VALUE ENGINEERING WORKSHOP

WIDENING US 441 – FARGO TO PEARSON
PROJECTS EDS 441 (41, 46, 48, & 49)
Clinch & Atkinson Counties, Georgia

PREPARED FOR:

Georgia Department of Transportation
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PREPARED BY:

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PROJECT DESCRIPTION AND BACKGROUND

These EDS 441 projects are part of the Governor's Road Improvement Program (GRIP). They are also to serve as part of the proposed economic development of Clinch-Atkinson Counties. The Widening and Reconstruction of US 441 is essential to the effort to reduce the travel demands on the existing corridors through Southern Georgia and Clinch-Atkinson Counties.

The typical road section for this project consist of a rural 4-lane divided highway with 12 foot lanes separated with a 44' wide depressed median, and Type "B" median breaks; Six foot wide paved outside shoulders; Two foot wide paved inside shoulders will be provided. Proposed right-of-way (ROW) would vary with intersections ROW being wider as necessary.

Major structures proposed:

- Two new parallel bridges over Jones Creek approximately 200 ft long
- Two new parallel bridges over Camp Branch approximately 280 ft long
- Two new bridges over Tatum Creek approximately 400 0 ft long
- Two new bridges over Tatum Creek overflow approximately 160 ft long
- One new parallel bridge over Sweet Gum Creek approximately 128 ft long.
- One existing bridge over Sweet Gum Creek to be widened
- Two new parallel bridges over Little Red Bluff Creek overflow 160 ft long
- Two new parallel bridges over Little Red Bluff Creek 160 ft long
- One new parallel bridge over Hog Creek approximately 160 ft long.
- Jacking up one existing bridge over Hog Creek and widening

There are 83 on-grade intersections proposed at the following projects:

EDS 441 (41, 46, 48, & 49):

- Project 41 has 23 on-grade intersections and median breaks
- Project 46 has 30 on-grade intersections and median breaks
- Project 48 has 15 on-grade intersections and median breaks
- Project 49 has 15 on-grade intersections and median breaks

Wetlands and Historic sites were identified along the proposed corridor.

The Design Cost Estimates for the projects indicate the following:

- EDS 441 (41, 46, 48, & 49) projects have a combined ECC of $128.6 Million, plus ROW cost of $22.7 Million

PROJECT DESCRIPTION AND BACKGROUND

CONCERNS AND OBJECTIVES:

These projects are part of an overall scheme to Widen and Reconstruct US 441 {(EDS 441 (41, 46, 48, & 49)} from Fargo to Pearson in Clinch-Atkinson Counties, Georgia. Over the past few years, the phases of this system have been slowly coming together, as part of the Governor's Economic Development (GRIP). The rivers/creeks and topographic terrain dictate traffic patterns; historic sites in the area; residential growth; and development of commercial and industrial properties make the roadway development an economic necessity.

The following are some of the highlighted concerns and objectives noted by the VE team for project:

Widen US 441 {EDS 441 (41, 46, 48, & 49)}

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
On-grade intersections	High speed rural traffic
Bridge Construction	Should consider, or allow contractor alternate methods of construction
No resources: asphalt plants, concrete plants, lodging, restaurants	Will increase cost
Environmental Impact Statement	Bridge Construction VE alternates may require a re-submittal of EIS.
Material haul distances	Cost and location of transporting over 2 million cy of borrow material
Construction sequence/Constructibility	Coordination of this project
Cost Estimate Inadequate	Cost estimate needs to address budget for award in 2008 – project has inadequate inflation
Location of GAB source	Macon and Albany
Designing for 65 mph ilo rural 55 mph	Stop lights and accidents in congested areas
Cost estimate does not include enough inflation	Update the budget estimate (has only three years of escalation/inflation)

PROJECT DESCRIPTION AND BACKGROUND

Project Objectives:
Complete the Widening of US 441 {EDS 441 (41, 46, 48, & 49)}
Reduce travel time
Benefit the local economy

The estimated combined construction cost (ECC) for the Widening and Reconstruction of US 441 is projected to be around $ 129 Million, with a scheduled advertising date of 2008.

KEY INFORMATION/NOTES

Introduction

U.S. Cost Incorporated conducted the Value Engineering Team Study on Widening US 441 from Fargo to Pearson in Clinch-Atkinson Counties, Georgia. The V.E. study was conducted for three (3) days, 27-29 January 2004, at the Georgia Department of Transportation Conference Room #401A in Atlanta, GA. The study team was furnished with four projects for Widening US 441 from Fargo to Pearson {EDS 441 (41, 46, 48, & 49)} which included Schematic Design submittal packages. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Lindsey Gardner, P.E., CVS	U.S. Cost, Inc.	VETL
Alex Stone, P.E.	MAAI	Roadway Design
Jerry Brooks, P.E.	MAAI	Roadway Design
Sam Deeb, P.E.	MAAI	Bridge Engineer
Laland Owens	MAAI	Construction
Lisa Myers	GDOT	Value Engineer
George Bradfield	GDOT	Cost Engineer
Kimberly Nesbitt	GDOT	Project Manager

Information Phase/Function Analysis

The V.E. team was first briefed on the project design by GDOT and Earth Tech (A/E) representatives in an orientation meeting the morning of the first day of the V.E. Study. The briefing gave insight into the current design, and also into the aspects of the Widening US 441 urban plan, which impact the sites. The briefing included a review of the design requirements and rationale for the location and arrangement of the major functional areas in addition to information on the replacement bridge structural systems. Discussions regarding project funding, required functions, and project criteria followed the design presentation.

As a basic part of the V.E. process, the team conducted a partial function analysis session on Widening US 441 to identify the needs and goals of the project and facilitate the creative idea session, by addressing functions as opposed to the specific design elements.

The Basic Function of the project is to *Enhance Economy***.** A strong secondary function is to *Enhance Travel* by Widening US 441 from Fargo to Pearson. A detailed project function analysis of the characteristics of the project and their relationships is presented in Appendix A.

KEY INFORMATION/NOTES

Risk Analysis

The group identified the following project risk elements, which may impact the Widening and Reconstruction of US 441. This exercise served as a catalyst for the Creative Phase of the study, when several ideas were suggested which would mitigate these project construction risks.

Risk Elements:

- Delays and impact on the traveling/commuting public
- Borrow pit locations and permitting process
- Contractor Phasing Coordination and traffic control
- Poor Progress/Quality By A Low Bid Construction Contractor
- Accidents at at-grade intersections
- Hydrologic impact on bridges
- Wetland impact at new bridge
- Maintaining uninterrupted flow of traffic on existing roads during construction
- Failure to meet GDOT Schedule
- Lengthy distances between median opening

Project Criteria

During the meeting, project goals, criteria and sensitivities were also identified. The following prioritized listing identifies the key items of which the V.E. team should be aware. Criteria with a score of 5 or higher were considered of prime importance, and those criteria therefore must be considered in the review of any design alternative. The ranking below is the V.E. teams' impression of the sensitivity of the criteria from discussions held with Georgia DOT and the A/E representatives.

Project Criteria Analysis:

Life Safety	10
Operational Issues	10
No additional ROW purchases	10
Compliance with approved EIS	10

KEY INFORMATION/NOTES

Constructibility	8
GDOT Criteria Compliance	8
Functionality	8
Life Cycle Cost (Analysis)	8
AASHTO 2001 Compliance	7
Local Code Restrictions	7
Maintenance and Operations	6
Cost Savings Impact	2

Creative Phase

The Creative Phase of the V.E. study was initiated the morning of the second day of the study. A total of twenty-five (25) creative ideas were generated for further investigation by the team. Many of the creative ideas focused on enhancements to the roadway safety, line of sight, excavation techniques, ramp storage, utility locations, and drainage impact, plus various other design elements of the Project. Additional ideas were generated reflecting alternative materials based on an understanding of local construction products and materials and the relative costs of installing them.

A listing of all creative ideas on Widening US 441 from Fargo to Pearson projects is included in Appendix A.

Evaluation Phase

The ideas generated during the Creative Phase were reviewed and evaluated by the VE team during a meeting held on the morning of the second study day. The intent of the meeting was to allow the V.E. team an opportunity to discuss and evaluate the ideas. A few of the V.E. ideas were dropped at that time as being conceptually unacceptable or in conflict with established Criteria, Right of Way (ROW) conflicts, previous agreements, or local construction methods. The ranking system consisted of VE team representatives assigning a designation to each idea. Those ideas, which the V.E. Team felt had the most promise, were given a designation of 1-5 on acceptability and 1-5 on cost impact, for a maximum rating of 10 points. This is a time management tool to identify those proposals that have the greatest potential. Approximately eighteen (18) out of the original twenty-five (25) creative ideas were deemed promising for further investigation and analysis by the V.E. team.

KEY INFORMATION/NOTES

The time management ranking system used by the VE team is as follows:

FEASIBILITY OF IDEA

5 points - Excellent Idea
4 points - Good Idea
3 points - Fair Idea
2 points – Marginal Idea
1 point - Poor Idea –do not develop

COST IMPACT

5 points - > $ 1,000,000
4 points - $750,000 to 999,999
3 points - $500,000 to 749,999
2 points - $250,000 t0 499,999
1 point – zero to $249,999
DS – Design Suggestion – sometimes reflects an increase in cost

Development Phase

The specific proposals found in the body of this report represent the positive results of Investigations by the V.E. team on the Widening US 441 projects. Each proposal represents a quality enhancing or cost saving alternative, which is documented by words, drawings and numbers. The proposal format presents the idea, describes the original design element proposed for change and the proposed change, lists the perceived advantages and disadvantages of the proposed change and supports the idea with a detailed cost estimate for the original and proposed design. Where necessary for clarity, the proposal also includes thumbnail design drawings and supporting engineering calculations.

Many of the V.E. proposals may require some level of redesign on specific portions of the project to implement the modification. Further, several of the V.E. ideas may involve modifications to the Criteria, or current goals, of Widening US 441 – Fargo to Pearson. These ideas are presented to initiate additional discussion and investigation during the next phase of design.

Presentation Phase

A final presentation was not scheduled for the last day of the study.

KEY INFORMATION/NOTES

Resolution Phase

Upon receipt of the Final Value Engineering Report, Widening US 441 from Fargo to Pearson, Georgia DOT and Earth Tech representatives are requested to prepare written comments on the acceptability of each of the V.E. proposals. Responses should include the rationale for accepting, rejecting, or modifying the V.E. proposal.

Basis of V.E. Cost Savings

The cost information for proposals in this report is based on the cost data prepared by the design A/E, Earth Tech, a nationally recognized engineering firm. The savings presented in the proposals is a general order of magnitude (estimate of the potential savings) if the idea were to be accepted. These figures are solely intended to identify the most attractive design solution, and are not prepared to represent a net deduction to the overall project budget. The costs are in 2004 dollars (escalated for 3 years at 5% per year). All life cycle cost analyses are prepared utilizing Present Worth methodology, a 25-year economic period, a 4.0% net discount factor (inclusive of inflation), and 3% escalation in the cost of utilities. With a bid opening of 2008 it appears the total estimated escalation cost is inadequate and needs to be re-evaluated.

Sustainable/Green Design Proposals

Sustainable design incorporates energy conservation, increased use of renewable energy sources, the reduction or elimination of toxic and harmful substances in facilities, efficiency in resource and material utilization, recycling of building materials, the use of recycled material, the reduction of waste products during both the construction and operation of the facility, and facility maintenance practices that reduce or eliminate harmful effects on people and the natural environment. In keeping with the National Policy objective of building all new facilities with sustainable design features, the VE team proposed sustainable design elements and/or practices. There are no developed sustainable proposals in this report; however, the construction contactor should have the option to employ construction techniques and materials to shorten the bridge construction time.

SUMMARY OF RECOMMENDATIONS

NUMBER	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT RECOM.	A/E ET	RECOM.	FINAL
	STRUCTURAL/BRIDGES							
1.0	(41) Reduce left Sweet Gum Bridge by one span	91,000		**91,000**				
2.0	(41) Reduce right Hog Creek Bridge by on span and align bent on widened portion	182,000		**182,000**				
3.0	(48) Reduce both left and right Jones Creek Bridges by one span	185,000		**185,000**				
4.0	(48) Reduce both left and right Camp Branch Bridges by two spans	370,000		**370,000**				
5.0	(48) Reduce both left and right Tatum Creek bridges by five spans	930,000		**930,000**				
6.0	Install pre-cast bottomless arches (i.e. Conspan units) ilo pile bent constructed bridges	Design Suggestion		**DS**				
8.0	Shorten SB deceleration lane over Hog Creek Bridge	420,000		**420,000**				
	Note: Proposal SB-8.0 is mutually exclusive and can not be accepted with proposals 1 thru 6.							
	ROADWAY/PROFILE (RW)							
*1.0	Revise typical roadway section to a rural roadway section with a 20’ raised median	1,005,000		**1,005,000**				

SUMMARY OF RECOMMENDATIONS

NUMBER	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT RECOM.	A/E ET	RECOM.	FINAL
1.1	Reduce median width from 44' to 32' for the entire project	1,215,000		**1,215,000**				
2.0	Leave existing road with crown ilo leveling as proposed	2,300,000		**2,300,000**				
3.0	Do not rework/elevate existing road as appropriate	Design Suggestion		**DS**				
4.0	Reduce width of outside paved shoulder from 6'-6" to 2'-0" and reduce from full depth to 5.5" of asphaltic concrete	8,700,000		**8,700,000**				
5.0	Reduce total shoulder width from 10 feet to 8 feet	1,075,000		**1,075,000**				
*7.0	Re-evaluate the need to widen road based on projected future traffic volumes	±151 mil		**±151 mil**				
*9.0	Construct 44' wide crowned median to improve drainage	1,075,000		**1,075,000**				
10.0	Develop separate profile grade lines for Northbound and Southbound lanes	2,200,000		**2,200,000**				
11.0	Allow soil cement stabilized base as an alternate to the graded aggregate base course	Design Suggestion		**DS**				
12.0	Install a type "A" median opening ilo type "B" median standard	2,465,000		**2,465,000**				
13.0	Standardize cost estimate format & unit costs	Design Suggestion		**DS**				
	Note: RW-1.0, RW-7.0, & RW-9.0 are mutually exclusive. All other proposals can be added and accepted							

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-1.0
PAGE NUMBER:	1 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: SWEETGUM BRIDGE (41) - REDUCE LEFT BRIDGE BY ONE SPAN.

ORIGINAL DESIGN: The original design proposes the addition of a 128'-0" by 41'-3" Southbound left bridge with end station 181+65.79 to align with the proposed in-situ bridge, to be widened.

PROPOSED CHANGE: The proposed change recommends eliminating the last span on the left bridge and shortening the length of the bridge by 32'-0" by bringing the end station to 181+33.79.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 363,000		$ 363,000
PROPOSED CHANGE:	$ 272,250		$ 272,250
		SAVINGS:	$ 90,750

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-1.0
PAGE NUMBER:	3 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $90,750.

Less construction time.

Reduce excess Freeboard to within “1” foot.

Aligning the endbents.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

Possible minimum raise of profile to meet 1’-0”min. freeboard.

JUSTIFICATION:

The reduced length has no impact of the function or structural integrity of the bridge, while providing a reduction in construction costs.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-1.0
PAGE NUMBER:	3 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Left bridge	7	SF	5,280	55	290,400
				SUBTOTAL:	290,400
				25 % MARK UP:	72,600
				TOTAL:	363,000

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Left Bridge	7	SF	3,960	55	217,800
				SUBTOTAL:	217,800
				25 % MARK UP:	54,450
				TOTAL:	272,250

SOURCES

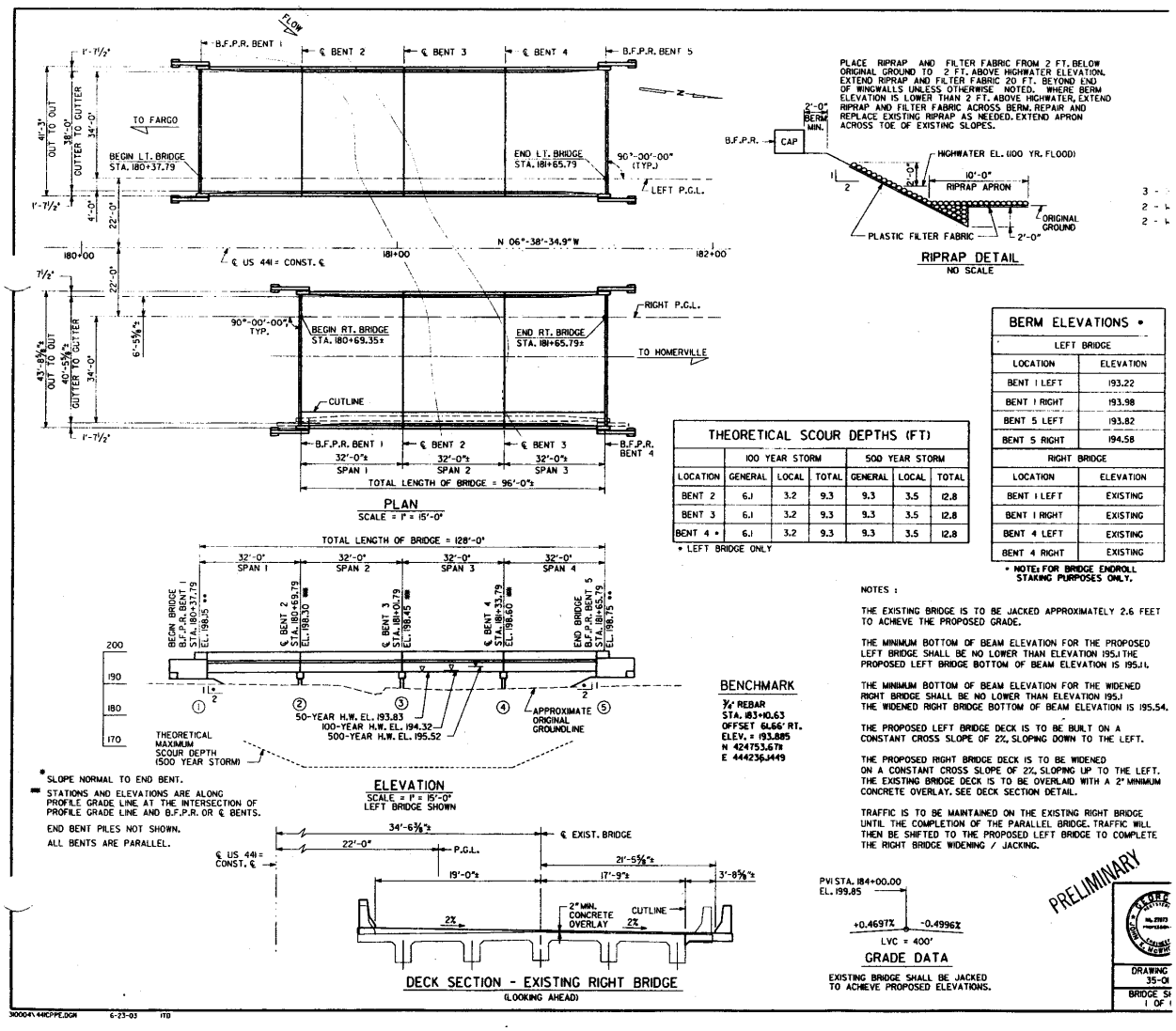
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Concept Report)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB-1.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	6.1	3.2	9.3	9.3	3.5	12.8
BENT 3	6.1	3.2	9.3	9.3	3.5	12.8
BENT 4 *	6.1	3.2	9.3	9.3	3.5	12.8

* LEFT BRIDGE ONLY

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	193.22
BENT 1 RIGHT	193.98
BENT 5 LEFT	193.82
BENT 5 RIGHT	194.58
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	EXISTING
BENT 1 RIGHT	EXISTING
BENT 4 LEFT	EXISTING
BENT 4 RIGHT	EXISTING

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB-1.0
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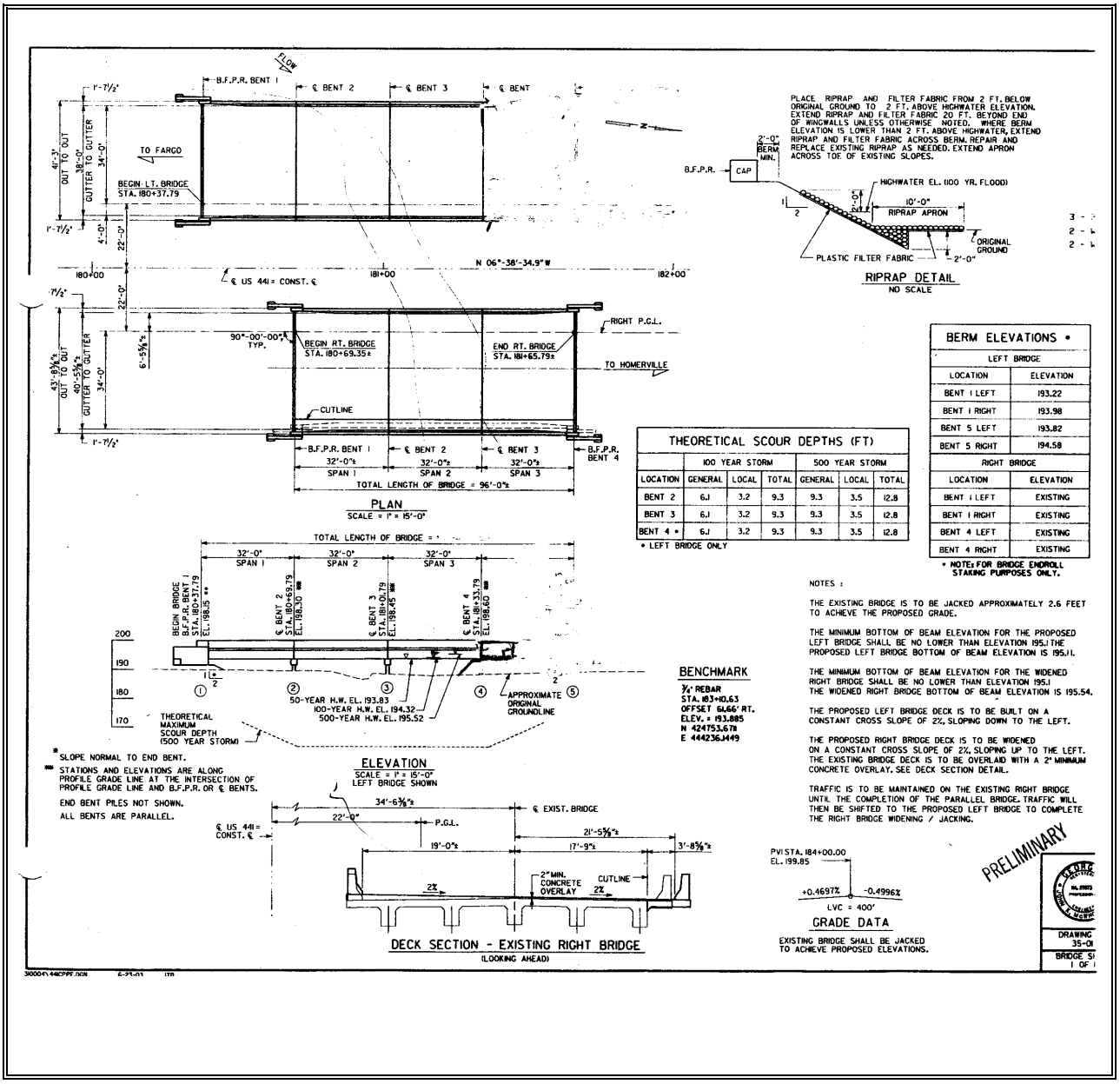
PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	6.1	3.2	9.3	9.3	3.5	12.8
BENT 3	6.1	3.2	9.3	9.3	3.5	12.8
BENT 4 *	6.1	3.2	9.3	9.3	3.5	12.8

* LEFT BRIDGE ONLY

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	193.22
BENT 1 RIGHT	193.98
BENT 5 LEFT	193.82
BENT 5 RIGHT	194.58
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	EXISTING
BENT 1 RIGHT	EXISTING
BENT 4 LEFT	EXISTING
BENT 4 RIGHT	EXISTING

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

NOTES :

THE EXISTING BRIDGE IS TO BE JACKED APPROXIMATELY 2.6 FEET TO ACHIEVE THE PROPOSED GRADE.

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED LEFT BRIDGE SHALL BE NO LOWER THAN ELEVATION 195.1 THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 195.11.

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE WIDENED RIGHT BRIDGE SHALL BE NO LOWER THAN ELEVATION 195.1 THE WIDENED RIGHT BRIDGE BOTTOM OF BEAM ELEVATION IS 195.54.

THE PROPOSED LEFT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 2%, SLOPING DOWN TO THE LEFT.

THE PROPOSED RIGHT BRIDGE DECK IS TO BE WIDENED ON A CONSTANT CROSS SLOPE OF 2%, SLOPING UP TO THE LEFT. THE EXISTING BRIDGE DECK IS TO BE OVERLAID WITH A 2" MINIMUM CONCRETE OVERLAY. SEE DECK SECTION DETAIL.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING RIGHT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED LEFT BRIDGE TO COMPLETE THE RIGHT BRIDGE WIDENING / JACKING.

* SLOPE NORMAL TO END BENT.

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

END BENT PILES NOT SHOWN.

ALL BENTS ARE PARALLEL.

BENCHMARK
½" REBAR
STA. 183+10.63
OFFSET 64.66' RT.
ELEV. = 193.885
N 424753.678
E 444236.1449

PVI STA. 184+00.00
EL. 199.85
+0.4697% -0.4996%
LVC = 400'

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

PRELIMINARY

DRAWING 35-01
BRIDGE SI
1 OF 1

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-2.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: HOG CREEK BRIDGE (41) - REDUCE RIGHT BRIDGE BY ONE SPAN AND CONSTRUCT AS A SINGLE BRIDGE.

ORIGINAL DESIGN: The original design proposes the addition of a 160'-0" by 41'-3" Northbound Right bridge with begin station 246+37.00 and end station 247+97.00 to align with the proposed in-situ bridge, to be widened.

PROPOSED CHANGE: The proposed change recommends eliminating the end spans as designed on the right bridge and shortening the length of the bridge by 64'-0". The new begin bridge station is 246+69.00 and the end bridge station is 247+65. Also, maintain the 75 degree skew of the end bent on the northbound end of the left bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 453,750		$ 453,750
PROPOSED CHANGE:	$ 272,250		$ 272,250
		SAVINGS:	$ 181,500

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-2.0
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PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $181,500.

Less construction time.

Aligning the endbents and the Endrolls.

Eliminate an excess skew if endrolls accommodate it on the Lt Bridge.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

JUSTIFICATION:

The reduced length has no impact on the function or the structural integrity of the bridge, while providing a reduction in construction costs.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-2.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right bridge	7	SF	6,600	55	363,000
				SUBTOTAL:	363,000
				25 % MARK UP:	90,750
				TOTAL:	453,750

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Left Bridge	7	SF	3,960	55	217,800
				SUBTOTAL:	217,800
				25 % MARK UP:	54,450
				TOTAL:	272,250

SOURCES

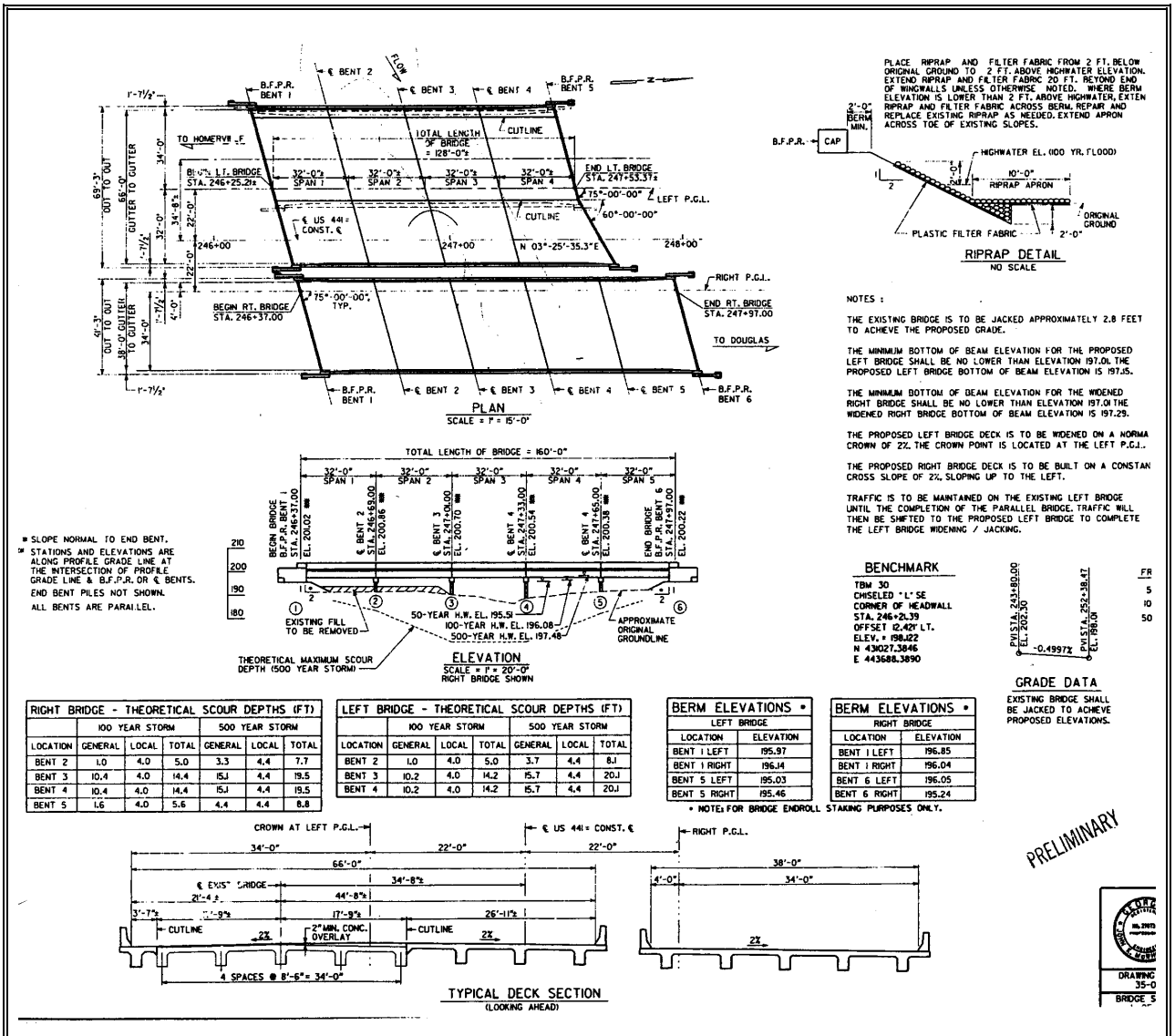
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Concept Report)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB-2.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



RIGHT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.3	4.4	7.7
BENT 3	10.4	4.0	14.4	15.1	4.4	19.5
BENT 4	10.4	4.0	14.4	15.1	4.4	19.5
BENT 5	1.6	4.0	5.6	4.4	4.4	8.8

LEFT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.7	4.4	8.1
BENT 3	10.2	4.0	14.2	15.7	4.4	20.1
BENT 4	10.2	4.0	14.2	15.7	4.4	20.1

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	195.97
BENT 1 RIGHT	196.14
BENT 5 LEFT	195.03
BENT 5 RIGHT	195.46

BERM ELEVATIONS *	
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	196.85
BENT 1 RIGHT	196.04
BENT 6 LEFT	196.05
BENT 6 RIGHT	195.24

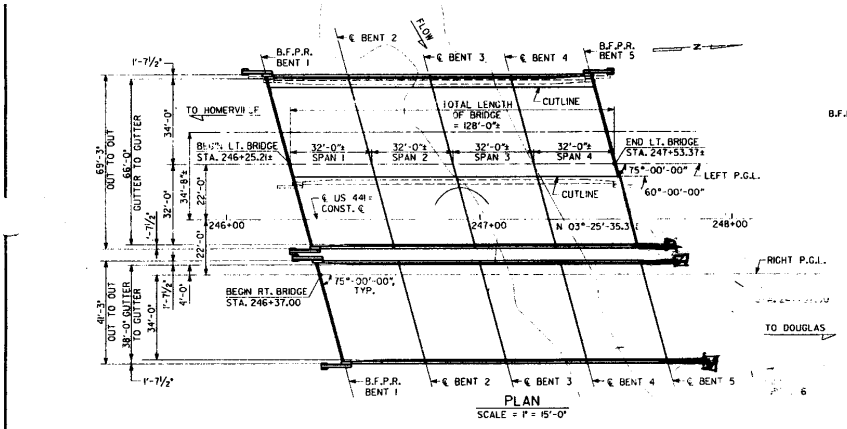
* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

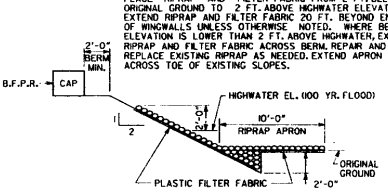
PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB-2.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia





NOTES :

THE EXISTING BRIDGE IS TO BE JACKED APPROXIMATELY 2.8 FEET TO ACHIEVE THE PROPOSED GRADE.

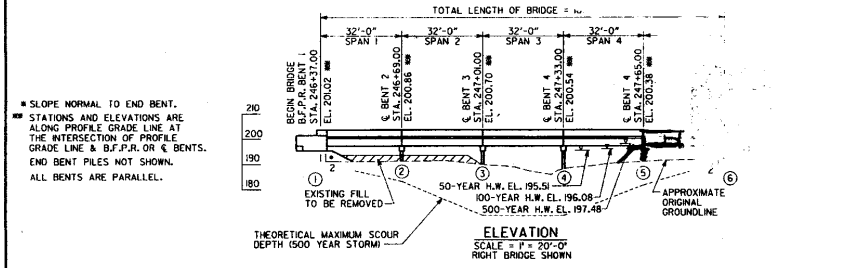
THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED LEFT BRIDGE SHALL BE NO LOWER THAN ELEVATION 197.01. THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 197.15.

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE WIDENED RIGHT BRIDGE SHALL BE NO LOWER THAN ELEVATION 197.01 THE WIDENED RIGHT BRIDGE BOTTOM OF BEAM ELEVATION IS 197.29.

THE PROPOSED LEFT BRIDGE DECK IS TO BE WIDENED ON A NORMAL CROWN OF 2%. THE CROWN POINT IS LOCATED AT THE LEFT P.G.L.

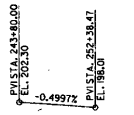
THE PROPOSED RIGHT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 2%, SLOPING UP TO THE LEFT.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING LEFT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED LEFT BRIDGE TO COMPLETE THE LEFT BRIDGE WIDENING / JACKING.



BENCHMARK

TBM 30
CHISELED "L" SE
CORNER OF HEADWALL
STA. 246+21.39
OFFSET 12.42' LT.
ELEV. = 198.22
N 431027.3846
E 443688.3890



EXISTING BRIDGE SHALL BE JACKED TO ACHIEVE PROPOSED ELEVATIONS.

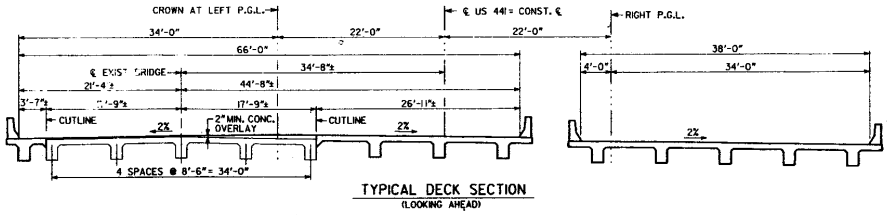
RIGHT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.3	4.4	7.7
BENT 3	10.4	4.0	14.4	15.1	4.4	19.5
BENT 4	10.4	4.0	14.4	15.1	4.4	19.5
BENT 5	1.6	4.0	5.6	4.4	4.4	8.8

LEFT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.7	4.4	8.1
BENT 3	10.2	4.0	14.2	15.7	4.4	20.1
BENT 4	10.2	4.0	14.2	15.7	4.4	20.1

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	195.97
BENT 1 RIGHT	196.14
BENT 5 LEFT	195.03
BENT 5 RIGHT	195.46

BERM ELEVATIONS *	
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	196.85
BENT 1 RIGHT	196.04
BENT 6 LEFT	196.05
BENT 6 RIGHT	195.24

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.



PRELIMINARY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: JONES CREEK BRIDGE (48) - REDUCE BOTH LEFT & RIGHT BRIDGE BY ONE SPAN.

ORIGINAL DESIGN: The original design proposes the replacement and addition of dual 200'-0" by 41'-3"North & South Bound bridges with begin stations 863+44.00 and end station 865+44.00**.**

PROPOSED CHANGE: The proposed change recommends eliminating the excess end span as designed on both bridges and shortening the length of the bridges by 40'-0". The begin bridge station is 863+44.00 and the end bridge station is 865+04.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 928,125		$ 928,125
PROPOSED CHANGE:	$ 742,500		$ 742,500
		SAVINGS:	$ 185,625

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $185,625.

Less construction time.

Reduce excess Freeboard to within “1” foot.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

JUSTIFICATION:

The reduced length has no impact on the function or the structural integrity of the bridge.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right bridge	7	SF	8,250	45	371,250
Left Bridge	7	SF	8,250	45	371,250
				SUBTOTAL:	742,500
				25 % MARK UP:	185,625
				TOTAL:	928,125

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right Bridge	7	SF	6,600	45	297,000
Left Bridge	7	SF	6,600	45	297,000
				SUBTOTAL:	594,000
				25 % MARK UP:	148,500
				TOTAL:	742,500

SOURCES

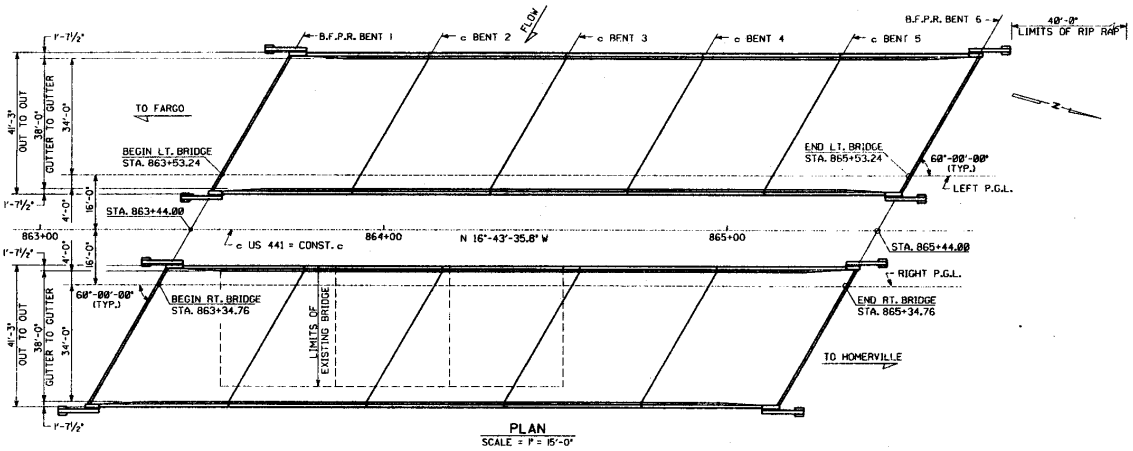
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Concept Report)

ORIGINAL DESIGN SKETCH/DETAIL

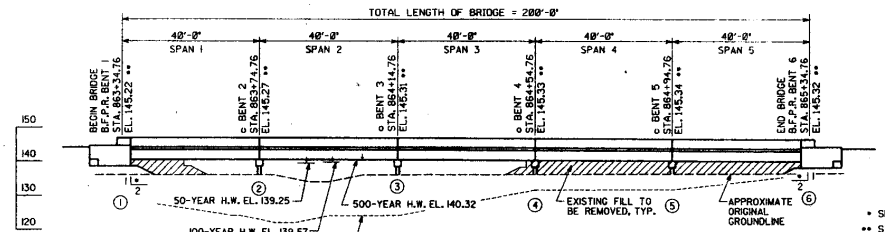
PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



PLAN
SCALE = 1" = 15'-0"



ELEVATION
SCALE = 1" = 15'-0"
RIGHT BRIDGE SHOWN

* SLOPE NORMAL TO END BENT.

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

END BENT PILES NOT SHOWN.

ALL BENTS ARE PARALLEL.

THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENTS 2-3	5.9	3.3	9.2	8.4	3.6	12.0
BENTS 4-5	1.0	3.3	4.3	1.0	3.6	4.6

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	139.84
BENT 1 RIGHT	140.57
BENT 6 LEFT	139.87
BENT 6 RIGHT	140.64

BERM ELEVATIONS *	
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	140.55
BENT 1 RIGHT	139.76
BENT 6 LEFT	140.65
BENT 6 RIGHT	139.90

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

NOTES :
THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED LEFT BRIDGE SHALL BE NO LOWER THAN ELEVATION 140.70. THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 141.81.

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED RIGHT BRIDGE SHALL BE NO LOWER THAN ELEVATION 140.70. THE PROPOSED RIGHT BRIDGE BOTTOM OF BEAM ELEVATION IS 141.76.

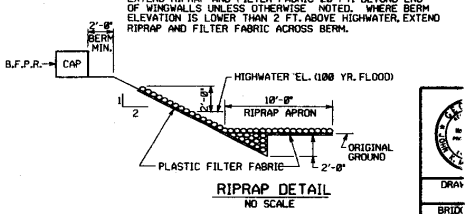
THE PROPOSED LEFT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT. SLOPING DOWN TO THE LEFT.

THE PROPOSED RIGHT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT. SLOPING DOWN TO THE RIGHT.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING RIGHT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED LEFT BRIDGE TO COMPLETE THE RIGHT BRIDGE CONSTRUCTION.

REMOVE THE EXISTING BRIDGE. REMOVE THE EXISTING SUB-STRUCTURE AS PER THE SPECIFICATIONS.

PLACE RIPRAP AND FILTER FABRIC FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE HIGHWATER ELEVATION. EXTEND RIPRAP AND FILTER FABRIC 20 FT. BEYOND END OF WINGWALLS UNLESS OTHERWISE NOTED. WHERE BERM ELEVATION IS LOWER THAN 2 FT. ABOVE HIGHWATER, EXTEND RIPRAP AND FILTER FABRIC ACROSS BERM.



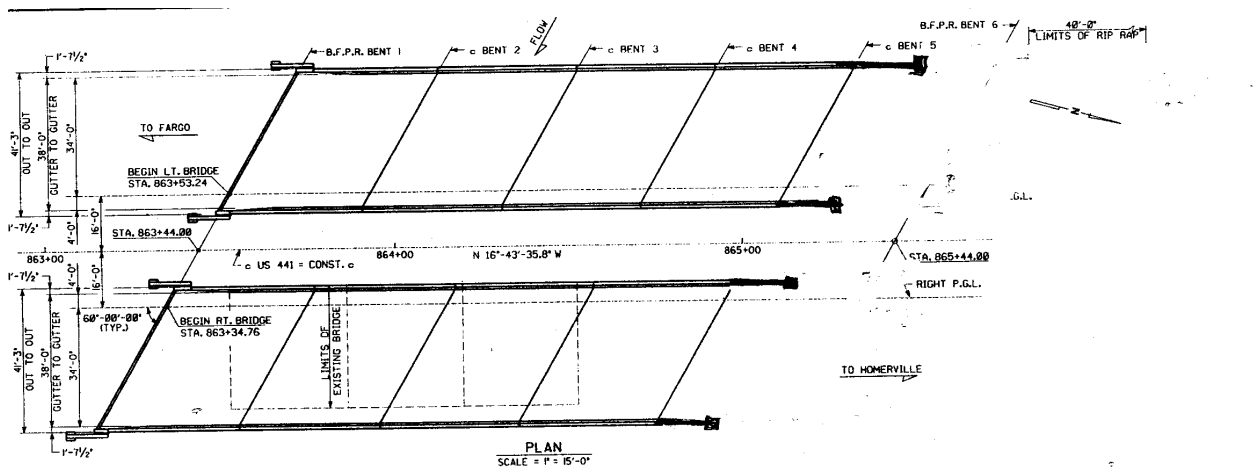
RIPRAP DETAIL
NO SCALE

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



- SLOPE NORMAL TO END BENT.
- ** STATIONS AND ELEVATIONS ARE ALONG PROFILE GRADE LINE AT THE INTERSECTION OF PROFILE GRADE LINE AND B.F.P.R. OR ℄ BENTS.

END BENT PILES NOT SHOWN.

ALL BENTS ARE PARALLEL.

THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENTS 2-3	5.9	3.3	9.2	8.4	3.6	12.0
BENTS 4-5	1.0	3.3	4.3	1.0	3.6	4.6

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	139.84
BENT 1 RIGHT	140.57
BENT 6 LEFT	139.87
BENT 6 RIGHT	140.64

BERM ELEVATIONS *	
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	140.55
BENT 1 RIGHT	139.76
BENT 6 LEFT	140.65
BENT 6 RIGHT	139.90

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

NOTES :

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED LEFT BRIDGE SHALL BE NO LOWER THAN ELEVATION 140.70. THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 141.81.

THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED RIGHT BRIDGE SHALL BE NO LOWER THAN ELEVATION 140.70. THE PROPOSED RIGHT BRIDGE BOTTOM OF BEAM ELEVATION IS 141.76.

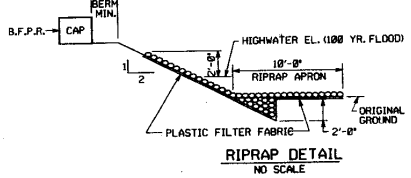
THE PROPOSED LEFT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT, SLOPING DOWN TO THE LEFT.

THE PROPOSED RIGHT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT. SLOPING DOWN TO THE RIGHT.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING RIGHT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED LEFT BRIDGE TO COMPLETE THE RIGHT BRIDGE CONSTRUCTION.

REMOVE THE EXISTING BRIDGE. REMOVE THE EXISTING SUB-STRUCTURE AS PER THE SPECIFICATIONS.

PLACE RIPRAP AND FILTER FABRIC FROM 2 FT. BELOW ORIGINAL GROUND TO 2 FT. ABOVE HIGHWATER ELEVATION. EXTEND RIPRAP AND FILTER FABRIC 20 FT. BEYOND END OF WINGWALLS UNLESS OTHERWISE NOTED. WHERE BERM ELEVATION IS LOWER THAN 2 FT. ABOVE HIGHWATER, EXTEND RIPRAP AND FILTER FABRIC ACROSS BERM.



RIPRAP DETAIL
NO SCALE

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: CAMP BRANCH BRIDGE (48) - REDUCE BOTH LEFT & RIGHT BRIDGE BY TWO SPANS.

ORIGINAL DESIGN: The original design proposes the replacement and addition of dual 280'-0" by 41'-3" North & South Bound bridges with begin stations 817+82.00 and end station 820+62.00.

PROPOSED CHANGE: The proposed change recommends eliminating the not needed end spans 6 & 7 as designed on both bridges and shortening the length of the bridges by 80'-0". The new begin bridge station is 817+82.00 and the end bridge station is 819+82.00.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,299,375		$ 1,299,375
PROPOSED CHANGE:	$ 928,125		$ 928,125
		SAVINGS:	$ 371,250

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $371,250.

Less construction time.

Reduce excess Freeboard to within “1” foot.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

JUSTIFICATION:

The reduced length has no impact on the function or the structural integrity of the bridge, while providing a savings in construction costs.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right bridge	7	SF	11,550	45	519,750
Left Bridge	7	SF	11,550	45	519,750
				SUBTOTAL:	1,039,500
				25 % MARK UP:	259,875
				TOTAL:	1,299,375

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right Bridge	7	SF	8,250	45	371,250
Left Bridge	7	SF	8,250	$45	371,250
				SUBTOTAL:	742,500
				25 % MARK UP:	185,625
				TOTAL:	928,125

SOURCES

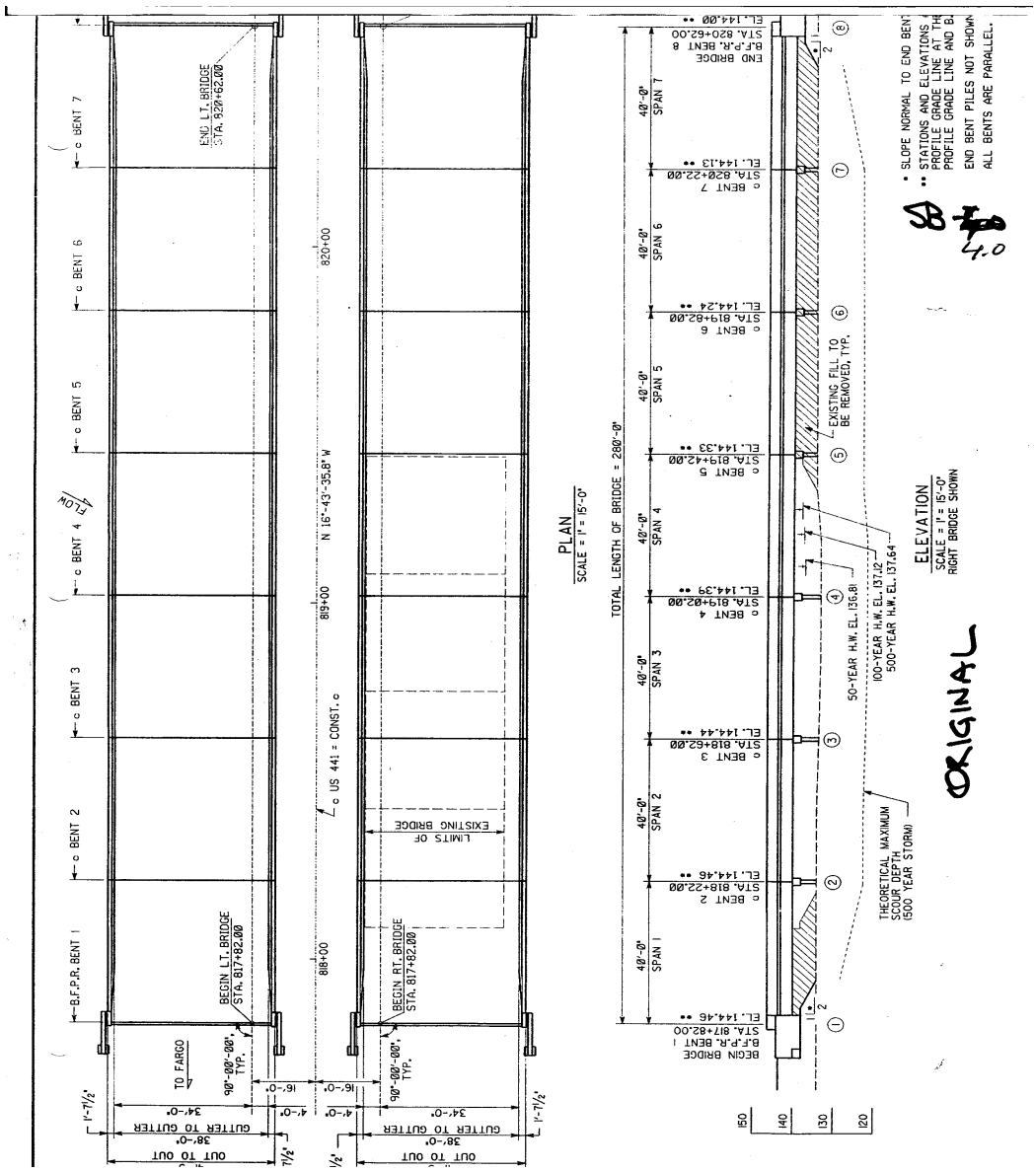
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Concept Report)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

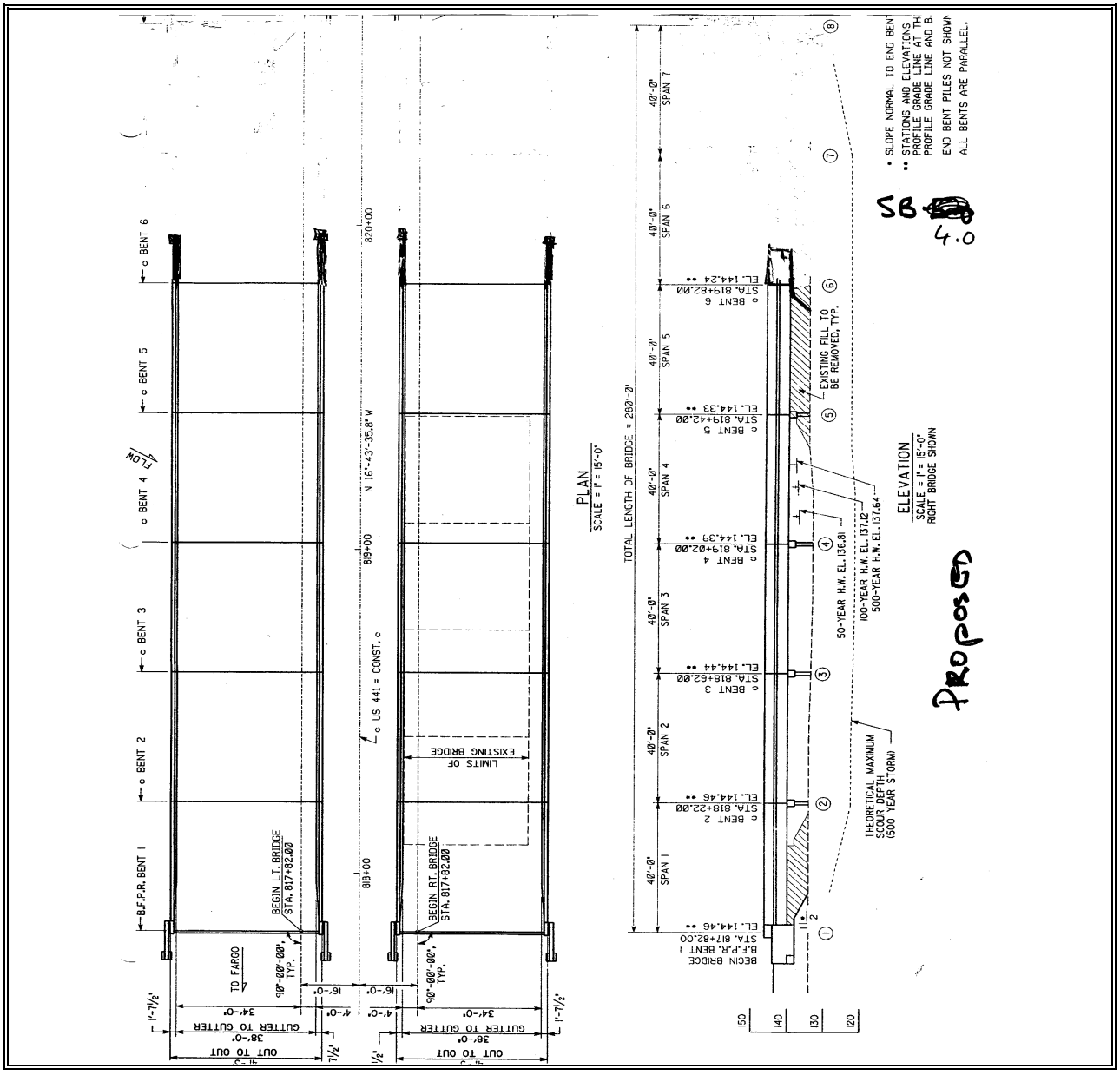


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: TATUM CREEK BRIDGE (48) - REDUCE BOTH LEFT & RIGHT BRIDGE BY FIVE SPANS.

ORIGINAL DESIGN: The original design proposes the replacement and addition of dual 400'-0" by 41'-3" North & South Bound bridges with begin stations 1019+85 and end station 1023+85**.**

PROPOSED CHANGE: The proposed change recommends eliminating the not needed begin spans 1, 2 &3 and end spans 9 & 10 as designed on both bridges and shortening the length of the bridges by 200'-0". The new begin bridge station is 1021+05 and the end bridge station is 1023+05.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,856,250		$ 1,856,250
PROPOSED CHANGE:	$ 928,125		$ 928,125
		SAVINGS:	$ 928,125

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $928,125.

Less construction time.

Reduce excess Freeboard to within “1” foot.

Less materials and maintenance.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

JUSTIFICATION:

Reduced length is more than adequate for the functional requirements, and less materials & maintenance.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right bridge	7	SF	16,500	45	742,500
Left Bridge	7	SF	16,500	45	742,500
				SUBTOTAL:	1,485,000
				25 % MARK UP:	371,250
				TOTAL:	1,856,250

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right Bridge	7	SF	8,250	45	371,250
Left Bridge	7	SF	8,250	45	371,250
				SUBTOTAL:	742,500
				25 % MARK UP:	185,625
				TOTAL:	928,125

SOURCES

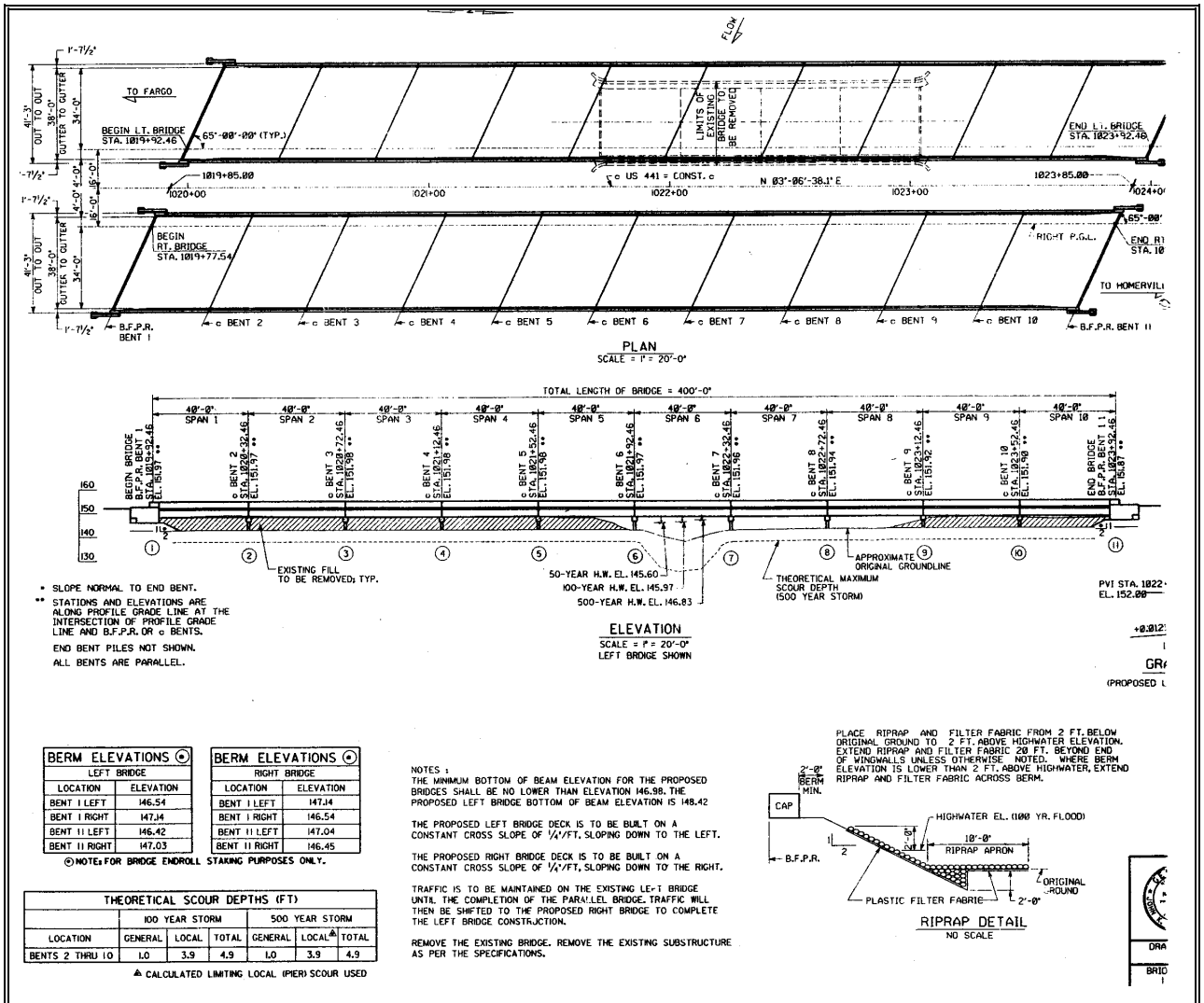
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Concept Report)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



BERM ELEVATIONS ⊙ LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	146.54
BENT 1 RIGHT	147.14
BENT 11 LEFT	146.42
BENT 11 RIGHT	147.03

BERM ELEVATIONS ⊙ RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	147.14
BENT 1 RIGHT	146.54
BENT 11 LEFT	147.04
BENT 11 RIGHT	146.45

⊙ NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL▲	TOTAL
BENTS 2 THRU 10	1.0	3.9	4.9	1.0	3.9	4.9

▲ CALCULATED LIMITING LOCAL (PIER) SCOUR USED

NOTES :
THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED BRIDGES SHALL BE NO LOWER THAN ELEVATION 146.98. THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 148.42

THE PROPOSED LEFT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT. SLOPING DOWN TO THE LEFT.

THE PROPOSED RIGHT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT, SLOPING DOWN TO THE RIGHT.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING LEFT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED RIGHT BRIDGE TO COMPLETE THE LEFT BRIDGE CONSTRUCTION.

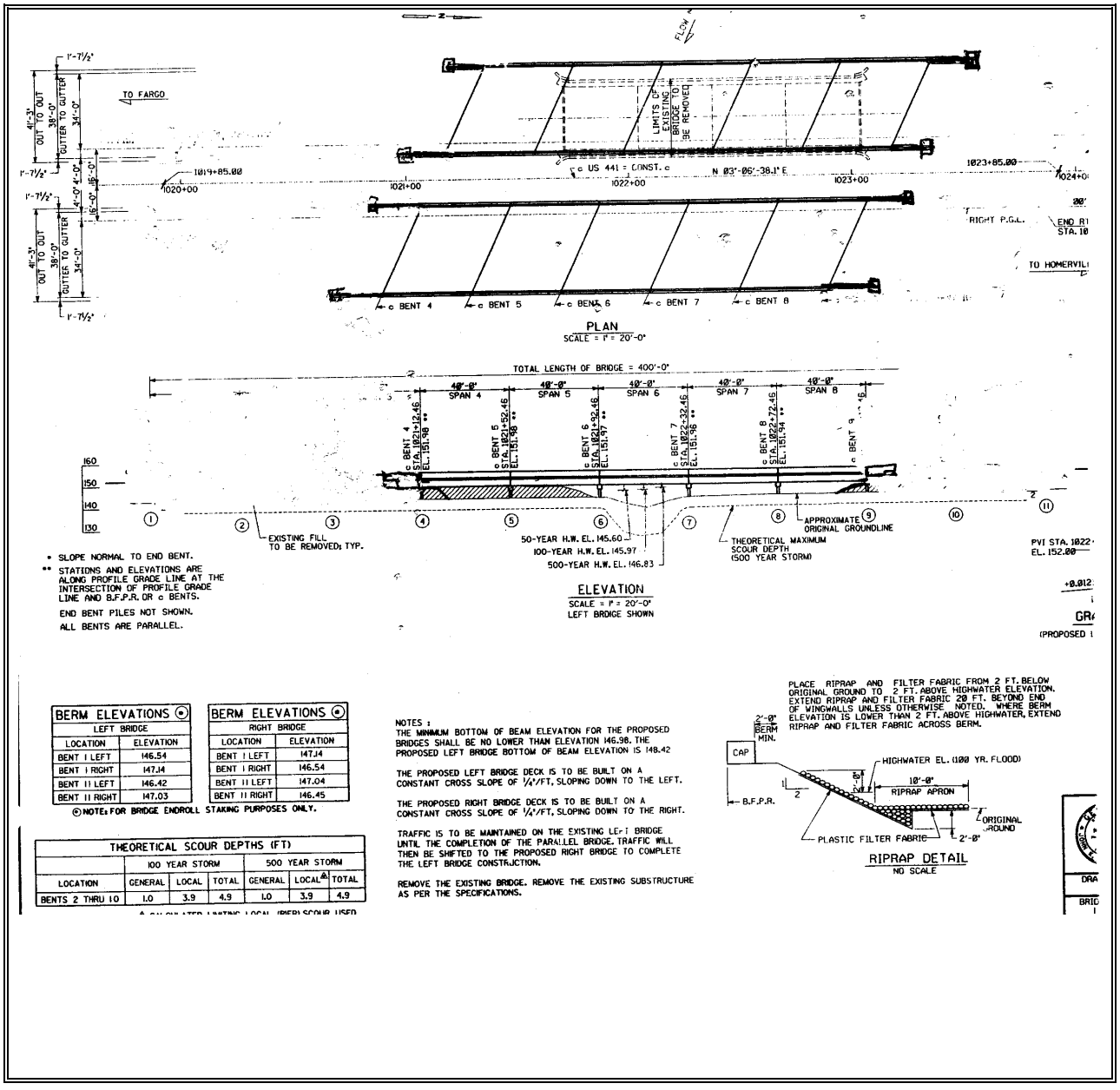
REMOVE THE EXISTING BRIDGE. REMOVE THE EXISTING SUBSTRUCTURE AS PER THE SPECIFICATIONS.

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



BERM ELEVATIONS ⊙ LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	146.54
BENT 1 RIGHT	147.14
BENT 11 LEFT	146.42
BENT 11 RIGHT	147.03

BERM ELEVATIONS ⊙ RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	147.14
BENT 1 RIGHT	146.54
BENT 11 LEFT	147.04
BENT 11 RIGHT	146.45

⊙ NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL ▲	TOTAL
BENTS 2 THRU 10	1.0	3.9	4.9	1.0	3.9	4.9

NOTES :
THE MINIMUM BOTTOM OF BEAM ELEVATION FOR THE PROPOSED BRIDGES SHALL BE NO LOWER THAN ELEVATION 146.98. THE PROPOSED LEFT BRIDGE BOTTOM OF BEAM ELEVATION IS 148.42

THE PROPOSED LEFT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT, SLOPING DOWN TO THE LEFT.

THE PROPOSED RIGHT BRIDGE DECK IS TO BE BUILT ON A CONSTANT CROSS SLOPE OF 1/4"/FT, SLOPING DOWN TO THE RIGHT.

TRAFFIC IS TO BE MAINTAINED ON THE EXISTING LEFT BRIDGE UNTIL THE COMPLETION OF THE PARALLEL BRIDGE. TRAFFIC WILL THEN BE SHIFTED TO THE PROPOSED RIGHT BRIDGE TO COMPLETE THE LEFT BRIDGE CONSTRUCTION.

REMOVE THE EXISTING BRIDGE. REMOVE THE EXISTING SUBSTRUCTURE AS PER THE SPECIFICATIONS.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: INSTALL PRECAST BOTTOMLESS ARCHES (I.E. CONSPAN UNITS) VS. PILE BENT BRIDGES.

ORIGINAL DESIGN: The original design proposes the replacement and addition of 41'-3" wide North & South Bound bridges on pile bents with various lengths on 8 different sites.

PROPOSED CHANGE: The proposed change recommends eliminating the pile bent bridges and utilizing Conspan Units instead, as long as hydrological aspects are satisfied. In most instances, these bridges were designed with 2-3 feet of freeboard that can be reduced. By reducing the length of the bridges a Precast Arch system is feasible. Specifically on short bridges of 80'-120' where 40'-triple arch culverts can be lined up to form a crossing over waterways. On average, the cost per 40 feet long x 40 feet wide Conspan units, the cost is 50-60,000 USD. The cost differential between a bridge and Precast arches culverts can justify their use.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
		SAVINGS:	Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of approximately $100,000.

Faster and drastic reduction in construction schedule.

Reduce excess Freeboard to within “1” foot.

Less materials and maintenance.

Less construction forming and equipment.

DISADVANTAGES:

Hydraulically a smaller opening.

Possibly a design exception for backwater elevation variance.

Backwater increase.

JUSTIFICATION:

Previously used by GDOT in other locations.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-8.0
PAGE NUMBER:	1 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: SHORTEN SOUTHBOUND DECELERATION LANE TO AVOID CONSTRUCTION OF WIDER BRIDGE OVER HOG CREEK.

ORIGINAL DESIGN: The original design widens the existing bridge to 69'-3" to not preclude a standard length deceleration lane.

PROPOSED CHANGE: The proposed change recommendation would shorten the deceleration lane enough so that the start of the taper would occur south of the proposed bridge. The proposed bridge would be 41'-3" wide.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 489,600		$ 489,600
PROPOSED CHANGE:	$ 70,975		$ 70,975
		SAVINGS:	$ 418,625

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-8.0
PAGE NUMBER:	2 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $418,625.

Eliminates possible confusion for the driver entering the deceleration lane before arriving on the bridge.

DISADVANTAGES:

Design variance will be needed.

Safety is slightly decreased, with a shorter deceleration length; thus, the driver turning left will have to slow down before entering the auxiliary lane.

JUSTIFICATION:

A savings of over $400,000 is justified, considering the traffic counts are very low and thus a shorter deceleration lane would very rarely cause a situation where safety would be an issue.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-8.0
PAGE NUMBER:	3 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge over Hog Creek - SB	7	SF	4,352	90	391,680
				SUBTOTAL:	391,680
				25 % MARK UP:	97,920
				TOTAL:	489,600

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge over Hog Creek - SB	7	SF.	630	90	56,700
				SUBTOTAL:	56,700
				25 % MARK UP:	14,175
				TOTAL:	70,975

SOURCES

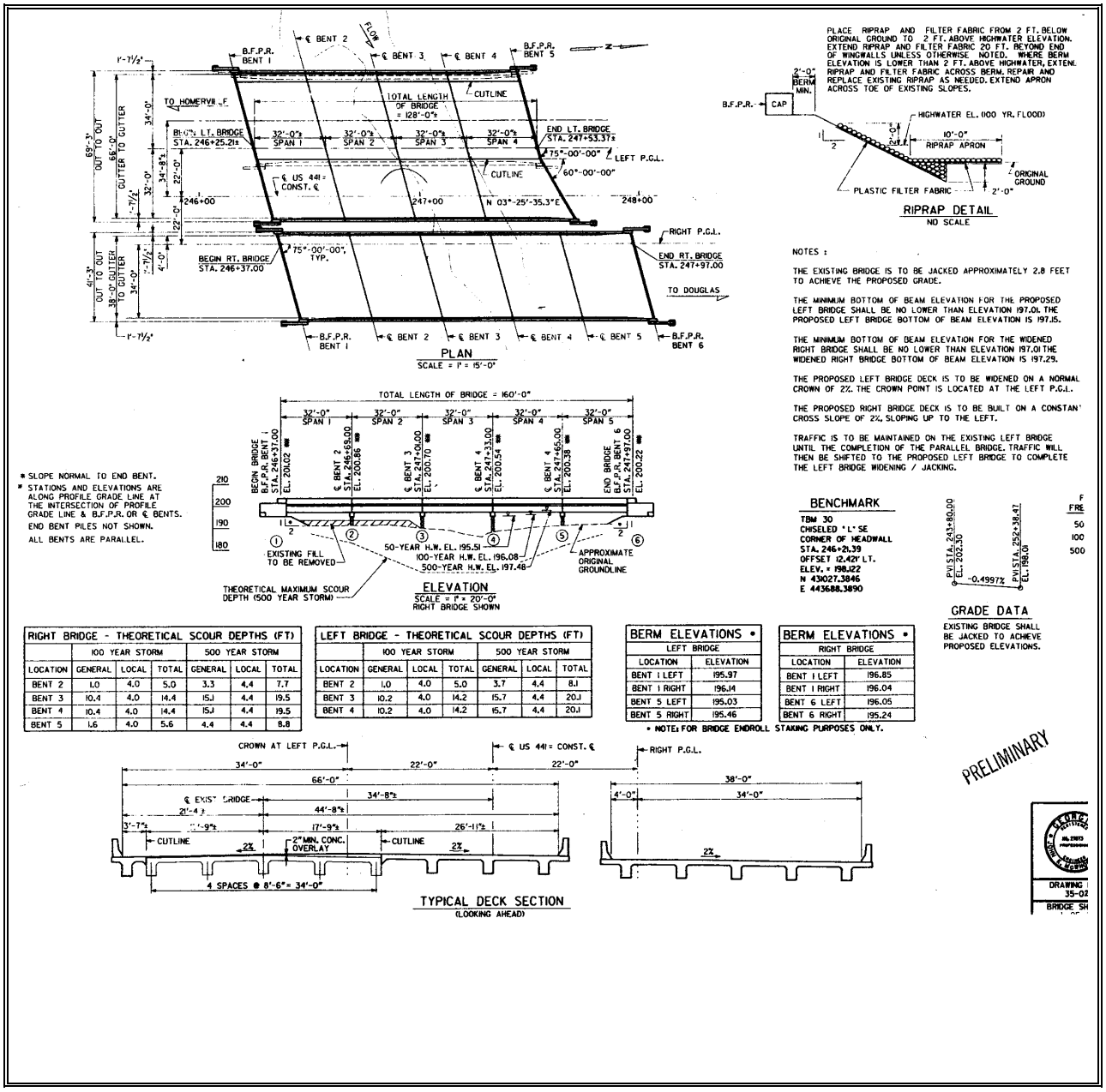
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB-8.0
PAGE NUMBER:	4 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



RIGHT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.3	4.4	7.7
BENT 3	10.4	4.0	14.4	15.1	4.4	19.5
BENT 4	10.4	4.0	14.4	15.1	4.4	19.5
BENT 5	1.6	4.0	5.6	4.4	4.4	8.8

LEFT BRIDGE - THEORETICAL SCOUR DEPTHS (FT)						
	100 YEAR STORM			500 YEAR STORM		
LOCATION	GENERAL	LOCAL	TOTAL	GENERAL	LOCAL	TOTAL
BENT 2	1.0	4.0	5.0	3.7	4.4	8.1
BENT 3	10.2	4.0	14.2	15.7	4.4	20.1
BENT 4	10.2	4.0	14.2	15.7	4.4	20.1

BERM ELEVATIONS *	
LEFT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	195.97
BENT 1 RIGHT	196.14
BENT 5 LEFT	195.03
BENT 5 RIGHT	195.46

BERM ELEVATIONS *	
RIGHT BRIDGE	
LOCATION	ELEVATION
BENT 1 LEFT	196.85
BENT 1 RIGHT	196.04
BENT 6 LEFT	196.05
BENT 6 RIGHT	195.24

* NOTE: FOR BRIDGE ENDROLL STAKING PURPOSES ONLY.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: REVISE TYPICAL ROADWAY SECTION TO A RURAL ROADWAY SECTION WITH A 20' RAISED MEDIAN.

ORIGINAL DESIGN: The original design includes a rural roadway section with a 32' to 44' depressed median for most of the length of the project.

PROPOSED CHANGE: The proposed change recommendation would include a rural roadway section with a 20' wide raised median. This median would be a grassed median, with curb and gutter. This section will only replace the rural sections of the current design.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 151,000,000		$ 151,000,000
PROPOSED CHANGE:	$ 149,995,000		$ 149,995,000
		SAVINGS:	$ 1,005,000

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $1,005,000.

Reduces wetland and Right-of-way impacts.

Eliminates drainage problems at median openings.

Eliminates most drainage in the median. Drainage on the proposed change will only be needed at the superelevated sections.

Reduces earthwork costs.

DISADVANTAGES:

More difficult to maintain.

High cost of large quantity of curb and gutter.

Lower design speed warranted.

Conflicts with GDOT policy on medians for GRIP Corridors.

JUSTIFICATION:

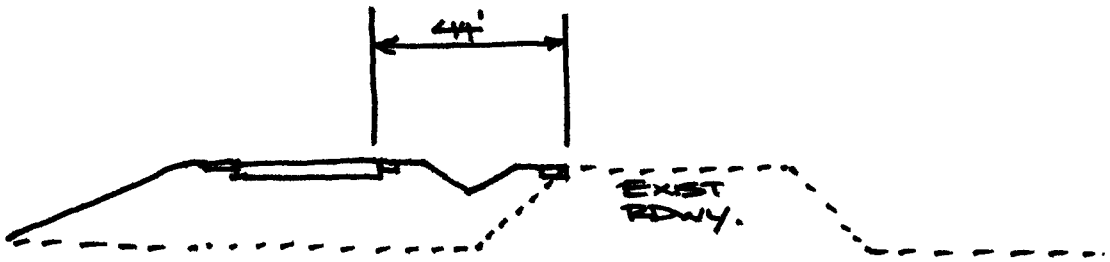
The proposed design change would include cost savings, as well as a reduction of ROW and wetland impacts. This outweighs the disadvantages of a lower roadway design speed.

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

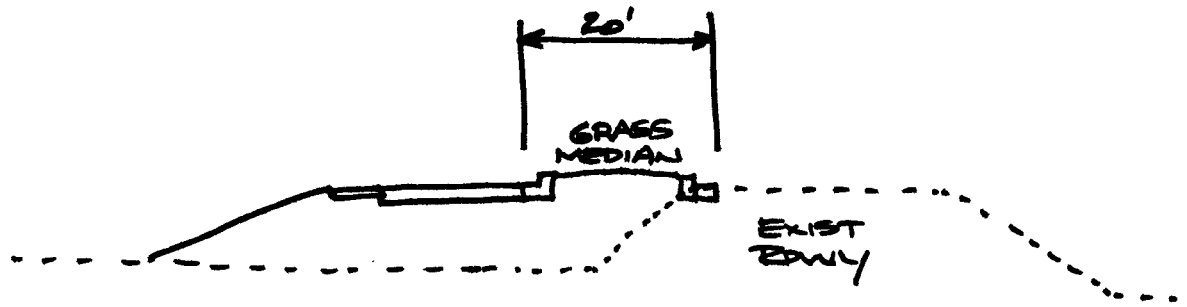


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Cost Comparison - 20' Raised Median vs. Current Design

		Average					Wetland				RW Width	Area (AC)	Unit Cost	RW Cost	Curb L	Unit Cost	CD Cost	Pvmt Area	Unit Cost	SH Cost
Begin Sta	End Sta	Area (SF)	Total CY	Unit Cost	EW Cost	Length	Area (AC)	Unit Cost	WL Cost											
EDS-441 (48)																				
24200	115600	24	81244.44	$7.50	$ 609,333.33	51925	14.30	$20,000	$286,088.15		12	25.18	$5,000	$125,895.32	182800	$10	$1,828,000	365600	$2.50	$914,000.00
115600	120613	48	9287.56	$7.50	$ 69,506.67	500	0.28	$20,000	$5,509.84		24	2.87	$5,000	$14,360.88	10426	$10	$104,260	20852	$2.50	$52,130.00
EDS-441 (49)																				
1900	47700	48	81422.22	$7.50	$ 610,666.67	5300	1.46	$20,000	$28,201.10		24	25.23	$5,000	$126,170.80	91600	$10	$916,000	183200	$2.50	$458,000.00
EDS-441 (46)																				
24000	59100	48	62400.00	$7.50	$ 468,000.00	0	0.00	$20,000	$0.00		24	19.34	$5,000	$96,694.21	70200	$10	$702,000	140400	$2.50	$351,000.00
EDS-441 (41)																				
8500	62950	48	96822.22	$7.50	$ 724,666.67	9950	2.99	$20,000	$83,160.04		24	29.94	$5,000	$149,724.52	108700	$10	$1,087,000	217400	$2.50	$543,500.00
TOTALS					$ 2,482,173.33				$ 373,968.94					$ 512,845.73			$ 4,637,260.00			$ 2,318,630.00
GRAND TOTAL=					$ 1,080,366.01															

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-1.1
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: REDUCE MEDIAN WIDTH FROM 44' TO 32' FOR THE ENTIRE PROJECT.

ORIGINAL DESIGN: The original design includes a typical roadway section with a 44' depressed median.

PROPOSED CHANGE: The proposed change recommendation would include a rural typical section with a 32' depressed median.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 151,000,000		$ 151,000,000
PROPOSED CHANGE:	$ 149,785,000		$ 149,785,000
		SAVINGS:	$ 1,215,000

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-1.1
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $1,215,000.

Reduces wetland and Right-of-way impacts.

Reduces earthwork costs.

DISADVANTAGES:

More difficult to maintain drainage at median crossovers.

Conflicts with GDOT policy on medians for GRIP Corridors; however, this width is already being used in areas with large amounts of wetland impacts.

JUSTIFICATION:

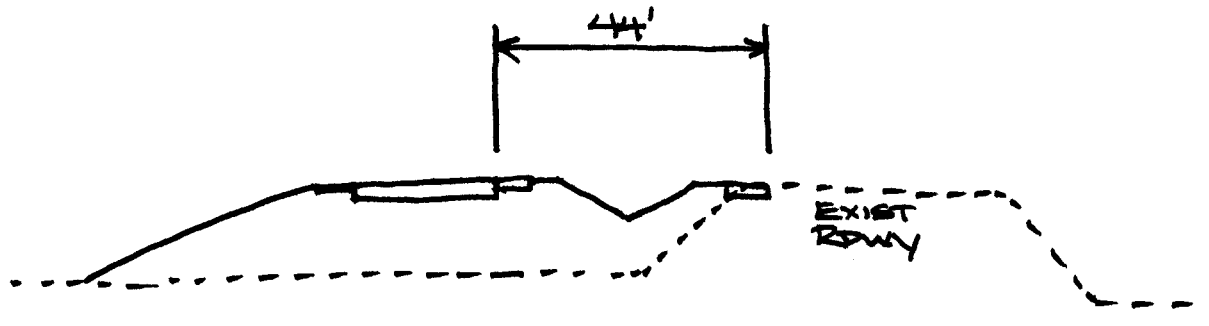
The proposed design change would include cost savings, as well as a reduction of ROW and wetland impacts. This outweighs the disadvantages of conflicts with current GDOT policy.

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	RW-1.1
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

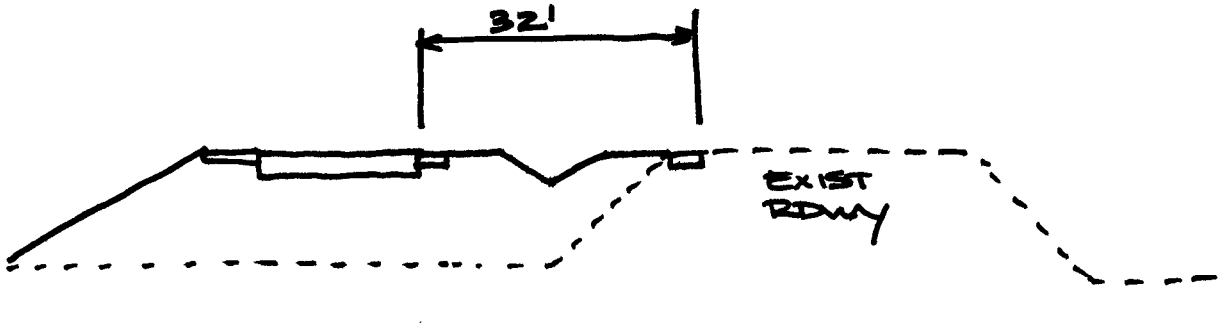


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	RW-1.1
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.1
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Cost Comparison - 32' median vs. Current Design

Begin Sta	End Sta	Area (SF)	Total CY	Unit Cost	EW Cost	Wetland Length	Area (AC)	Unit Cost	WL Cost	ROW Width	Area (AC)	Unit Cost	RW Cost
EDS-441 (46)													
24200	115600	0	0.00	$7.50	$ -	0	0.00	$20,000	$0.00	0	0.00	$5,000	$0.00
115600	120813	24	4633.78	$7.50	$ 34,753.33	500	0.14	$20,000	$2,754.82	12	1.44	$5,000	$7,190.44
EDS-441 (49)													
1900	47700	24	40711.11	$7.50	$ 305,333.33	5300	1.46	$20,000	$29,201.10	12	12.62	$5,000	$63,085.40
EDS-441 (48)													
24000	59100	24	31200.00	$7.50	$ 234,000.00	0	0.00	$20,000	$0.00	12	9.67	$5,000	$48,347.11
EDS-441 (41)													
8500	62850	24	4831.11	$7.50	$ 362,333.33	9650	2.66	$20,000	$53,168.04	12	14.97	$5,000	$74,862.26
TOTALS					$ 936,420.00				$ 85,123.97				$ 193,475.21

GRAND TOTAL= $ 1,215,019.17

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: LEAVE EXISTING ROAD WITH CROWN IN LIEU OF LEVELING AS PROPOSED.

ORIGINAL DESIGN: The original design uses leveling on the existing section to remove the crown that is on the existing roadway centerline.

PROPOSED CHANGE: The proposed change recommendation would leave the existing roadway crowned in lieu of removing the crown with leveling.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 0		$ 0
PROPOSED CHANGE:	$ (2,295,392)		$ (2,295,392)
		SAVINGS:	$ 2,295,392

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT – Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Cost savings.

Ease of construction.

DISADVANTAGES:

Does not reduce travel time, accidents or congestion.

JUSTIFICATION:

Proposed design change would include cost reduction and reduction in construction time. AASHTO, chapter 7, Cross Slope, states “Each roadway of a divided arterial may be sloped to drain to both edges, or each roadway may be sloped to drain to its outer edge”

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
(41)Leveling	1	TN	5,692	37.54	213,695
(46)Req'd but not included	1		0		0
(48)Req'd but not included	1		0		0
(49)Leveling	1	TN	4,3750	37.00	1,618,750
				SUBTOTAL:	
				25 % MARK UP:	
				TOTAL:	

*Note: Not estimated by all contracts.

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
(41)Leveling	7	TN	(11,420T)	37.27	(425,623)
(46)Leveling	7	TN	(8,270T)	37.27	(308,222)
(48)Leveling	7	TN	(21,263T)	37.27	(792,472)
(49)Leveling	7	TN	(8,331T)	37.27	(309,997)
				SUBTOTAL:	(1,836,314)
				25 % MARK UP:	(459,078)
				TOTAL:	(2,295,392)

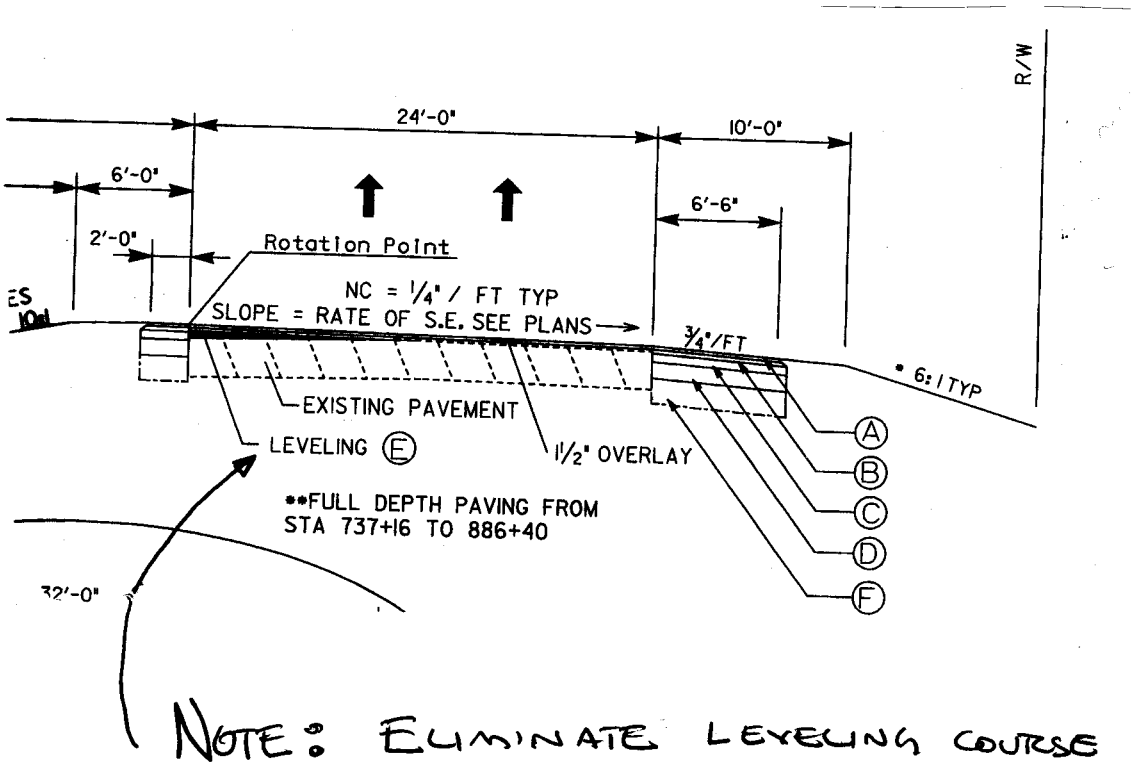
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	4 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



NOTE: ELIMINATE LEVELING COURSE

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	5 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Calculation taken from information provided by design engineer.

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	6 of 6

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Linear Feet of leveling is taken from station shown on typical section for overlay section in each project.

(41) 47702lf x 12ft x 3” x .00665T-sf/in = 11420T
(46) 34545lf x 12ft x 3” x .00665T-sf/in = 8270T
(48) 88816lf x 12ft x 3” x .00665T-sf/in = 21263T
(49) 34800lf x 12ft x 3” x .00665T-sf/in = 8331T

Cross slope = .0208 x 12ft = .2496 x 2 = .4992 = 6inches / 2 = 3 inches of leveling average to remove crown

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-3.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: DO NOT REWORK (ELEVATE) EXISTING EXCEPT AS NECESSARY.

ORIGINAL DESIGN: The original design indicates that portions of the existing roadway does not follow the existing grade and would be replaced in lieu of overlay and widening.

PROPOSED CHANGE: The proposed change recommendation would be to follow existing grade and only change elevation where necessary.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
		SAVINGS:	Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-3.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Cost savings and reduced construction time.

Ease of construction staging.

DISADVANTAGES:

Condition of existing road must be analyzed in places where overlay is utilized.

JUSTIFICATION:

After review of cross sections for each of these projects, it appears that the existing grade has been maintained wherever possible. On section (46) the cross sections are all drawn as if all sections are full depth. This appears to be a drafting error and should be corrected during plan preparation. On section (41), (46), (48) and (49) the stations on the typical should reflect the actual stations of full depth pavement and these station limits should also be reflected on the cross sections during plan preparation.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: REDUCE WIDTH OF OUTSIDE PAVED SHOULDER FROM 6'-6" TO 2' AND REDUCE FROM FULL DEPTH TO 5.5" OF ASPHALTIC CONCRETE.

ORIGINAL DESIGN: The original design proposed to pave 6'-6" of the outside shoulder with three of the projects proposing full depth of the pavement structure.

PROPOSED CHANGE: The proposed change recommendation involves paving only 2' of the outside shoulder and reducing the shoulder pavement design to 440#/SY of 25 mm superpave topped with 165#/SY of 9.5mm superpave.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 10,266,085		$ 10,266,085
PROPOSED CHANGE:	$ 1,563,936		$ 1,563,936
		SAVINGS:	$ 8,702,149

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $8,702,149.

Eliminate edge rut.

Reduce drop off recovery accidents.

Keeps mowing operations out of travel lane.

DISADVANTAGES:

Requires different construction equipment and techniques.

Does not provide area for bicycles.

Does not provide enough width for rumble strips.

Would not provide as good vehicle recovery as a wider pavement.

JUSTIFICATION:

The primary objective of eliminating edge rutting and the resulting drop off can be achieved with lesser width paved shoulder.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
9.5mm Asph. Conc.	1 Avg.	T	28,645	36.16	1,035,910
19mm Asph. Conc.	1 Avg.	T	41,054	37.00	1,518,997
25mm Asph. Conc.	1 Avg.	T	65,546	35.19	2,306,499
GAB	1 Avg.	SY	310,100	10.81	3,351,462
				SUBTOTAL:	8,212,868
				25 % MARK UP:	2,053,217
				TOTAL:	10,266,085

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
9.5mm Asph. Conc.	1 Avg.	T	9,652	35.25	340,233
25mm Asph. Conc.	1 Avg.	T	25,739	35.40	911,149
				SUBTOTAL:	1,251,149
				25 % MARK UP:	312,787
				TOTAL:	1,563,936

SOURCES

1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

EDS 441 (48) 6.5 ft shoulder plan typical section 142,954 s.y.

9.5mm = 142,954 sy x 135 #/sy ÷ 2000 #/ton x $34.71 = $384,931
19 mm = " x 220 #/sy " x 36.20 = 569,243
25mm = " x 440 #/sy " x 34.65 = 1,089,739
GAB = " x $8.35/sy = 1,193,666
$3,187,579

EDS 441(49) 63,114 s.y.

9.5 mm 63,114 sy x 165 #/sy ÷ 2000 #/ton x $35.50 = $184,846
19 mm " 220 #/sy " 38.00 = 263,816
25 mm " 440 #/sy " 36.00 = 499,862
$948,524

EDS 441 (46) 75,276 sy

1 1/2" 75,276 sy x 165 #/sy ÷ 2000 #/ton x $35.50 = $220,465
3" " x 220 #/sy " x 38.00 = 314,654
GAB (6") " x $6.27 sy = 471,981
$1,007,100

EDS 441 (41) 91,870 sy

12.5 mm 91,870 sy x 165 #/sy ÷ 2000 #/ton x $39.01 = $295,668
19 mm " 220 #/sy " x 36.24 = 371,284
25 mm " 440 #/sy " x 35.47 = 716,898
GAB " x 18.35 s.y. = 1,685,815
$3,069,664

Total cost per typical sections = $8,312,868

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

2.0ft outside shoulder @ 9.5mm 165#/sy
25 mm 440#/sy

EDS 441(48) 43,986 sy
EDS 441(49) 21,578 sy
EDS 441(46) 23,162 sy
EDS 441(41) 28,268 sy
116,994 sy

9.5mm: 116,994 sy x 165#/sy ÷ 2000#/ton x #35.25 = #340,233
25mm: " x 440#/sy " x 35.40 = 911,149
Cost for 2ft outside shldr = #1,251,382

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-5.0
PAGE NUMBER:	1 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: REDUCE TOTAL SHOULDER WIDTH FROM 10FT. TO 8FT.

ORIGINAL DESIGN: The original design typical section requires 10ft. shoulders on the mainline.

PROPOSED CHANGE: The proposed change recommendation is to reduce mainline shoulder width to 8ft.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 0		$ 0
PROPOSED CHANGE:	$ (1,075,973)		$ (1,075,973)
		SAVINGS:	$ 1,075,973

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-5.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $1,075,973.

Displaces less wetland.

Requires less right-of-way.

DISADVANTAGES:

Less vehicular refuge.

Less vehicular recovery area.

Moves guardrail closer to travel path.

JUSTIFICATION:

The proposed 8ft. shoulder meets AASHTO design standards.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-5.0
PAGE NUMBER:	3 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
				SUBTOTAL:	
				% MARK UP:	
				TOTAL:	

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Unclass Excavation (Reduction)	1	CY	(78,970)	5.80	(458,026)
Right of Way (Reduction)	7	AC	(24)	5,000	(120,000)
Bridges (Reduction)	7	SF	(6,016)	47	(282,752)
				SUBTOTAL:	(860,778)
				25 % MARK UP:	(215,195)
				TOTAL:	(1,075,973)

SOURCES

1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-7.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: RE-EVALUATE THE NEED TO WIDEN ROAD BASED ON PROJECTED TRAFFIC VOLUMES.

ORIGINAL DESIGN: The original design includes a typical 4 lane rural roadway section with a 44' depressed median.

PROPOSED CHANGE: The proposed change recommendation would give the option to not build these projects along this corridor.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 151,000,000		$ 151,000,000
PROPOSED CHANGE:	$ 0		$ 0
		SAVINGS:	$ 151,000,000

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-7.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $151,000,000.

Reduces wetland and Right-of-way impacts.

Frees up funding for projects with greater public need.

DISADVANTAGES:

Existing bridges need to be replaced in the next 10 years; GDOT will need to find additional funding to replace these bridges.

Leaves the communities along this corridor without 4-lane access to the rest of the state.

JUSTIFICATION:

The proposed change is justified because:

1. The projected traffic volumes are very low and do not justify the need for a 4-lane facility.
2. The US 441 corridor in this area of the state does not link any major cities, towns, or tourist destinations; thus, generation of future traffic by construction of a 4-lane highway will not change traffic patterns on other major state corridors that are currently congested or inconvenient for most drivers.
3. The basis that improving this corridor will improve economic development in this corridor is a risky assumption, considering the amount of funding needed to complete the entire length of the corridor.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: CONSTRUCT 44' CROWNED MEDIAN TO IMPROVE DRAINAGE.

ORIGINAL DESIGN: The original design includes a typical 4 lane rural roadway section with a 44' depressed median.

PROPOSED CHANGE: The proposed change recommendation would eliminate the depressed median and change the median to match the crown of the roadway.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 151,000,000		$ 151,000,000
PROPOSED CHANGE:	$ 149,925,000		$ 149,925,000
		SAVINGS:	$ 1,075,000

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $1,075,000.

Eliminates drainage problems at the Type B Median Crossovers.

Eliminates all median drainage.

Reduces construction time.

Reduces maintenance costs (ease of mowing, cleaning out of pipes).

DISADVANTAGES:

Small amounts of water falling on median will flow onto roadway.

Although the 44’ median will meet clear zone standards, a crowned median is more easily traversable compared to a depressed median.

JUSTIFICATION:

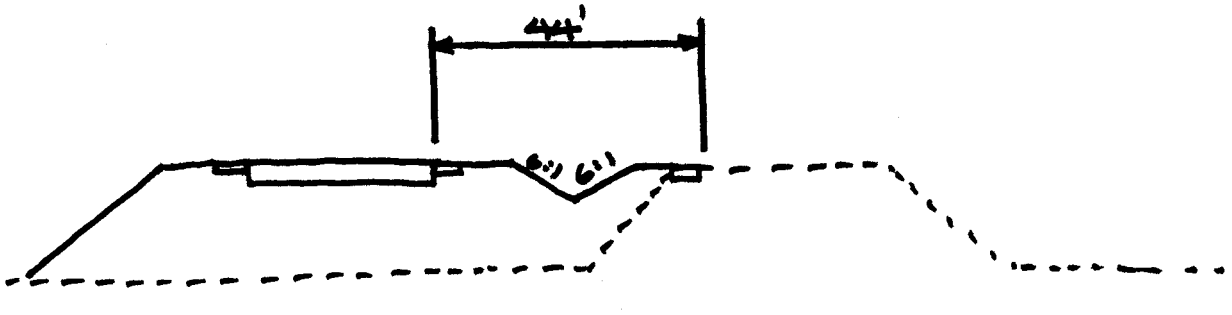
The proposed change still allows for the same design speeds, yet saves on construction and maintenance costs.

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

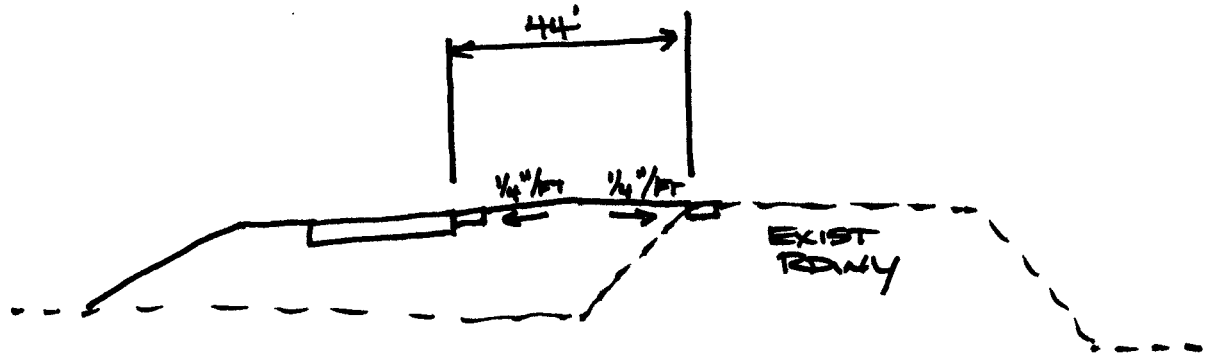


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Cost Comparison - 44' crowned median vs. 44' depressed median

		Average				Drainage		Drop Inlets &		Flared		Drainage
Begin Sta	End Sta	Area (SF)	Total CY	Unit Cost	EW Cost	Length	Unit Cost	Safe End Section	Unit Cost	End Sect.	Unit Cost	Cost
EDS-441 (48)												
24200	115600	13.5	45700.00	$7.50	$ 342,750.00	18000	$30	260	$1,500	211	$500	$1,035,500.00
115600	120813	27	5213.00	$7.50	$ 39,097.50							
EDS-441 (49)												
1900	47700	27	45800.00	$7.50	$ 343,500.00	8500	$30	122	$1,500	99	$500	$487,500.00
EDS-441 (46)												
24000	59100	27	35100.00	$7.50	$ 263,250.00	6500	$30	93	$1,500	76	$500	$372,500.00
EDS-441 (41)												
8500	62850	27	54350.00	$7.50	$ 407,625.00	10080	$30	144	$1,500	117	$500	$576,300.00
TOTALS					$ 1,396,222.50							$ 2,471,800.00

GRAND TOTAL= $ 1,075,577.50

* Crowned median will be used in tangent sections.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: DEVELOP SEPARATE PROFILE GRADE LINES FOR NORTH BOUND AND SOUTH BOUND LANES.

ORIGINAL DESIGN: The original design has the profile grade and super elevation rotation point located at the left edge of pavement in each direction and typically 22 feet left and right of centerline. This profile grade elevation is the same for the northbound and southbound lanes. With this design, the existing roadway elevation is maintained for the majority of the project and the new parallel travel lanes are designed to the same elevation. For the majority of the project, this requires raising the new lanes to match the existing.

PROPOSED CHANGE: The proposed change recommends leaving the profile grade point and super elevation rotation point at the same location in relation to the centerline but develop different and independent profile grades for the northbound and southbound lanes.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$		$
PROPOSED CHANGE:	$ (2,191,513)		$ (2,191,513)
		SAVINGS:	$ 2,191,513/vert ft

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Total life cycle cost savings of $2,191,513 per vertical foot of profile grade change.

Less required fill material.

Less construction time in hauling and placing fill.

Improved driveway and side street tie in grades.

Reduces fill for reduced environmental impact.

DISADVANTAGES:

Limited ability to add additional lanes in the median.

Difficulty in obtaining desired cover at drainage cross drain locations unless roadway is raised at these locations.

Additional redesign cost.

JUSTIFICATION:

Proposed design change meets AASHTO (Chapter 7, Alignment and Profile), GDOT and FHWA design requirements and would include cost reductions and construction time savings. Grades could be raised as necessary at cross drain and median opening locations, which would in turn increase the grade of the roadway to allow better drainage. The existing roadway could retain its crown and reduce the need for leveling.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
(41) Embankment in Place	2	CY	586,150	4.81	2,819,384
(46) Borrow Excavation	2	CY	316,460	7.50	2,373,450
(48) Borrow Excavation	2	CY	1,190,349	5.36	6,380,270
(49) Borrow Excavation	2	CY	223,100	5.00	1,115,500
				SUBTOTAL:	12,688,604
				% MARK UP:	
				TOTAL:	12,688,604

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Borrow Excavation (Red)	7	CY/MI/FT	7,822	5.66	(44,273)/MI
					x49.5 MI
				SUBTOTAL:	(2,191,513)
				% MARK UP:	
				TOTAL:	(2,191,513)

Note: Proposed change is based on a cubic yard per each 1 vertical foot of grade change per mile.

SOURCES

1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	4 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Information for original design calculations was taken directly from information provided in cost estimate for each project by design firm.

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	5 of 5

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Pavement width: 24 feet
Shoulder width: 10 feet + 6 feet
Total: 40 feet

40 feet wide x 5280 feet/mi x 1 foot vertical elevation = 211,200 cubic feet
211,200 cubic feet / 27 = 7822 cubic yards per mile per vertical foot

7822 cubic yards x $5.66/ cubic yard = $44,273 per mile per vertical foot
$44,273 x 49.5 miles = $2,191,513 per vertical foot

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-11.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: ALLOW SOIL CEMENT STABILIZED BASE AS AN ALTERNATE TO THE GRADED AGGREGATE BASE COURSES IN THE PAVEMENT STRUCTURE.

ORIGINAL DESIGN: The original design typical sections show only graded aggregate base course in the pavement structure.

PROPOSED CHANGE: The proposed change recommendation is to add soil cement stabilized base as an alternate for base construction.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
		SAVINGS:	Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-11.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Contractor options often result in cheaper prices.

DISADVANTAGES:

None.

JUSTIFICATION:

Structural support can be achieved with less total pavement depth.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-12.0
PAGE NUMBER:	1 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: INSTALL TYPE "A" MEDIAN OPENING IN LIEU OF TYPE "B" MEDIAN OPENING.

ORIGINAL DESIGN: The original design utilizes type "B" median openings at each location by direction of the Georgia DOT by letter from David Studstill dated October 16, 2002.

PROPOSED CHANGE: The proposed change recommendation is to specify and install a type "A" median opening in lieu of a type "B" at most locations.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 4,313,510		$ 4,313,510
PROPOSED CHANGE:	$ 1,850,900		$ 1,850,900
		SAVINGS:	$ 2,464,685

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-12.0
PAGE NUMBER:	2 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT – Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Cost savings of $29,695 per median opening for a total savings of $2,465,000.

Less roadway construction.

Simplifies drainage design and construction.

Less pavement to maintain.

DISADVANTAGES:

Does not comply with the GRIP policy or current GDOT policy.

JUSTIFICATION:

Previously accepted GDOT policy and low volume of traffic on roadway makes type “A” more acceptable.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-12.0
PAGE NUMBER:	3 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Type "B" median opening		EA	83	51,970	4,313,510
				SUBTOTAL:	4,313,510
				% MARK UP:	(Incl.)
				TOTAL:	4,313,510

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Type "A" median opening		EA	83	22,300	1,850,900
				SUBTOTAL:	1,850,900
				% MARK UP:	(Incl.)
				TOTAL:	1,850,900

SOURCES

1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-12.0
PAGE NUMBER:	4 of 4

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

Type "A" median requires 8400 sf of roadway area
Type "B" median requires 19600 sf of roadway area

8400sf of asph and GAB = $22,275
19600 sf of asph and GAB = $51,970
Difference/Savings $29,695 ea

A total of 83 median openings are proposed in the four projects
83each x @29,695 = $2,464,685 Cost Savings

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-13.0
PAGE NUMBER:	1 of 3

PROJECT TITLE: WIDENING US EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

PROPOSAL DESCRIPTION: STANDARDIZE COST ESTIMATE FORMAT & UNIT COSTS.

ORIGINAL DESIGN: The current four design submittals (US 441) by the designer had various formats & various cost estimates for similar construction items.

PROPOSED CHANGE: The proposed change recommendation is for the prime A/E to establish a standard cost estimating format for all consultants/sub consultant to insure work cost elements are identified and with-in reasonable parameters.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:			
		SAVINGS:	Design Suggestion

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-13.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

ADVANTAGES:

Standardized format.

Insures all elements are identified.

Assures cost for work elements & materials are consistent (cy, tons, lf, etc.).

DISADVANTAGES:

Requires close coordination with consultants.

May require one firm to estimate all of the projects.

JUSTIFICATION:

The current four (4) design estimates had a wide range of prices and thickness of pavement sections. Numerous other common elements were not identified or were omitted.

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-13.0
PAGE NUMBER:	3 of 3

PROJECT TITLE: WIDENING EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Georgia DOT - Clinch-Atkinson Counties, Georgia

EDS 441
Clinch-Atkinson Counties

Projects	41	46	48	49
Right of Way	11,648,907	3,874,000	3,200,000	4,000,000
Borrow Mtl	586,150 cy 2,819,384	316,460 cy 2,373,450	1,190,349 cy 6,380,271	223,100 cy 1,115,500
Excavation		588,000		237,750
Mitigation	386,862		1,417,890	
Utilities				
Retaining wall				
Storm Drainage	1,655,631	932,747	1,821,010	698,256
Box Culvert	971,382			
Retaining Wall		58,808		
Guardrail	92,274	98,700	529,342	32,375
Traffic Signal	200,000			
Signs/striping	361,500	2,368,000	426,052	152,442
Agg Base	7,653,213	2,565,900	2,521,181	2,683,125
Pavement	6,823,011	6,094,127	11,753,161	5,745,710
Leveling/Tack	529,592		61,430	1,665,850
Clear & Grubb	1,404,870	1,974,000		500,000
Traffic Control	200,000	1,480,500	241,590	
Landscaping		345,450		
Erosion Cont -P	1,081,612	987,000	3,688,860	339,731
Erosion Cont -T	1,230,205	(incl. above)	(incl. Above)	945,350
Grassing		345,450		123,900
Sidewalk	4,672	139,515		
Curb & Gutter	271,892	158,034		36,800
Bridges	2,544,600		3,861,000	
Field Engineer		45,849	50,649	45,000
E & C	2,933,260	2,055,633	3,287,257	1,797,302
3yr Inflation	5,098,005	3,391,794	9,990,295	2,324,385
Total	49,060,267	30,062,763	49,357,625	22,810,319
	(41)	(46)	(48)	(49)

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Scott Gero	Earth Tech	770-990-1508	Kenneth.mcduff@earthtech.com

FUNCTION ANALYSIS

The following functions for EDS 441 (41, 46, 48, & 49) were identified during discussions with the Georgia DOT and Earth Tech representatives (design team consultants) on the first day of the study. These two word functions consist of an active verb, and a quantifiable (measurable) noun. The functions represent the proposed capital improvement expenditures of EDS 441 (41, 46, 48, & 49), and assist the V.E. team in becoming familiar with the needs of the project and the long-term goals for this expansion of the EDS 441 (41, 46, 48, & 49). The Basic Function of the project is to "Enhance Economy". The following are considered by the V.E. team to be Secondary and Supporting Functions.

Verb	Noun		Verb	Noun
Meet	Budget		Improve	Commuting
Reduce	Cost		Maintain	Surface
Optimize	Resources		Reduce	Risk
Expand	Development		Identify	Centerline
Adjust	Grade		Identify	Edge
Serve	Communities		Reuse	Materials
Serve	Public		Package	Contracts
Protect	Rivers		Develop	Options
Satisfy	Users		Develop	Alternatives
Support	Councils		Define	Performance
Minimize	Lawsuits		Develop	Specification
Improve	Access		Reduce	Liability
Enhance	Image		Re-cycle	Materials
Enhance	Signage		Drain	Median
Reduce	Risk		Enhance	Maintainability
Relieve	Traffic		Minimize	Relocations
Enhance	Economy		Expedite	Travel
Reduce	Delays		Improve	Functions
Maintain	Passage		Improve	Drainage
Improve	Constructibility		Correct	Drainage
Benefit	Community		Protect	Environment

FUNCTION ANALYSIS

Verb	Noun		Verb	Noun
Improve	Flow		Accommodate	
Increase	Capacity		Reduce	Risks
Add	Lanes		Accommodate	Breakdowns
Increase	Speeds		Protect	Species
Reduce	Delays		Minimize	Mitigation
Straighten	Alignment		Segregate	Materials
Improve	Line-of-Sight		Store	Materials
Improve	Visibility		Access	Materials
Enhance	Visibility		Access	Storage
Straighten	Road		Remove	Soils
Reduce	Interruptions		Protect	Wetlands
Reduce	Delays		Relocate	Soils
Identify	Passing			
Accommodate	Passing		Minimize	Erosion
Minimize	Intersections		Contain	Flow
Improve	Intersections		Control	Flow
Reduce	Accidents		Stage	Materials
Improve	Safety		Complete	Corridor
Separate	Lanes		Reduce	Congestion
Add	Lanes		Satisfy	Codes
Install	Medians		Meet	Schedules
Enhance	Definition		Meet	Budget
Communicate	Changes		Reduce	Cost
Assure	Safety		Improve	Functions
Accommodate	Hauling		Satisfy	Agencies
Expedite	Hauling		Utilize	Guidelines
Minimize	Hauling		Construct	Bridge
Control	Traffic		Widen	Bridge
Maintain	Passage		Support	Tourism
Phase	Construction		Access	Recreation
Utilize	Resources		Protect	Species
Maximize	Utilization		Improve	Weaving
Protect	Landmarks		Help	Commuters
Guide	Traffic		Satisfy	Public
Transmit	Information		Satisfy	Commuters
Manage	Traffic		Support	Weight

COST DRIVER ANALYSIS

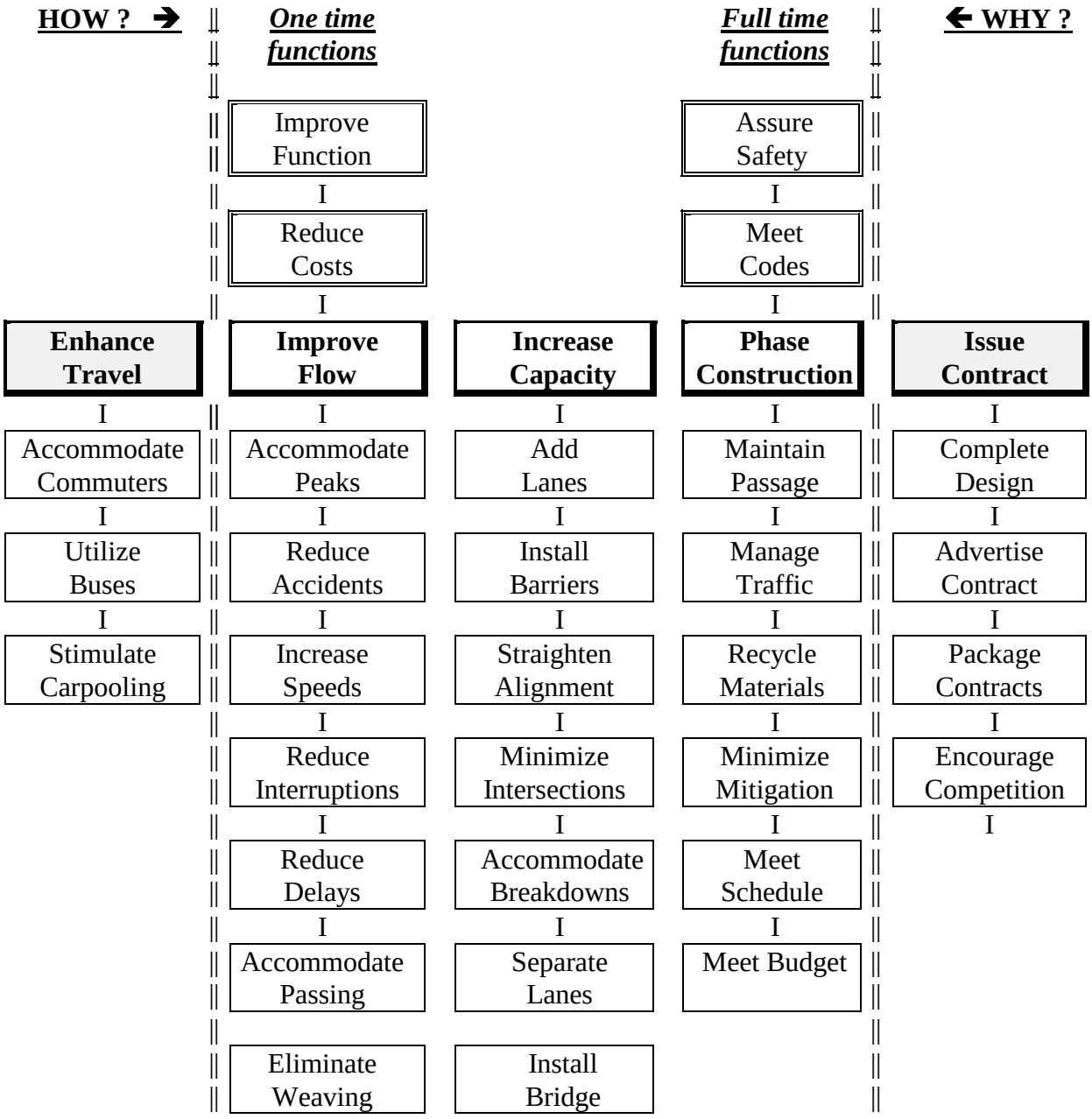
The V.E. team reviewed the project cost elements and identified the controlling element or cost driver for the EDS 441 (41, 46, 48, & 49) projects. The cost drivers are used in the brainstorming process as a focal point of discussion and for idea generation.

Element	Function	Cost Driver
Excavation	Widen Streets Relieve Congestion Adjust Grade Improve Alignment Improve Drainage	Disposal Sites Time Limits Haul Distances Road Width Shoulder Width Road Length
Road Section	Support Weight Maintain Surface Support Vehicles Distribute Load Overlay Road Lengthen Ramps	Base Course Materials Source of Materials Wearing Surface Drainage System Road Length Road Width Median Width Shoulder Width
Bridge	Bridge Creeks Bridge Roads Improve Safety Support Weight Support Vehicles	Bridge Heights Foundation Protection Materials Used Structural Design Length of Beam Lengths of Bridge Number of Spans
Earth Stabilization	Insure Safety Reduce Risk Minimize Lawsuits	Require Methods Material Types Material Quantities Areas of Application Frequency of Use
Traffic Management	Insure Safety Maintain Passage Avoid Delays Assist Commuters Assist Tourist	Methods of Control Frequency of Control Duration of Control

F.A.S.T. DIAGRAM

Note: For those unfamiliar with F.A.S.T. diagrams, the functional critical path is shown by the row of heavily lined boxes. Moving to the right should answer HOW the functions are being accomplished; moving to the left should answer the WHY question. Vertical dashed lines define the Project Scope addressed by the V.E. Team. Upper left functions in dotted boxes are Design/Team objectives, and upper right functions in the dotted boxes are inherent project requirements. Functions shown vertically under each heavy box are those, which are intended to be accomplished concurrently with their respective critical path functions. The F.A.S.T. Diagram shown represents only a few key functions extracted from the above list of functions developed by the V.E. Team. There are numerous secondary functions identified in the above list that are necessary and support the primary function of “Enhance Economy”.

F.A.S.T. DIAGRAM



PROJECT TITLE: EDS 441 (41, 46, 48, & 49)

PROJECT LOCATION: Clinch-Atkinson Counties, Georgia

NUMBER	IDEA	RANK
	STRUCTURAL/BRIDGE (SB)	
1.0	(41) Reduce left Sweet Gum bridge by one span	4/1
2.0	(41) Reduce right Hog Creek bridge by one span – construct as single bridge	4/1
3.0	(48) Reduce Jones Creek bridges by one span	4/1
4.0	(48) Reduce Camp Creek bridges by two spans	4/1
5.0	(48) Reduce Tatum Creek bridges by four spans	4/1
6.0	Install/consider conspans ilo installing bridges	DS
7.0	Leave existing box culverts in place ilo removal and construction on new bridge	Drop
	ROADWAY (RW)	
1.0	Construct 20’ raised median ilo 44’ depressed median for entire length of corridor	3/5
1.1	Construct 32’ depressed median ilo 44’ depressed median for entire length of corridor	4/5
1.2	Construct a five (5) lane flush median ilo 44’ depressed median for entire length of corridor	2/5
2.0	Leave existing road with crown ilo leveling as proposed	5/5
3.0	Do not rework (elevate) existing except as necessary	4/5
3.1	Leave existing road crowned and construct new parallel road	Drop
4.0	Reduce paved shoulder on outside from 6’6” width to a std. 2’ wide	5/5
5.0	Reduce total shoulder width from 10’-0” to 8’-0”	4/5
6.0	Construct 2:1 slopes ilo the current 6:1 slopes	Drop
7.0	Re-evaluate the need to widen road based on projected traffic volumes	DS 4/5
8.0	Construct by-pass around Pearson and Homerville as designed but defer widening roads until needed	Drop
9.0	Construct a 44’ wide crowned median ilo 44’ depressed median	DS
10.0	Consider/evaluate split profile for Southbound and Northbound roads	4/5
11.0	Allow the contractor the option to use soil cement stabilized base ilo aggregate base material imported from Florida	DS
12.0	Install type “A” median opening ilo GDOT standard for a type “B” median opening (requires wavier)	4/2
14.0	Do not construct full depth when shoulder is 6’-6” – full depth for two feet only	5/3
14.1	Do not construct full depth shoulders	5/3

VALUE ENGINEERING WORKSHOP AGENDA

WIDEN US 441 FROM NORTH OF WILLIAMSBURG RD. TO SR40/204 PROJECTS; EDS – 441 (41), (46), (48) & (49)

CLINCH/ATKINSON COUNTIES, GEORGIA

24 HOUR - V.E. STUDY
27-29 January 2004

The value engineering workshop for the subject project will be conducted for three (3) days from 27-29 January 2004, **at the Georgia Department of Transportation General Office, Conference Room #401A, #2 Capitol Square, Atlanta, GA; POC – Lisa Myers @ (404) 651-7468 voice, (404) 463-6161 Fax**

TUESDAY	0800 - 0815	**Introduction Phase**	Lindsey Gardner, P.E., CVS Team Leader, U.S. Cost, Inc. **(V.E. Team Only)**
		The VETL will review previous events along with activities planned for the week and outline several areas, which may be investigated by the V.E. team.	
	0815 - 1000	**Review of Project Plans**	V.E. Team Only
		The team members will review the project plans, cost estimates, available calculations, cost models, and cost bar graphs to gain a working knowledge of the project.	
	1000 - 1200	**Project Design Briefing**	V.E. Team; (A/E), GDOT
		The A/E project design manager will discuss the project requirements and the proposed design solution(s) in some detail. The V.E. team members will ask questions as appropriate to completely understand the project requirements as established by the user and the proposed design solution (both alternatives considered and those recommended by the design team).	
	1200-1300	Lunch	

TUES. (cont.)	1300 - 1700	**Creative Phase**	V.E. Team

The V.E. team will creatively review, (Brainstorm), and tabulate possible design alternatives for the project. While the designer's solution will serve as the "baseline", the team will identify alternatives not in the recommended solution, but deserving of further investigation. Generally, a brainstorming session will produce between 75 and 100 creative design alternatives. Each system will be carefully analyzed with the basic questions in mind:

What is the system/item?
What does it do (what is its basic function)?
What must it do?
What does it cost?
What is the item worth?
What else will do the same, or a better job?
What does that alternative cost?

During the creative phase, the team will not judge the ideas. The essential requirements for the project, however, must always be considered.

WEDNESDAY	0800 - 1000	**Analysis Phase**	V.E. Team, GDOT Reps

During this phase, all of the ideas or alternatives will be ranked according to their potential for life-cycle (25-year) cost reduction and the potential for acceptance by the user, designers, and other appropriate parties.

	1000 - 1200	**Project Assignments**	VETL

Each team member will be assigned a number of ideas for further development. The ideas will be those with the highest rankings. In general, the ideas will be assigned according to technical discipline; road design, structures, and constructability.

1200 – 1300 Lunch

WEDS (cont.)	1300 - 1700	**Development Phase**	V.E. Team
		During the development phase, each team member will gather information and prepare written proposals for those ideas assigned to him/her. These may require additional discussions with the A/E, outside contractors and suppliers, and other specialists to fully define the alternative. The team members will prepare sketches, perform calculations and develop other data to support each proposal. In addition, costs will be prepared for each alternative as originally designed, and as proposed by the V.E. team. Life-cycle costs for operation, maintenance and related annual costs will also be considered.	
THURSDAY	0800 - 1200	**Development Phase** (Continued)	
	1200 - 1300	Lunch	
	1300 - 1630	**Development Phase** (Continued)	
	1630 - 1700	**Summary of Results/Workshop Conclusion**	VETL
		The study will be concluded. The final report will be delivered within eight working days of the study's conclusion.	

NOTES: LAPTOP COMPUTERS ARE REQUIRED FOR VE DEVELOPMENT

1. V.E. team members should bring to the workshop any technical and pricing reference manuals, which may be used during the study. These may include design handbooks, code documents, estimating price guides, and related documents. Calculators, pencils, sketch paper, scales, and other similar items will also be useful.

2. It is critical that outside telephone calls and other interruptions of the study team members be held to an absolute minimum during the week to allow for efficient, uninterrupted concentration on the Value Engineering Study.

3. Questions concerning the proposed study should be directed to Lindsey Gardner at (757) 496-3055 or;

U.S. Cost Incorporated
Mr. Tom Orr, P.E.
1200 Abernathy Road
Atlanta, GA 30328
(770) 481-1600
e-mail: torr@uscost.com

PRELIMINARY COST ESTIMATE

U.S. 441 Widening, 0.95 Miles South of C.R. 100 to West Pine Ave. in Pearson

PROJECT NUMBER:	EDS-441(41)	COUNTY:	Clinch / Atkinson
DATE:	12-22-03	ESTIMATED LETTING DATE:	2007
PREPARED BY:	HNTB Corporation	PROJECT LENGTH (MILES):	12.05

( ) PROGRAMMING PROCESS ( ) CONCEPT DEVELOPMENT (X) DURING PROJECT DEV.

PROJECT COST

ITEM	UNIT	UNIT PRICE	QUANTITY	COST
A. RIGHT-OF-WAY (From Concept Report)				
			SUBTOTAL: A	$ 11,648,907
B. REIMBURSABLE UTILITIES (From Concept Report)				
			SUBTOTAL: B	$ 47,500
C. CONSTRUCTION COSTS				
1. MAJOR STRUCTURES				
a. Bridges				
Sweetgum Bay Branch SB (Bridge No. 1 Lt.)	SF	$55.00	5280	$ 290,400
Sweetgum Bay Branch NB (Bridge No. 1 Rt.)	SF	$90.00	528	$ 47,520
Hog Creek SB (Bridge No. 2 Lt.)	SF	$90.00	4352	$ 391,680
Hog Creek NB (Bridge No. 2 Rt.)	SF	$55.00	6600	$ 363,000
Little Red Bluff Creek SB (Bridge No. 3 Lt.)	SF	$55.00	6600	$ 363,000
Little Red Bluff Creek NB (Bridge No. 3 Rt.)	SF	$55.00	6600	$ 363,000
Little Red Bluff Creek Overflow SB (Bridge No. 4 Lt.)	SF	$55.00	6600	$ 363,000
Little Red Bluff Creek Overflow NB (Bridge No. 4 Rt.)	SF	$55.00	6600	$ 363,000
			SUBTOTAL: C-1a	$ 2,544,600
b. Other				
Trp. 10' X 4' X 154' RCBC Sta. 184+05	LS			$ 224,105
Trp. 10' X 4' X 143' RCBC Sta. 244+68	LS			$ 208,098
Trp. 10' X 4' X 115' RCBC Sta. 436+35	LS			$ 167,351
Trp. 10' X 5' X 189' RCBC Sta. 446+89	LS			$ 285,449
Trp. 4' X 4' X 158' RCBC Sta. 622+07	LS			$ 86,379
			SUBTOTAL: C-1b	$ 971,382

PRELIMINARY COST ESTIMATE

2. GRADING AND DRAINAGE				
a. Earthwork				
Excavation	CY	$2.27	85,425	$ 193,914
Embankment in Place	CY	$4.81	586,150	$ 2,819,384
			SUBTOTAL: C-2a	$ 3,013,298
b. Drainage				
18" Pipe	LF	$26.61	27910	$ 742,685
24" Pipe	LF	$32.99	4105	$ 135,424
30" Pipe	LF	$40.25	705	$ 28,376
18" Flared End Sections	EA	$570.56	336	$ 191,708
24" Flared End Sections	EA	$728.24	76	$ 55,346
30" Flared End Sections	EA	$780.95	10	$ 7,810
D-5 Inlets	EA	$2,331.17	144	$ 335,688
1033-D Inlets	EA	$1,611.52	72	$ 116,029
1034-D Inlets	EA	$1,850.62	23	$ 42,564
			SUBTOTAL: C-2b	$ 1,655,631
3. BASE AND PAVING				
12.5 mm Superpave	TN	$39.01	47,334	$ 1,846,489
19 mm Superpave	TN	$36.74	47,749	$ 1,754,312
25 mm Superpave	TN	$35.47	90,843	$ 3,222,210
Graded Aggregate Base (12" Thick)	SY	$18.35	417,069	$ 7,653,213
Leveling	TN	$37.54	5,692	$ 213,695
Tack Coat	GL	$0.90	350,997	$ 315,897
			SUBTOTAL: C-3	$ 15,005,816
4. EROSION CONTROL				
Temporary Items	LS			$ 1,230,205
Permanent Items	LS			$ 1,081,612
			SUBTOTAL: C-4	$ 2,311,817
5. LUMP ITEMS				
Clearing & Grubbing	AC	$5,500.00	255	$ 1,404,870
Traffic Control	LS			$ 200,000
			SUBTOTAL: C-5	$ 1,604,870

PRELIMINARY COST ESTIMATE

6. MISCELLANEOUS				
Signing & Marking	MI	$30,000.00	12.05	$ 361,500
Guardrail				
W Beam	LF	$8.61	5900	$ 50,799
W Beam Double Faced Guardrail	LF	$10.62	38	$ 401
T Beam	LF	$18.71	461	$ 8,622
Type 1 Anchors	EA	$341.30	8	$ 2,730
Type 10-D Anchors	EA	$1,188.87	1	$ 1,189
Type 12 Anchors	EA	$1,188.87	24	$ 28,533
Curb & Gutter	LF	$13.63	19948	$ 271,892
Sidewalk	SY	$23.20	201	$ 4,672
Approach Slabs	SY	$206.94	2387	$ 493,897
Concrete (Driveway Dustpans)	CY	$365.99	148	$ 54,085
Removal				
Bridges	EA	$60,000.00	1	$ 60,000
Other				
Wetland Mitigation (unit = Credits) (From Con. Rpt.)	CR	$1,400.00	276.33	$ 386,862
UST Removal (From Concept Report)	SY	$100,000.00	3	$ 300,000
Traffic Signals	EA	$100,000.00	2	$ 200,000
			SUBTOTAL: C-6	2,225,181

PRELIMINARY COST ESTIMATE

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY	$	11,648,907
B. REIMBURSABLE UTILITIES	$	47,500
C. CONSTRUCTION COST		
C-1a Major Structures - Bridges	$	2,544,600
C-1b Major Structures - Other	$	971,382
C-2a Earthwork	$	3,013,298
C-2b Drainage	$	1,655,631
C-3 Base and Paving	$	15,005,816
C-4 Erosion Control	$	2,311,817
C-5 Lump Items	$	1,604,870
C-6 Miscellaneous	$	2,225,181
Total Construction Cost	$	29,332,596
E. & C. (10%)	$	2,933,260
INFLATION (5% PER YEAR)	$	5,098,005
NUMBER OF YEARS 3		
GRAND TOTAL PROJECT COST	$	49,060,267

COST ESTIMATE
US-441(46) Clinch County

PROJECT NO.:	EDS-441(46)	**COUNTY:**	Clinch
P.I. No.:	422390	**ESTIMATED LETTING DATE:**	2006
DATE:	12/22/2003	**PROJECT LENGTH:**	9.87 mile
PREPARED BY:	KCA		

[ ] **Programming Process**
[ ] **Concept Development**
[X] **During Project Development**

GDOT PROJECT MANAGER: Michael Haithco

PROJECT COSTS
(Engineer's Opinion of Probable Costs)

A.	**RIGHT-OF-WAY**				
1	**Property (land and easements)**	COM: 16.73 AC, RES: 33.45 AC, AGG: 117.09 AC			$564,588
2	**Improvements**				$410,000
3	**Displacements**	RES: 5, BUS: 0, M.H.: 0			$100,000
4	**Damage (proximity)**				$70,000
5	**Other Costs**	SCH: 55%, ADM: 60%, INF: 40%			$2,829,420
				SUBTOTAL	**$3,974,008**
B.	**UTILITIES**				
1	**(Reimbursable)**			L.G.P.A.	
	a Railroad				
	b Transmission Lines				
	c Services				
	d Other				$85,000
				SUBTOTAL	**$85,000**
C.	**MAJOR STRUCTURES**				
1	**Retaining Walls**				$58,808
2	**Box Culverts**				$0
				SUBTOTAL	**$58,808**
D.	**GRADING AND DRAINAGE**				
1	**Earthwork**				
	a Borrow Excavation, Cu Yd	316,460	$7.50		$2,373,450.00
	b Excavation, Cu Yd	78,400	$7.50		$588,000.00
2	**Drainage**				
	a Side Drain				$194,484
	b Storm Drain				$531,517
	c Minor Structures				$206,746
				SUBTOTAL	**$3,894,196**
E.	**BASE AND PAVING**				
1	**Aggregate Base**				$2,565,900
2	**Asphaltic Paving**				
	a Asph Conc 9 MM Superpave 165 LBS/SY				$1,195,259
	b Asph Conc 19 MM Superpave 220 LBS/SY				$1,671,475
	c Asph Conc 25 MM Superpave 440 LBS/SY				$3,227,393
3	**Concrete Median Paving**				$0
4	**Concrete Sidewalk**				$139,515
5	**Concrete Curb & Gutter, TP 2**				$158,034
6	**Concrete Curb & Gutter, TP 7**				$0
				SUBTOTAL	**$8,957,575**

F.	**LUMP SUM ITEMS**		
1	**Traffic Control**		$1,480,500
2	**Clearing and Grubbing**		$1,974,000
3	**Landscaping**		$345,450
4	**Erosion Control**		$987,000
5	**Grassing**		$345,450
		SUBTOTAL	**$5,132,400**
G.	**MISCELLANEOUS**		
1	**Signing/Striping/Signal**		$2,368,800
2	**Guardrail**		$98,700
		SUBTOTAL	**$2,467,500**
H.	**SPECIAL FEATURES**		
1	**Field Engineer's Office, Type 3**		$45,849
		SUBTOTAL	**$45,849**

SUBTOTAL CONSTRUCTION COST (C thru H)	**$20,556,328**
ENGINEERING/CONSTRUCTION CONTINGENCIES (10%)	**$2,055,633**
INFLATION (5%/YEAR X 3 YEARS)	**$3,391,794**
TOTAL CONSTRUCTION COST	**$26,003,755**
RIGHT-OF-WAY(A)	**$3,974,008**
UTILITY COST(B)	**$85,000**
TOTAL PROJECT COST	**$30,062,763**

base	181978.72	14.1	$2,565,900
culvert conc	0	387.13	$0
bar reinf steel	0	0.51	$0
165	34121.01	35.03	$1,195,259
220	45494.68	36.74	$1,671,475
440	90989.36	35.47	$3,227,393
type 7	0	8.19	$0
type 2	16848	9.38	$158,034
sidewalk	7035.56	19.83	$139,515
conc medain	0	36.31	$0
retaining wall	0	38.58	$0
gravity wall	193.24	304.33	$58,808

gravity wall	area	distance	volume	
11000	0	0	0	
11050	21.4521	25	536.3025	
11100	21.4957	50	1074.785	
11150	20.8423	50	1042.115	
11200	20.8876	50	1044.38	
11250	19.6736	50	983.68	
11300	21.4457	25	536.1425	
	0	0	0	
	0	0	0	
	0	0	0	
	0	0	0	
	0	0	0	
			5217.405	193.2372

DRAINAGE			
a) Side Drain			
Pipe, 18 In, LF	3200	$21.83	$69,856.00
Pipe, 24 In, LF	1800	$30.35	$54,630.00
Pipe, 30 In, LF	200	$29.34	$5,868.00
Sf End Sec, 18 In, Ea	70	$570.56	$39,939.20
Sf End Sec, 24 In, Ea	24	$732.93	$17,590.32
Sf End Sec, 30 In, Ea	6	$1,100.00	$6,600.00
Sub Total			$194,483.52
b) Storm Drain			
Pipe, 18 In, LF	4600	$26.61	$122,406.00
Pipe, 24 In, LF	3270	$32.99	$107,877.30
Pipe, 30 In, LF	1820	$40.25	$73,255.00
Pipe, 36 In, LF	1180	$51.16	$60,368.80
Pipe, 48 In, LF	630	$70.05	$44,131.50
Fl End Sec, 18 In, Ea	50	$378.61	$18,930.50
Fl End Sec, 24 In, Ea	20	$510.73	$10,214.60
Sf End Sec, 30 In, Ea	20	$1,356.66	$27,133.20
Sf End Sec, 36 In, Ea	20	$2,085.00	$41,700.00
Sf End Sec, 48 In, Ea	10	$2,550.00	$25,500.00
Sub Total			$531,516.90
c) Minor Structures			
CB, Gp1	40	$1,611.52	$64,460.80
CB, Gp1, Addl Depth	10	$174.07	$1,740.70
DI, Gp1	80	$1,520.85	$121,668.00
DI, Gp1, Addl Depth	10	$180.66	$1,806.60
DI, Gp2	4	$1,500.00	$6,000.00
DI, Gp2, Addl Depth	4	$250.00	$1,000.00
MH, Tp1	3	$1,477.12	$4,431.36
MH, Tp1, Ad Dp, Cl 2	20	$281.91	$5,638.20
Sub Total			$206,745.66

Estimate Report for file "422400"

Section BRIDGE #1 - CAMP BRANCH LT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	5775.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	259875.0
999-2030	5775.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	259875.0
				Section Sub Total:	**$519,750.00**

Section BRIDGE #1 - CAMP BRANCH RT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	5775.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	259875.0
999-2030	5775.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	259875.0
				Section Sub Total:	**$519,750.00**

Section BRIDGE #2 - JONES CREEK LT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	4125.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	185625.0
999-2030	4125.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	185625.0
				Section Sub Total:	**$371,250.00**

Section BRIDGE #2 - JONES CREEK RT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	4125.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	185625.0
999-2030	4125.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	185625.0
				Section Sub Total:	**$371,250.00**

Section BRIDGE #3 - TATUM CREEK OVERFLOW LT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	3300.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	148500.0
999-2030	3300.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	148500.0
				Section Sub Total:	**$297,000.00**

Section BRIDGE #3 TATUM CREEK OVERFLOW RT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	3300.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	148500.0
999-2030	3300.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	148500.0
				Section Sub Total:	**$297,000.00**

Section BRIDGE #4 - TATUM CREEK LT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	8250.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	371250.0
999-2030	8250.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	371250.0
				Section Sub Total:	**$742,500.00**

Section BRIDGE #4 - TATUM CREEK RT ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
999-2020	8250.00	LS	45.00	SUBSTRUCTURE COMPLETE, BR NO -	371250.0
999-2030	8250.00	LS	45.00	SUPERSTRUCTURE COMPLETE, BR NO -	371250.0
				Section Sub Total:	**$742,500.00**

Section Drainage					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
207-0203	2000.00	CY	35.13	FOUND BKFILL MATL, TP II	70260.0
500-3101	3012.00	CY	378.24	CLASS A CONCRETE	1139258.88
511-1000	337820.00	LB	0.52	BAR REINF STEEL	175666.4
550-1180	4500.00	LF	25.82	STORM DRAIN PIPE, 18 IN, H 1-10	116190.0
550-1360	440.00	LF	48.08	STORM DRAIN PIPE, 36 IN, H 1-10	21155.2

550-2180	1000.00	LF	20.88	SIDE DRAIN PIPE, 18 IN, H 1-10	20880.0
550-2240	500.00	LF	27.65	SIDE DRAIN PIPE, 24 IN, H 1-10	13825.0
550-3324	15.00	EA	784.96	SAFETY END SECTION 24 IN, STORM DRAIN, 4:1 SLOPE	11774.40
550-3418	60.00	EA	404.28	SAFETY END SECTION 18 IN, SIDE DRAIN, 4:1 SLOPE	24256.8
550-4218	120.00	EA	382.65	FLARED END SECTION 18 IN, STORM DRAIN	45918.0
550-4224	15.00	EA	450.97	FLARED END SECTION 24 IN, STORM DRAIN	6764.55
550-4236	8.00	EA	687.23	FLARED END SECTION 36 IN, STORM DRAIN	5497.84
603-2180	2397.00	SY	28.17	STN DUMPED RIP RAP, TP 3, 12 IN	67523.49
668-2100	70.00	EA	1457.70	DROP INLET, GP 1	102039.0
				Section Sub Total:	**$1,821,009.56**

Section EARTHWORK

Item Number	Quantity	Units	Unit Price	Item Description	Cost
206-0002	1190349.00	CY	5.36	BORROW EXCAV, INCL MATL	6380270.64
				Section Sub Total:	**$6,380,270.64**

Section Environmental

Item Number	Quantity	Units	Unit Price	Item Description	Cost
214-0100	7.50	LS	189052.05	MITIGATION SITE CONSTRUCTION	1417890.37
				Section Sub Total:	**$1,417,890.38**

Section EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	200.00	AC	433.14	TEMPORARY GRASSING	86628.0
163-0240	6000.00	TN	219.67	MULCH	1318020.0
163-0300	65.00	EA	1101.76	CONSTRUCTION EXIT	71614.4
163-0503	125.00	EA	354.95	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	44368.75
163-0504	50.00	EA	361.88	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 4	18094.0
163-0520	10000.00	LF	10.43	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	104300.0
163-0521	500.00	EA	196.13	CONSTRUCT AND REMOVE TEMPORARY DITCH CHECKS	98065.0
163-0530	35000.00	LF	1.86	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	65100.0
163-0531	1.00	EA	5792.37	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	5792.37
165-0010	100000.00	LF	1.04	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	104000.0
165-0030	16000.00	LF	1.30	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	20800.0
165-0040	500.00	EA	70.05	MAINTENANCE OF EROSION CONTROL CHECKDAMS/DITCH CHECKS	35025.0
165-0060	1.00	EA	891.58	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO -	891.58
165-0070	18000.00	LF	1.18	MAINTENANCE OF BALED STRAW EROSION CHECK	21240.0
165-0087	120.00	EA	116.23	MAINTENANCE OF SILT CONTROL GATE, TP 3	13947.6
165-0088	50.00	EA	166.68	MAINTENANCE OF SILT CONTROL GATE, TP 4	8334.0
165-0101	65.00	EA	347.15	MAINTENANCE OF CONSTRUCTION EXIT	22564.75
171-0010	200000.00	LF	1.83	TEMPORARY SILT FENCE, TYPE A	366000.0
171-0030	32000.00	LF	3.03	TEMPORARY SILT FENCE, TYPE C	96960.0
441-0204	5000.00	SY	24.53	PLAIN CONC DITCH PAVING, 4 IN	122650.0
603-1012	1000.00	SY	25.14	STN PLAIN RIP RAP, 12 IN	25140.0
603-7000	1000.00	SY	3.05	PLASTIC FILTER FABRIC	3050.0
700-6910	500.00	AC	751.50	PERMANENT GRASSING	375750.0
700-7000	500.00	TN	51.20	AGRICULTURAL LIME	25600.0
700-7010	1000.00	GL	18.81	LIQUID LIME	18810.0
700-8000	650.00	TN	235.50	FERTILIZER MIXED GRADE	153075.0
700-8100	21000.00	LB	1.41	FERTILIZER NITROGEN CONTENT	29610.0
710-9000	22000.00	SY	5.19	PERMANENT SOIL REINFORCING MAT	114180.00
715-2100	50000.00	SY	2.36	BITUMINOUS TREATED ROVING, SLOPES	118000.0

716-2000	175000.00	SY	1.15	EROSION CONTROL MATS, SLOPES	201249.99
				Section Sub Total:	**$3,688,860.45**

Section GUARDRAIL ITEMS					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
641-1100	4969.00	LF	41.74	GUARDRAIL, TP T	207406.06
641-1200	22310.00	LF	8.97	GUARDRAIL, TP W	200120.7
641-5001	51.00	EA	403.21	GUARDRAIL ANCHORAGE, TP 1	20563.71
641-5012	80.00	EA	1265.64	GUARDRAIL ANCHORAGE, TP 12	101251.20
				Section Sub Total:	**$529,341.67**

Section ROADWAY					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
150-1000	5.00	LS	43737.17	TRAFFIC CONTROL -	218685.84
150-5000	50.00	EA	458.07	TRAFFIC CONTROL, TEMPORARY SAND LOADED ATTENUATOR MODULE	22903.5
153-1300	1.00	EA	50648.62	FIELD ENGINEERS OFFICE TP 3	50648.62
310-5040	1600.00	SY	6.46	GR AGGR BASE CRS, 4 INCH, INCL MATL	10336.0
310-5080	300700.00	SY	8.35	GR AGGR BASE CRS, 8 INCH, INCL MATL	2510845.0
402-3121	184812.00	TN	34.65	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	6403735.8
402-3140	57745.00	TN	34.71	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 1 OR 2, INCL	2004328.95
402-3190	92406.00	TN	36.20	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	3345097.2
413-1000	60840.00	GL	0.87	BITUM TACK COAT	52930.8
432-5010	5000.00	SY	1.70	MILL ASPH CONC PVMT, VARIABLE DEPTH	8500.0
441-0016	160.00	SY	26.95	DRIVEWAY CONCRETE, 6 IN TK	4312.0
441-0302	0.00	EA	1444.44	CONC SPILLWAY, TP 2	0.0
622-1033	3000.00	LF	25.53	PRECAST CONCRETE MEDIAN BARRIER, METHOD 3	76590.0
634-1200	500.00	EA	78.47	RIGHT OF WAY MARKERS	39235.0
				Section Sub Total:	**$14,748,148.72**

Section SIGNING AND MARKING					
Item Number	**Quantity**	**Units**	**Unit Price**	**Item Description**	**Cost**
636-1020	1000.00	SF	15.07	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	15070.0
636-1022	1000.00	SF	16.43	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 4	16430.0
636-1029	1000.00	SF	21.08	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	21080.0
636-2030	4000.00	LF	4.80	GALV STEEL POSTS, TP 3	19200.0
636-2040	3000.00	LF	5.54	GALV STEEL POSTS, TP 4	16620.0
653-0120	100.00	EA	57.67	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	5767.0
653-0170	80.00	EA	70.48	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	5638.40
653-1501	380500.00	LF	0.22	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	83710.0
653-1502	100000.00	LF	0.22	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	22000.0
653-1704	500.00	LF	3.68	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1840.0
653-3501	150000.00	GLF	0.15	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	22500.0
653-3502	3500.00	GLF	0.15	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	525.0
654-1001	300.00	EA	3.44	RAISED PVMT MARKERS TP 1	1032.0
654-1003	2000.00	EA	3.57	RAISED PVMT MARKERS TP 3	7140.0
656-3600	50000.00	SY	3.75	REMOVE EXIST TRAF STRIPE, ALL KINDS & TYPES	187500.0
				Section Sub Total:	**$426,052.40**

Total Estimated Cost: $32,872,573.82

Detail Estimate: Cost Estimate Report

Subtotal Construction Cost	**$32,872,573.82**
E&C Rate 10.0 %	$3,287,257.38
Inflation Rate 5.0 % @ 5.0 Years	$9,990,294.66
Total Construction Cost	**$46,150,125.86**
Right Of Way	$3,200,000.00
ReImb. Utilities	$7,500.00
Grand Total Project Cost	**$49,357,625.86**

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ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITIY	PRICE	TOTAL
	ROADWAY				
150-1000	TRAFFIC CONTROL - EDS-441(19)	LS	LUMP	$ 250,000.00	$ 250,000.00
153-1300	FIELD ENGINEERS OFFICE TP 3	EA	1	$ 45,000.00	$ 45,000.00
201-1500	CLEARING & GRUBBING	LS	LUMP	$ 500,000.00	$ 500,000.00
205-0001	UNCLASS EXCAV	CY	95100	$ 2.50	$ 237,750.00
206-0002	BORROW EXCAV, INCL MATL	CY	223100	$ 5.00	$ 1,115,500.00
310-1101	GR AGGR BASE CRS, INCL MATL	TN	175375	$ 15.00	$ 2,630,625.00
318-3000	AGGR SURF CRS	TN	3500	$ 15.00	$ 52,500.00
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM & H LIME	TN	43750	$ 37.00	$ 1,618,750.00
402-3112	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	40850	$ 38.00	$ 1,552,300.00
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	TN	77690	$ 36.00	$ 2,796,840.00
402-3131	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	TN	39340	$ 35.50	$ 1,396,570.00
413-1000	BITUM TACK COAT	GL	47100	$ 1.00	$ 47,100.00
441-6022	CONC CURB & GUTTER, 6 IN X 30 IN, TP 2	LF	4600	$ 8.00	$ 36,800.00
500-3101	CLASS A CONCRETE	CY	240	$ 400.00	$ 96,000.00
500-3200	CLASS B CONCRETE	CY	210	$ 300.00	$ 63,000.00
511-1000	BAR REINF STEEL	LB	29200	$ 0.60	$ 17,520.00
550-1180	STORM DRAIN PIPE, 18 IN, H 1-10	LF	5590	$ 32.50	$ 181,675.00
550-1240	STORM DRAIN PIPE, 24 IN, H 1-10	LF	1082	$ 35.00	$ 37,870.00
550-1300	STORM DRAIN PIPE, 30 IN, H 1-10	LF	2464	$ 45.00	$ 110,880.00
550-1360	STORM DRAIN PIPE, 36 IN, H 1-10	LF	1060	$ 52.50	$ 55,650.00
550-1420	STORM DRAIN PIPE, 42 IN, H 1-10	LF	600	$ 62.50	$ 37,500.00
550-2180	SIDE DRAIN PIPE, 18 IN, H 1-10	LF	1914	$ 21.50	$ 41,151.00
550-2240	SIDE DRAIN PIPE, 24 IN, H 1-10	LF	140	$ 29.00	$ 4,060.00
550-3418	SAFETY END SECTION 18 IN, SIDE DRAIN, 4:1 SLOPE	EA	44	$ 550.00	$ 24,200.00
550-3518	SAFETY END SECTION 18 IN, SIDE DRAIN, 6:1 SLOPE	EA	133	$ 530.00	$ 70,490.00
550-3524	SAFETY END SECTION 24 IN, SIDE DRAIN, 6:1 SLOPE	EA	4	$ 735.00	$ 2,940.00
550-3530	SAFETY END SECTION 30 IN, SIDE DRAIN, 6:1 SLOPE	EA	10	$ 1,440.00	$ 14,400.00
550-4218	FLARED END SECTION 18 IN, STORM DRAIN	EA	65	$ 240.00	$ 15,600.00
550-4224	FLARED END SECTION 24 IN, STORM DRAIN	EA	44	$ 325.00	$ 14,300.00
550-4230	FLARED END SECTION 30 IN, STORM DRAIN	EA	22	$ 550.00	$ 12,100.00
550-4236	FLARED END SECTION 36 IN, STORM DRAIN	EA	26	$ 750.00	$ 19,500.00
550-4242	FLARED END SECTION 42 IN, STORM DRAIN	EA	22	$ 950.00	$ 20,900.00
634-1200	RIGHT OF WAY MARKER	EA	188	$ 80.00	$ 15,040.00
641-1200	GUARDRAIL, TP W	LF	2175	$ 9.00	$ 19,575.00
641-5001	GUARDRAIL ANCHORAGE, TP 1	EA	8	$ 350.00	$ 2,800.00
641-5012	GUARDRAIL ANCHORAGE, TP 12	EA	8	$ 1,250.00	$ 10,000.00
668-2100	DROP INLET, GP 1	EA	13	$ 1,525.00	$ 19,825.00

	PERMANENT EROSION CONTROL					
603-2024	STN DUMPED RIP RAP, TP 1, 24 IN	SY	60	$ 35.00	$	2,100.00
603-2181	STN DUMPED RIP RAP, TP 3, 18 IN	SY	461	$ 27.50	$	12,677.50
603-7000	PLASTIC FILTER FABRIC	SY	521	$ 3.50	$	1,823.50
700-6910	PERMANENT GRASSING	AC	177	$ 700.00	$	123,900.00
700-7000	AGRICULTURAL LIME	TN	462	$ 45.00	$	20,790.00
700-7010	LIQUID LIME	GL	578	$ 17.00	$	9,826.00
700-8000	FERTILIZER MIXED GRADE	TN	121	$ 225.00	$	27,225.00
700-8100	FERTILIZER NITROGEN CONTENT	LB	11550	$ 1.50	$	17,325.00
716-2000	EROSION CONTROL MATS, SLOPES	SY	198370	$ 1.25	$	247,962.50
						463,631
	TEMPORARY EROSION CONTROL					
163-0232	TEMPORARY GRASSING	AC	89	$ 500.00	$	44,500.00
163-0240	MULCH	TN	2000	$ 300.00	$	600,000.00
163-0300	CONSTRUCTION EXIT	EA	12	$ 1,000.00	$	12,000.00
163-0501	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 1	EA	5	$ 1,150.00		
163-0503	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	EA	159	$ 425.00	$	67,575.00
163-0504	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 4	EA	51	$ 375.00	$	19,125.00
163-0520	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	LF	615	$ 14.00	$	8,610.00
163-0550	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	EA	70	$ 350.00	$	24,500.00
165-0010	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	LF	15000	$ 1.00	$	15,000.00
165-0020	MAINTENANCE OF TEMPORARY SILT FENCE, TP B	LF	13600	$ 1.00	$	13,600.00
165-0085	MAINTENANCE OF SILT CONTROL GATE, TP 1	EA	5	$ 235.00		
165-0087	MAINTENANCE OF SILT CONTROL GATE, TP 3	EA	159	$ 200.00	$	31,800.00
165-0088	MAINTENANCE OF SILT CONTROL GATE, TP 4	EA	51	$ 140.00	$	7,140.00
165-0105	MAINTENANCE OF INLET SEDIMENT TRAP	EA	70	$ 200.00	$	14,000.00
167-1000	WATER QUALITY MONITORING & SAMPLING	EA	2	$ 750.00	$	1,500.00
171-0010	TEMPORARY SILT FENCE, TYPE A	LF	30000	$ 1.75	$	52,500.00
171-0020	TEMPORARY SILT FENCE, TYPE B	LF	13600	$ 2.50	$	34,000.00
						945,350
	SIGNING & MARKING					
636-1020	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	SF	1575	$ 12.00	$	18,900.00
636-2070	GALVANIZED STEEL POSTS, TP 7	LF	2000	$ 6.75	$	13,500.00
652-6501	SKIP TRAFFIC STRIPE, 5 IN, WHITE	GLF	93300	$ 0.17	$	15,861.00
652-6502	SKIP TRAFFIC STRIPE, 5 IN, YELLOW	GLF	10700	$ 0.17	$	1,819.00
652-5451	SOLID TRAFFIC STRIPE, 5 IN, WHITE	LF	115200	$ 0.25	$	28,800.00
652-5452	SOLID TRAFFIC STRIPE, 5 IN, YELLOW	LF	109600	$ 0.25	$	27,400.00
652-9001	TRAFFIC STRIPE, WHITE	SY	17240	$ 1.65	$	28,446.00
652-9002	TRAFFIC STRIPE, YELLOW	SY	3670	$ 1.65	$	6,055.50

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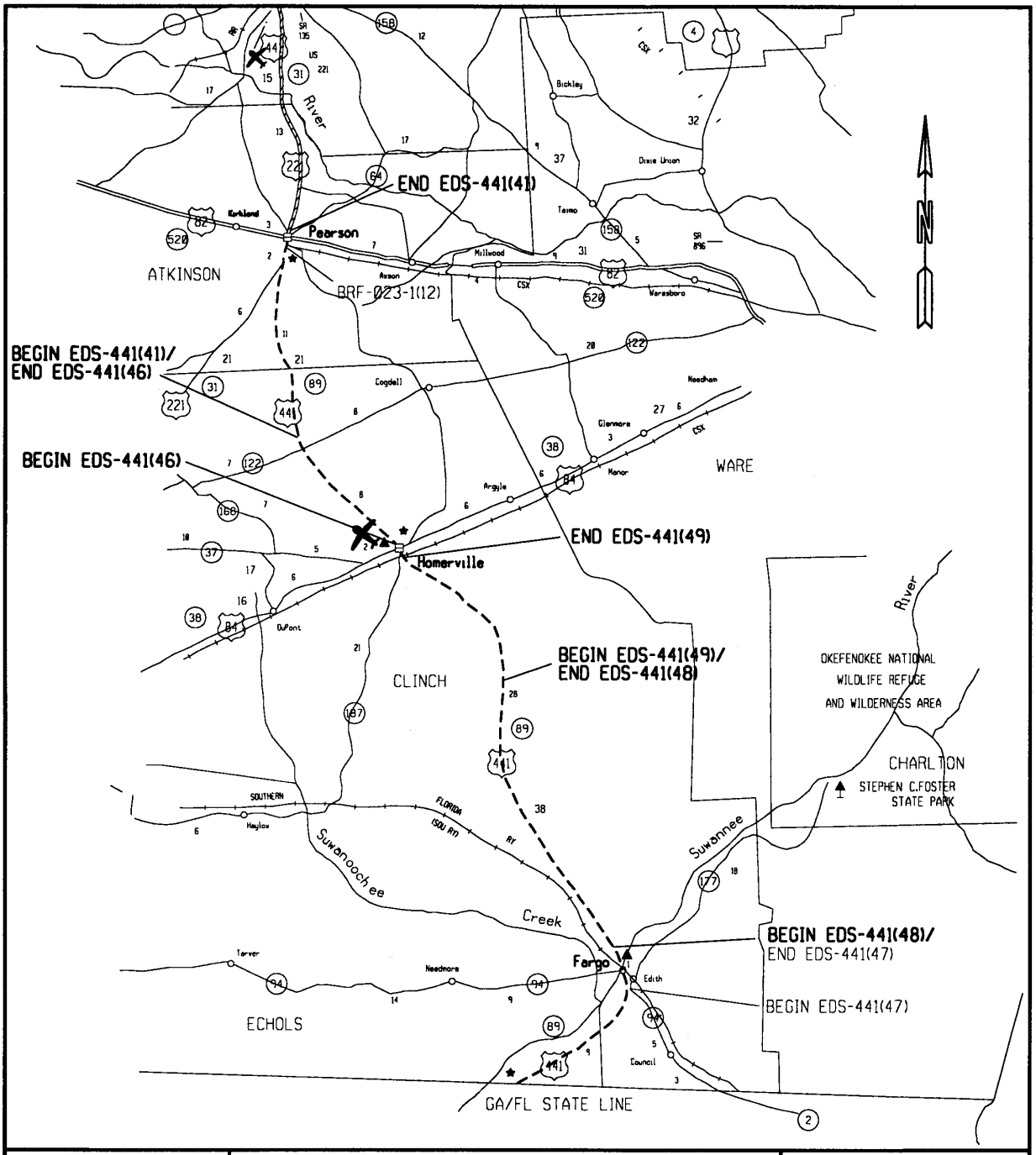
653-0120	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	EA	54	$	60.00	$ 3,240.00
653-0170	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	EA	33	$	70.00	$ 2,310.00
654-1003	RAISED PVMT MARKERS TP 3	EA	1358	$	4.50	$ 6,111.00

Construction Cost	**$14,748,633.00**
Inflation (5%-3Years)	**$ 2,324,384.56**
E&C (10%)	$1,707,302
Total Construction Cost	**$18,780,319**
Reimbursable Utilities	**$30,000**
Right-of-Way Cost	**$4,000,000**
Total Project Cost	**$22,810,319**



PROJECT LOCATION MAP

US 441/SR 89 GRIP CORRIDOR
PROJECT NUMBERS EDS-441(48, 49, 46 &41)
CLINCH & ATKINSON COUNTIES
P.I. Numbers 422400, 422410, 422390, 422380

NOT TO SCALE

Value Engineering Study

Contact List

1/27/04 – 1/29/04

US 441 GRIP CORRIDOR

GENERAL CONTACTS:

GDOT-OCD Project Manager:
Kimberly Nesbitt **(404) 656-5404** **kimberly.nesbitt@dot.state.ga.us**

Consultant Project Manager:
Scott Gero (Earth Tech) **(770) 990-1511** **scott.gero@earthtech.com**

PROJECT SPECIFIC CONTACTS:

Project: EDS-441(48) P.I. No.: 422400
2850 ft North of Williamsburg Road to CR 204/Antioch Church Road
Lead Engineer:
Ken McDuff (Earth Tech) **(770) 990-1507** **kenneth.mcduff@earthtech.com**

Project: EDS-441(49) P.I. No.: 422410
CR 204/Antioch Church Road to Wheeler Street in Homerville
Lead Engineer:
Steve Linley (JB Trimble) **(770) 952-1022** **slinley@jbtrimble.com**

Project: EDS-441(46) P.I. No.: 422390
Orange Street in Homerville to 5000 ft South of CR 101/Cowart Road
Lead Engineer:
Mike Reynolds (KCA) **(404) 607-1676** **mreynolds@kisingercampo.com**

Project: EDS-441(41) P.I. No.: 422380
5000 ft South of CR 101/Cowart Road to Pine Street in Pearson
Lead Engineer:
Larry Cook (HNTB) **(770) 956-5770** **lcook@hntb.com**