VALUE ENGINEERING REPORT

SR 42 Widening
Clayton County
PI Nos.: 720815 / 720817
Project Nos. STP-037-2(54) / BHF-037-2(55)
March 19, 2008

OWNER:

Georgia Department of Transportation
No.2 Capitol Square
Atlanta, GA 30334
(404.651.7468)

VALUE ENGINEERING CONSULTANT:

MACTEC Engineering and Consulting, Inc.
3200 Town Point Drive NW, Suite 100
Kennesaw, GA 30144
(770.421.3346)

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EXECUTIVE SUMMARY

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Introduction

This report summarizes the results of a value engineering (VE) study conducted on the widening and improvements to SR 42 in Clayton County. It is located approximately 10 miles southwest of Atlanta. In essence, this effort includes a four day study on the concept level design for the widening and reconstruction of SR 42 from the existing four lane section just north of Lake Harbin Road to the existing four lane just south of Anvil Block Road. The total project length is 3.20 miles. The purpose of this project is to improve the safety and operation of SR 42 in Clayton County and also connect the existing four lane section to the south to the existing four lane section to the north. SR 42 is a major north-south route in Clayton County that runs from I-285 south to I-675 and the Henry County line. In 2002-2004 there were 387 accidents reported along SR 42 within the project limits. The accident rate for all three years was significantly higher than the statewide average for this type of facility. The projected ADT for SR 42 is 17,340 VPD in 2013, and the projections indicate a growth to 25,092 in design year 2033.

The proposed typical section includes four 12 foot lanes with a 20 foot raised median, 5 foot sidewalks and 16 foot urban shoulders for the entire length. Improvements will be made to all intersections with substandard skew angles. Project BHF-037-2(55) has been appropriated to replace the double 10′ x 12′ box culvert at Upton Creek with a bridge structure. All remaining existing culverts will be extended. A Norfolk Southern Railroad spur track bridge over SR 42 near Tony Road will be demolished and removed. This structure is not in use and is owned by the Army and operated by the Norfolk Southern Railroad Company.

The proposed posted speed limit for the roadway will be 45 mph. The right of way will increase from 80 foot existing to a variable width of 100-150 feet. The estimated construction cost is

$46.1 million including $18.8 million in right of way costs.

The design is approximately 20% complete. The Environmental effort is being updated and is due for submittal this fall. Right-of-way purchase is scheduled to begin in March 2009 and the current contract let date is March 2011. The study was conducted February 26-29 at the DOT offices in Atlanta using a four person VE team. The design team included in-house GDOT personnel.

This report presents the VE 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. Lastly, the **Appendix** includes a complete record of the Team's activities and findings as well as the meeting attendees sign in sheet. 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 informed that potential Historic Properties may be impacted by this project including the Rock Baptist Church and sections of Fort Gillem. These are currently under evaluation by the State.
- Of major community concern is the Riverside Store property at the northeast quadrant of the Rex Road intersection. This was identified during the Public Information meetings conducted on the project as a community gathering place.

Results Obtained

The VE Team generated 16 ideas and presented 12 recommendations for consideration by GDOT. The recommendations involve reductions in right of way by reducing shoulder width, lane width and median width; using gravity retaining walls where possible; using a culvert in lieu of a bridge; revising the sidewalk to asphalt and reducing the sidewalk to one side of the road; and eliminating the median concrete covering and using topsoil and seeding.

Neglecting the overlapping nature of the recommendations as much as possible, the total of all the recommendations have the potential to reduce project costs by as much as $7.1 million while continuing to provide the required functionality. This is shown in the last column of the Summary Table that follows the summary description below.

A brief presentation of these recommendations was conducted on March 29th , with the following in attendance: Brian Summers, Lisa Myers and Ron Wishon from GDOT Engineering Services, Fletcher Miller from Road Design and the VE Team: Dave Wohlscheid, Alex Wiley, Dan Cogan and Aruna Sastry.

Recommendation Highlights

A-1 Reduce the shoulder width, retain the sidewalks

This idea is to reduce the shoulder width from 16 feet to 12 feet on each side of the roadway. The edge of the curb to the sidewalk would be 2 feet in lieu of the 6 feet shown on the typical detail. There does not appear to be an abnormal amount of utilities to be placed in this area. There is a substantial savings in right of way.

Potential Savings $1,448,000

A-2 Reduce lane width from 12 to 11 feet on all four travel lanes

This concept reduces the pavement by 1 foot per each lane which seems appropriate for a 45 mile per hour design speed, urban section with gutter.

Potential Savings $1,273,000

A-2.1 Reduce the inside lane to 11 feet, retain the outside lane at 12 feet in width

The percent of truck usage along this route is 15%. This may be a more palatable suggestion than A-2 if the GDOT feels 15% trucks would cause problems on this type of roadway.

Proposed savings $636,300

A-3 Reduce the raised concrete median width from 20 to 16 feet

At left turns the proposed median would be a 2 foot raised median without gutters offset 1 foot from the edge of the travel way.

Proposed savings is: $975,200

A-4 Use a 14 foot flush mount median in lieu of 20 foot raised median

This concept is to replace the raised median with another travel lane that will be used for left turn lanes. With a 2013 design ADT of 17,300 it will be several years before the >24,000 number will be reached. (That is the number when a raised median should be built.)

Potential savings is $325,000

A-5 Minimize intersection realignments at Rex Road

The original design revises the two roads to attain a 70 degree intersection with the main line at this signalized intersection. The proposed concept retains the existing 60 degree intersection to minimize right of way impacts, but provides the same number of turn lanes as the existing design. 60˚ or greater complies with AASHTO requirements.

Potential savings for this item is $459,100

A-6 Minimize intersection realignments at Forest Parkway

The original concept increases the 70 degree signalized intersection to 80 degrees while increasing the number of turn lanes. The proposed recommendation retains the number of turn lanes but eliminates the improvements to the intersection angle as in A-5.

Potential savings is $463,000

F-4 Use gravity retaining walls for 75% of the walls

The original design estimates that all the walls will be reinforced concrete although the exact location of the walls is unknown at this time. The estimate indicated over 2600 CY of Class A concrete (reinforced) for these walls. The idea is to use non-reinforced walls since the proposed heights will be below 10 feet in all potential areas allowing the use of gravity walls.

Potential savings is $329,000

G-1 Use 3 inch thick 5 feet wide asphalt sidewalks on a 6 inch GAB in lieu of concrete walks

This replacement of material for sidewalks is widely used in other parts of the country at a substantial savings in material cost and in speed of construction.

Potential savings is $241,600

G-1.1 Use asphalt sidewalks on one side of the corridor and delete the sidewalk on the other side entirely

This option also reduces right of way.

Potential savings is $1,116,000

G-2 Eliminate the 4 inch concrete median paving in the areas outside the left turn lanes

This concept replaces the paved median surfacing with topsoil and seeding for the wide areas of the median. Maintenance costs were included for the mowing of this area and the cost savings represents a net life cycle savings.

Proposed savings is $251,100

H-1 Use a culvert instead of a bridge at Stream #5

The original concept allowed for 150 feet long × 86.5 feet wide bridge at this stream crossing dependant on the outcome of a hydraulic study. This suggestion is to use double 10 ft × 12 ft × 112 ft box culverts since they are more economical.

Proposed savings is $841,000

SR 42 Widening and New Bridge
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	Reduce shoulder width, retain sidewalks	1,448,000	-0-	1,448,000	-0-	1,448,000	1,448,000
A-2	Reduce lane width from 12 feet to 11 feet	1,273,000	-0-	1,273,000	-0-	1,273,000	1,273,000
A-2.1	Reduce the proposed inside lanes from 12 feet to 11 feet	636,300	-0-	636,300	-0-	636,300	-0-
A-3	Reduce the median from 20 feet to 16 feet	1,256,700	281,500	975,200	-0-	975,200	975,200
A-4	Use a 14 foot paved flush median	325,000	-0-	325,000	-0-	325,000	-0-
A-5	Minimize intersection realignments at Rex Road retaining the same number of turn lanes	459,100	-0-	459,100	-0-	459,100	459,100
A-6	Minimize intersection realignment at Forest Parkway retaining the number of turn lanes	463,000	-0-	463,000	-0-	463,000	463,000
F	**Concrete Structures**						
F-4	Use gravity retaining walls (non-reinforced concrete) for 75% of structures in lieu of reinforced concrete walls	2,179,000	1,850,000	329,000	-0-	329,000	329,000

SR 42 Widening and New Bridge

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
G	**Concrete Work**						
G-1	Use 3 inch asphalt and GAB base for sidewalks	761,600	520,000	241,600	-0-	241,600	-0-
G-1.1	Use asphalt sidewalk on one side of road only	1,376,000	260,000	1,116,000	-0-	1,116,000	1,116,000
G-2	Eliminate the 4 inch median paving in wide areas and replace with seeding / top soil	513,700	113,600	400,100	(149,000)	251,100	150,000
H	**Other**						
H-1	Use a box culvert in lieu of a bridge at stream #5	1,141,000	300,000	841,000	-0-	841,000	841,000
	TOTAL POTENTIAL SAVINGS						**7,054,300**

STUDY IDENTIFICATION

STUDY IDENTIFICATION

Project: SR 42Widening and New Bridge	**Dates: March 26-29, 2008**
Location: GDOT HQ - Atlanta	

VE Team Members

Name:	Discipline:	Organization:	Telephone:
David Wohlscheid	VE Team Leader	MACTEC	703-471-8383
Alex Wiley	Highway Design	MACTEC	770-421-3481
Dan Cogan	Highway Construction	Kennedy Engineers Associates	678-904-8591
Aruna Sastry	Highway Bridges	Sastry and Associates	678-366-9375

Project Description

This value engineering effort includes a four day study on the concept level design for the widening and reconstruction of SR 42 from the existing four lane section just north of Lake Harbin Road to the existing four lane just south of Anvil Block Road. The total project length is 3.20 miles. The purpose of this project is to improve the safety and operation of SR 42 in Clayton County and also connect the existing four lane section to the south to the existing four lane section to the north. SR 42 is a major north-south route in Clayton County that runs from I-285 south to I-675 and the Henry County line. In 2002-2004 there were 387 accidents reported along SR 42 within the project limits. The accident rate for all three years was significantly higher than the statewide average for this type of facility. The projected ADT for SR 42 is 17,340 VPD in 2013, and the projections indicate a growth to 25,092 in design year 2033.

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The proposed posted speed limit for the roadway will be 45 mph. The right of way will increase from 80 foot existing to a variable width of 100-150 feet. The estimated construction cost is $46.1 million including $18.8 million in right of way costs.

Please refer to the Cost Distribution Model contained in the Appendix for a breakdown of the estimate for this project.

Kick off Meeting/Design Presentation

In addition to the VE Team, the following personnel attended this meeting which was held at the outset of the VE study:

Lisa Myers	GDOT Engineering Services
Ron Wishon	GDOT Engineering Services
Fletcher Miller	GDOT Road Design Project Manager
Brent Story	GDOT Road Design
Scott MacLean	GDOT Road Design
Jacob Achorn	GDOT Road Design
James Magnus	GDOT Construction
Funmi Adesesan	GDOT Office Environmental Location
Loren Bartlett	GDOT District Construction
Grant Waldrop	GDOT Traffic Operations
Jerry Milligan	GDOT Right of Way

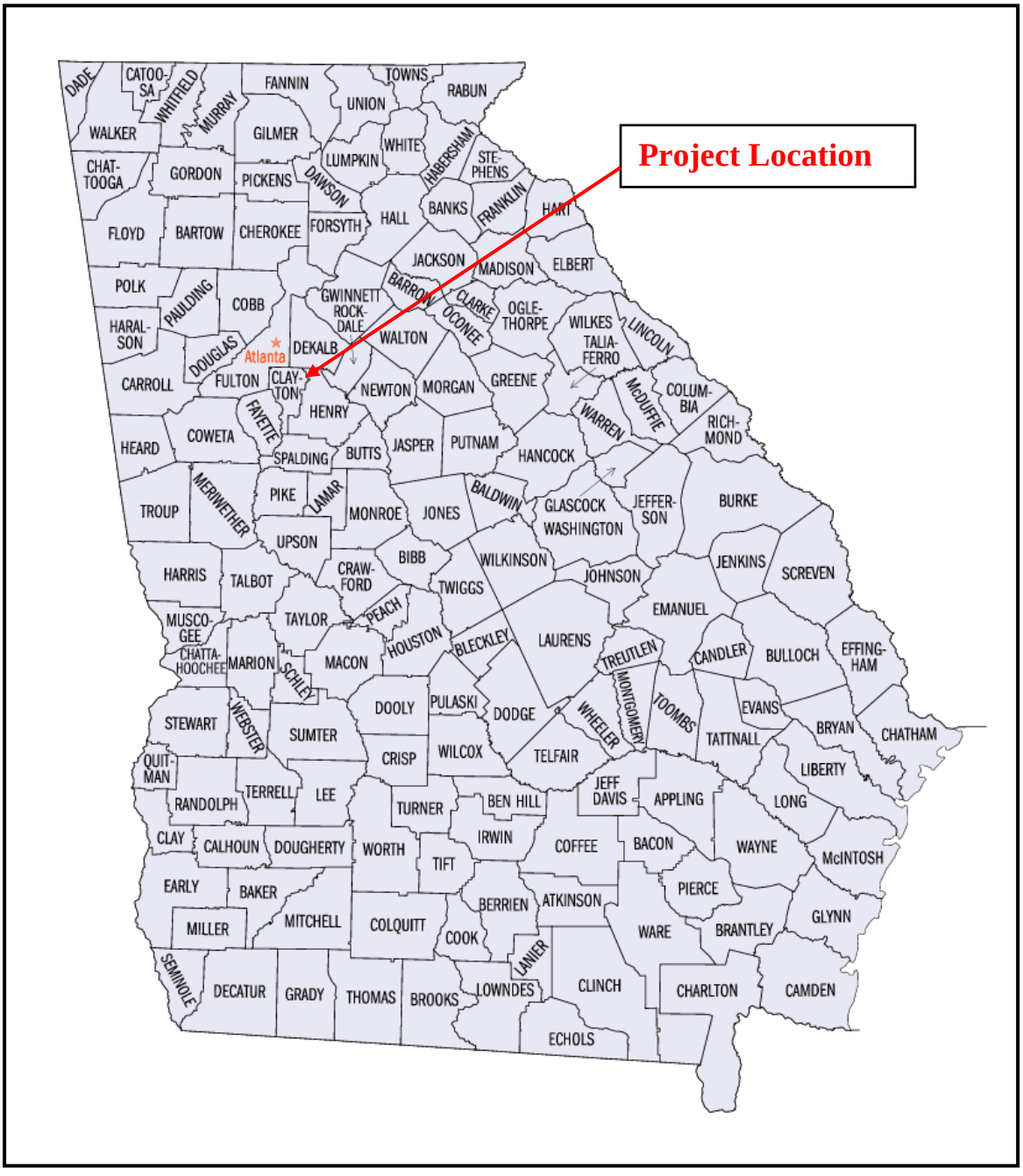
The VE Team appreciated the project overview given by Fletcher Miller. Highlights included:

- The project is about 3.2 miles in length and the main reason for the project is to improve safety due to the poor sight distances on this segment.
- The road will be widened to 4 lanes with additional right of way being acquired.
- The existing roadway was constructed in 1945.
- The vertical profile is very rolling throughout the project – like a rollercoaster.
- Environmentally there are 7 streams identified in the project limits.
- There is one church and portions of Fort Gillem with potential historic significance.
- There is one store that is of Community significance, but no historic significance.
- Side road alignment will be improved by increasing the skew angles closer to 90˚.
- Retaining walls will be needed but the locations are not yet identified.
- A 1941 concrete Railroad bridge over the road will be demolished since it is no longer used (see photo previous page).
- A question was raised whether the existing drainage box culverts on the project will be extended or replaced? Current design is for extension.
- The concept design was approved in March 2006. Since then several new housing developments have occurred.
- There have been two Town Hall Meetings to date, but no public hearings.
- Right of Way is scheduled for in March 2009 with the contract scheduled to be let in March 2011

- The roadway is currently experiencing approximately 15% truck traffic which is projected to continue
- Clayton County would like to maintain this as a residential section of the SR 42 corridor
- The new bridge cost needs to be added to the roadway estimate for total project cost

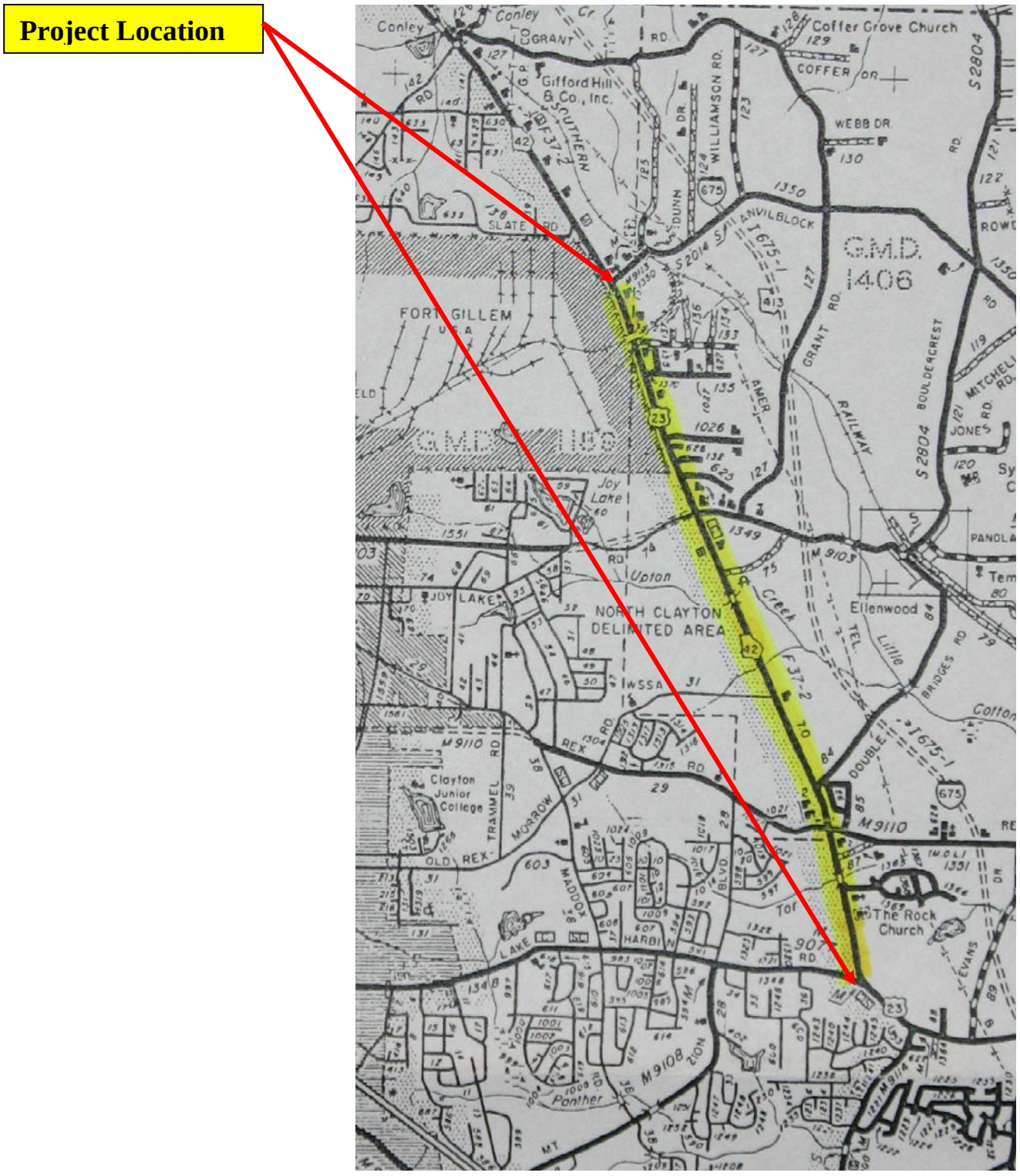
The following shows the project vicinity and location maps and project cost information used in this VE effort to present a more complete project description.

Figure 1
Project Vicinity Map



County Map of Georgia

Figure 2
Project Location Map



Estimate Report for file "720815_11-29"

Section Major Structures

Item Number	Quantity	Units	Unit Price	Item Description	Cost
500-3101	800	CY	581.59	CLASS A CONCRETE	465272.00
500-3107	2607	CY	759.76	CLASS A CONCRETE, RETAINING WALL	1980694.32
511-1000	17000	LB	0.92	BAR REINF STEEL	15640.00
				Section Sub Total:	**$2,461,606.32**

Section Base & Paving

Item Number	Quantity	Units	Unit Price	Item Description	Cost
310-5120	150921	SY	21.12	GR AGGR BASE CRS, 12 INCH, INCL MATL	3187451.52
402-1812	330	TN	69.08	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	22796.40
402-3121	56491	TN	63.86	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	3607515.26
402-3130	10592	TN	65.32	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	691869.44
402-3190	14123	TN	63.79	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM MATL & H LIME	900906.17
413-1000	32165	GL	1.96	BITUM TACK COAT	63043.40
441-6222	36960	LF	19.27	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	712219.20
441-6740	36960	LF	15.30	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	565488.00
446-1100	38725	LF	2.79	PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	108042.75
				Section Sub Total:	**$9,859,332.14**

Section Clearing & Grubbing

Item Number	Quantity	Units	Unit Price	Item Description	Cost
201-1500	1	LS	128000.00	CLEARING & GRUBBING - STP-037-2(54)	128000.00
				Section Sub Total:	**$128,000.00**

Section Grading & Earthwork

Item Number	Quantity	Units	Unit Price	Item Description	Cost
210-0100	1	LS	2500000.00	GRADING COMPLETE - STP-037-2(54)	2500000.00
				Section Sub Total:	**$2,500,000.00**

Section Landscaping

Item Number	Quantity	Units	Unit Price	Item Description	Cost
				Section Sub Total:	**$0.00**

Section Drainage

Item Number	Quantity	Units	Unit Price	Item Description	Cost
550-1241	36860	LF	61.20	STORM DRAIN PIPE, 24 IN, H 10-15	2255832.00
550-4224	150	EA	776.50	FLARED END SECTION 24 IN, STORM DRAIN	116475.00
576-1018	205	LF	36.82	SLOPE DRAIN PIPE, 18 IN	7548.10
668-1100	75	EA	2745.73	CATCH BASIN, GP 1	205929.75
				Section Sub Total:	**$2,585,784.85**

Section Special Features

Item Number	Quantity	Units	Unit Price	Item Description	Cost
620-0100	11420	LF	30.34	TEMPORARY BARRIER, METHOD NO. 1	346482.80
634-1200	150	EA	103.93	RIGHT OF WAY MARKERS	15589.50
				Section Sub Total:	**$362,072.30**

Section Traffic Signals

Item Number	Quantity	Units	Unit Price	Item Description	Cost
999-2015	1	LS	600000.00	TRAFFIC SIGNALS(5)	600000.00

Section Sub Total: $600,000.00

Section Concrete Work

Item Number	Quantity	Units	Unit Price	Item Description	Cost
441-0016	2850	SY	41.89	DRIVEWAY CONCRETE, 6 IN TK	119386.50
441-0104	20534	SY	33.72	CONC SIDEWALK, 4 IN	692406.48
441-0301	6	EA	2163.72	CONC SPILLWAY, TP 1	12982.32
441-0303	9	EA	2209.92	CONC SPILLWAY, TP 3	19889.28
441-0740	24024	SY	31.66	CONCRETE MEDIAN, 4 IN	760599.84
441-4020	1740	SY	44.63	CONC VALLEY GUTTER, 6 IN	77656.20
441-5002	1370	LF	21.50	CONCRETE HEADER CURB, 6 IN, TP 2	29455.00
441-5003	35	LF	21.60	CONCRETE HEADER CURB, 8 IN, TP 3	756.00
441-5004	430	LF	18.09	CONCRETE HEADER CURB, 10 IN, TP 4	7778.70
				Section Sub Total:	**$1,720,910.32**

Section Signs & Striping

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1029	200	SF	16.21	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	3242.00
636-1031	1085	SF	19.00	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING TP 6	20615.00
636-1041	66	SF	35.66	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	2353.56
636-2070	2030	LF	7.99	GALV STEEL POSTS, TP 7	16219.70
636-2080	317	LF	9.33	GALV STEEL POSTS, TP 8	2957.61
636-2090	91	LF	8.66	GALV STEEL POSTS, TP 9	788.06
636-3010	13	EA	506.34	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	6582.42
639-4004	19	EA	7288.47	STRAIN POLE, TP IV	138480.93
653-0120	112	EA	72.77	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	8150.24
653-1501	56120	LF	0.69	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	38722.80
653-1502	47101	LF	0.65	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	30615.65
653-1704	477	LF	4.19	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1998.63
653-1804	4149	LF	2.11	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	8754.39
653-3501	3333	GLF	0.56	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	1866.48
653-6004	9586	SY	2.84	THERMOPLASTIC TRAF STRIPING, WHITE	27224.24
653-6006	514	SY	3.06	THERMOPLASTIC TRAF STRIPING, YELLOW	1572.84
654-1002	2000	EA	3.09	RAISED PVMT MARKERS TP 2	6180.00
657-1054	1575	LF	4.86	PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, WHITE, TP PB	7654.50
657-3085	1575	GLF	4.57	PREFORMED PLASTIC SKIP PVMT MKG, 8 IN, CONTRAST (BLACK-WHITE), TP PB	7197.75
657-6054	1575	LF	4.91	PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, YELLOW, TP PB	7733.25
				Section Sub Total:	**$338,910.05**

Section Guardrail

Item Number	Quantity	Units	Unit Price	Item Description	Cost
641-1100	1244	LF	48.31	GUARDRAIL, TP T	60097.64
641-1200	470	LF	16.01	GUARDRAIL, TP W	7524.70
641-5001	20	EA	635.33	GUARDRAIL ANCHORAGE, TP 1	12706.60
641-5012	20	EA	1778.08	GUARDRAIL ANCHORAGE, TP 12	35561.60
				Section Sub Total:	**$115,890.54**

Section Lighting System

Item Number	Quantity	Units	Unit Price	Item Description	Cost
682-9030	1	LS	0.00	LIGHTING SYSTEM	0.00

Section Sub Total:	**$0.00**

Section Traffic Control - 1.5% of Construction Cost

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1010	1	LS	345000.00	TRAFFIC CONTROL - STP-037-2(54)	345000.00
				Section Sub Total:	**$345,000.00**

Section Erosion Control

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	27	AC	703.86	TEMPORARY GRASSING	19004.22
163-0240	490	TN	159.79	MULCH	78297.10
163-0240	1860	TN	176.49	MULCH	328271.40
163-0300	15	EA	1700.55	CONSTRUCTION EXIT	25508.25
163-0503	11	EA	542.06	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	5962.66
163-0520	71	LF	17.60	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	1249.60
163-0530	1875	LF	4.30	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	8062.50
163-0550	220	EA	281.30	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	61886.00
165-0010	1060	LF	0.82	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	869.20
165-0030	6910	LF	1.61	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	11125.10
165-0070	938	LF	1.79	MAINTENANCE OF BALED STRAW EROSION CHECK	1679.02
165-0087	11	EA	166.07	MAINTENANCE OF SILT CONTROL GATE, TP 3	1826.77
165-0101	15	EA	571.19	MAINTENANCE OF CONSTRUCTION EXIT	8567.85
167-1000	8	EA	1175.47	WATER QUALITY MONITORING AND SAMPLING	9403.76
167-1500	30	MO	1027.27	WATER QUALITY INSPECTIONS	30818.10
171-0010	2120	LF	1.83	TEMPORARY SILT FENCE, TYPE A	3879.60
171-0030	13820	LF	4.06	TEMPORARY SILT FENCE, TYPE C	56109.20
603-2024	7360	SY	53.49	STN DUMPED RIP RAP, TP 1, 24 IN	393686.40
603-2181	1830	SY	44.09	STN DUMPED RIP RAP, TP 3, 18 IN	80684.70
603-7000	9190	SY	5.15	PLASTIC FILTER FABRIC	47328.50
700-6910	50	AC	1063.20	PERMANENT GRASSING	53160.00
700-7000	96	TN	59.69	AGRICULTURAL LIME	5730.24
700-7010	125	GL	22.95	LIQUID LIME	2868.75
700-8000	55	TN	286.72	FERTILIZER MIXED GRADE	15769.60
700-8100	2412	LB	2.32	FERTILIZER NITROGEN CONTENT	5595.84
700-9100	33171	SY	6.33	BLOCK SOD	209972.43
710-9000	8435	SY	4.76	PERMANENT SOIL REINFORCING MAT	40150.60
716-2000	137700	SY	1.20	EROSION CONTROL MATS, SLOPES	165240.00
				Section Sub Total:	**$1,672,707.39**

Section Field Engineers Office

Item Number	Quantity	Units	Unit Price	Item Description	Cost
153-1300	1	EA	76757.66	FIELD ENGINEERS OFFICE TP 3	76757.66
				Section Sub Total:	**$76,757.66**

Total Estimated Cost: $22,766,971.57

Subtotal Construction Cost	**$22,766,971.57**
E&C Rate 10.0 %	$2,276,697.16
Inflation Rate 0.0 % @ 0.0 Years	$0.00
Total Construction Cost	**$25,043,668.73**

Right Of Way	$18,790,000.00
ReImb. Utilities	$1,525,000.00
Grand Total Project Cost	**$45,358,668.73**

Department of Transportation
State of Georgia

Interdepartmental Correspondence

FILE R/W Cost Estimate **OFFICE** Atlanta
DATE January 15, 2008

FROM Phil Copeland, Right of Way Administrator

TO Brent A. Story, P.E. / WDT., State Road and Airport Design Engineer

ATTN: Jacob Achorn

SUBJECT **Preliminary Right of Way Cost Estimate**
Project: STP-037-2(54)Clayton
PI. No.: 720815
Description: SR 54 Widening from Lake Harbin to Fort Gillam

As per your request, attached is a copy of the approved Revised Preliminary Right of Way Cost Estimate on the above referenced project.

Please note the area of Required R/W was furnished with your request. **Please include total Required R/W areas for the entire corridor in all future requests.**

If you have any questions, please contact Jerry Milligan at the Chamblee Right of Way Office at (770) 986-1541.

PC:GAM
Attachments
cc: Brian Summers, Engineering Services
Wes Brock, R/W
Windy Bickers, Financial Management
File

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: Jerry Milligan

Date: January 15, 2008
Project: STP-037-2(54)Clayton UPDATE
Existing/Required R/W: Varies/Varies
Project Termini : SR 54 Widening from Lake Harbin to Fort Gillam
Project Description: SR 54 Widening Project

P.I. Number: 720815
No. Parcels: 110

Land: Res. R/W: 334,541 sf @ $.65/sf	$ 217,452		
Res. Esmt.: 243.065 sf @ $.65/sf @ 50%	78,996		
Comm. R/W: 55,757 sf @ $5.50/sf	306,664		
Comm.R/W: 40,511sf @ $5.50 /sf @ 50%	111,405		
Indus. R/W: 167,270 sf @ $ 3.03/sf	506,828		
Indus. Esmt.: 121,532 sf @ $3.03/sf @ 50%	184,121	$	1,405,466
Improvements : Signs, fencing, residences, businesses, landscaping, misc. site improvements			3,271,400
Relocation: Residential (10)	$ 400,000		
Commercial (9)	225,000		625,000
Damage : Proximity (5)			
Cost to Cure (9)		$	110,000
Net Cost		$	5,411,866

Net Cost		$ 5,411,866
Scheduling Contingency	55 %	2,976,526
Adm/Court Cost	60 %	5,033,036
Market Appreciation	40 %	5,368,571
		$ 18,789,998

Total Cost **$18,790,000**

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE **STP-037-2(54), CLAYTON**
SR42 FM LAKE HARBIN RD N
TO ANVIL BLOCK RD
PI 720815

OFFICE District Seven
Chamblee, GA

DATE January 30, 2008

FROM Bryant R. Poole, District Engineer

TO Mr. Fletcher Miller, Office of Road & Airport Design
Attention: Jacob Achorn

SUBJECT **Updated Cost Estimate**

A field inspection was conducted on the above referenced project. The following companies have facilities that occupy the public right-of-way and should be relocated at **no cost** to the Department.

Atlanta Gas Light Company
Georgia Power Company
City of Atlanta
Comcast of Georgia, Inc.
Clayton County Water Authority

The companies who are on private easements or publicly owned facilities on State right-of-way are:

BellSouth Telecommunications	**$ 30,000.00**
Clayton County Water Authority	**$ 1,495,000.00**
Total Cost	**$ 1,525,000.00**

RECEIVED
FEB – 1 2008
ROAD & AIRPORT DESIGN

Please note that this estimate was prepared with limited information and could change when more detailed information is made available. If you have any questions, please contact Mrs. Yulonda Pride-Foster at (770) 986-1117.

Sincerely,

Bryant R. Poole
District Engineer

By: Jonathan Walker
District Utilities Engineer

BRP:JW:YPF:

CC: Jeff Baker, P.E./ Utilities (TMC)
File

ENGINEERING SERVICES LET STATUS

PROJECT ID	COUNTY	DESCRIPTION	MGNT. LET DATE
720817-	Clayton	SR 42/MACON HWY @ UPTON CREEK	December 2010

BHF00-0037-02(055) *FIELD DIST:* 7

TIP #: CL-012B *TWIN:* 720815- *US:* 23

MPO: Atlanta TMA *EST DATE:* 3/23/2006

Phase	Approved	Proposed	Cost	Fund	Status
CST	LR	LR	637,000.00	L1C0	PRECST
PE	1992	1992	21,300.00	Q10	AUTHORIZED

PROJ MGR: Miller, Fletcher *REVIEWER:*

PROG Reconstruction/Rehabilitation *TYPE WORK:* Bridges

CONCEPT: BR REMOVAL *LET RESP:* DOT *ACT LEADER FOR 40200:*

ACTIVITY	SCHED START	SCHED FINISH	DESCRIPTION	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
08300	2/21/08	2/27/08	VE Study			0	GOES W/720815, NO UST'S. COUNTY SAYS SEND NEW LGPA . UTILITY CE - $1,220,000. W/720815 (4-10-02) ADVERTISE FOR CONSULTANT IN FY 2003. FOLLOW/UP LGPA LTR SENT 4-25-02. (9/22/03) RE-ASSIGNED TO ROAD DESIGN. (3/10/04) NEED NEW CONCEPT. (6/7/06) CONCEPT APPVD. 3/23/06; MAPPING COMPLETE; PRELIM. DESIGN UNDERWAY.
40000	10/13/09	12/9/09	Preliminary Field Plan Review			0	
40100	10/13/09	11/2/09	PFPR Request and Meeting Preparation			0	
40200	11/3/09	11/4/09	PFPR Inspection			0	
40300	11/5/09	11/11/09	PFPR Report Preparation			0	
40400	11/12/09	11/25/09	PFPR Report Approval and Distribution			0	
40500	11/26/09	12/9/09	PFPR Report Response			0	
90000	8/25/10	10/13/10	Final Field Plan Review			0	
90100	8/25/10	9/14/10	FFPR Request and Meeting Preparation			0	
90200	9/15/10	9/16/10	FFPR Inspection			0	
90300	9/17/10	9/23/10	FFPR Report Preparation			0	
90350	9/24/10	9/29/10	FFPR Report Approval and Distribution			0	
90400	9/30/10	10/13/10	FFPR Response			0	

BIKE PROVISIONS INCLUDED?: N *MEASUREMENT SYSTEM:* E *CONSULTANT:* N *UT EST:* $0.00

Project Comments

Design: FM/JA: Need to request Bridge Hydraulic Study. (12/10/07)
EIS: FONSI|Apvd9-30-97|OnSchedRW|Updated 12-12-07| ADESESAN
LGPA: CLAYTON REF DO UTILITIES 10-3-02|RESCISSION LETTER SENT TO CLAYTON 3-8-05.
Programming: PR2/PE=5-15-92|#1 7-05
Traffic Op: CAH|BR REMOVAL PRJCT W/720815-/CLAYTON CO|032001|$
Utility: YPF: With 720815 08/07
PDD: W/720815. 10/8/99. Reassigned to Road Design. 9/22/03.
Bridge: BRIDGE REQUIRED
EMG: RECST/REHAB(BRIDGE REMOVAL); MAPPED WITH JOB 720815

Activity Comments

Activity	Comment
08300	VE Study scheduled for 2/26-29/08

Design Exceptions

Exception Type	Recieved Date	Approved Date

Comment

Bridge Project
Constr = 637,000

Thursday, February 14, 2008 1

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-1	1 of 4	Reduce shoulder width from 16 feet to 12 feet

Comp By: AW Date: 2/27/08 Checked By: DCW Date: 2/28/08

Original Concept:

The original concept calls for 16 foot urban shoulders.

Proposed Change:

Revise the shoulder width to 12 feet. See proposed sketch on page 2 of 4.

Justification:

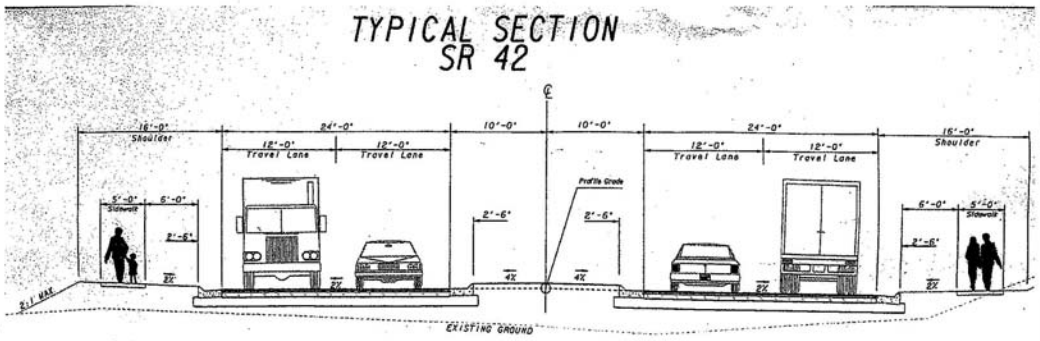
Reducing the shoulder width by 4 feet on each side of the roadway will reduce the amount of earthwork required for the project and will reduce the amount of required right of way.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,448,000		
- Proposed	-0-		
- Savings	1,448,000		1,448,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**1,448,000**

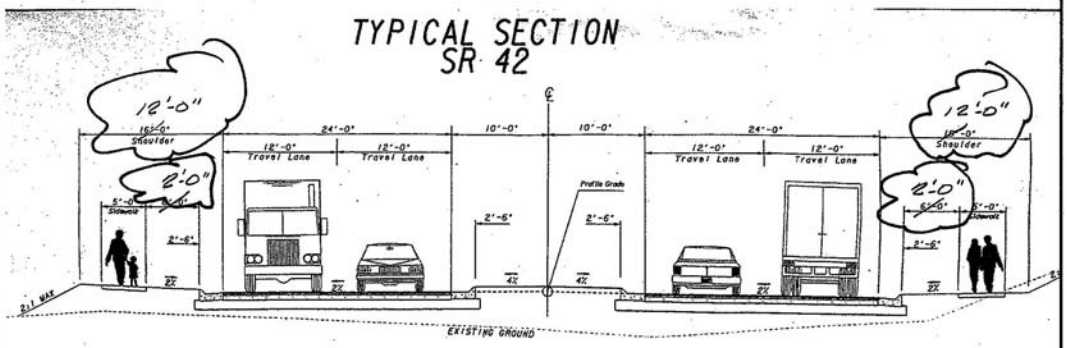
SKETCH

SR 42 Widening and new Bridge	ITEM Nº: A-1 CLIENT: GDOT Sheet 2 of 4

Original Section



Proposed Section



COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: A-1 CLIENT: GDOT		
					Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Earthwork	CY	20,500	5.00	102,500			
Right of Way	SF	139,560	8.70	1,214,172			
SUBTOTAL				1,316,672			0
Markup @ 10.00%				131,667			0
TOTAL				1,448,339			0
TOTAL ROUNDED				1,448,000			0

STA 23+00 to STA 204+00 = 18,100 LF X 2 sides = 36,200 LF
Side streets (see below) scaled from plans = - 1,310
150 ft. bridge + 2-30 ft. approach slabs X 2 sides = -420
34,470 LF

34,470 X (16'-12') = 137,880 SF

Earthwork:

Assume 4 ft. height
137,880 SF X 4 ft. / 27 CF/ CY = 20,427 CY, use 20,500 CY

Right of way reduction:

18,100 LF x 2 sides = 36,200 LF
Side Streets = -1,310
34,890LF
34,890 LF X 4 ft wide = 139,560 SF saved

Approximate side street width near intersection with SR 42:

Stone Creek Dr.	70'
Chippewa	60'
Owens Tr.	70'
Dease Dr.	50'
Rex Rd W	100'
Rex Rd. E	120'
Double Bridge Rd.	60'
Anderson Ct.	40'
Pactin Pl.	50'
Old Rex Morrow Rd.	70'
E. Clayton Dr.	50'
Forest Pkwy	120'
Ellenwood Rd.	100'
Farn Dr.	40'
Burkshire Rd	40'
South Haven Rd	40'(Assume)
Campbell Blvd	70'
Oak Cir	40'
Old Tony Rd	40'
Truck Drwy.	80'
TOTAL	1,310 LF

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	**PAGE No.:**	**CREATIVE IDEA:**
A-2	1 of 5	Reduce lane width from 12 feet to 11 feet on all four travel lanes

Comp By: AW Date: 2/27/08 Checked By: DCW Date: 2/27/08

Original Concept:

The original concept included 4-12 foot travel lanes for the typical section.

Proposed Change:

Use 4-11 foot travel lanes.

Justification:

The proposed roadway is designed as an urban section at a design speed of 45 mph. Using an urban section and a design speed of 45 mph, the 11 foot lanes should function similar to the 12 foot lane width. There is also a 2 foot gutter adjacent to each lane giving additional area before the curb.

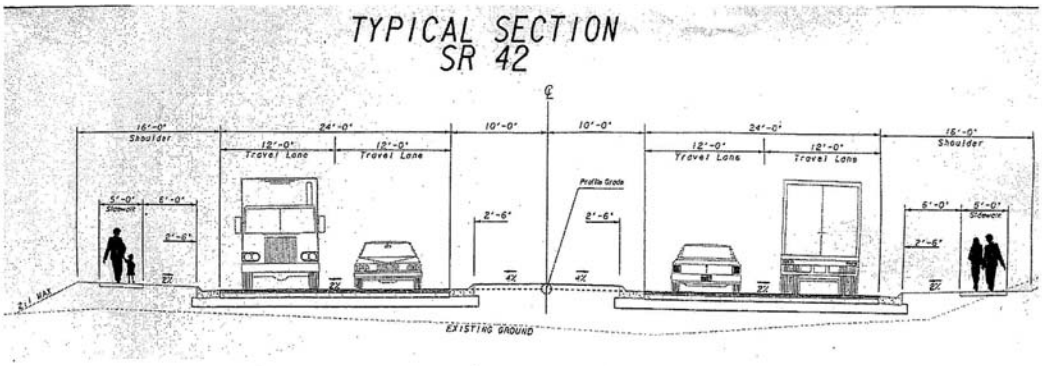
Substantial savings results in right of way, pavement, GAB, and earthwork.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**PRESENT WORTH**
INITIAL COST - Original	1,273,000		
- Proposed	-0-		
- Savings	1,273,000		1,273,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**1,273,000**

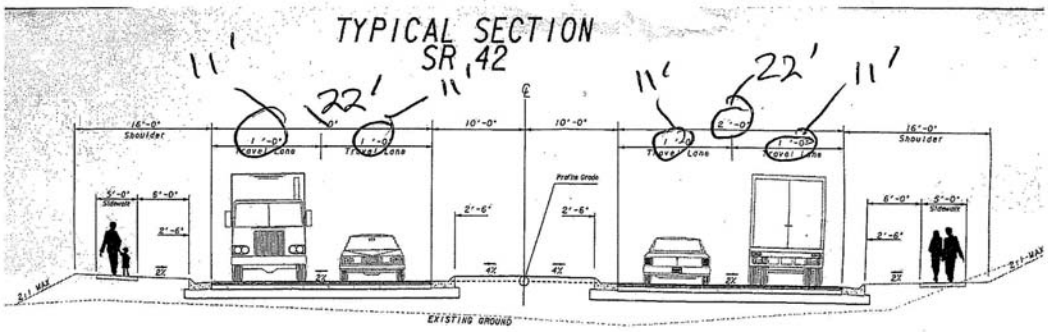
SKETCH

SR 42 Widening and new Bridge	ITEM Nº: A-2 CLIENT: GDOT Sheet 2 of 5

Original Section



Proposed Section



COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: A-2 CLIENT: GDOT		
					Sheet 3 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Asphalt Paving	SY	8,050	41	330,050			
Graded Aggregate Base	SY	8,050	21.12	170,016			
Earthwork	CY	5,400	5.00	27,000			
Right of way	SF	72,400	8.70	629,880			
SUBTOTAL				1,156,946			0
Markup @ 10.00%				115,695			0
TOTAL				1,272,641			0
TOTAL ROUNDED				1,273,000			0

Sta 23+00 to 204+00 = 18,100 LF of SR 42

18,100 LF X 4 lanes X 1 foot width / 9 SF/SY = 8,044 SY, use 8,050 SY

Pavement:

Assume asphalt at 110 #/SY-IN / 2000 # / T = 0.055 Tons / SY-IN
Full Depth = 11.5 inches X 0.055Tons / SY-IN = 0.63Tons / SY

Asphalt Cost:

1.5 inch of 12.5 mm - $65.32/Ton
2.0 inch of 19 mm - $63.79/Ton
8.0 inch of 25 mm - $63.86/Ton

$$\frac{(65.32 \times 1.5) + (63.79 \times 2.0) + (63.86 \times 8.0)}{11.5} = \$64.06 \text{ / Ton weighted average}$$

$64.06 / Ton X 0.63 Tons / SY = $40.43 / SY, use $41.00 / SY

12 inch GAB:

8050 SY

Earthwork:

Assume average 2 foot height cut or fill
Volume = 2 ft. X 4 lanes X 1 ft wide X 18,100 LF / 27 CY/CF = 5,363 CY , use 5,400 CY

Right of Way:

Total net cost of ROW $5,412,000

Disallow improvements (use $3,000,000) as they will be done regardless of the incremental ROW savings, therefore Net ROW cost = $2,412,000

Apply markups:

= $2,412,000 X 1.55 X 1.60 X 1.40 = $8,375,000

Apply this to total ROW and easement areas = 963,000 SF

Average cost = $8.70 / SF

A-2
Pg 5 of 5

Preliminary Right of Way Cost Estimate

Phil Copeland
Right of Way Administrator
By: Jerry Milligan

Date: January 15, 2008
Project: STP-037-2(54)Clayton UPDATE
Existing/Required R/W: Varies/Varies
Project Termini : SR 54 Widening from Lake Harbin to Fort Gillam
Project Description: SR 54 Widening Project

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No. Parcels: 110

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	Res. Esmt.: 243.065 sf @ $.65/sf @ 50%	78,996		
	Comm. R/W: 55,757 sf @ $5.50/sf	306,664		
	Comm.R/W: 40,511sf @ $5.50 /sf @ 50%	111,405		
	Indus. R/W: 167,270 sf @ $ 3.03/sf	506,828		
	Indus. Esmt.: 121,532 sf @ $3.03/sf @ 50%	184,121	$	1,405,466
Improvements :	Signs, fencing, residences, businesses, landscaping, misc. site improvements			3,271,400
Relocation:	Residential (10)	$ 400,000		
	Commercial (9)	225,000		625,000
Damage :	Proximity (5)			
	Cost to Cure (9)		$	110,000
	Net Cost		$	5,411,866

Net Cost		$	5,411,866
Scheduling Contingency	55 %		2,976,526
Adm/Court Cost	60 %		5,033,036
Market Appreciation	40 %		5,368,571
		$	18,789,998

Total Cost **$18,790,000**

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	**PAGE No.:**	**CREATIVE IDEA:**
A-2.1	1 of 4	Reduce the proposed inside lanes (closest to median) to 11 feet. Retain the outside lanes at 12 feet.

Comp By: AW Date: 2/27.08 Checked By: DCW Date: 2/27/08

Original Concept:

The original concept calls for 4-12 foot travel lanes.

Proposed Change:

Change the inside lane width from 12 feet to 11 feet, keeping the outside lanes at 12 feet.

Justification:

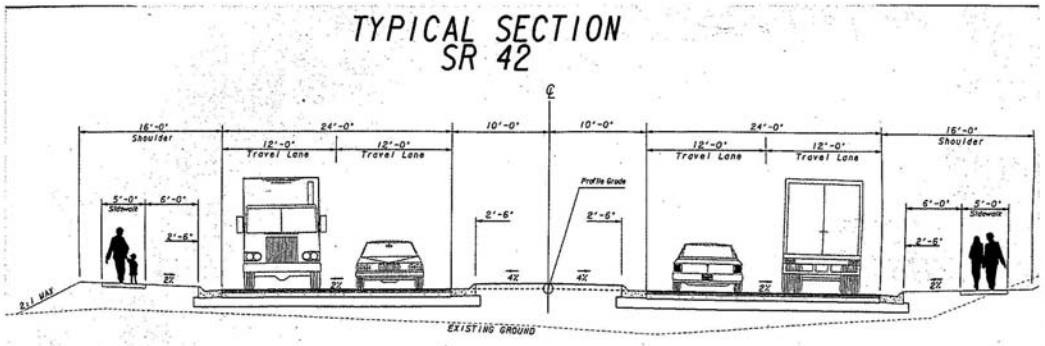
With a 45 mph speed design and in an urban section, 11 foot lanes should function similar to 12 foot lanes. Due to the truck percentage of 15% on this route, retaining the outside lanes at 12 feet will help facilitate the truck traffic.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**PRESENT WORTH**
INITIAL COST - Original	636,300		
- Proposed	-0-		
- Savings	636,300		636,300
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**636,300**

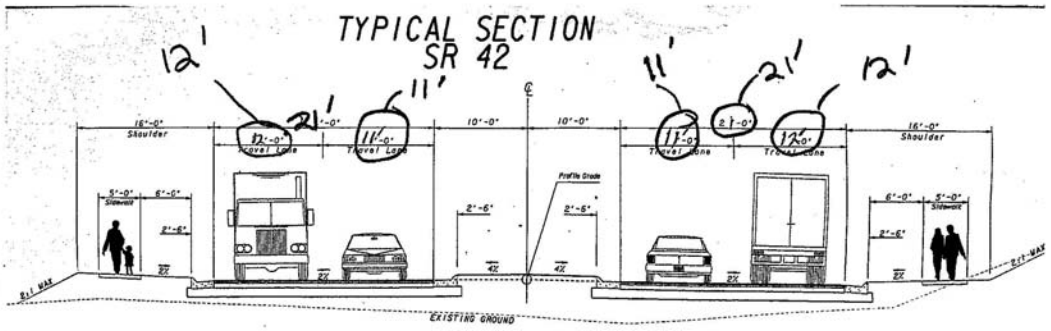
SKETCH

SR 42 Widening and new Bridge	ITEM N^{Q} : A-2.1 CLIENT: GDOT Sheet 2 of 4

Original Section



Proposed Section



COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM Nc A-2.1 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Paving Costs:							
Asphalt Concrete	SY	4,025	41.00	165,025			
Graded Aggregate Base	SY	4,025	21.12	85,008			
Earthwork	CY	2,700	5.00	13,500			
Right of Way	SF	36,200	8.70	314,940			
SUBTOTAL				578,473			0
Markup @ 10.00%				57,847			0
TOTAL				636,320			0
TOTAL ROUNDED				636,300			0

For this idea, pavement, earthwork and right of way quantities were assumed to be approximately ½ of those proposed under idea A-2.

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-3	1 of 4	Reduce the median width by 4 feet from 20 feet to 16 feet

Comp By: AW Date: 2/28/08 Checked By: DCW Date: 2/28/08

Original Concept:

The original concept calls for a 20 foot raised median with a 2.5 foot curb and gutter. Left turn bays reduce the median to 8 feet with a 2.5 foot curb and gutter.

Proposed Change:

Reduce the median to a 16 foot raised median with 2.5 foot curb and gutter. At left turn lanes, reduce the median to a 2 foot raised median without concrete gutters and offset the raised median 1 foot from the edge of the travel way. See attached sketch page 2 of 4.

Justification:

Reducing the median width would reduce the amount of new right of way, reduce the amount of earthwork and reduce the amount of median pavement. Maintaining a 2 foot raised concrete median at the left turns would present a clear visual and physical barrier.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,256,700		
- Proposed	281,500		
- Savings	975,200		975,200
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**975,200**

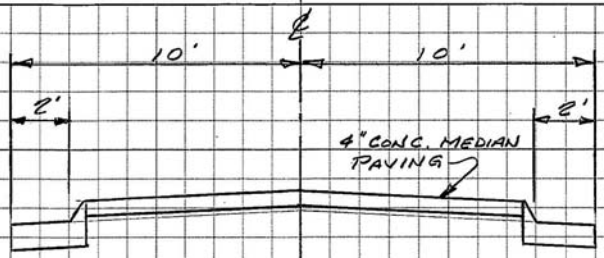
A-3

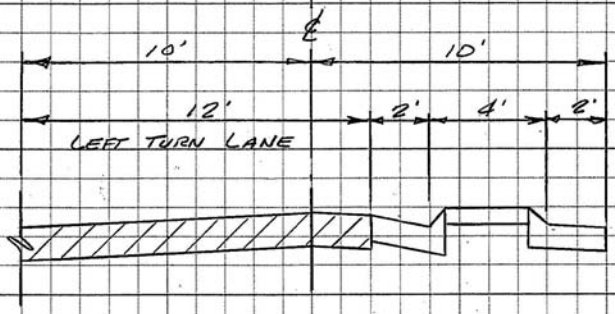
MACTEC

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

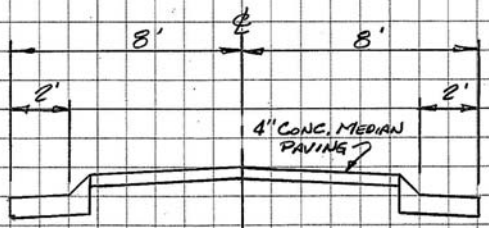
JOB NO. A-3 SHEET 2 OF 4
PHASE _____ TASK _____
JOB NAME _____
BY AW DATE 2/28/08
CHECKED BY DCW DATE 2/28/08

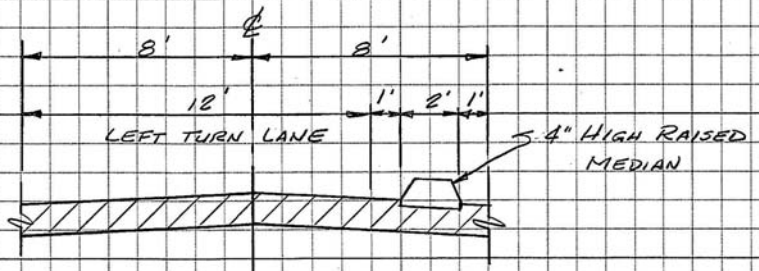
ORIGINAL CONCEPT





PROPOSED CHANGE





COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: A-3 CLIENT: GDOT		
					Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Right of way	SF	72,400	8.70	629,880			
Earthwork	CY	5,350	5.00	26,750			
4 in. concrete median	SY	6,500	31.66	205,790			
Concrete curb and gutter	LF	15,160	15.30	231,948			
Bridge	SF	600	80.00	48,000			
Asphalt Added (See Calcs)	EA						130,255
Graded Aggregate Base	SY				3,400	21.12	71,808
4 inch concrete median	SY				1,700	31.66	53,822
SUBTOTAL				1,142,368			255,885
Markup @ 10.00%				114,237			25,589
TOTAL				1,256,605			281,474
TOTAL ROUNDED				1,257,000			281,500

STA 23+00 to 204+00 = 18,100 LF

Right of Way Reduction:
18,100 LF X (20-16) = 72,400 SF

Earthwork
18,100 LF – 150 foot bridge = 17,950 LF
Assume fill / cut average = 2 feet
17,950 LF X (20-16) X 2 feet/ 27 CF/CY = 5,319 CY, use 5,350 CY

4 inch concrete median paving:
Length of bridge = 150 feet
Median openings: 14@100 feet + 1@ 120 feet = 1,520 LF
Length of median: 18,100 LF – 150 LF – 1,520 LF = 16,430 LF
Left turn bays: (250 feet X 28 ea.) + 200 feet + 200 feet + 180 feet = 7,580 LF
(16,430 LF – 7,580 LF) X 4 feet wide = 35,400 SF
7,580 SF X 3 feet wide = 22,740 SF
Total = (35,400 SF + 22,740 SF) / 9 SF/SY = 6,460 SY

Concrete curb and gutter, Type 7:
7,580 LF X 2 sides = 15,160 LF

Bridge reduction:
150 feet long X 4 feet wide = 600 SF

Additional AC pavement and graded aggregate base course:
Asphalt: 7,580 LF X 4 ft. / 9 SF/SY = 3369 SY, use 3,400 SY full depth
3400 SY X $41.00 / SY = $139,400
Surface course only: 7580 LF X 2 ft. / 9 SF/SY = 1,684 SY, use 1700 SY
1,700 X 1.5 in. X 0.055 Tons /SY-in. = 140 Tons @ $65.32/Ton = $9,145
Total AC cost = $139,400 – $9,145 = $130,255
GAB:
3,400 SY

Addition of 4 inch median along left turn bay:
7,580 LF X 2 ft. wide / 9 SF/SY = 1,684 SY, use 1,700 SY

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A - 4	1 of 3	Use a 14-foot flush median instead of a 20-foot raised median throughout the entire project limits.

Comp By: DPC Date: 2/27/08 Checked By: DCW Date: 2/28/08

Original Concept:

The current concept features a 20-foot raised concrete median with turn lanes throughout the entire project limits.

Proposed Change:

The VE Team recommends that the Design Team consider utilizing a 14-foot flush median instead of the 20-foot raised median throughout the entire project limits.

Justification:

The 14-foot flush median is the recommended typical section for a four lane arterial with a design ADT volume less than 24,000 vpd. SR 42 is projected to have 17,340 vpd by 2013 and 25,092 vpd by 2033 and the number of driveways is not a factor, therefore a raised median is not warranted for several years. Selecting this alternative would reduce the project's right-of-way footprint by 6.0 feet and eliminate hundreds of feet of curb & gutter and concrete median sections. This recommendation would also avoid potential opposition to the right-in/right-out condition that might emerge as other local projects move forward.

This section would not match adjacent segments which are already raised medians, and if it does become necessary to construct a raised median in the future, a complete reconstruct would be required and this would not be a cost effective solution.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,956,000		
- Proposed	1,631,000		
- Savings	325,000		325,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**325,000**

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM N A-4 CLIEN GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Elim. curb & gutter, 8" x 30" Tp. 7	LF	32,120	$15.30	491,436			
Eliminate Concrete Median, 4"	SY	11,700	$31.66	370,422			
Additional Asphalt Conc. Pave.	SY				20,625	75	1,546,875
Full Depth w/ grading/ earth.							
Elim. R-O-W acquisition	SF	105,360	$8.70	916,632			
(See Item A-2 for unit cost)							
Bridge Savings (see calc. sheet#2)							(64,200)
SUBTOTAL				1,778,490			1,482,675
Markup @ 10.00%				177,849			148,268
TOTAL				1,956,339			1,630,943
TOTAL ROUNDED				1,956,000			1,631,000

Concrete Median –

Full width section 5,600 LF x 15 LF / 9 SF / SY = 9,333 SY to be eliminated.
Narrow width section 7,100 LF x 3.0 LF / 9 SF / SY = 2,367 SY to be eliminated.
Total median eliminated = 11,700 SY

Concrete curb & gutter Type 7 –

198+60 – 23+00 = 17,560 LF corridor
(15) 100 LF median breaks or openings along corridor = 1,500 LF
17,560 – 1,500 = 16,060 LF of curb and gutter for one side only, multiply by 2.
32,120 LF of type 7 curb and gutter eliminated.

New asphalt pavement to be utilized in place the entire length of the project.

11,700 SY of median eliminated but full depth asphalt section needed in place.
Plus the area eliminated by the curb and gutter section at 32,120 LF x 2.5 LF / 9 SY = 8,922 SY
Total asphalt required is 8,922 SY + 11,700 SY = 20,625 SY

Right-of Way Reduction

198+60 – 23+00 = 17,560 LF corridor
Reduction from 20 LF down to 14 LF = 6 LF for entire length of corridor.
17,560 LF x 6 LF = 105,360 SF

Bridge Savings

6 foot of bridge deck X 150 feet X $80 = $72,000 minus AC pavement included above = (6X150)/9 = 100SY X 75 = (7500)
Net Savings for bridge = $64,500

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A - 5	1 of 4	Minimize intersection realignments at Rex Road

Comp By: DPC Date: 2/28/08 Checked By: DCW Date: 2/28/08

Original Concept:

The current concept includes a realignment of the Rex Road and SR 42 intersection. Currently it has an intersection angle of 60 DEG and by design at concept level the Department wants to increase this angle to 70 DEG.

Proposed Change:

The VE Team recommends that the Design Team consider not adjusting this intersection angle to 70 DEG due to the Right of Way impacts and additional construction costs. Widen intersection to meet capacity requirements and turn movements, but do not offset Rex Road centerline to the northeast.

Justification:

The 2004 ASSHTO "Green Book" Chapter 9 Intersection states "an intersection providing an angle of at least 60 DEG's provides most of the benefits of a 90 DEG intersection angle while reducing the right of way takings and construction costs." Selecting this alternative would reduce the project's right-of-way taking and eliminate construction costs in pavement and embankment items.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	459,100		
- Proposed	-0-		
- Savings	459,100		459,100
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**459,100**

SKETCH

SR 42 Widening and New Bridge	ITEM N^{O} : A-5 CLIENT: GDOT Sheet 2 of 4

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: A - 5 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Earthwork	CY	1,482	$5.00	7,410	0		
Asphalt Pave. full depth sect.	SY	2,230	$75.00	167,250	0		
Right of Way	SF	24,200	$8.70	210,540	0		
Retaining Wall, concrete CIP	CY	42	759.76	31,910	0		
Retaining Wall, Reinf. Steel	LBS	300	$0.92	276	0		
SUBTOTAL				417,386			0
Markup @ 10.00%				41,739			0
TOTAL				459,125			0
TOTAL ROUNDED				459,100			0

Earthwork / Embankment:

North side of Rex Road embankment elimination area calculations.
Total area = 20,000 SF = 2,230 SY (*from calculation below*)
Using $5.00 CY for embankment and placement with an average 2.0 LF of depth
Equates to (20,000 SF)(2.0 LF) = 40,000 CF = 1,482 CY

New Asphalt Pavement:

North side of Rex Road pavement elimination area calculations.
Area # 1 (.5)(50')(100') = 2,500 SF / 9 = 280 SY
Area # 2 (250')(50') = 12,500 SF / 9 = 1,390 SY
Area # 3 (.5)(200')(50') = 5,000 SF / 9 = 560 SY
Total area = 20,000 SF = 2,230 SY

Right-of Way Reduction:

Using total pavement elimination calculations from above at 20,000 SF. Need to add shoulder area elimination dimension.
(350 LF Rex Road)(12 LF Clear zone) = 4,200 SF
Total area = 20,000 SF + 4,200 SF = 24,200 SF

(*See Idea A-2 Calculation Spreadsheet for the logic supporting the $8.70 SF cost of ROW*)

Retaining Wall:

Rex Road southeast corner quadrant. Shift Rex Road south approximately 20 LF in order to keep lane connectivity as it crosses SR 42.
(1.5')(250')(3')/27 = 42 CY of class A concrete.

Reinforcing steel – 42 CY equates to 300 lbs. of steel

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
A-6	1 of 3	Minimize intersection realignments at Forest Parkway / Ellenwood Road intersection.

Comp By: DPC Date: 2/28/08 Checked By: DCW Date: 2/28/08

Original Concept:

The current concept includes a realignment of the Forest Parkway / Ellenwood Road and SR 42 intersection. Currently it has an intersection angle of > 70 DEG and by design at concept level the Department wants to increase this angle to > 80 DEG.

Proposed Change:

The VE Team recommends that the Design Team consider not adjusting this intersection angle to 80 DEG due to the Right of Way impacts and additional construction costs. Widen intersection to meet capacity requirements and turn movements, but do not relocate current centerline 75 LF to the south.

Justification:

The 2004 ASSHTO "Green Book" Chapter 9 Intersection states "an intersection providing an angle of at least 60 DEG's provides most of the benefits of a 90 DEG intersection angle while reducing the right of way takings and construction costs." Selecting this alternative would reduce the project's right-of-way taking and eliminate construction costs in pavement and embankment items.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	463,000		
- Proposed	-0-		
- Savings	463,000		463,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**463,000**

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No	A - 6	
					CLIENT	GDOT	
					Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Earthwork	CY	1,956	$5.00	9,780			
Asphalt Pave. full depth sect.	SY	2,935	$75.00	220,125			
Right of Way	SF	22,000	$8.70	191,400			
SUBTOTAL				421,305			0
Markup @ 10.00%				42,131			0
TOTAL				463,436			0
TOTAL ROUNDED				463,400			0

Earthwork / Embankment:

Total area = 26,400 SF = 2,935 SY (*from calculation below*)
Using $5.00 CY for embankment and placement with an average 2.0 LF of depth
Equates to (26,400 SF)(2.0 LF)/27 = 1,956 CY

New Asphalt Pavement:

South side of Ellenwood Road pavement elimination area calculation.
(12 LF lane)(2)(600 LF) = 14,400 SF / 9 = 1,600 SY
South side of Forest Parkway pavement elimination area calculation.
(12 LF lane)(2)(500 LF) = 12,000 SF / 9 = 1,335 SY
Total area = 26,400 SF = 2,935 SY

Right-of Way Reduction:

(600 LF Ellenwood Road)(40 LF)(0.5) = 12,000 SF
(500 LF Forest Parkway)(40 LF)(0.5) = 10,000 SF

Total area = 12,000 SF + 10,000 SF = 22,000 SF

(*See Idea A-2 Calculation Spreadsheet for the logic supporting the $8.70 SF cost of ROW*)

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
F - 4	1 of 4	Use Gravity Retaining Walls for 75% of walls

Comp By: AS Date: 2/28/08 Checked By: DCW Date: 2/28/08

Original Concept:

The original cost estimate is based on constructing the retaining walls utilizing reinforced concrete.

Proposed Change:

Based on the review of cross sections, the average height of the walls is approximately 7 ft. Utilizing gravity walls (GA Std. 9031L) will work for 75% of the locations.

Justification:

Construction cost of gravity walls is less expensive than reinforced concrete retaining walls.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	2,179,000		
- Proposed	1,850,000		
- Savings	329,000		329,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**329,000**

DETAIL OF CATCH BASIN MODIFIED FOR DOUBLE GRATES
DETAIL OF DROP INLET MODIFIED FOR DOUBLE GRATES
DETAIL OF CONCRETE SPRING BOX
DETAIL OF CONCRETE STEPS
DETAILS FOR CAPPING EXISTING DROP INLET WITH CONCRETE COVER
DETAIL FOR RAISING HEADWALL
TYPICAL PIPE PLUG
DETAILS OF CATCH BASIN OR DROP INLET CONNECTION TO CONCRETE BOX CULVERT
DETAILS OF RETAINING WALL TYPICAL SECTIONS
TYPICAL SECTION FOR GRAVITY TYPE WALL
STANDARD DRAINAGE FOR RETAINING WALLS
DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
STANDARD
DETAILS OF:
CATCH BASIN MODIFIED FOR DOUBLE GRATE DROP INLET MODIFIED FOR DOUBLE GRATE, CONCRETE SPRING BOX, CONCRETE STEPS, CONCRETE HEADWALL, CONNECTION TO CONCRETE BOX CULVERT, CAPPING EXISTING DROP INLET, RAISING HEADWALL, TYPICAL PIPE PLUG, TYPICAL SECTIONS
NO SCALE
DECEMBER 1982
NUMBER 9031
ORIGINAL WALL
PROPOSED WALL

ITEM F-4
Pg 2/4

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: F-4 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Design of Concrete	CY	2607	760	1,980,694			
Retaining Walls							
Design of Gravity Walls	CY				1,955	547.82	1,071,125
75% of Project							
Design of Reinforced	CY				652	936.69	610,488
Concrete Retaining walls							
SUBTOTAL				1,980,694			1,681,613
Markup @ 10.00%				198,069			168,161
TOTAL				2,178,764			1,849,774
TOTAL ROUNDED				2,179,000			1,850,000

GEORGIA DEPARTMENT OF TRANSPORTATION
ITEM MEAN SUMMARY FOR 01/2007 TO 12/2007
FOR SPEC YEAR 2001 CONTRACTS - (EN 3H)

Date : January 07, 2008
Page No. : 5

ITEM CODE	ITEM DESCRIPTION	QUANTITY	USE	UM	MEAN	WTD AVG
457-1005	GEOGRID REINFORCEMENT, TP A	6900.00	1	SY	12.38	12.38
457-1010	GEOGRID REINFORCEMENT, TP B	43495.00	4	SY	7.36	6.32
457-1015	GEOGRID REINFORCEMENT, TP C	1490.00	1	SY	14.12	14.12
461-1000	RESEALING ROADWAY JOINTS AND CRACKS, TP -	2000.00	1	LF	2.15	2.15
461-2000	RESEALING BRIDGE JOINTS, TP -	4639.00	4	LF	19.47	19.20
461-3000	SEALING ROADWAY JOINTS AND CRACKS, TP	60.00	1	LF	43.50	43.50
500-0100	GROOVED CONCRETE	267567.00	64	SY	5.65	4.13
500-1006	SUPERSTR CONCRETE, CL AA, BR NO -	61800.00	109	LS	947.48	873.47
500-1008	SUPERSTR CONCRETE, CL AA-1, BR NO -	10428.00	2	LS	1538.76	1534.33
500-1009	SUPERSTR CONCRETE, CL AAA, BR NO -	715.00	2	LS	669.12	470.85
500-2100	CONCRETE BARRIER	72783.00	48	LF	48.97	43.38
500-2110	CONCRETE PARAPET, SPCL DESIGN	4967.00	5	LF	184.03	184.82
500-3002	CLASS AA CONCRETE	26393.00	35	CY	628.56	515.76
500-3101	CLASS A CONCRETE	38331.00	79	CY	693.90	528.99
500-3104	CLASS A CONCRETE, SIGNS	64.00	5	CY	893.35	898.77
500-3107	CLASS A CONCRETE, RETAINING WALL	493.00	7	CY	1108.93	936.69
500-3110	CLASS A CONCRETE, TYPE P1, RETAINING WALL	261.00	1	LF	383.34	383.34
500-3115	CLASS A CONCRETE, TYPE P2, RETAINING WALL	50.00	1	LF	805.00	805.00
500-3200	CLASS B CONCRETE	2528.00	37	CY	581.37	407.75
500-3201	CLASS B CONCRETE, RETAINING WALL	2055.00	12	CY	721.02	547.82
500-3650	CLASS AA-1 CONCRETE	2331.00	1	CY	316.61	316.61
500-3700	SEAL CONC	64.00	1	CY	250.00	250.00
500-3800	CLASS A CONCRETE, INCL REINF STEEL	2752.00	46	CY	1081.01	793.19
500-3900	CLASS B CONCRETE, INCL REINF STEEL	21.00	4	CY	746.28	813.36
500-9999	CLASS B CONC, BASE OR PVMT WIDENING	6877.00	44	CY	271.56	175.24
501-2100	STR STEEL, SWAYBRACING	11615.00	4	LB	6.14	5.97
501-3000	STR STEEL, BR NO -	5129101.00	5	LS	2.98	1.99
504-0600	TWENTY-FOUR HOUR ACCELERATED STRENGTH CONC	197.00	4	CY	1706.25	1821.57
505-1100	COMPOSITE STEEL GRID DECK WITH PRECAST CONCRETE SLAB	13810.00	1	SF	86.22	86.22
507-9001	PSC BEAMS, AASHTO TYPE I, BR NO -	5186.00	10	LF	107.00	104.14
507-9002	PSC BEAMS, AASHTO TYPE II, BR NO -	83302.00	37	LF	123.53	125.21
507-9003	PSC BEAMS, AASHTO TYPE III, BR NO -	28642.00	30	LF	146.17	141.89
507-9030	PSC BEAMS, AASHTO, BULB TEE, 54 IN, BR NO -	17269.00	16	LF	178.66	180.22
507-9031	PSC BEAMS, AASHTO, BULB TEE, 63 IN, BR NO -	37675.00	19	LF	195.34	188.68
507-9032	PSC BEAMS, AASHTO, BULB TEE, 72 IN, BR NO -	24498.00	14	LF	194.84	189.23
507-9033	PSC BEAMS, AASHTO, BULB TEE, 74 IN, BR NO -	16056.00	4	LF	226.49	219.85
509-0005	PRESTRESSING CAST-IN-PLACE CONC, BR NO -	608739.00	2	LS	3.36	3.36
511-1000	BAR REINF STEEL	8342522.00	107	LB	0.99	0.90
511-3000	SUPERSTR REINF STEEL, BR NO -	17729321.00	125	LS	1.13	0.93
514-1000	EPOXY COATED SUPERSTR REINF STEEL, BR NO -	428389.00	4	LS	0.88	0.89
515-2015	GALV STEEL PIPE HANDRAIL -	901.00	2	LF	39.69	39.81
515-2020	GALV STEEL PIPE HANDRAIL, 2 IN, ROUND	14431.00	10	LF	46.35	35.39
516-1100	ALUM HANDRAIL, STD 3626	2877.00	10	LF	63.44	65.61
518-1000	RAISE EXISTING BRIDGE, STA -	26.00	26	LS	99769.11	99769.11
519-0400	CONCRETE OVERLAY, PORTLAND CEMENT, VARB THK	54815.00	5	SY	225.31	204.81
519-0515	SURFACE PREPARATION	2660.00	1	SY	4.57	4.57
519-0530	POLYMER OVERLAY	2660.00	1	SY	68.94	68.94
520-0242	H-PILE POINTS, HP 10 X 42	22.00	2	EA	154.07	146.12
520-0353	H-PILE POINTS, HP 12 X 53	127.00	6	EA	185.47	185.36
520-0573	H-PILE POINTS, HP 14 X 73	365.00	11	EA	214.82	218.52
520-0589	H-PILE POINTS, HP 14 X 89	48.00	3	EA	207.70	198.48
520-1104	PILING IN PLACE, STEEL H, HP 10 X 42	8190.00	9	LF	48.58	48.19

ITEM F-4
Pg 4/4

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
G-1	1 of 2	Use 3-inch thick, 5-foot wide recycled asphaltic concrete sidewalks in lieu of 4" thick concrete, 5-foot wide sidewalks

Comp By: DPC Date: 2/27/08 Checked By: DCW Date: 2/28/08

Original Concept:

The proposed concept features the use of 4" thick, 5-foot wide concrete sidewalks located on both sides of the SR 42 corridor.

Proposed Change:

The VE Team recommends that the Design Team consider utilizing a 3-inch thick, 5-foot wide recycled asphaltic concrete placed on top of a 6-inch GAB base.

Justification:

Concrete materials have typically been specified on most Department projects to date. The recent use of 8 to 12 foot wide multi-purpose trails throughout Georgia communities constructed with recycled asphaltic concrete material has grown rapidly due to its flexibility, ease of construction, cost savings, and durability characteristics. Contractor equipment is readily available and asphalt concrete construction production rates are much greater than the time consuming form / pour / finish / break down activities associated with typical flatwork construction.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	761,600		
- Proposed	520,000		
- Savings	241,600		241,600
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**241,600**

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No G-1 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Concrete Sidewalk, 4"	SY	20,534	33.72	692,406			
(eliminate item)							
Gr Aggr Base, 6" incl. material	SY				20,534	12.50	256,675
Recyed Asph. Conc. 19 mm	SY				20,534	10.52	216,018
Superpav, Gp 1 or 2, incl. bit.							
3" thick layer.							
SUBTOTAL				692,406			472,693
Markup @ 10.00%				69,241			47,269
TOTAL				761,647			519,962
TOTAL ROUNDED				761,600			520,000

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
G-1.1	1 of 2	Eliminate 5-foot wide, 4" thick concrete sidewalk on one side of corridor, leaving 5-foot wide, 3-inch thick recycled asphaltic concrete sidewalk on only one side of the SR 42 corridor.

Comp By: DPC Date: 2/27/08 Checked By: DCW Date: 2/28/08

Original Concept:

The proposed concept features the use of 4" thick, 5-foot wide concrete sidewalks on both sides of the SR 42 corridor.

Proposed Change:

The VE Team recommends that the Design Team consider eliminating all sidewalks on the eastside of SR 42 corridor and utilize a 3-inch thick, 5-foot wide recycled asphaltic concrete material placed on top of a 6-inch GAB base on the corridor's west side.

Justification:

Constructing sidewalks on one side of a roadway used to be typical practice by the Department. This corridor has several residential communities accessible from SR 42, but rather few points of pedestrian destinations (as well as no local bus routes) due to a majority of industrial type business entities in the area.

The recent use of 8 to 12 foot wide multi-purpose trails throughout Georgia communities constructed with recycled asphaltic concrete material has grown rapidly due to its flexibility, ease of construction, cost savings, and durability characteristics. Contractor equipment is readily available and asphaltic concrete construction production rates are much greater than the time consuming form / pour / finish / break down activities associated with typical flatwork construction.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,376,000		
- Proposed	260,000		
- Savings	1,116,000		1,116,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**1,116,000**

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No	G-1.1	
					CLIENT:	GDOT	
					Sheet 2 of 2		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
Concrete Sidewalk, 4"	SY	20,534	33.72	692,406			
(eliminate item)							
Gr Aggr Base, 6" incl. material	SY				10,267	12.50	128,338
3" Recyed Asph. Conc. 19 mm	SY				10,267	10.52	108,009
Superpav, Gp 1 or 2, 3" thick							
(One side of corridor only)							
Elim. R-O-W on West side of	SF	64,240	8.70	558,888			
corridor, reducing shoulder from							
16 feet to 12 feet.							
SUBTOTAL				1,251,294			236,346
Markup @ 10.00%				125,129			23,635
TOTAL				1,376,424			259,981
TOTAL ROUNDED				1,376,000			260,000

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	**PAGE No.:**	**CREATIVE IDEA:**
G-2	1 of 5	Eliminate the 4 ″ concrete median paving in the areas outside the left turn areas per GDOT Construction Detail M-3

Comp By: AW Date: 2/28/08 Checked By: DCW Date: 2/28/08

Original Concept:

The original concept calls for paving the entire median between the curb and the gutter.

Proposed Change:

Eliminate the median paving in the wider areas away from the left turn bays (see GDOT standard construction detail M-3, Type "c" median crossover.) Topsoil and seeding were added in the areas the concrete was removed.

Justification:

This will reduce the amount of concrete paving for the project.
An allowance has been made for the increased maintenance needed for mowing.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**PRESENT WORTH**
INITIAL COST - Original	513,700		
- Proposed	113,600		
- Savings	400,100		400,100
FUTURE COST - Savings		(149,000)	(149,000)
TOTAL PRESENT WORTH SAVINGS			**251,100**

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
CONSTRUCTION DETAILS
MEDIAN CROSSOVERS
JULY, 1987
NUMBER M-3
TYPE A MEDIAN CROSSOVERS
TYPE B MEDIAN CROSSOVER
TYPE C MEDIAN CROSSOVERS
SECTION C-C
DETAIL 'A' (YELLOW)
DETAIL 'B' (WHITE)
TYPE A MEDIAN CROSSOVER
TYPE B MEDIAN CROSSOVER
TYPE C MEDIAN CROSSOVER

G-2
Pg 2 of 5

COST WORKSHEET							
PROJECT: **SR 42 Widening and New Bridge**					ITEM No G-2 CLIENT: GDOT Sheet 3 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
ITEM	UNITS	No. UNITS	COST/ UNIT	TOTAL COST	No. UNITS	COST/ UNIT	TOTAL COST
4 " concrete median	SY	14,750	31.66	466,985			
paving							
Seedind and Topsoil	SY				14,750	7.00	103,250
SUBTOTAL				466,985			103,250
Markup @ 10.00%				46,699			10,325
TOTAL				513,684			113,575
TOTAL ROUNDED				513,700			113,600

LIFE CYCLE COST ANALYSIS – RESENT WORTH METHOD
FUTURE COST CALCULATION

SR 42 Widening and New Bridge

IDEA No.:	**PAGE No.:**	**DISCOUNT RATE – 3.0%** **ECONOMIC LIFE – 20 YEARS**
G-2	4 of 5	

	A	B	C	D
	Original Design		**Alternate Design**	
	Cost	PW	Cost	PW
1. Single Expenditures: (i.e., stage Construction, Major Maintenance)				
a. Year ____ PWF _____				
b. Year ____ PWF _____				
c. Year ____ PWF _____				
d. Salvage / Unused Service Life				
Year ____ PWF _____				
1. Total Future Single Costs:				
2. Annual Costs:				
a. General Maintenance (Mowing) PWF' 14.877	-0-	-0-	10,000	148,770
b. Other Annual Costs PWF' 14.877				
2. Total Future Annual Costs		-0-		149,000
3. Total Future Costs: (1 + 2)		-0-		149,000
4. Total Future Cost Savings on a Present Worth Basis (3B-3D)		(149,000)		

Station 23+00 to Sta. 204+00 = 18,100 LF

4 inch concrete median paving area:

Length of bridge = 150 feet
Median Openings = 14 @ 100 ft + 1 @ 120 ft. = 1,520 LF
Length of median = 18,100 LF - 150 LF – 1,520 LF = 16,430 LF
Left turn lanes = (250 ft. X 28 ea.) + 200’ + 180’ = 7,580 feet
16,430 LF – 7,580 LF = 8,850 LF X 15 LF wide/ 9 = 14,750 SY

MOWING:

Estimated at $2,500 / mowing, 4 times per year = $10,000 / year

DEVELOPMENT AND RECOMMENDATION PHASE

SR 42 Widening and New Bridge

IDEA No.:	PAGE No.:	CREATIVE IDEA:
H-1	1 of 7	Use a culvert instead of a bridge at Stream #5

Comp By: AS Date: 2/27/08 Checked By: DCW Date: 2/28/08

Original Concept:

Design a new SR 42 bridge over Upton Creek 150 ft. long and 86'-5" wide. The superstructure will be prestressed concrete Type I (Mod) beams and pile bents as a substructure.

Proposed Change:

Design a new box culvert DBL 10 ft X 12 ft X 112 ft. long to accommodate four lanes of traffic.

Justification:

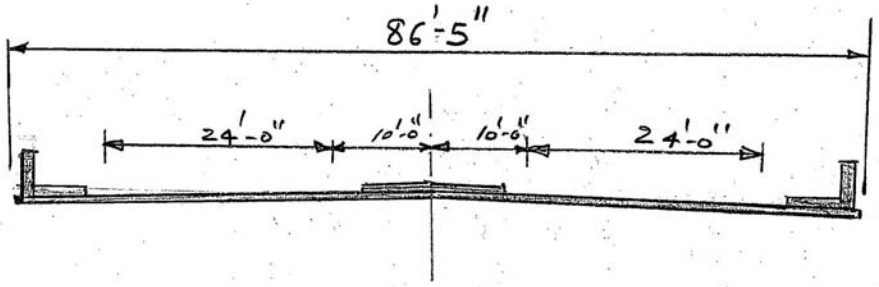
Construction cost of concrete box culvert is economical, easy to construct, and low maintenance. This is dependant on the results of the hydraulic study to be performed on this stream.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,141,000		
- Proposed	300,000		
- Savings	841,000		841,000
FUTURE COST - Savings		-0-	-0-
TOTAL PRESENT WORTH SAVINGS			**841,000**

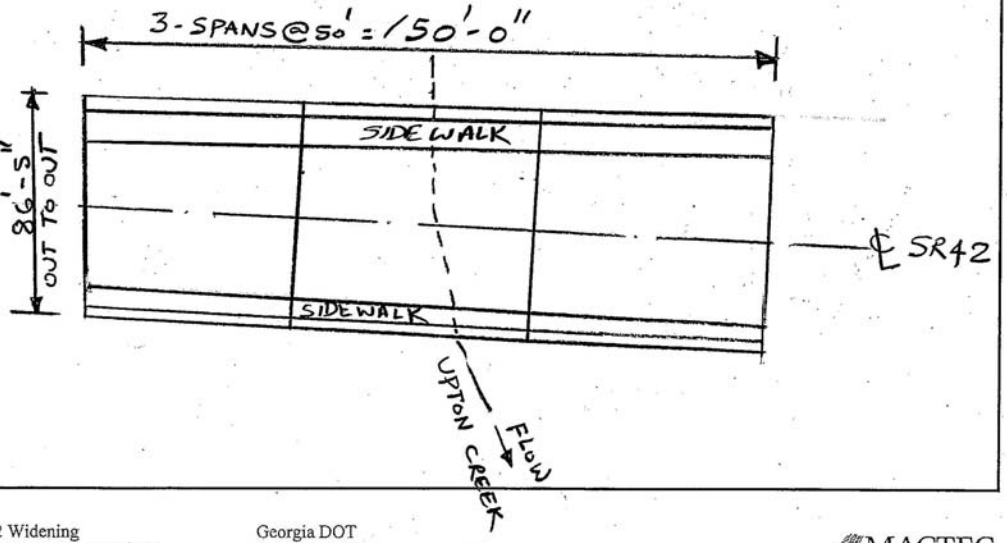
SKETCH

SR 42 Widening and New Bridge	ITEM Nº: H1 CLIENT: GDOT Sheet 2 of 7

USE 3-SPANS @ 50' = 150'-0" TYPE I (MOD) PSC BEAMS SUPERSTRUCTURE.



TYPICAL BRIDGE SECTION AT UPTON CREEK



SR 42 Widening
Project No. 6115070004.20

Georgia DOT
February 2008

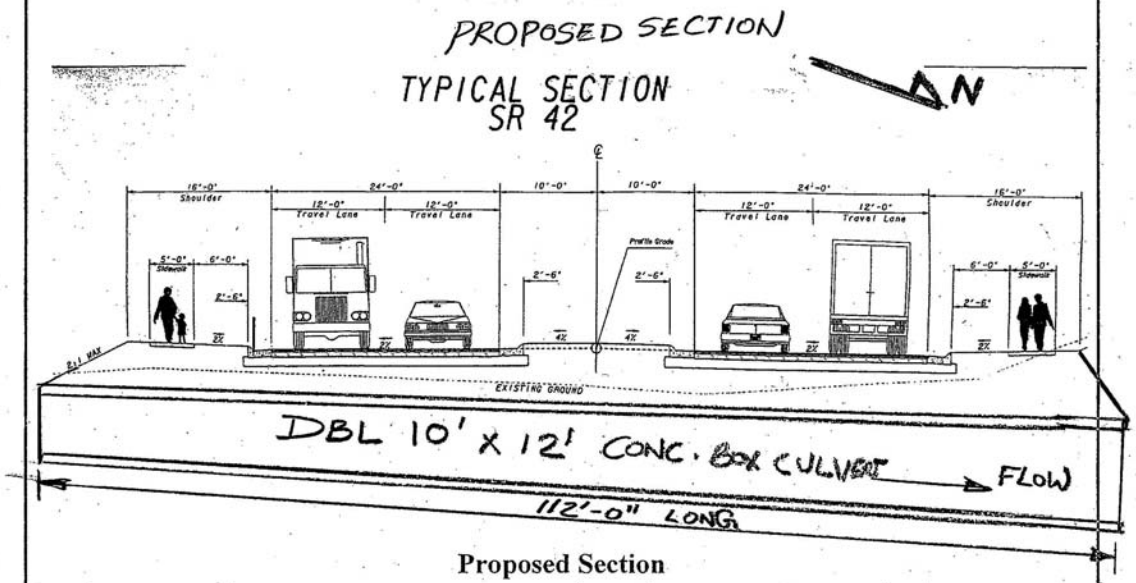
MACTEC

SKETCH

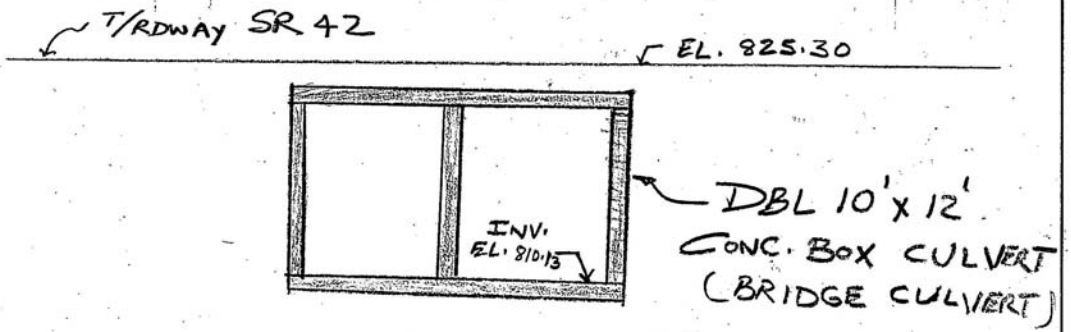
SR 42 Widening and new Bridge	ITEM Nº: H-1 CLIENT: GDOT Sheet 3 of 7

PROPOSED SECTION

TYPICAL SECTION
SR 42



Proposed Section



							COST WORKSHEET
PROJECT: **SR 42 Widening and New Bridge**					ITEM No: H-1 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
Design of new bridge over	SF	12,962	80	1,036,920			
Upton Creek (150 ft. x 86.41 ft.)							
Design Of New Culvert							
Concrete	CY				417	528.99	220,846
Reinforcing Steel	LB				52,446	0.99	51,922
*Unit costs from 1/08 Item							
Mean Summary Data							
SUBTOTAL				1,036,920			272,767
Markup @ 10.00%				103,692			27,277
TOTAL				1,140,612			300,044
TOTAL ROUNDED				1,141,000			300,000

Design of new bridge over Upton Creek (150 ft. x 86.41 ft.) = 12,961.5 SF

Design Of New Culvert

3.198 CY x112 lf + 59.31 cy (wing walls)Parapets = 417 CY

419lb X 112lf +5,518 lb (wingwalls+parapets) = 52,446 LB

H-1
Pg 6 of 7

MacLean, Scott

From: Davidson, Mike
Sent: Thursday, August 04, 2005 8:48 AM
To: Brown, Chandria; Chan, Jonathan; Emmanuel, Peter; Lott, Justin; MacLean, Scott; McManus, Brad; Miller, Fletcher; Sanders, Matt
Subject: FW: Bridge Cost / SF....."Request for.."

fyi

-----Original Message-----
From: Story, Brent
Sent: Wednesday, August 03, 2005 11:19 AM
To: Acree, David; Bastian, Clay; Casey, Andy; Davidson, Mike; Fulbright, Kim; Hill, Stanley; Hopkins, Eugene; McCook, Jason; Simpson, Jim
Subject: FW: Bridge Cost / SF....."Request for.."

fyi

-----Original Message-----
From: Harris, Wade
Sent: Wednesday, August 03, 2005 8:50 AM
To: Quinonez, Fabricio
Cc: Gellineau, Hayden; Buchan, Ben; Story, Brent; Abubakari, Babs; Myers, Lisa; Liles, Paul; Duvall, Bill; Ingalsbe, Bill; Teal, Sam
Subject: RE: Bridge Cost / SF....."Request for.."

Fabricio,

Troy Patterson does our structural cost estimates. Below is a summary of his comments.

We can give you a general sf price on new construction for the different types of bridges.

For preliminary cost comparisons use:

T-Beam	$65 /sf
Steel	$110 /sf
PSC	$80 /sf

Bridge jacking prices vary. If you are jacking for bearing pad replacement I would use $ 8/sf. If you are raising the bridge more than 3 inches I would use $ 14 /sf

We cannot give you an ACCURATE sf price on bridge widening because there are too many unknowns. Note that the sf costs vary widely from bridge to bridge.

If you are increasing the width a substantial amount I would use $25/sf for the removal cost and increase the construction cost about 25% over the sf cost of a new bridge.

If you are doing a narrow widening (less than 15 feet) I would use $40 /sf for removal cost and increase the construct cost 50% to 100% over the sf cost of a new bridge.

The cost of additional traffic control needed for the widening is not included.

-----Original Message-----
From: Quinonez, Fabricio [mailto:QuinonezF@AyresAssociates.com]
Sent: Tuesday, August 02, 2005 3:06 PM
To: Harris, Wade
Cc: Gellineau, Hayden
Subject: Bridge Cost / SF....."Request for.."

Mr. Harris,
As per your request, I'm emailing you so you can be able to send us information regarding construction cost / SF for

1

#-1
Pg 7 of 7
STANDARD
REINFORCED CONCRETE BOX CULVERTS
DOUBLE 10'X4' TO TRIPLE 10'X12'
FOR DEPTHS OF FILL UP TO 20 FT.
NO SCALE
DECEMBER 1969
STATE HIGHWAY DEPARTMENT OF GEORGIA
BRIDGE DEPARTMENT
NUMBER
2327
GENERAL NOTES
DESIGN DATA
STEEL REINFORCEMENT - BARRELS
WINGWALLS AND PARAPETS
STEEL REINFORCEMENT
QUANTITIES
DIMENSIONS
PART SECTION SIDE VIEW
PART ELEVATION
ELEVATION OF WING
SECTION OF BARREL
HALF SECTION OF BARREL
SECTION A-A
SECTION OF SLAB SHOWING REINFORCING
HALF END ELEVATION
HALF PLAN DOUBLE BOX
HALF PLAN TRIPLE BOX
SECTION B-B
BENDING FOR E BARS
C BARS
E BARS

APPENDIX

COST MODEL

VALUE ENGINEERING

COST DISTRIBUTION

By

Decreasing Item Number

S.R. 42 Widening and New Bridge
Project Nos. STP-037-2(54) and BHF-037-2(55)
PI. Nos. 720815 and 720817
Clayton County

Element ID.	Item Description	Cost x $1,000	%
A	Right of Way	18,790	40.7
B	Asphalt Concrete Paving	5,934	12.9
C	Graded Aggregate Base	3,506	7.5
D	Drainage	2,844	6.2
E	Grading and Earthwork	2,750	6.0
F	Concrete Structures	2,708	5.9
80% Cost Line			
G	Concrete Work	1,893	4.1
H	Erosion Control	1,840	4.0
I	Reimbursable Utilities	1,525	3.3
J	Curb and Gutter	1,405	3.0
K	New Bridge	740	1.6
L	Traffic Signals	660	1.4
M	Temp. Barriers & ROW Markers	398	0.9
N	Traffic Control	380	0.9
O	Signs and Striping	373	0.8
P	Clearing and Grubbing	141	0.3
Q	Guardrail	128	0.3
R	Field Engineers Office	84	0.2
	TOTAL	**46,099**	**100.0%**

INFORMATION PHASE FUNCTION ANALYSIS

SR 42 Widening

System: Widen Roadway
Function: Reduce Accidents

ITEM No.	DESCRIPTION	FUNCTION			INITIAL DOLLARS (x 1,000)		
		Verb	Noun	Kind*	Cost	% of Total	Worth
A	Right of way	Provide	Space	B	18,790	41	17,000
B	AC pavement	Shed	Liquids	B	5,934	13	5,400
		Distribute	Load				
		Improve	Ride				
C	Graded Aggregate Base	Distribute	Load	B	3,506	7	3,200
		Allows	Drainage				
D	Drainage	Transport	Liquids	S	2,844	6	2,700
E	Grading and Earthwork	Meet	Profile	S	2,750	6	2,700
F	Concrete Structures	Retain	Earth	S	2,708	6	2,000
		Reduce	ROW				
G	Concrete Work	Access	Property	S	1,823	4	1,800
TOTALS					**38,355**	**83**	**34,800**

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
SR 42 Widening			
NO.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING ****
A	**Right of Way**		
A-1	Reduce shoulder width – sidewalks remain		√
A-2	Reduce all lanes to 11 feet		√
A-2.1	Reduce two outside lanes to 11 feet		√
A-3	Reduce median width		√
A-4	Use 14 foot paved flush turn lane for median		√
A-5	Minimize realignment at signalized intersections – Rex Road		√
A-6	Minimize realignment at Forest Parkway		√
B	**AC Pavement**		
B-1	Reduce extent of side road work	See A-5 and A-6 above	√
C	**Graded Aggregate Base**		
	No ideas generated		
D	**Drainage**		
	No ideas generated		

** √ = 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 **
E	**Grading / Earthwork**		
	No ideas generated		
F	**Concrete Structures**		
F-1	Reduce height of retaining walls	Existing design information does not exist	√
F-2	Reduce length of retaining walls	Existing design information does not exist	√
F-3	Use different type of retaining wall	No cost savings per Item Mean Summary	√
F-4	Use gravity walls for lower walls		√
G	**Concrete Work**		
G-1	Use asphalt sidewalks		√
G-1.1	Delete sidewalks on one side		√
G-2	Eliminate the 4 inch median paving in wide areas		√
H	**Other**		
H-1	Use culverts in lieu of bridge		√
H-2	Use pipes in lieu of culverts if the existing culverts are replaced in lieu of extended	No cost savings per Item Mean Summary	√

** √ = 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.: STP-037-2(54) BHF-37-2(55) County: Clayton PI No.: 720815 & 720817 Date: 2/26-29/08

NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
Lisa L. Myers	00244168	Engineering Services	404-651-7468	lmyers@dot.ga.gov
DAVE WOHLSCHEID		MACTEC	(C) 571-717-0808	DCWOHLSCHEID@MACTEC.COM
DAN COGAN		KEA GROUP	678-904-8591	dcogan@keagroup.com
ALEX WILEY		MACTEC	770-421-3481	awiley@mactec.com
JAMES MAGNUS	00208161	GA DOT	404-656-53[illegible]	jmagnus@dot.ga.gov
RON WISHON	00208180	ENG. SRVCS	404-651-7470	rwishon@dot.ga.gov
ARUNA SASTRY		SASTRY AND ASSOC	678-366-9375	sast9375@bellsouth.net
JACOB ACHORN	00986361	GDOT - ROAD DESIGN	404-656-5383	jachorn@dot.ga.gov
FLETCHER MILLER	00769398	GDOT - ROAD DESIGN	404-656-5383	fmiller@dot.ga.gov
SCOTT MACLEAN	00286192	GDOT - ROAD DESIGN	4-656-5449	SMacLean@dot.ga.gov
Funmi Adesesan	00922496	GDOT-OEL	4-[illegible]-6866	oadesesan@dot.ga.gov
LOREN BARTLETT	00867446	GDOT - CONSTRUCTION	4)559-6699	lbartlett@dot.ga.gov
Brent Story	00285686	GDOT - Road Design	4)656-5386	
Grant Waldrop	00832624	GDOT - Traffic Ops	4)635-8123	
JERRY Milligan		GDOT R/W		