implemented is $208,300

B-2: Combine two bridges into one bridge crossing at Bridge No. 2 (E-W Connector) location. This option combines the functions of the two bridges with one bridge. The southbound movement of traffic on the E-W Connector is eliminated.

Potential savings is $1,287,300

B-6: Construct a new one lane bridge adjacent to existing historic bridge and eliminate the need for the one way pair. This concept proposes to use a new one lane bridge to carry the SR 335, right turn traffic. Also, widen SR 335 by adding a left turn only lane to expedite the AM peak turns.

Proposed savings is $4,239,000

C-1: Use 11 foot lanes for the travel lanes. This project is designed for traffic in the 25 to 35 mph speed. Eleven foot lanes with shoulders should be acceptable with these criteria. Savings results in paving and right of way.

The potential savings for this item is $265,000

C-2: Shift Kissam Street alignment to the west as much as possible to minimize impacts on the parkland. Moving Kissam as close to the Civic Center as feasible would minimize the right of way acquisitions and grading in the park.

Savings potential is $151,400

C-4: Reduce the length of Peach Hill Drive improvements. This proposal is to shorten the length of Peach Hill Drive that receives improvement. It provides the same degree of access to the existing neighborhood while reducing the extent of the work.

The potential amount of savings is $286,200

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SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Savings in Combination with other VE proposals
A	**Right of Way**						
A-1	Tighten limits of right of way	4,476,000	3,500,000	976,000	-0-	976,000	500,000
A-2	Reduce right of way north of E-W Connector and west of Curry Creek	149,000	79,000	70,000	-0-	70,000	-0-
B	**Bridges**						
B-1	Narrow width of bridge No.1 (Kissam)	917,900	709,600	208,300	-0-	208,300	-0-
B-2	Combine 2 bridges into 1 bridge crossing at Bridge N. 2 (E-W Connector) location	2,091,000	803,700	1,287,300	-0-	1,287,300	-0-
B-6	Construct new bridge adjacent to historic bridge	5,105,000	866,000	4,239,000	-0-	4,239,000	4,239,000

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C	**Grade and Pave**						
C-1	Use 11 foot lanes	1,363,000	1,098,000	265,000	-0-	265,000	40,000
C-2	Shift Kissam Street alignment towards the Civic Center	151,400	-0-	151,400	-0-	151,400	-0-
C-4	Reduce length of Peach Hill Drive reconstruction	286,200	-0-	286,200	-0-	286,200	286,200
	TOTAL POTENTIAL SAVINGS						**5,065,000**

STUDY IDENTIFICATION

Study Identification

Project: SR 15A from Storey Street to SR 82 with new bridges	**Date:** May 24-27, 2010
Location: City of Jefferson, Jackson County, GA	

VE Team Members

Name:	Title:	Organization:	Telephone:
George Obaranec	Construction	MACTEC	770-421-3346
Lenor Bromberg	Roadway Design	KEA	678-904-8591
Greg Grant	Structures	Wolverton Associates	770-447-8999
David Wohlscheid	VE Team Facilitator	MACTEC	571-217-0808

Project Description

This value engineering effort included a four day study on the 70% level of design for the reconstruction of SR 15A/SR 82 and Kissam Street as a one way pair in the City of Jefferson, GA.

The project is being built to address high volumes of traffic, a large proportion of turning traffic and a poor intersection design geometry. This has produced a high accident rate and a low level of service for the area.

This project is located in Jackson County, beginning just west of the Storey Street and SR15A/SR82 (Sycamore Avenue) intersection and ending just east of the existing SR15A and SR82 intersection. The project length is approximately 0.7 miles and is located entirely within the city limits of Jefferson. Starting from the west end of the project, the roadway will consist of 2-way operation with one 12' lane in each direction and a 16' flush median. At Storey Street, the flush median will transition to start a one-way pair consisting of a two lane roadway traveling eastbound on existing SR15A/SR82 and will transition back to a bi-directional two lane roadway east of the SR15 and SR82 intersection. From the east end of the project between SR82 and Kissam Street, the westbound leg of the one-way pair will require a new single 12' lane facility across Curry Creek. The new roadway will continue one-way operation and transition to 2-12' lanes along the existing segment of Kissam Street running east/west and Storey Street. The westbound lanes of the one-way pair will tie back in to match the existing 2-way operation at the intersection of Storey Street and SR15/SR82, and proceed back to the beginning of the project.

The new one-way pair roadway will provide an acceptable level of service for the projected traffic volumes. A major safety improvement will be the realignment of SR82 to eliminate the existing Y-intersection at SR15A and SR82.

The project includes two new bridges. The first bridge is known as the east west connector and is a 160 foot long bridge that replaces an existing bridge and connects the two, one way pairs. The second bridge is the new 320 foot Kissam Street bridge that ties into the intersection of SR 15A/SR82 at the new proposed intersection with Peach Hill Drive.

The existing ADT (2010) within the project is estimated from 12,500 to 15,600 VPD and the 2030 traffic within the ranges of 18,600 to 23,200 VPD. The proposed design speed is 25/30 mph.

The total estimated project cost is $8,998,000 including $4,476,000 in right of way, $120,000 in utilities, $3,854,000 in construction costs, $355,000 in fuel and AC price adjustments and $193,000 in E & I. No cost has been included for contingencies.

Project Constraints:

The VE team was advised of several constraints to consider when developing their recommendations. The restrictions were:

- Avoid any modifications, improvements , widening, etc, to the Curry Creek Bridge
- There is a Georgia Heritage Tree located in the Curry Creek Park that is important to the City of Jefferson. Impacts to it should be avoided
- Impacting the wall at the historically eligible Brock House would require coordination with SHPO

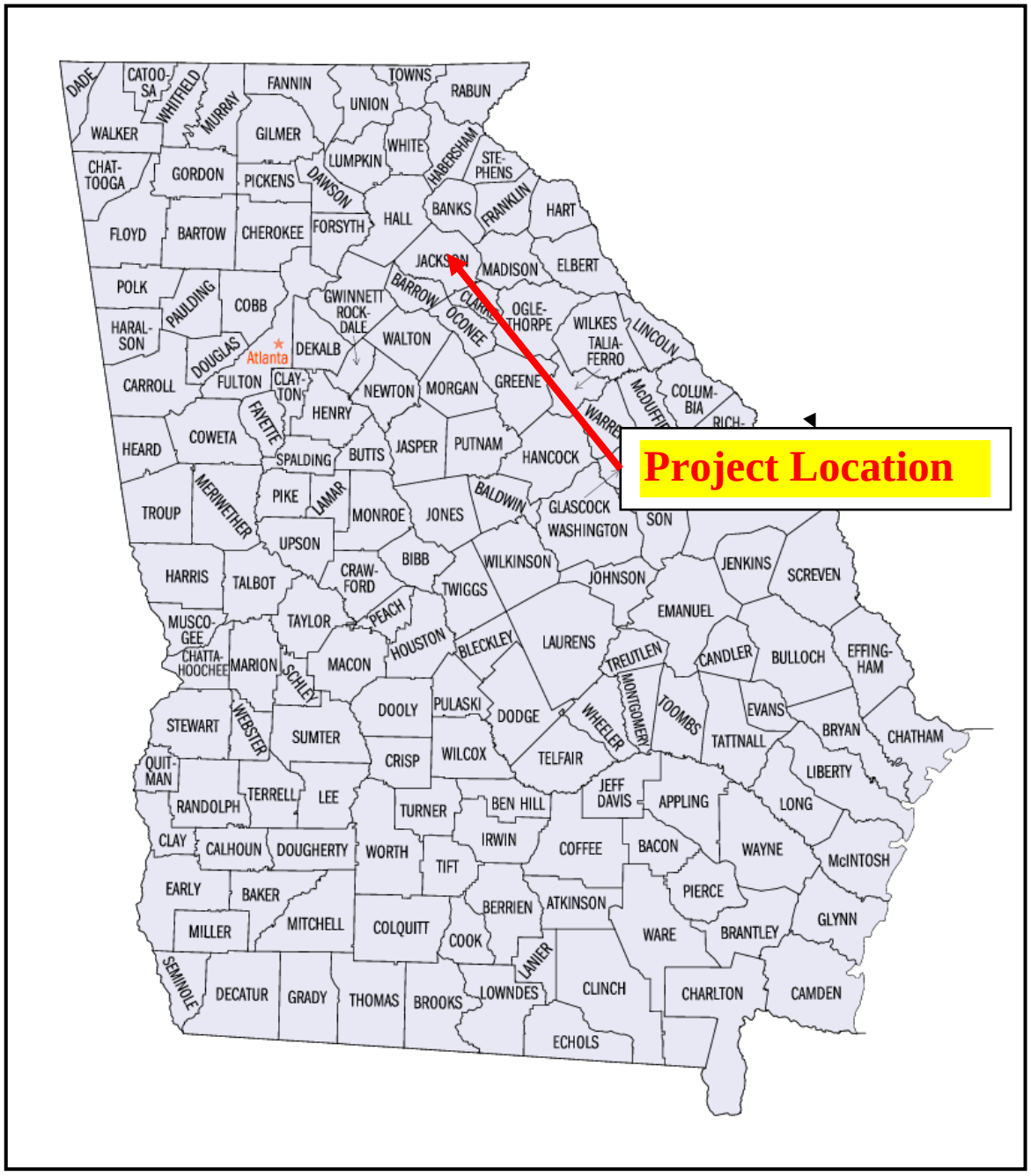
Project Briefing:

The VE team was given a design presentation and briefing on the current status of the project by David Henry of Long Engineering. In addition to the above constraints, the following items were discussed:

- The project was put on hold (stop work order from GDOT) in 2008 but has recently been activated.
- The current schedule is to complete ROW acquisition by June 2011, bid the project in June 2013 and finish construction in 2014
- The ROW plans are almost 100% complete at this time
- The pavement on the existing Kissam Street will be completely removed and new full-depth pavement will be constructed
- The pavement on SR 15A/SR 82 will be an resurfaced
- The Curry Creek Park was not identified as a Park in the first Environmental document that has been approved as FONSI. A Public Information meeting will be needed due to the park impacts.
- The design team is planning on adding walls to minimize the impact on parkland and the Heritage Street
- There is a relatively new Civic Center on Kissam Street
- The historic bridge over Curry Creek is a concrete arch with 4 main arches

- A landscape plan will need to be developed for the park. This will most likely be a mitigation item for the re-evaluation of the environmental document.
- A maintenance Agreement between GDOT and the City will have to be worked out.

Figure 1
Project Vicinity Map



County Map of Georgia

Figure 2
Project Vicinity

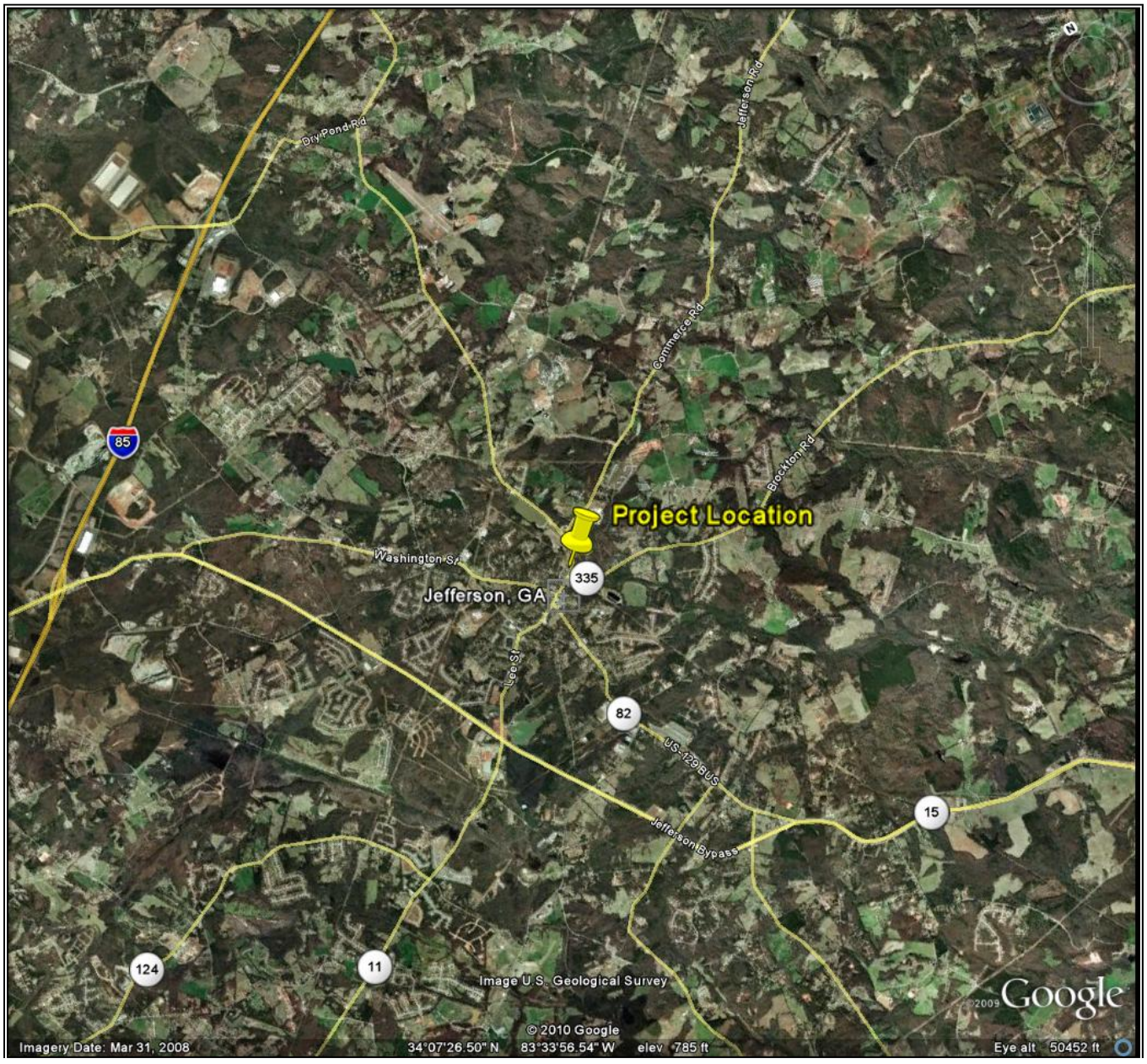


Figure 3
Project Limits

Figure 4
Project Plan

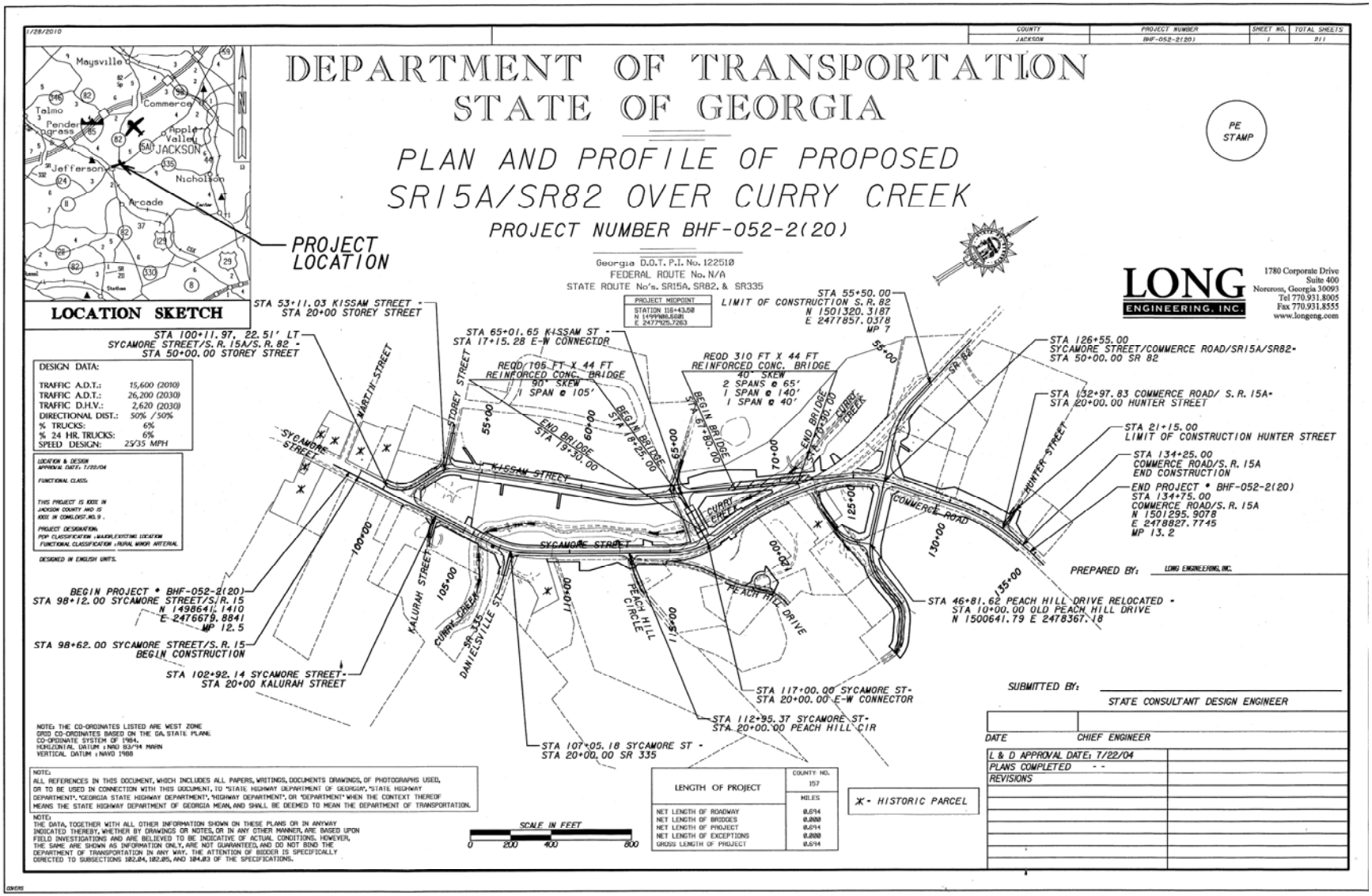


Figure 5
Project Photos

Curry Creek Bridge

Curry Creek Bridge from Kissam Street

Kissam Street looking North by Civic Center

Kissam Street at Connector looking East

Figure F6
Project Photos

SR 15A (Left side) and SR 82 (Right side) Split looking North

Curry Creek Bridge

Curry Creek Bridge

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE PROJECT No. BHF-052-2(20), Jackson
Reconstruction/Rehabilitation
P.I. No. 122510-

OFFICE Program Delivery

DATE 10/28/2009

FROM Bobby Hilliard, State Program Delivery Engineer B.H.

TO Ronald E. Wishon, Project Review Engineer

SUBJECT REVISIONS TO PROGRAMMED COSTS

PROJECT MANAGER Hiral Patel

MNGT LET DATE None

MNGT R/W DATE None

PROGRAMMED COST (TPro W/OUT INFLATION)		**LAST ESTIMATE UPDATE**
CONSTRUCTION	$4399000.00	DATE 11/15/2007
RIGHT OF WAY	$2,133,000.00	DATE 5/5/2008
UTILITIES	$0.00	DATE N/A

REVISED COST ESTIMATES

CONSTRUCTION*	$4,401,803.00
RIGHT OF WAY	$4,476,500
UTILITIES**	$120,000

* Costs contain 5% Engineering and Inspection and 0% Construction Contingencies.

** Costs contain 0% contingency.

REASON FOR COST INCREASE Annual update. Lashone Alexander informed me that ROW cost increased due to market appreciation for commercial property in Jackson County.

Attachments

c: Genetha Rice - Singleton, Assistant Director of Preconstruction

PROJ. NO.: BHF-052-2(20), Jackson
P.I. NO. 122510
DATE: 10/22/2009

Base Construction Cost		$	3,853,822.40
E & I	5%	$	192,691.12
Construction Contingency		$	-
Subtotal Construction Cost		$	4,046,513.52
Fuel Adjustment (Roadway) (125% cap)		$	111,824.76
Fuel Adjustment (Bridge) (125% cap)		$	26,957.77
Liquid AC Adjustment (125 % cap)		$	216,506.95
Total Construction Cost		$	4,401,803.00

Fuel Adjustment Unleaded	$	29,345.08
Fuel Adjustment Diesel	$	109,437.45

Estimate Report for file "BHF-052-2(20)"

Section Drainage Items

Item Number	Quantity	Units	Unit Price	Item Description	Cost
441-0301	11	EA	1877.56	CONC SPILLWAY, TP 1	20653.16
500-3101	4	CY	611.14	CLASS A CONCRETE	2444.56
550-1180	2907	LF	42.82	STORM DRAIN PIPE, 18 IN, H 1-10	124477.74
550-1360	654	LF	83.75	STORM DRAIN PIPE, 36 IN, H 1-10	54772.5
550-1420	448	LF	124.67	STORM DRAIN PIPE, 42 IN, H 1-10	55852.16
550-1480	104	LF	138.82	STORM DRAIN PIPE, 48 IN, H 1-10	14437.27
550-4218	4	EA	672.09	FLARED END SECTION 18 IN, STORM DRAIN	2688.36
550-4236	3	EA	1227.33	FLARED END SECTION 36 IN, STORM DRAIN	3681.99
576-1018	118	LF	32.46	SLOPE DRAIN PIPE, 18 IN	3830.28
576-1024	38	LF	49.74	SLOPE DRAIN PIPE, 24 IN	1890.12
668-1100	28	EA	2891.31	CATCH BASIN, GP 1	80956.68
668-1200	2	EA	5988.9	CATCH BASIN, GP 2	11977.8
668-2100	9	EA	4239.62	DROP INLET, GP 1	38156.58
668-2200	2	EA	4684.76	DROP INLET, GP 2	9369.52
668-4300	5	EA	2584.32	STORM SEWER MANHOLE, TP 1	12921.6
668-4400	2	EA	4620.54	STORM SEWER MANHOLE, TP 2	9241.08
				Section Sub Total:	**$447,351.41**

Section Roadway Items

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	90000.0	TRAFFIC CONTROL -	90000.0
153-1300	1	EA	79134.11	FIELD ENGINEERS OFFICE TP 3	79134.11
201-1500	1	LS	120000.0	CLEARING & GRUBBING -	120000.0
310-1101	11200	TN	18.89	GR AGGR BASE CRS, INCL MATL	211568.0
318-3000	200	TN	19.38	AGGR SURF CRS	3876.0
400-3605	3340	TN	85.0	ASPH CONC 19MM SUPERPAVE, GP 1 OR 2, INCL POLYMER MODIFIED BITUM MATL & H LIME	283900.0
402-1812	100	TN	65.83	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	6583.0
402-3121	3780	TN	85.0	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	321300.0
402-3131	1670	TN	85.0	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	141950.0
413-1000	2320	GL	2.05	BITUM TACK COAT	4756.0
433-1000	590	SY	131.73	REINF CONC APPROACH SLAB	77720.7
436-1000	3400	LF	10.0	ASPHALTIC CONCRETE CURB -	34000.0
441-0104	2700	SY	39.88	CONC SIDEWALK, 4 IN	107676.0
441-6022	5000	LF	19.37	CONC CURB & GUTTER, 6 IN X 30 IN, TP 2	96850.0
500-3107	400	CY	560.23	CLASS A CONCRETE, RETAINING WALL	224092.0
641-1200	3400	LF	18.05	GUARDRAIL, TP W	61370.0
641-5001	18	EA	653.72	GUARDRAIL ANCHORAGE, TP 1	11766.96
641-5012	6	EA	1811.86	GUARDRAIL ANCHORAGE, TP 12	10871.16
				Section Sub Total:	**$1,887,413.93**

Section Erosion Control Items

Item Number	Quantity	Units	Unit Price	Item Description	Cost
xxx-xxxx	1	Lump Sum	160000.0	Erosion Control	160000.0
				Section Sub Total:	**$160,000.00**

Section Signing and Marking

Item Number	Quantity	Units	Unit Price	Item Description	Cost
647-1000	1	LS	48257.06	TRAFFIC SIGNAL INSTALLATION NO -	48257.06
xxx-xxxx	1	Lump Sum	20000.0	Signing and Marking	20000.0
				Section Sub Total:	**$68,257.06**

Total Estimated Cost: $2,563,022.40

Estimate Report for file "BHF-052-2(20) (SR15A JACKSON COUNTY BRIDGES)"

Section Bridge					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
540-1101	1	LS	90000.0	REMOVAL OF EXISTING BR, STA NO - 119+00 EW Connector	90000.0
XXX-XX-XXX	4620	SF	80.0	BRIDGE No. 1 - EW Connector	369600.0
xxx-xxxx	10390	SF	80.0	Bridge No. 2 - Kissam Street	831200.0
				Section Sub Total:	**$1,290,800.00**

Total Estimated Cost: $1,290,800.00

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-1	1 of 1	Tighten limits of right of way

Comp By: LB Date: 05-25-10 Checked By: DCW Date: 05-25-10

Original Concept:

Proposed Right-of-Way is defined as: Required Right-of-Way, Easement for Construction and Maintenance of Slopes or Easement for Construction of Drives.

Proposed Change:

A review of the plan set and design files indicate some discrepancies in the definition of the various required properties. It is recommended that the definition of the required property for constructing the improvements be reviewed for consistency in application. In addition, it is recommended that the limits of right-of-way and easement required be customized to best fit the proposed construction limits to eliminate unnecessary land purchase. It is estimated that a savings of approximately 25% of the proposed right-of-way cost could be realized through this careful examination.

Justification:

At a cost of $42,000 and $175,000 per acre for residential and commercial properties plus all designated markups, reduction in right-of-way or easement need would result in a cost savings.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	4,476,000		
- Proposed	3,500,000		
- Savings	976,000		976,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**976,000**

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	**PAGE No.:**	**CREATIVE IDEA:**
A-2	1 of 3	Reduce right-of-way north of the E-W Connector and west of Curry Creek

Comp By: LB Date: 05-25-10 Checked By: DCW Date: 05-26-10

Original Concept:

A combination of permanent right-of-way and easement for construction and maintenance of slopes is proposed along the west side new location portion of Kissam Street north of the E-W Connector and south of the Curry Creek crossing. The land acquisition area is necessary for construction of the proposed new location portion of Kissam Street, the bridge over Curry Creek, and associated slopes and drainage improvements.

Proposed Change:

It is recommended that the property required for construction of the proposed new location portion of Kissam Street, the bridge over Curry Creek and associated slopes and drainage improvements be redefined such that permanent right-of-way be acquired for only the roadway, bridge and drainage structures and that the balance be revised to easement of the construction and maintenance of slopes.

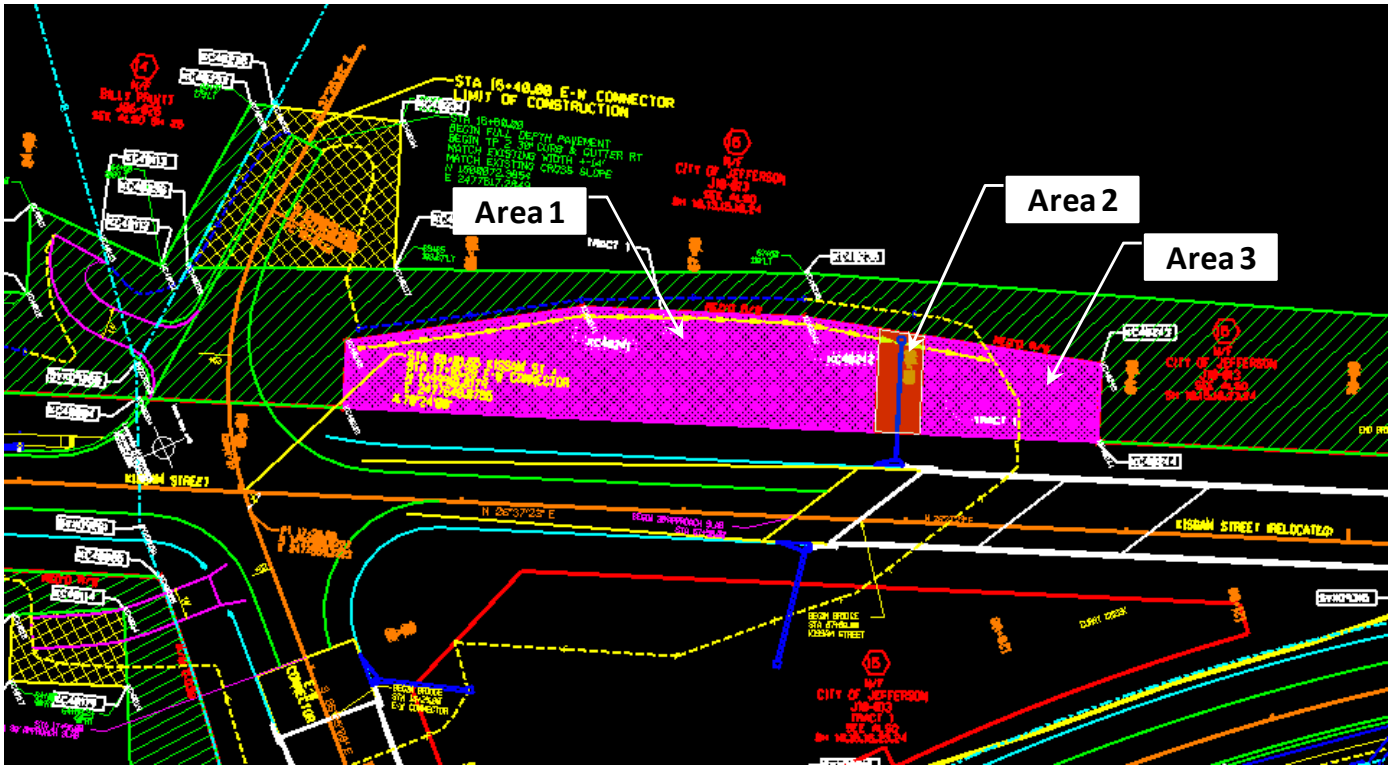
Justification:

The land adjacent to the proposed improvements is owned by the City of Jefferson and is associated with the Curry Creek Park and/or the water treatment facility. The required areas can be acquired as easements. A cost savings could be realized if the land purchases were redefined.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**PRESENT WORTH**
INITIAL COST - Original	149,000		
- Proposed	79,000		
- Savings	70,000		70,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**70,000**

SKETCH

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : A-2 CLIENT: GDOT Sheet 2 of 3



Area 1: 10865.3305 sf = 0.2494 Acre
Area 2: 900.7276 sf = 0.0207 Acre
Area 3: 3171.0149 sf = 0.0728 Acre

Original Concept:
Area 1, 2 and 3 are all required right-of-way.
A1 +A2+A3 = 0.3429 Acre
0.3429 Acre at $175,000/Acre = $60,008 Cost
Scheduling Contingency at 55% = $33,004
$60,008 + $33,004 = $93,012
Adm/Court Cost at 60% = $55,807
$93,012 + $55,807 = $148,819 Total Cost

Proposed Change:
Area 1 and 3 are easement for construction and maintenance of slopes. Area 2 is required right-of-way.
A1+A3 = 0.3222 Acre
0.3222 Acre at $175,000/Acre @50% = $28,193
A2 = 0.0207 Acre
0.0207 Acre at $175,000/Acre = $3,623
$28,193 + $3,623 = $31,816 Cost
Scheduling Contingency at 55% = $17,499
$31,816 + $17,499 = $49,315
Adm/Court Cost at 60% = $29,589
$49,315 +$ 29,589 = $78,904 Total Cost

Justification:
$148,819 - $78,904 = $69,915
Net Savings = $69,915
Say----$70,000

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
B-1	1 of 5	Narrow width of Bridge No. 1

Comp By: GCG Date: 5-24-2010 Checked By: DCW Date: 5-26-10

Original Concept:

Bridge No. 1 - SR 15A/82 (Kissam St.) over Curry Creek

Bridge No. 1 is 35'-3" wide out-to-out and comprised of one (1) - 12' wide lane and two (2) - 10 foot shoulders with two (2) "jersey style" side barriers.

Proposed Change:

Reduce the width of Bridge No. 1 as follows:

27'-3" wide out-to-out comprised of one (1) - 12' wide lane and one (1) - 4 foot inside shoulder and one (1) - 8 foot outside shoulder with two (2) "jersey style" side barriers.

Justification:

See next sheet

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	917,900		
- Proposed	709,600		
- Savings	208,300		208,300
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**208,300**

Justification:

The following are observations about the proposed Bridge No. 1 - SR 15A/82 (Kissam St.) over Curry Creek:

- SR 15A is a State route.
- SR 15A has a rural cross-section in the immediate vicinity of the bridge.
- The highway is divided at the bridge location.
- The bridge is a single lane bridge.

Bridge width is governed by AASHTO and under Section 2.9.1 Bridge Widths, of the current GDOT "Bridge and Structures Policy Manual".

In the policy manual, the guidance for a rural section of a multi-lane divided highway on the State/Federal System is as follows:

Width = 4 foot inside shoulder + TW + 8 foot outside shoulder

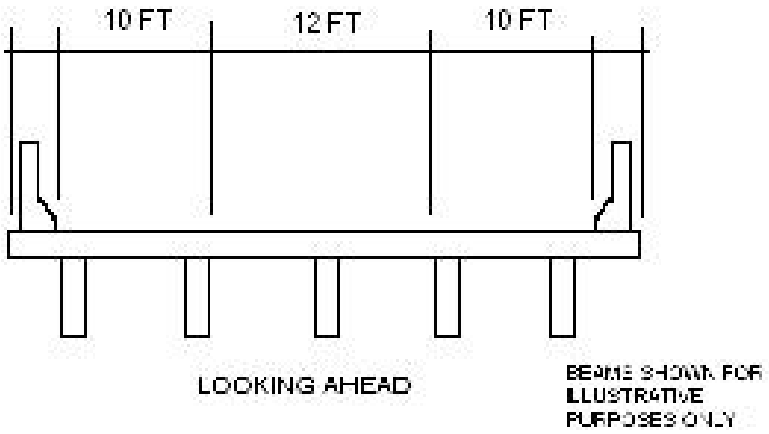
Where TW = total width of lanes

Width = 4 foot shoulder + 12 foot lane + 8 foot shoulder

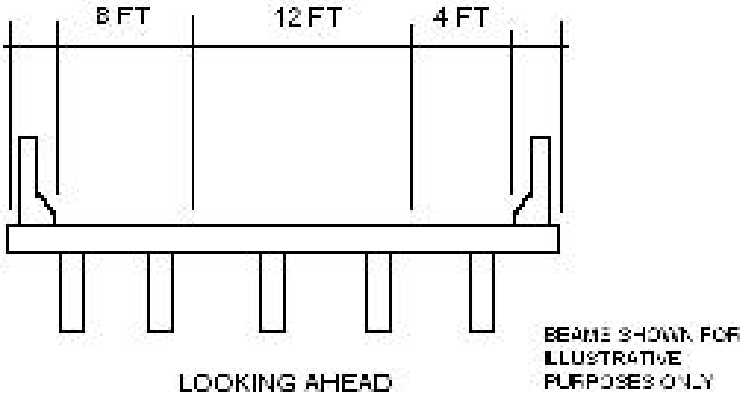
Width = 24 feet from gutter to gutter

SKETCH

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : B-1 CLIENT: GDOT Sheet 3 of 5



ORIGINAL CONCEPT



PROPOSED CONCEPT

COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: B-1 CLIENT: GDOT Sheet 4 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Bridge 1	SF	10927.5	80.00	874,200	8447.5	80.00	675,800
SUBTOTAL				874,200			675,800
Markup 5.0%				43,710			33,790
TOTAL				917,910			709,590
TOTAL ROUNDED				917,900			709,600

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : B-1 CLIENT: GDOT Sheet 5 of 5

Length of Bridge No. 1 = 310 feet

Bridge Cost = \$80/ft^2 (from cost project estimate)

Original Concept:

Width = 35.25 feet

Area (Original) = 310 x 35.25 = 10,927.5 ft^2 (10,390 ft^2 in cost estimate)

Cost = 10,927.5 ft2 x \$80/ft2 = \$874,200 (\$831,200 in cost estimate)

Proposed Change:

Width =27.25 feet

Area (Original) = 310 x 27.25 = 8447.5 ft^2

Difference:

Area Difference = 10,927 ft^2 - 8447.5 ft^2 = 2480 ft^2

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
B-2	1 of 7	Combine both bridges into 1 bridge crossing at Bridge No. 2 Location

Comp By: GCG Date: 5-24-2010 Checked By: DCW Date: 5-26-10

Original Concept:
There are two bridges on the original concept.
Bridge No. 1 - SR 15A/82 (Kissam St.) over Curry Creek (new bridge)
- 310 feet long x 35.25 feet wide carrying one lane of traffic.

Bridge No. 2 - East/West Connector over Curry Creek (replacement bridge)
- 105 feet long x 43.25 feet wide carrying two lanes of traffic.

Proposed Change:

This proposed change suggest the following:
- Combine bridge No. 1 & 2 into 1 bridge near the location of bridge 2 in the original concept.
- Eliminate the south movement from East West Connector on the combined bridge and force the 5 houses in this cul-de-sac and the traffic from the water treatment plant to follow the one way pair toward the civic center to go east on 15A.
- Create raised islands to separate traffic (see sketch)

The proposed bridge (Bridge 1A) would have the following features:
Bridge 1A would be a tapered bridge that spans the creek by the same width as the original concept.

Justification:

(see next page)

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	2,091,000		
- Proposed	803,700		
- Savings	1,287,300		1,287,300
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**1,287,300**

Justification:

Having two bridges forces the need for shoulders on both sides of the two bridges creating additional cost.

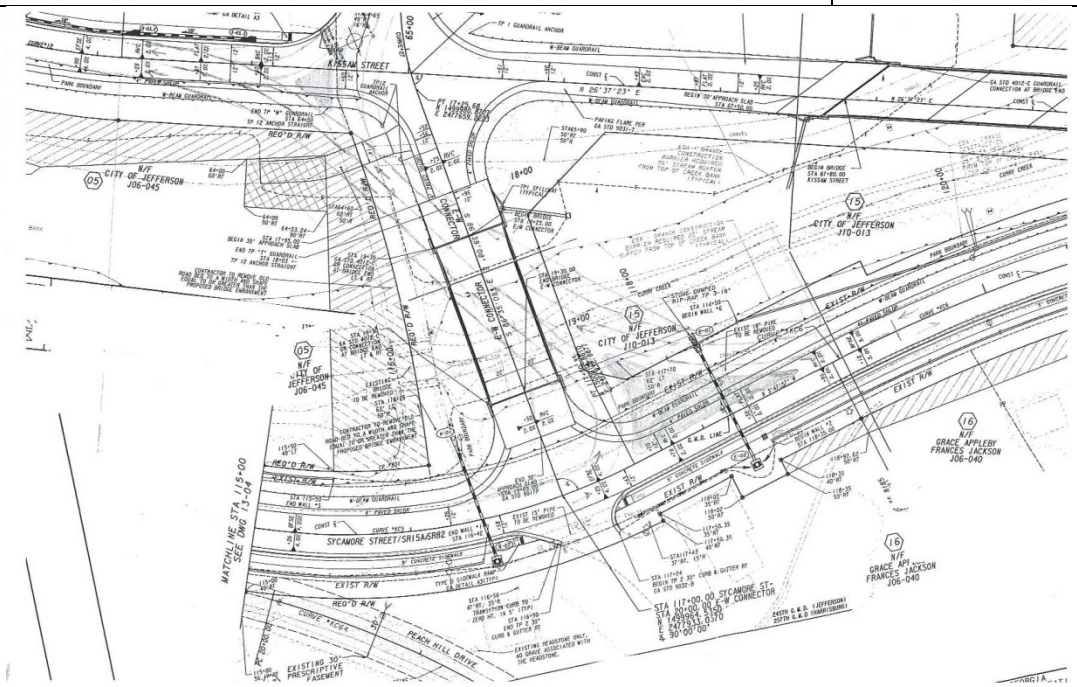
The traffic generated from the small cul-de-sac and the water treatment plant is estimated to be 25 vehicles in the peak hour for the 2030 design year. This is a relatively minor amount of traffic and forcing them to use the one-way seems reasonable compared to the cost savings of eliminating a bridge. Eliminating this movement off the bridge eliminates the potential for accidents at the un-signalized intersections at both ends of the bridge.

The combined bridge uses a 250 foot radius curve to accommodate a 30 mph design speed for West bound SR 15A. This alignment is similar to the layout at the western section of the one-way pair at Storey Street.

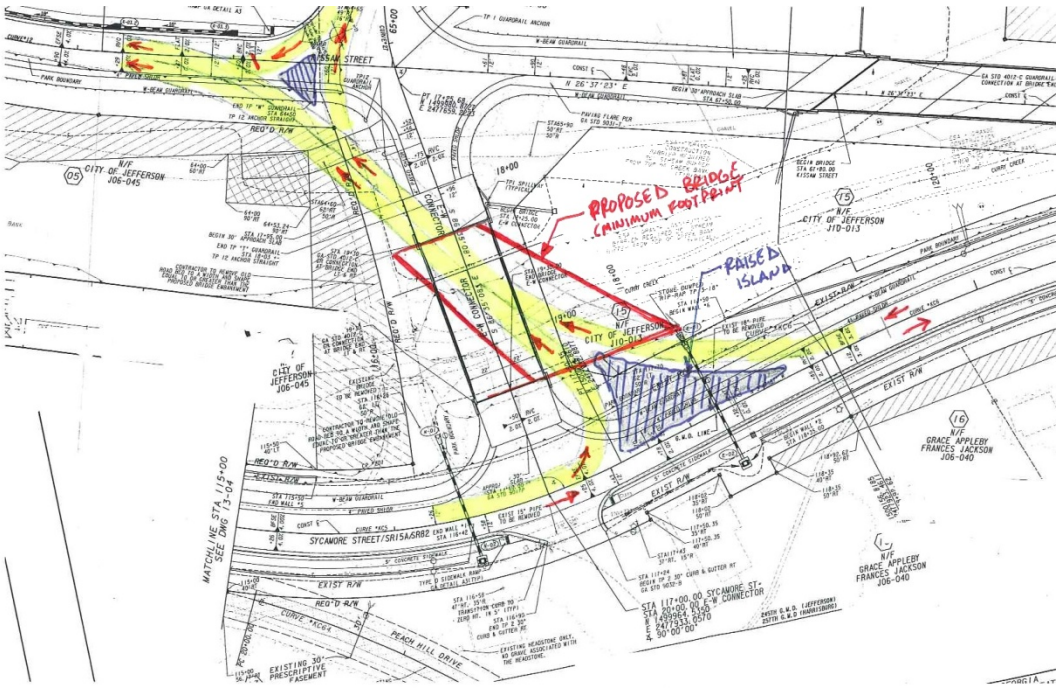
SKETCH

SR 15A from Storey Street to SR 82 with new bridges

ITEM NO : B-2
CLIENT: GDOT
Sheet 3 of 7



ORIGINAL CONCEPT



PROPOSED CHANGE

COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: B-2 CLIENT: GDOT Sheet 4 of 7		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Bridge 1	SF	4620	80.00	369,600			
Bridge 2	SF	10390	80.00	831,200			
Bridge 1A					8505	90.00	765,450
RW footprint for Bridge 1 (See Below)							
SUBTOTAL				1,200,800			765,450
Markup 5.00%				60,040			38,273
Add Right of Way (see above description)				830,242			0
TOTAL				2,091,082			803,723
TOTAL ROUNDED				2,091,000			803,700

The new bridge characteristics:

- Bridge will be tapered along its length
- Bridge will be a single span (approximately 124 feet along the CL alignment).
- Bent locations are the same distance apart as the original concept (105 feet)
- Width of bridge at Bent 1 is approximately 62 feet (measured along bent)
- Width of bridge at Bent 2 is approximately 100 feet (measured along bent)
- Beam lengths would be approximately 140 feet long on the left side and 120 feet long on the right side of the bridge.

Additional length of beams verses the original concept would require a deeper beam than the original design. For the beam lengths listed above, it is anticipated that a 72 inch bulb T will be required. The existing profile allows for a structure depth that will allow this. (see calculation below)

From original design:

- PGL at CL bridge at bent 2 = 737.71
- Controlling HW elevation = 50 year + 2 feet = 725.82 +2 = 727.82
- Allowable depth = 737.71-727.82=9.89 feet
- 9.89 - 0.5 ft (cross slope) - 1.0 ft (slab & coping) = 8.39 ft (allowable depth for beam)
- 72 inch Bulb Tee will fit

Area of bridge:

- Average Width (62 ft +100 ft)/2 = 81 feet wide
- Length = 105 feet (distance from parallel bents)
- Area = 81 x 105 = 8505 ft^2

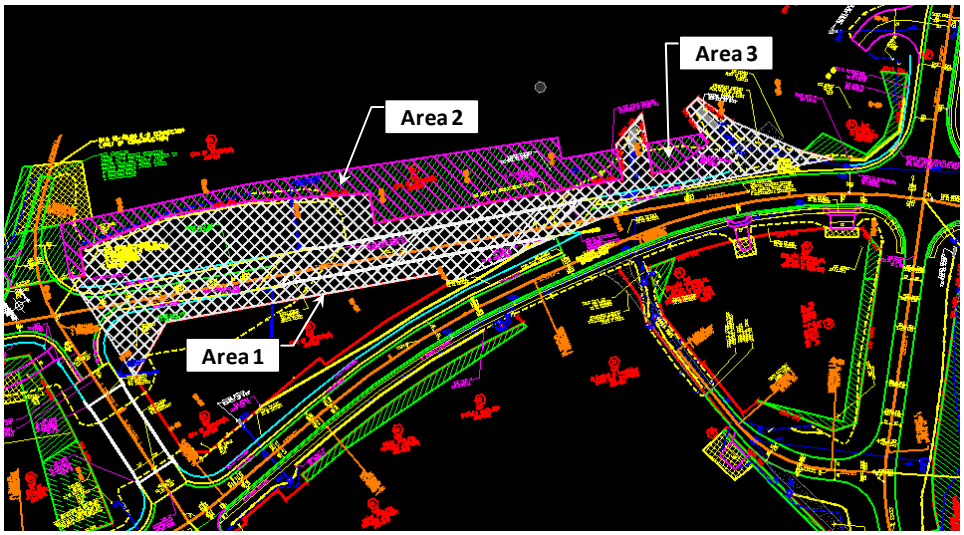
Cost of Bridge 1A:
Because of the taper and the additional beams required for the flared beam layout, use \$90/ft^2 verses \$80/ft^2 in cost estimate.

Bridge Cost = 8505 ft2 x \$90/ft2 = \$765,450

Other savings:

Right of way

Area at the location of Bridge No. 1 will not be needed in the proposed alternate.
This area was measured in CAD using the files provided by the design team.



Area 1: 1.6 Acres Area 2: 0.583 Acre Area 3: 0.043 Acre

CALCULATIONS	
SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : B-2 CLIENT: GDOT Sheet 7 of 7

Original Concept:

Area 1 is required right-of-way; Areas 2 and 3 are easements for construction and maintenance of slopes.

A1 = 1.6 Acres

1.6 Acres at $175,000/Acre = $280,000 Right-of-Way Cost

A2+A3 = 0.626 Acre

0.626 Acre at $175,000/Acre at 50% = $54,775 Easement Cost

$280,000+$54,775 = $334,775 Land Cost

Scheduling Contingency at 55% = $184,126
$334,775 + $184,126 = $518,901

Adm/Court Cost at 60% = $311,341
$518,901 + $311,341 = $830,242 Total Cost

Proposed Change:

None of this area is required for construction.
$0 Total Cost

Say, area of R/W needed for Bridge 1A is approximately equal to the area needed for Bridge 2.

Justification:
$830,242 - $0 = $830,242

Net Savings = $830,242

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
B-6	1 of 6	Construct new bridge adjacent to existing historic bridge

Comp By: GAO Date: 5-25-10 Checked By: DCW Date: 5-26-10

Original Concept:

Construct a one way pair to improve traffic conditions. Improving the traffic operations at the SR 335 intersection is one of the primary functions of this project. Due to the location of the historic bridge and the environmental constraint of not touching it, the preferred alternative is to construct a one-way pair alignment.

Proposed Change:

Construct the required intersection modifications at the SR 335 intersection to improve the traffic operations and safety. Based on the projected traffic presented in the plans, the required improvements include a right turn lane from NB SR 15A / SR 82 to EB SR 335 and a left turn lane from WB SR 335 to SB SR 15A / SR 82. A new bridge adjacent to the existing historic bridge will be required to accommodate the right turn lane. The bridge is 30 feet wide, 12 foot lane and 8 and 10 ft shoulders, 6 feet from the existing bridge.

Justification:

Improving traffic operations at the SR 335 intersection is a primary function of this project. In order to accommodate this, additional turn lanes need to be constructed; a right turn lane on SR 15A/SR 82 and a left turn lane on SR 335. (A detailed review of the traffic data will be required to confirm the scope of the recommended improvements). The constraint on SR 15 A / SR 82 is the historic bridge, however constructing a new bridge, immediately adjacent to the existing one will add the required capacity and allow for the improved intersection operations. It will maintain the overall existing traffic patterns without incorporating a one-way pair alignment. (Continued next page.)

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	5,105,000		
- Proposed	866,000		
- Savings	4,239,000		4,239,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**4,239,000**

Justification, Continued

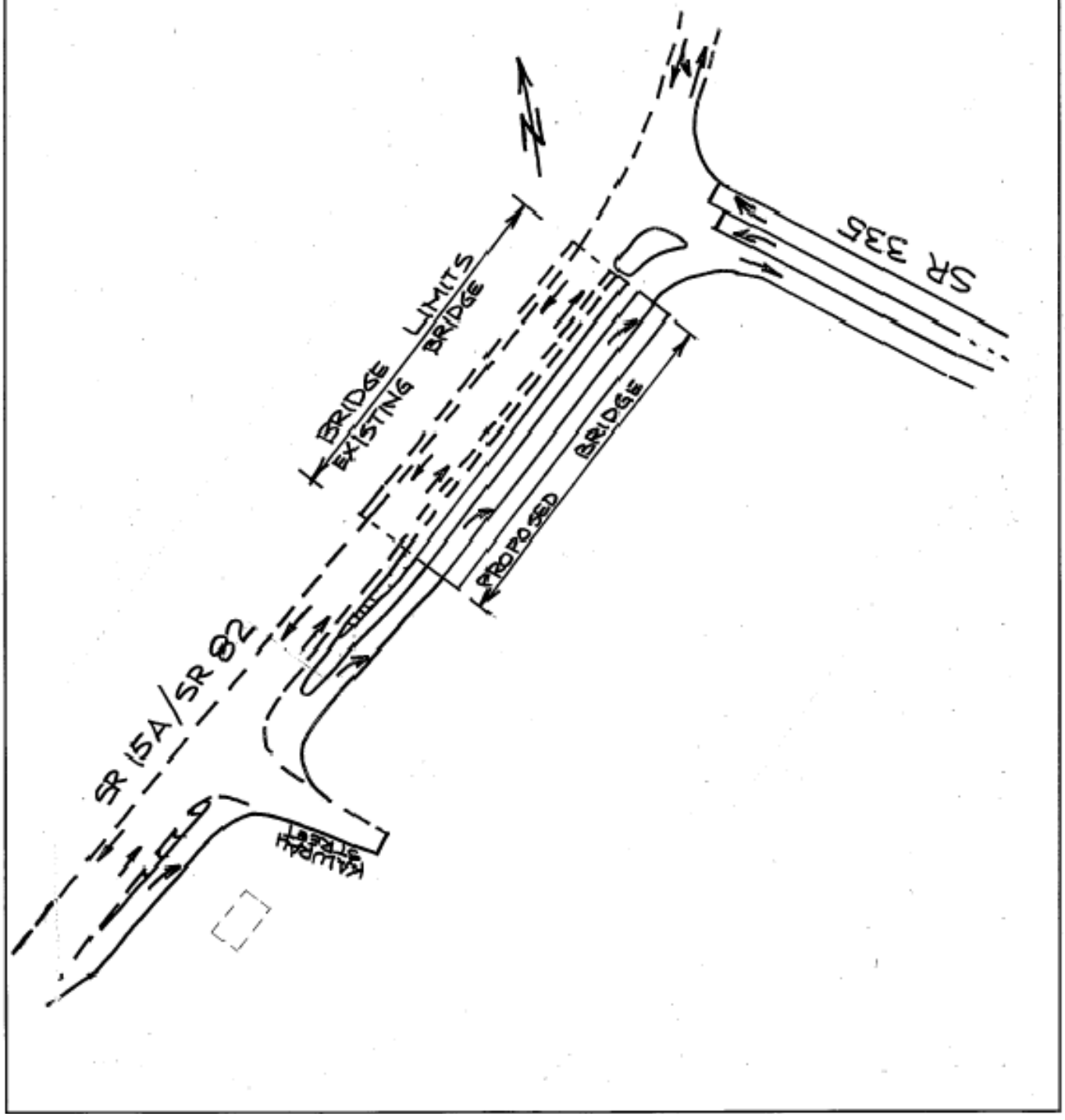
The current design proposed improvements will construct a one-way pair system, about ½ mile in length, to improve traffic and safety conditions. It will significantly modify local traffic patterns through the area. The one-way pair will also require tight, reverse curve alignment at the southern end, entering downtown Jefferson.

The overall project improvements proposed under this idea will be reduced to basically two intersection improvements, thereby eliminating most of the remainder of the project. This includes the 2 new bridges, the Kissam Street work and all the associated drainage, walls, and right of way requirements, most of which are in the existing park area. It will significantly reduce the total project costs. Since it appears this project's environmental document is required to be re-evaluated, the overall impacts with this recommendation will be reduced which should streamline / shorten the re-evaluation process.

Since the new bridge will be located immediately adjacent to the existing historic arch culvert bridge, it should mimic it. Several sample photos are included.

SKETCH

SR 15A from Storey Street to SR 82 with new bridges	ITEM Nº : B-6 CLIENT: GDOT Sheet 3 of 6



SKETCH

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : B-6 CLIENT: GDOT Sheet 4 of 6

SAMPLE Prefabricated Concrete Arch Bridges

COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: B-6 CLIENT: GDOT Sheet 5 of 6		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
additional pavement SR 15A& SR 355	SY				1167	55	64,185
New Bridge	SF				4800	135	648,000
Reconstruct traffic signal	LS	-	0		1	35,000	35,000
Impact attenuator	Each				1	20,000	20,000
Additional earthwork	LS				1	25,000	25,000
Eliminate Kissam St work - pavement	SY	4,533	55	249,315			
Eliminate Kissam St bridge	SF	4,620	80	369,600			
Eliminate Connector bridge	SF	10,390	80	831,200			
Reduce resurfacing - SR 15A	SY	2,133	20	42,660			
Eliminate / reduce 60% of project	LS	1	811,019	811,019			
SUBTOTAL				2,303,794			792,185
Markup 5.00%				115,190			39,609
SUB-TOTAL				2,418,984			831,794
Additional R/W	Acre				0.33	104,160	34,373
Eliminate / reduce 60% of R/W	LS	1	2685900	2,685,900			
SOB-TOTAL				5,104,884			866,167
TOTAL ROUNDED				5,105,000			866,000

Cost of Asphalt Pavement; 8 ½ in asphalt / 10 inch GAB

(8.5/12 ft) (150 #/cf) (1 ton / 2000 #) = 0.053125 ton/sf
(10/12 ft) (135 #/cf) (1 ton/ 2000#) = 0.05625 ton/sf
Cost per SY
(0.053125 ton/sf x 9 sf/sy x $85 / ton) + (0.05625 ton/sf x 9 sf/sy x $18.89 / ton) =
$ 40.64 + 9.56 = $50.20 / SY USE: $55 per SY

Cost of Asphalt Resurfacing; 1 ½ in asphalt / Asphalt leveling – 2 ½ inches – Avg.

(4/12 ft) (150 #/cf) (1 ton / 2000 #) = 0.025 ton/sf
Cost per SY
(0.025 ton/sf x 9 sf/sy x $85 / ton) = $ 19.125 / SY USE: $20 per SY

Additional Asphalt pavement
SR 15A / SR 82 (600 x 12) = 7,200 sq ft

SR 335 (125 x 12) + (0.5 x 300 x 12) = 1,500 +1,800 = 3,300 sq ft
Total = 7,200 +3,300 = 10,500 sq ft = 1,167 sq yd

Reduce SR 15A / SR 82 resurfacing – 800 ft
800 x 24 = 19,200 sq ft = 2,133 sq yd

New bridge area (1 lane x 12) + 10 + 8 shoulders = 30 ft
30 x 160 = 4,800 sq ft
Assume a similar bridge; approximate cost at 135 $/sq ft; 70% mark-up over 80$.
See attached examples of prefabricated concrete arches.

Assume a 60 % reduction in most project items; drainage, signing, pavement markings, sidewalk, curb and gutter, guard rail, retaining walls and clearing and grubbing.
1,351,697 x 0.60 = $811,018

Additional R/W required; SR 335; (150 ft x 12 ft) + (0.5 x 300 x 12) = 3,600 sq ft = 0.08 ac
SR 15A / SR 82; (400 x 24) + 0.5 x 150 x 12 = 10,500 sq ft
Total additional R/W area – 3,600 + 10,500 = 14,100 sq ft = 0.3236 acre; USE 0.33

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
C-1	1 of 4	Use 11-foot Lanes

Comp By: LB Date: 05-25-10 Checked By: DCW Date: 05-26-10

Original Concept:

The proposed typical sections presented in the preliminary plans typically call for 12-foot travel lanes. The proposed improvements provide for new full depth pavement construction, reconstruction, and widening, as well as resurfacing of existing pavement.

Proposed Change:

It is proposed to reduce travel lanes to 11-feet wide. The project is within an urban area with 25-30 mph design speeds.

Justification:

By reducing the lanes widths a savings would be realized in right-of-way and pavement costs while continuing to provide the overall project function. Reduction in bridges width is also included in the total savings shown below.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,363,000		
- Proposed	1,098,000		
- Savings	265,000		265,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**265,000**

COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: C-1 CLIENT: GDOT Sheet 2 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Sycamore/SR 15A							
Widening	SY	8,925	55.00	490,893	8181.6	55.00	449,986
Resurfacing	SY	8,925	20.00	178,507	8181.6	20.00	163,631
Storey/Kissam Street							
Full Depth Construction	SY	4,401	55.00	242,073	4034.6	55.00	221,901
SR 82							
Widening	SY	736	55.00	40,480	674.67	55.00	37,107
Resurfacing	SY	736	20.00	14,720	674.67	20.00	13,493
Full Depth Construction	SY	730.667	55.00	40,187	669.78	55.00	36,838
Peach Hill Drive							
Full Depth Constuction	SY	2,440	55.00	134,200	2236.7	55.00	123,017
Bridge Reduction	SF	520	80.00	41,600	0	0.00	0
SUBTOTAL				1,182,660			1,045,972
Markup 5.00%				59,133			52,299
Right-ofWay Cost Savings				121,423			0
TOTAL				1,363,216			1,098,270
TOTAL ROUNDED				1,363,000			1,098,000

Cost of Asphalt Pavement: 8 ½ in. asphalt and 10 in. GAB
(8.5 in/12 ft) x (150 #/cf) x (1 ton/2000 #) = 0.053125 ton/sf
(10 in/12 ft) x (135 #/cf) x (1 ton/2000 #) = 0.05625 ton/sf

Cost per SY:
(0.053125 ton/sf x 9 sf/sy x $85/ton) + (0.05625 ton/sf x 9 sf/sy x $18.89/ton) =
$40.64 + $9.56 = $50.20/sy
USE: $55 per SY.

Cost of Asphalt Resurfacing: 1 ½ in. asphalt / Asphalt leveling – 2 ½ inches – Average
(4 in/12 ft) x (150 #/cf) x (1 ton/2000 #) = (0.025 ton/sf

Cost per SY:
(0.025 ton/sf x 9 sf/sy c $85/ton) = $19.125/sy
USE: $20/SY.

Bridge Width Reduction: = (310 LF X 1.0 ft) + (105LF X 2.0ft) =520SF

			SY for:			Construction, Reconstruction and Widening			
Sycamore/SR 15A:	**lf**	**12' lane**	**11' lane**	**# lanes**	**Cost/SY**	**12' lanes**	**11' lanes**	**Diff.**
98+62 to 104+53	591	788.00	722.33	2	$ 55	$ 86,680	$ 79,456.67	$ 7,223
106+49 to 134+05	2756	3674.67	3368.44	2	$ 55	$ 404,213	$ 370,528.89	$ 33,684
	3347	4462.67	4090.78			**$ 490,893**	**$ 449,985.56**	**$ 40,908**
Storey Street/Kissam Street:								
50+88 to 65+01	1413	1884.00	1727.00	2	$ 55	$ 207,240.00	$ 189,970.00	$ 17,270
65+01 to 67+80	279	372.00	341.00	1	$ 55	$ 20,460.00	$ 18,755.00	$ 1,705
71+20 to 73+16	196	261.33	239.56	1	$ 55	$ 14,373.33	$ 13,175.56	$ 1,198
	1888	2517.33	2307.56			**$ 242,073.33**	**$ 221,900.56**	**$ 20,173**
SR 82:								
50+00 to 52+74	274	365.33	334.89	2	$ 55	$ 40,186.67	$ 36,837.78	$ 3,349
52+74 to 55+50	276	368.00	337.33	2	$ 55	$ 40,480.00	$ 37,106.67	$ 3,373
	550	733.33	672.22			**$ 80,667.00**	**$ 73,944.44**	**$ 6,722**
Peach Hill Drive:								
40+85 to 50+00	915	1220.00	1118.33	2	$ 55	$ 134,200.00	$ 123,016.67	$ 11,183
	915	1220.00	1118.33			**$ 134,200.00**	**$ 123,017 .00**	**$ 11,183**

SR 15A from Storey Street to SR 82 with new bridges

ITEM NO: C-1
CLIENT: GDOT
Sheet 4 of 4

			SY for:			Construction, Reconstruction and Widening			
Sycamore/SR 15A:	**lf**	**12' lane**	**11' lane**	**# lanes**	**Cost/SY**	**12' lanes**	**11' lanes**	**Diff.**
98+62 to 104+53	591	788.00	722.33	2	$ 20	$ 31,520	$ 28,893	$ 2,627
106+49 to 134+05	2756	3674.67	3368.44	2	$ 20	$ 146,987	$ 134,738	$ 12,249
	3347	4462.67	4090.78			**$ 178,507**	**$ 163,631**	**$ 14,876**
Storey Street/Kissam Street:								
50+88 to 65+01	1413	1884.00	1727.00	2				
65+01 to 67+80	279	372.00	341.00	1				
71+20 to 73+16	196	261.33	239.56	1				
	1888	2517.33	2307.56			**$ -**	**$ -**	**$ -**
SR 82:								
50+00 to 52+74	274	365.33	334.89	2				
52+74 to 55+50	276	368.00	337.33	2	$ 20	$ 14,720	$ 13,493	$ 1,227
	550	733.33	672.22			**$ -**	**$ 13,493**	**$ 1,227**
Peach Hill Drive:								
40+85 to 50+00	915	1220.00	1118.33	2				
	915	1220.00	1118.33					

Right-of-Way:

Sycamore/SR 15A:	**lf**	**ROW (ft)**	**Acre of ROW**	**Cost**	**Land**	**Sched Cont**	**Court Cost**	**Total**
98+62 to 104+53	591	2	0.027	$ 175,000	$ 4,748.62	$ 2,611.74	$ 4,416.22	$ 11,776.58
106+49 to 134+05	2756	2	0.127	$ 175,000	$ 22,144.17	$ 12,179.29	$ 20,594.08	$ 54,917.54
	3347		0.154					**$ 66,694.12**
Storey Street/Kissam Street:								
50+88 to 65+01	1413	2	0.065	$ 175,000	$ 11,353.31	$ 6,244.32	$ 10,558.57	$ 28,156.20
65+01 to 67+80	279	1	0.006	$ 175,000	$ 1,120.87	$ 616.48	$ 1,042.41	$ 2,779.75
71+20 to 73+16	196	1	0.004	$ 175,000	$ 787.42	$ 433.08	$ 732.30	$ 1,952.80
	1888		0.076					**$ 32,888.75**
SR 82:								
50+00 to 52+74	274	2	0.013	$ 175,000	$ 2,201.56	$ 1,210.86	$ 2,047.45	$ 5,459.87
52+74 to 55+50	276	2	0.013	$ 175,000	$ 2,217.63	$ 1,219.70	$ 2,062.40	$ 5,499.72
	550		0.025					**$ 10,959.60**
Peach Hill Drive:								
40+85 to 50+00	915	2	0.042	$ 175,000	$ 7,351.93	$ 4,043.56	$ 6,837.29	$ 10,880.85
	915		0.042					**$ 10,880.85**
							Total savings in Right-of-Way	**$ 121,423.32**

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
C-2	1 of 5	Shift Kissam Street alignment to the west to minimize impacts

Comp By: GAO Date: 5-25-10 Checked By: DCW Date: 5-26-10

Original Concept:

Construct the Kissam Street improvements symmetric to the existing alignment. This will significantly affect the park area and require a retaining wall to protect the heritage tree.

Proposed Change:

Shift the proposed Kissam Street alignment to the west to the available, open area in front of the civic center from Storey Street to the E/W connector intersection. This will minimize impacts to the park and the heritage tree. We provided a 12' shift for this recommendation and analysis, however, a more detailed review could result in different value.

Justification:

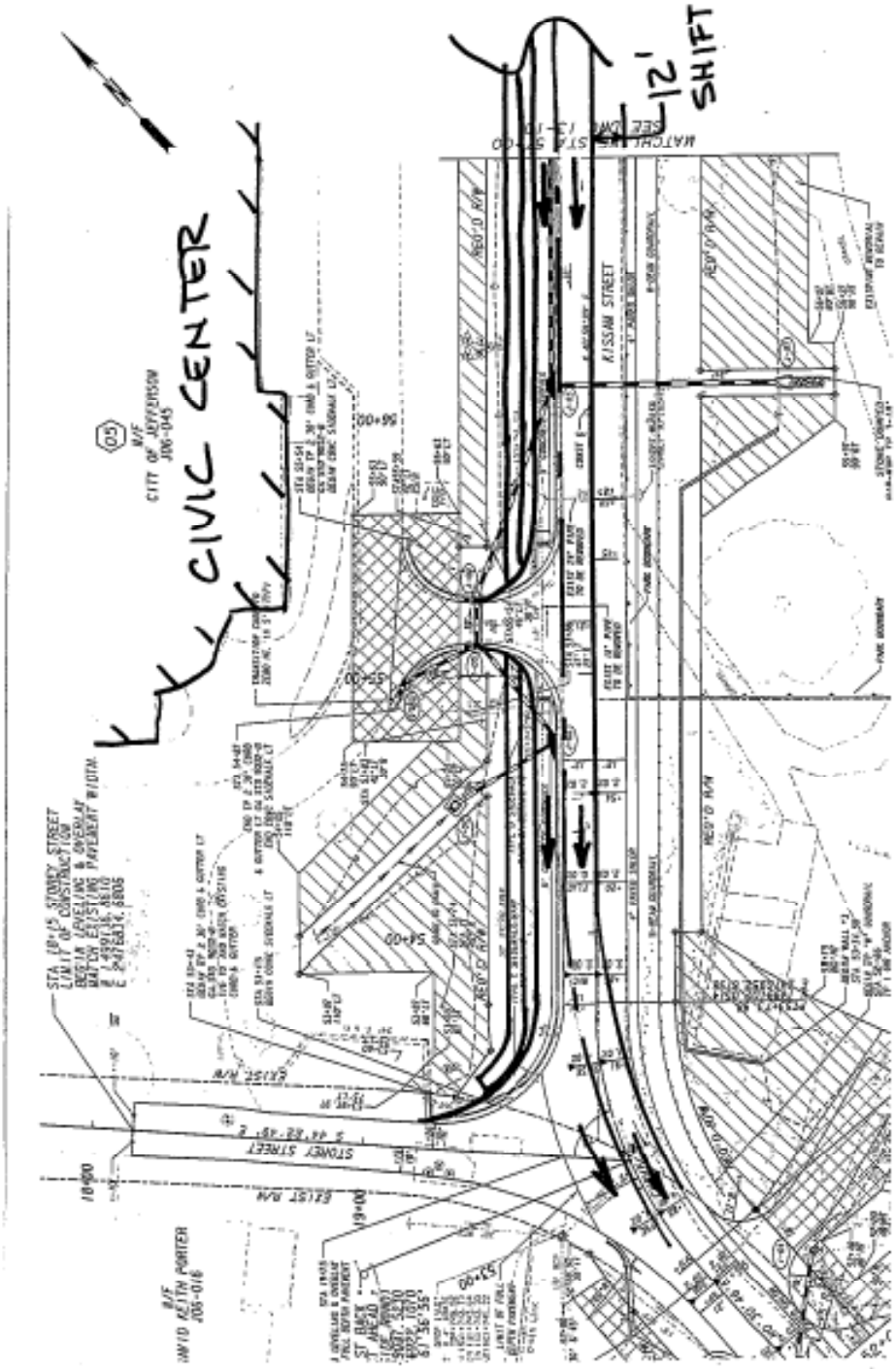
There is open, generally flat space to the west along the current Kissam Street alignment. Rather than constructing a symmetric widening that would have significant impacts to the park area and require a retaining wall to protect the heritage tree, shift the alignment to minimize the impacts. This will reduce the earthwork required to construct the widened Kissam Street and minimize the grading effects to the park. Some protection or wall might be required for the heritage tree but it will be greatly reduced, if not totally eliminated. The alignment would move Kissam Street closer to the civic center where there is available space and it is generally flatter. Since there is no salvage value to the Kissam Street pavement, the proposed alignment should not be committed to maintaining its current layout. Additionally, this recommendation does not require as much parkland acquisition which should facilitate the environmental document re-evaluation process should this become necessary.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	151,400		
- Proposed	-0-		
- Savings	151,400		151,400
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**151,400**

SKETCH

SR 15A from Storey Street to SR 82 with new bridges

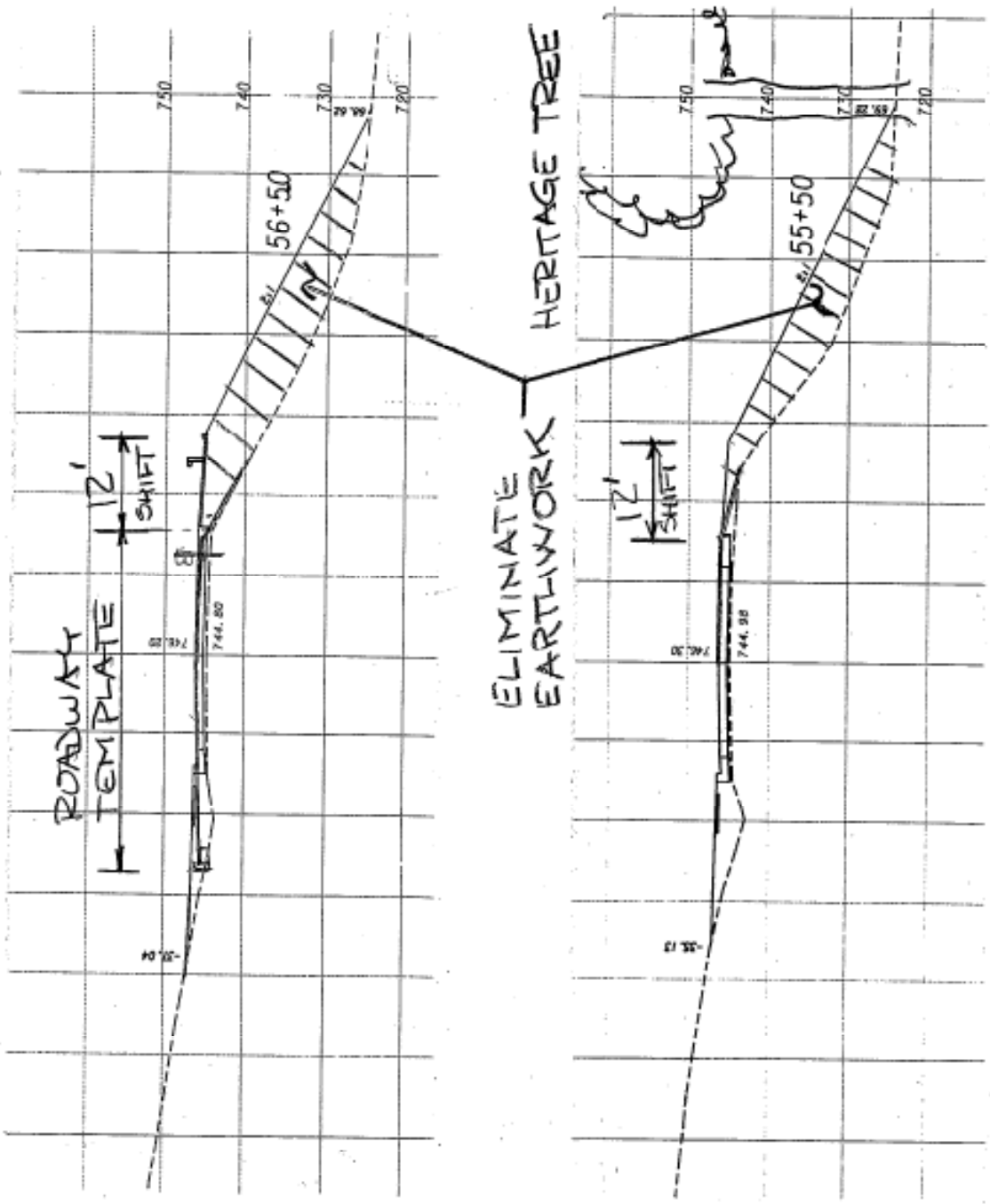
ITEM N^{O} : C-2
CLIENT: GDOT
Sheet 2 of 5



SKETCH

SR 15A from Storey Street to SR 82 with new bridges

ITEM N^{O} : C-2
CLIENT: GDOT
Sheet 3 of 5



COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: C-2 CLIENT: GDOT Sheet 4 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Retaining wall	SF	2283	50.00	114,150	0	0.00	
Embankment	CY	6,000	5.00	30,000	0	0.00	
SUBTOTAL				144,150			0
Markup 5.00%				7,208			0
TOTAL				151,358			0
TOTAL ROUNDED				151,400			0

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : C-2 CLIENT: GDOT Sheet 5 of 5

Retaining wall No. 3 total square footage = 2,283 sq ft

Reduced earthwork; Sta 54+00 to Sta 62+00 = 800 ft; beyond Sta 62+00, additional cut required offsets any reduction in embankment.
Average end area = 200 sq ft

800 ft x 200 sq ft = 160,000 cu ft = 5,926 cu yds USE 6,000 cy

Assume all other items, paving, drainage, signing, curbing and sidewalk all remain the same.

DEVELOPMENT AND RECOMMENDATION PHASE

SR 15A from Storey Street to SR 82 with new bridges

IDEA No.:	PAGE No.:	CREATIVE IDEA:
C-4	1 of 7	Reduce the length of Peach Hill Drive Improvements

Comp By: GCG Date: 5-24-2010 Checked By: DCW Date: 05-25-10

Original Concept:

The Original Concept calls for revising the intersection of SR 82 with SR15A by removing the Y intersection and creating a signalized T intersection further to the northeast and along SR15A.

Because of the new location of this major intersection, the existing intersection of Peach Hill Drive with SR 15A/Sycamore Street is considered too close to the new intersection to allow for drivers that turn onto SR15A from Peach Hill heading east to change lanes and turn left at the new SR82 intersection.

In order to accommodate this movement, the intersection of Peach Hill Drive with SR15A will be severed and Peach Hill Drive will be relocated to intersect at the new SR82/SR15A intersection (creating a 4-way intersection).

Existing Peach Hill Drive (near SR15A) will be renamed as Old Peach Hill Drive. Old Peach Hill Drive will intersect Relocated Peach Hill Drive and create an intersection such to make Peach Hill Drive (relocated) is the major movement. (See Original Concept Sketch).

Improvements to the existing alignment of Peach Hill Drive east of the intersection of Peach Hill Drive (Relocated) and Old Peach Hill Drive will be made to create a smooth and less steep profile.

In the Project Briefing for the Value Engineering Study, it was stated that Jackson Electric Membership Corporation owned land that would front the improvements to Peach Hill Drive and would look to use this as an ingress/egress for its service vehicles.

(Continued next page)

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	286,200		
- Proposed	0		
- Savings	286,200		286,200
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			**286,200**

CONTINUATION	
SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : C-4 CLIENT: GDOT Sheet 2 of 7

Proposed Change:

The proposed change would minimize the amount of work done to Peach Hill Drive yet provide the same degree of access to the existing neighborhood.

Relocated Peach Hill Drive would T intersect Old Peach Hill Drive in front of the property owned by the City of Jefferson on the existing Peach Hill Drive alignment.

No work beyond this intersection along existing Peach Hill Drive would be done.

Justification:

A new intersection of SR82 and SR15A is needed from a safety and traffic operations standpoint.

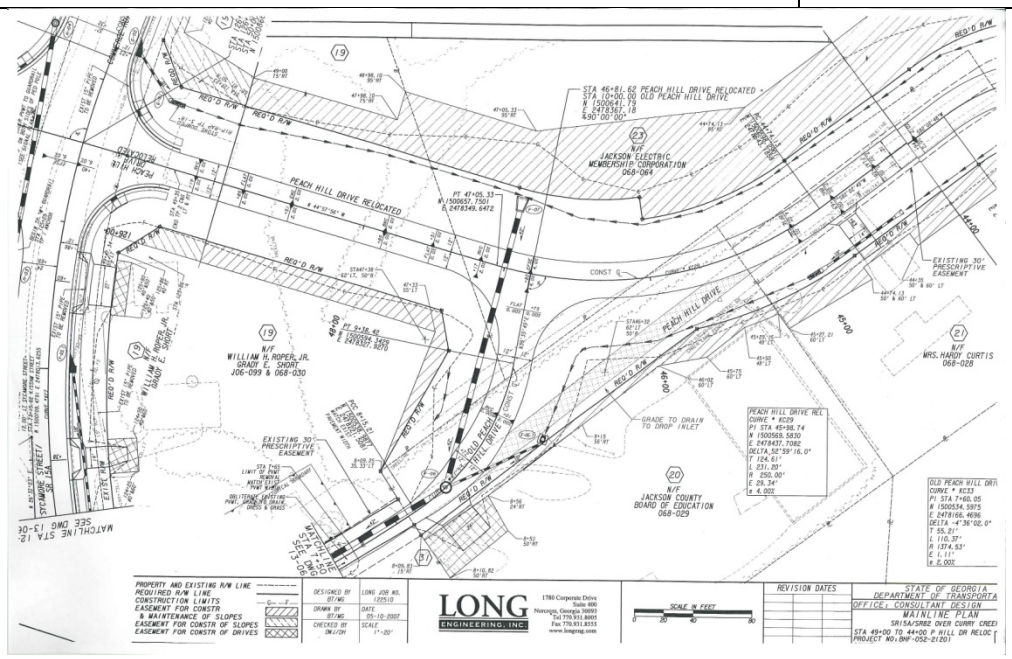
Relocating the existing Peach Hill intersection with SR 15A is necessary from a safety concern based on the reduced length available for traffic turning from Peach Hill onto SR15A and then wanting to turn left on SR 82 heading north.

It would appear that any additional work on Peach Hill Drive beyond relocating Peach Hill Drive to the new SR 15A/SR82 intersection and tying in relocated Peach Hill Road to the existing Peach Hill Road would be beyond the need and purpose of this project and more likely better suited for a county road improvement project.

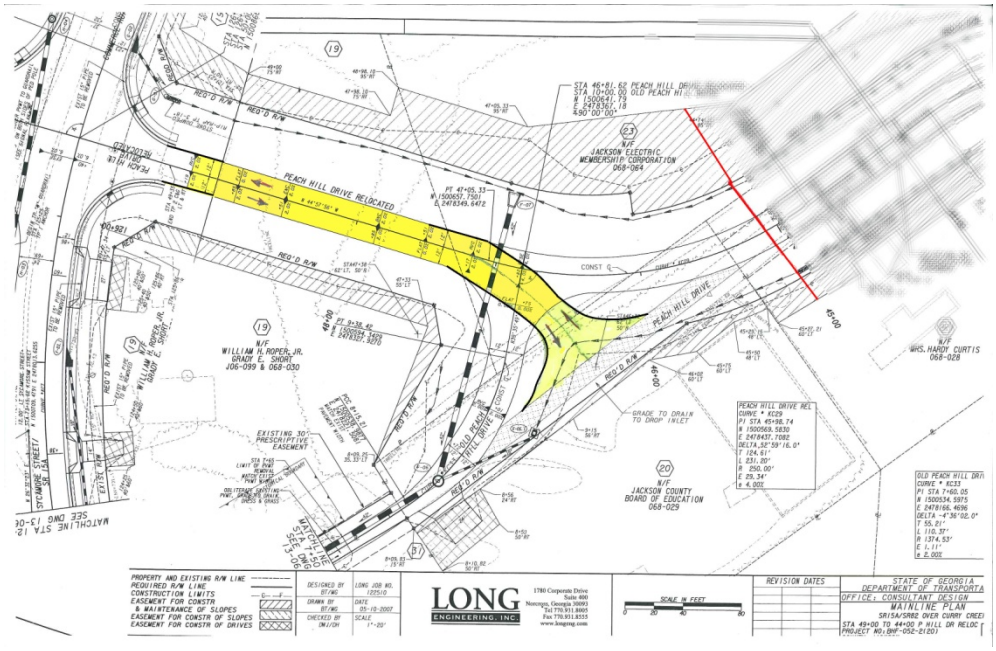
SKETCH

SR 15A from Storey Street to SR 82 with new bridges

ITEM N^{O} : C-4
CLIENT: GDOT
Sheet 3 of 7



ORIGINAL CONCEPT



PROPOSED CHANGE

COST WORKSHEET							
PROJECT: **SR 15A from Storey Street to SR 82 with new bridges Jackson County**					ITEM No: C-4 CLIENT: GDOT Sheet 4 of 7		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Pavement	SY	1107.0	55.00	60,885			
SUBTOTAL				60,885			0
Markup 5.0%				3,044			0
Right of Way Cost				222,230			
TOTAL				286,159			0
TOTAL ROUNDED				286,200			0

Length of improvements along Peach Hill Drive that are eliminated in the Proposed Concept from Station 40+85 to Station 45+00.

These include:

- Right of Way
- Easements
- Pavement

There would be a minor reduction in earthwork.

Pavement

Cost of Asphalt Pavement; 8 ½ in asphalt / 10 inch GAB

(8.5/12 ft) (150 #/ft^3) (1 ton / 2000 #) = 0.053125 ton/ft^2
(10/12 ft) (135 #/ ft^3) (1 ton/ 2000#) = 0.05625 ton/ ft^2

Cost per Yd^2
(0.053125 ton/ ft^2 x 9 ft^2/yd^2 x \$85 / ton)
+ (0.05625 ton/ ft^2 x 9 ft^2/yd^2 x \$18.89 / ton)
= \$ 40.64 + 9.56
= \$50.20 / Yd^2

USE: \$55 per Yd^2

Cost of Asphalt Resurfacing; 1 ½ in asphalt / Asphalt leveling – 2 ½ inches – Avg.

(4/12 ft) (150 #/cf) (1 ton / 2000 #) = 0.025 ton/sf

Cost per Yd^2
(0.025 ton/ ft^2 x 9 ft^2/yd^2 x \$85 / ton) = \$ 19.125 / Yd^2

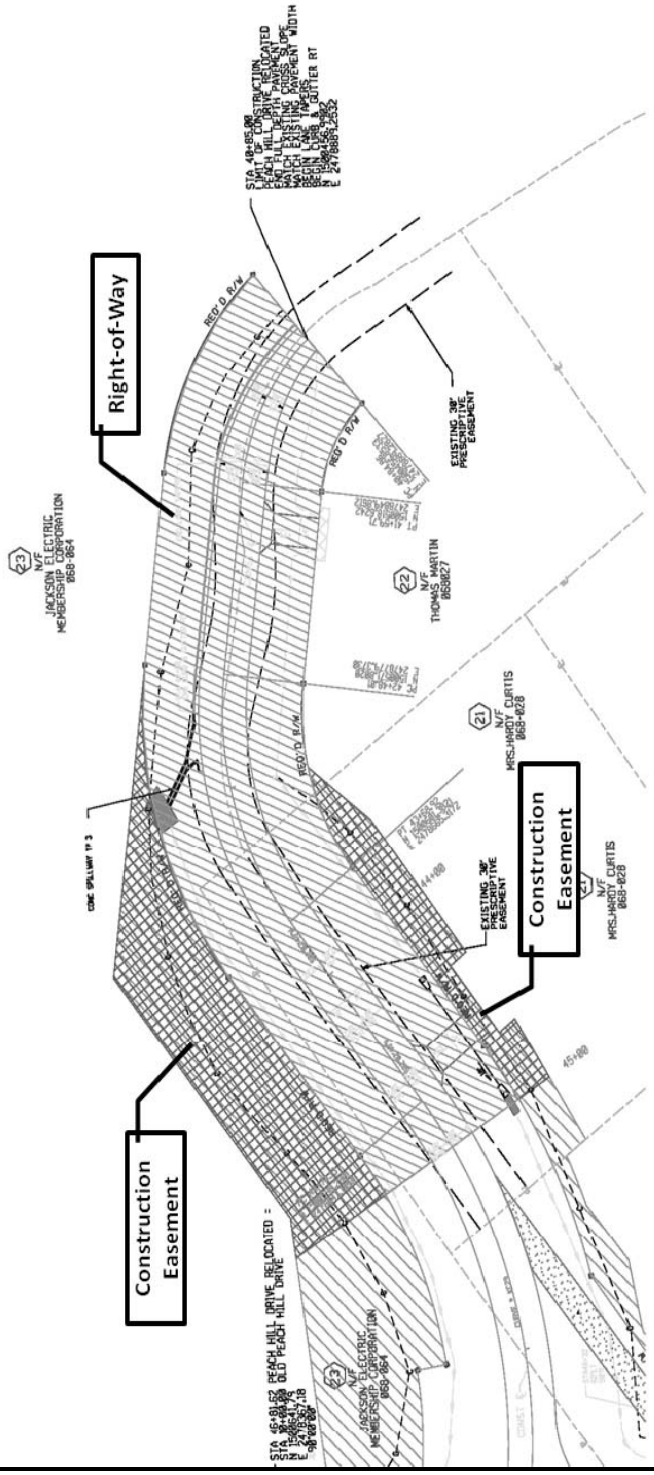
USE: \$20 per Yd^2

Calculate Yd^2 of Pavement not needed:

Length = Station 40+85 to 45+00 = 415 feet
Width = Two - 12’ lanes = 24 feet

Area = 24 ft wide x 415 ft long = 9,960 ft^2 = 1,107 yd^2

SR 15A from Storey Street to SR 82 with new bridges	ITEM N^{O} : C-4 CLIENT: GDOT Sheet 6 of 7



SR 15A from Storey Street to SR 82 with new bridges	ITEM NO: C-4 CLIENT: GDOT Sheet 7 of 7

Right of Way Calculations:

Amount of Right of Way not needed in the Proposed Change

Right-of-Way:

Peach Hill Drive:			If	ROW (ft)	Acre of ROW	Cost	Land Cost	Sched Cont	Court Cost	Total
40+85	to	43+30	245	40	0.225	$ 175,000	$ 39,370.98	$ 21,654.04	$ 36,615.01	$ 97,640.04
40+85	to	43+30	245	40	0.225	$ 42,000	$ 9,449.04	$ 5,196.97	$ 8,787.60	$ 23,433.61
			490		0.450					**$ 121,073.65**
Peach Hill Drive:										
43+30	to	45+00	170	15	0.059	$ 175,000	$ 10,244.49	$ 5,634.47	$ 9,527.38	$ 25,406.34
43+30	to	45+00	170	65	0.254	$ 42,000	$ 10,654.27	$ 5,859.85	$ 9,908.47	$ 26,422.59
			340		0.312					**$ 51,828.93**
								Total savings in Right-of-Way		**$ 172,902.57**

Construction Easement:

Peach Hill Drive:	Acre of ROW	Cost	Land	Sched Cont	Court Cost	Total
Commercial property to RT (measured)	0.211	$ 87,500	$ 18,453.75	$ 10,149.56	$ 17,161.99	$ 45,765.30
Residential property to LT (measured)	0.068	$ 21,000	$ 1,436.40	$ 790.02	$ 1,335.85	$ 3,562.27
	0.279					**$ 49,327.57**
					Total savings in Easements	**$ 49,327.57**
					Grand Total Savings:	**$ 222,230.14**

APPENDIX

COST MODEL

VALUE ENGINEERING

COST MODEL/DISTRIBUTION

By

Decreasing Item

Project No. BHF00-0052-02(020)

SR 15A from Storey Street to SR 82 with new bridges

PI No. 122510

Jackson County

May 2010

Element ID.	Item Description	Cost x $1,000	%
A	Right of Way	4,476	53
B	Bridges	1,291	15
C	Base and Pave	974	12
80% Cost Line			
D	Storm Drainage	447	5
E	Retaining Wall	224	3
F	Erosion Control	160	2
G	Curb and Gutter	131	2
H	Clearing and Grubbing	120	1
I	Utilities	120	1
J	Concrete Sidewalk	108	1
K	Traffic Control	90	1
L	Guardrail	84	1
M	Field Engineers Office	79	1
N	Concrete Approach Slab	78	1
O	Signalization, Signing and Marking	68	1
	TOTAL	**$8,449**	**100%**

INFORMATION PHASE ------- FUNCTION ANALYSIS

SR 15A from Storey Street to SR 82 with new bridges

System: **Separate traffic**
Function: **Improve traffic flow**

ITEM No.	DESCRIPTION	FUNCTION			INITIAL DOLLARS (x 1,000)		
		Verb	Noun	Kind*	Cost	% of Total	Worth
A	Right of Way	Store	Project	S	4,476	53	3,500
B	Bridges	Cross	Creek	B	1,291	15	500
C	Base and Pave	Support	Traffic	B	974	12	800
D	Storm Drainage	Transport	Flow	S	447	5	400
E	Retaining Walls	Reduce	ROW	S	224	3	224+
TOTAL					**7,412**	**88**	**5,424**

* B = Basic, S = Secondary

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
SR 15A from Storey Street to SR 82 with new bridges			
NO.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING ****
A	**Right of Way**		
A-1	Tighten Limits		√
A-2	Reduce right of way north of EW connector		√
A-3	Add walls to the park and reduce the right of way	Not cost effective –walls increase cost	**X**
B	**Bridges**		
B-1	Narrow width of bridges		√
B-2	Combine into one bridge crossing		√
B-3	Rebuild historic bridge with one that is visually similar	Will not be accepted by local interests identified as a project constraint	**X**
B-4	Extend SR 335 across to Kissam	Will adversely impact Park	**X**
B-5	Relocate SR 15A to Kissam	No apparent advantages to this	**X**
B-6	Build a parallel one lane bridge on the south side of Curry Creek bridge.		√
B-7	Make connector bridge a one way bridge		**See B-2**
C	**Grade and Pave**		
C-1	Use 11 foot lanes		√
C-2	Shift Kissam Street towards the Civic Center		√

** √ = Idea will be evaluated; X= idea will be dropped; DC = Design Consideration – presented for consideration by the design team

NO.	CREATIVE IDEA	COMMENTS	IDEA RATING **
C-3	Use an urban typical section/shoulders	Already used in design	**X**
C-4	Reduce length of Peach Tree drive		√

** √ = Idea will be evaluated; X= idea will be dropped; DC= Design Consideration – presented for consideration by the design team

VE STUDY SIGN-IN SHEET

Project No.: BHF00-0052-02(020) County: Jackson PI No.: 122510- Date: May 24 - 27, 2010

Days

FIRST	LAST	NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
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✓	✓	Matt Sanders		Engineering Services	404-631-1752	msanders@dot.ga.gov
✓		James K. Magnus		Construction	404-631-1971	jmagnus@dot.ga.gov
✓		Ken Werho		Traffic Operations	404-635-8144	kwerho@dot.ga.gov
✓		Ron Wishon		Engineering Services	404-631-1753	rwishon@dot.ga.gov
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✓		Jill Brown		Edwards-Pitman	770-333-9484	jbrown@edwards-pitman.com
✓	✓	Lenor Bromberg		KEA Group	678 904 8591	lbromberg@keagroup.com
✓	✓	GEORGE OBADARE		MACTEC	770-421-3346	GAOBARARE@MACTEC.COM
✓	✓	DAVID HENRY		LONG ENG	770-931-8005	dhenry@longeng.com
✓	✓	HIRAL PATEL		OPD	706-601-1849	hpatel@dot.ga.gov
✓	✓	GREG GRANT		WOLVERTON & ASSOC	770-447-8999	greg.grant@wolverton-assoc.com
✓		BILL DUVALL		Bridge Design	404-631-1883	bduvall@dot.ga.gov
✓		Philip P. Alima		Environmental Svcs	4-631-1353	palima@dot.ga.gov

✓ Check all that attend 14 Attended Project Overview(Day 1) 7 Attended Project Presentation (Day 4)