

VALUE ENGINEERING TEAM STUDY

TABLE OF CONTENTS

Executive Summary

- Project Description for two projects and Background..... 1
- Key Information/Notes..... 2
- Summary of Recommendations..... 11

Proposals

- Roadway/Profile (RW)..... 14
- Structural Bridges (SB) 68
- Constructability/Other (CO)..... 97

Appendix A

- Contact Directory 110
- Cost Models..... 111
- Function Analysis..... 115
- Cost Driver Analysis..... 117
- Brainstorming/Speculation Ideas 118

Appendix B

- Team Study Agenda..... 120
- Cost Estimate Summary Sheet..... 123

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

INTRODUCTION

This Value Engineering Study Report summarizes the events of the VE Workshop facilitated by U. S. Cost, Inc. for the Georgia Department of Transportation (GDOT). The subject of the two studies is: 1) Widen SR 142 to Four Lanes, 2) Replace and widen SR –142 bridge over I-20 to four lanes and relocate the I-20 Interstate ramps, in Newton County, Georgia. Both projects are being designed by Georgia Department of Transportation, In-House Staff.

The three-day study was conducted 29-31 March 2005 in Georgia Department of Transportation Conference Room #352 and followed an abbreviated job plan established by GDOT.

PROJECT DESCRIPTION (TWO PROJECTS)

The project was initially designed as one project, but the I-20 Interchange Replacement which includes a new wider bridge and new ramps (IM-20-2 {141}) was moved forward to a let date in June 2006. This IM-20-2 (141) project is part of the Federal Highway (FWHA) maintenance program. It is also proposed to serve as part of the proposed economic development and to relieve congestion on SR 142 in Newton Counties. Widening SR 142 to Four Lanes {STP-000S} is essential to the effort to reduce the travel demands on the existing two lane corridor through Newton County as part of the local name of the Cumberland By-Pass. The STP-000S {14} project connects various major roads throughout Newton County. The project will eliminate congestion on SR 142 coming into Newton County, Georgia by constructing a four lane road with a raised 44 ft median.

The concept for projects STP-000S(14) and IM-20-2(141) consists of the widening of State Route 142 from SR 12 to CR 75. The total combined length of the two projects is 1.78 miles. The existing roadway consists of two rural lanes. An existing major structure is a 250-ft. by 34-ft. bridge that spans over I-20 and has a sufficiency rating of 81.

Currently the approved concept will begin at a point 0.3 miles south of SR 12 to a point approximately 0.5 miles north of I-20. The speed design for the project will be 45 mph. Sections between SR 12 and CR 72 have been approved for a combination of rural and urban shoulders. Sections north of I-20 have been approved for rural shoulders on both sides. Turn lanes will be added at intersections as required. The proposed typical section approved for the bridge over I-20 calls for widening it from 34-ft. to 88-ft. The approved concept calls for limited access at the radius returns of the I-20 entrance and exit ramps.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

One (1) major structure is proposed as follows:

- One new four lane bridge (SR 142) with sidewalks and bike lanes over four lanes of traffic over Interstate I-20 (Project IM-20-2)

CONCERNS AND OBJECTIVES:

These projects are part of an overall program to Widen SR 142 to four lanes, in Newton County, Georgia. Over the past ten years upgrades have been slowly coming together, spurred by the increased traffic and growth in Newton County. The following are some of the highlighted concerns and objectives noted by the VE team:

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

WIDEN SR 142 TO FOUR LANES AND CONSTRUCT A NEW I-20 INTERCHANGE

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
Detention/Retention Basins	Current design of 2% Cross Slope is in compliance with FHWA criteria. Drainage and ponding during heavy rains could cause serious safety hazard. Current design may require installation of detention ponds
New SR 142 Bridge construction over I-20 – IM-20-2 (141)	Bridge Construction alternates, alignments, profile, and/or suggested changes may require re-submittal to Newton County for approval.
Choke Points	During the widening of SR 142 there will some serious interruptions to local traffic. Coordination with Alcovy Rd project is needed.
Demolition of Existing Bridge (IM)	Since the current bridge has a sufficiency rating of 81, it is recommended to retain the bridge and build a new two lane parallel bridge adjacent to existing bridge. Will require super elevating existing bridge.
Material haul distances	Cost and location of borrow material site have not been identified. The cost of ± \$5.00/cy appears low based on availability in Newton County. Borrow required for raising profile will be in excess of 750,000 CY if current profile is retained.
Construction sequence/Constructibility	Coordination of this project and traffic management will be difficult but adequate traffic control funds have been identified
I-20 Ramps	Ramp construction may require closing the ramps for a period of time and cause difficulty of commuters. Coordination with Alcovy Rd project ramp closing is required
Cost Estimate	Overall cost estimate appears (10%) low based on current market conditions for concrete, steel and high petroleum prices.
Speed design of Road	New design speed is 45 mph and the existing design speed is 55 mph.
Railroad Bridge (NIC)	The railroad bridge (2008 award) should be included in the IM project to avoid potential conflicts and interface problems on profile.
Alcovy Road Interchange Project	Concern about conflicts with closing ramps and disruption to commuters when both of these projects are awarded in June 2006. May consider combining the projects.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Project Objectives:

Complete Widen SR 142 to Four Lanes and maintenance work on I-20 Interchange
Reduce travel time and reduce congestion in Newton County
Benefit the local economy

The estimated ROW cost and estimated construction cost (ECC) as of 02/08/05 is:

Project	ROW \$	ECC \$	Total \$	Award Date
STP-000S (14)	2,670,975	6,486,063	9,157,038	June 2009
IM-20-2 (141)	19,001,100	8,280,195	27,281,295	June 2006
Alcovy Road				June 2006
Totals	21,672,075	14,766,258	36,438,333	

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Introduction

U.S. Cost Incorporated conducted two Value Engineering Team Studies on Widen SR 142 {STP-000S (14)} to Four Lanes, and replace I-20 Bridge and Interchange {IM-20-2 (141)} in Newton County, Georgia. The dual V.E. study was conducted for three (3) days, 29-31 March 2005, at the Georgia Department of Transportation Conference Room #352 in Atlanta, GA. The study team was furnished with a 35% design package. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Lindsey Gardner, P.E., CVS	U.S. Cost, Inc.	VETL
Jerry Brooks, P.E.	MAAI	Roadway Designer
Sam Deeb, P.E.	MAAI	Bridge Designer
Laland Owens	MAAI	Constructibility
Lisa Myers	GDOT	Value Engineer
Wade Harris	GDOT	Cost Engineer
Tony Eadie	GDOT	Project Manager
Neal O'Brian	GDOT	Project Liaison

Information Phase/Function Analysis

The V.E. team was first briefed on the two projects designed In-House by the Georgia Department of Transportation engineers 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 Widening SR 142 to four lanes (4) urban plan, and the construction of a new SR 142 Bridge over Interstate I-20 and Interchange improvements, which impact the site. 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 bridge structural systems and new four lane road profile. Discussions regarding project funding, required functions, bid dates, adjacent projects, 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 the Widen SR 142 to Four Lanes(STP), and construction of a new SR 142 Bridge over I-20 and Interchange (IM) improvements project 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.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

The Basic Function of the project is to *Enhance Safety*. A strong secondary function is to *Improve Capacity* and or *Improve Sight Distance* by constructing four new lanes to SR 142, and construction of new four lane SR 142 Bridge over Interstate I-20 and Interchange improvements in Newton County, Georgia. A detailed project function analysis of the characteristics of the project and their relationships is presented in Appendix A.

Risk Analysis

The group identified the following project risk elements, which may impact the construction/widening of existing SR 142 to four lanes (4) and construction of a new SR 142 four lane bridge over Interstate I-20 and I-20 Interchange improvements in Newton County, Georgia. 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

- Maintaining uninterrupted flow of traffic of existing and detour roads during construction (SR 142, I-20 and Alcovy Road)
- Delays and impact on the traveling/commuting public/interstate commerce
- Contractor Phasing Coordination and traffic management for both contracts: IM-20-2 and Alcovy Road Project
- Poor Progress/Quality By A Low Bid Construction Contractor
- Inflationary (Market Conditions) cost of concrete, asphalt and steel
- Failure to meet GDOT advertisement/let date currently scheduled for June 2006
- Accidents and potential lawsuits during construction
- Traffic management and detours during ramp staging, ramp closing and construction
- ROW approval and procurement in a timely manner for IM-20 (June 2006)
- Establishing new line of sight requirements
- Conflicts with Alcovy Road project being awarded at the same time.

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 engineers.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Project Criteria Analysis

Life Safety	10
Operational Issues	10
Interruptions	10
FWHA Criteria Compliance	10
Constructibility	8
GDOT Criteria Compliance	8
Functionality	8
Life Cycle Cost (Analysis)	8
AASHTO 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-nine (29) creative ideas were generated for further investigation by the team. Many of the creative ideas focused on enhancements to the roadway profile, safety, line of sight, excavation techniques, ramp storage and reconstruction, utility locations, bridge replacement, 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 SR 142 to four lanes (STP-000S) with a 44 foot raised median, and construction of a new SR 142 Bridge over I-20 and I-20 Interchange Improvements (IM-20-2) is included in Appendix A.

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.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Approximately twenty-three (23) out of the original twenty-nine (29) creative ideas were deemed promising for further investigation and analysis by the V.E. team, mainly due to 35% stage of design.

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 - > \$ 500,000
- 4 points - \$400,000 to 499,999
- 3 points - \$300,000 to 399,999
- 2 points - \$200,000 to 299,999
- 1 point – zero to \$199,999
- 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 two projects, Widening SR 142 to Four Lanes (STP-000S) and construction of a new four lane SR 142 Bridge over I-20 and Interchange improvements (IM-20-2). 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, to Widen SR 142, and construction of a new bridge and interchange. These ideas are presented to initiate additional discussion and investigation during the next phase of design.

VALUE ENGINEERING TEAM STUDY

KEY INFORMATION/NOTES

Presentation Phase

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

Resolution Phase

Upon receipt of the Final Value Engineering Report for the two projects, Widen SR 142 to four lanes (STP-000S, construct a new four lane SR 142 bridge over I-20 and Interchange Improvements (IM-20-2), Georgia DOT design 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 are based on the cost data prepared by the design A/E /Georgia Department of Transportation designers and bid tabs. Therefore, 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 2005 dollars. 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 June 2006 for IM-20 with a 15% mark-up, and June 2009 for STP-000S with a 30% mark-up it appears the estimate is adequate. All cost proposals have been marked up 10% for E & C & 5% per year for inflation. The cost estimate does not address current market conditions for concrete and steel shortage and or impact of \$55/barrel for the cost of oil.

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 and use re-cycled asphalt and crushed concrete as appropriate. Proposal to reuse existing two lane SR 142 bridge and construct a parallel two lane bridge. Also consider retaining the existing two lanes of SR 142 road and build two adjacent parallel lanes.

VALUE ENGINEERING TEAM STUDY

SUMMARY OF RECOMMENDATIONS

NUMBER	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT PM	A/E	LOCAL RECOM	FINAL
	ROADWAY/PROFILE (RW)							
1.0	(IM, STP) Revise profile to reduce embankment between Sta. 186+00 to Sta. 205+00 on SR 142	1,062,000		1,062,000				
2.0	(IM-20) Lower Eastbound 1-20 lanes to achieve vertical clearance for SR 142 overhead bridge	296,000		296,000				
3.0	(IM-20) Consider roller compacted concrete for temporary I-20 interchange ramps	Design Suggestion		DS				
4.0	(IM-20) Reduce right-of-way requirements by utilizing an urban section North of the Interchange on SR 142	Design Suggestion		DS				
6.0	(IM-20) Install PCC pavement on all ramps ilo asphalt pavement as a GDOT policy	Design Suggestion		DS				
7.0	(Both) Validate requirement for retention/detention basins. Not currently shown on contract documents.	Design Suggestion		DS				
8.0	(IM-20) Coordinate proposed grades of Hazelbrand Road with SKC personnel	Design Suggestion		DS				
9.0	(Both) Eliminate proposed 4" concrete median curb and gutter around median islands on SR 142	448,000		448,000				

Note Prefix on each proposal indicates which project it applies to: **IM** is the I-20 Interchange project; **STP** is the widening of SR 142; **BOTH** means it applies/applicable to both projects.

VALUE ENGINEERING TEAM STUDY

SUMMARY OF RECOMMENDATIONS

NUMBER	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT PM	A/E	LOCAL RECOM	FINAL
	ROADWAY/PROFILE (RW)							
9.2	(STP) Consider a complete paved five lane section with a 14'-0" center lane for left hand turns.	± \$ 4 mil		± \$ 4 mil DS				
10.0	(IM-20) Reduce staging complexity on construction of new ramps	Design Suggestion		DS				
12.0	(STP) Revise profile to closer match existing pavement between Sta. 144+00 to Sta. 170+00 on SR-142	265,000		265,000				
14.0	(Both) Use current GDOT policy regarding placement of Graded Aggregate Base (GAB) under and beyond curb and gutter	Design Suggestion		DS				
	STRUCTURAL/BRIDGES (SB)							
1.0	(IM-20) Reduce bridge spans from four (4) spans to two (2) spans	835,000		835,000				
1.1	(IM-20) Reduce structural depth of beams by using steel beams and reducing from four (4) spans to two (2) spans	420,000	(50,000)	370,000				
1.2	(IM-20) Reduce structural depth by allowing the use of HPC Type III concrete beams and reducing spans from four (4) spans to two (2) spans	870,000		870,000				
2.0	(IM-20) Reduce the length of the interior spans by 13'-0"	210,000		210,000				

VALUE ENGINEERING TEAM STUDY

SUMMARY OF RECOMMENDATIONS

NUMBER	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT PM	A/E	LOCAL RECOM	FINAL
5.0	(IM-20) Include Rail Road bridge work on SR 142 in construction contract for IM-20-2 advertisement	Design Suggestion		DS				
	CONSTRUCTIBILITY/OTHER (CO)							
1.0	(Both) Utilize temporary barriers to reduce encroachment of staging fills onto existing pavements and reduce the amount of temporary paving	Design Suggestion		DS				
2.0	(IM-20) Coordinate I-20 Interchange replacement (IM-20-2) project with the Alcovy Road (NH-20-2) project	Design Suggestion		DS				
3.0	(IM-20) Investigate closing I-20 ramps during reconstruction of the Interchange	Design Suggestion		DS				
4.0	(Both) Consider incentives to shorten the construction schedule of 18-24 months	Design Suggestion		DS				
5.0	(IM) Combine Alcovy Road I-20 Interchange project (NH 20-2 {167}) and SR 142 I-20 Interchange replacement project (IM-20-2) into one construction project for letting in June 2006	Design Suggestion		DS				
6.0	(IM-20) Provide for new High Mast signage on I-20 to replace existing signs mounted on SR 142 bridge (Cost adder since it is not currently in project)	Design Suggestion		DS				

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	1 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (BOTH) REVISE PROFILE TO REDUCE EMBANKMENT BETWEEN STA 186+00 TO STA 205+00 ON SR142.

ORIGINAL DESIGN: The original design consists of setting a profile grade for SR142 that is as much as 20 feet above the existing roadway between Sta 186+00 to Sta 205+00.

PROPOSED CHANGE: The proposed change recommends creating a profile grade that reduces the proposed fill section.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$3,219,011		\$3,219,011
PROPOSED CHANGE:	\$2,156,739		\$2,156,739
		SAVINGS:	\$1,062,272

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	2 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA..

ADVANTAGES:

Total life cycle cost savings of: \$1,062,272

Ease of construction, quicker to complete
Easier to maintain access to adjacent property and driveways
Easier to maintain traffic during construction
Reduces the grade on intersecting side roads

DISADVANTAGES:

Additional redesign cost
Increased grades on SR142
Reduced “K” values on SR142 vertical curves
May require a design exception if 55mph speed design is desired

JUSTIFICATION:

The proposed profile grade will meet the minimum AASHTO requirements for a 45mph speed design which is the design speed referenced on the project cover sheet.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	3 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Embankment	GDOT	CY	622,031	\$4.50/CY	\$2,799,140
SUBTOTAL:					\$2,799,140
15% MARK UP:					\$419,871
TOTAL:					\$3,219,011

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Embankment	GDOT	CY	416,761	\$4.50/CY	\$1,875,425
SUBTOTAL:					\$1,875,425
15% MARK UP:					\$281,314
TOTAL:					\$2,156,739

SOURCES

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

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	4 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

Original Borrow calculated on SR142 from Sta 177+00 to Sta 205+00 is 299,814 CY

Revised (lowered) profile for same range is 163,746 CY

There is a reduction of 45% for SR142 alone.

Revising the profile will reduce Embankment Borrow Including Haul by an estimated factor of 33% for the entire IM project.

Original Borrow quantity for IM project = 622,031CY

$$622,031 \times 0.33 = 205,270 \text{ CY}$$

$$622,031 - 205,270 = 416,761 \text{ CY}$$

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	5 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

 CAiCE Visual Roads Design System
 EarthWork Report from C:\Kcdata\231220\a500f.EAR : Thu Mar 31 08:36:28 2005

 EarthWork Class Table : C:\CAiCE\EWCLASS\GDOTEWRK.TBL
 Description : GDOT Earthwork Class Table

Station	Area Type	Area	Inc.Vol.	Cum.Vol.	MassHaul
177+00.00	EMBANK	441.29			
	EXCAV	0.00			
	CUT	0.00			
	USABLE	0.00			
	FILL	441.29			
177+50.00	EMBANK	0.00	408.60	408.60	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	408.60	408.60	-408.60
178+00.00	EMBANK	1658.17	1535.35	1943.94	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1658.17	1535.35	1943.94	-1943.94
178+50.00	EMBANK	1866.22	3263.32	5207.27	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1866.22	3263.32	5207.27	-5207.27
179+00.00	EMBANK	1994.73	3574.95	8782.22	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1994.73	3574.95	8782.22	-8782.22
179+50.00	EMBANK	0.00	1846.98	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	1846.98	10629.20	-10629.20
180+00.00	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	-10629.20
180+50.00	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	6 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	
Station	181+00.00				-10629.20
	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	
Station	181+50.00				-10629.20
	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	
Station	182+00.00				-10629.20
	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	
Station	182+50.00				-10629.20
	EMBANK	0.00	0.00	10629.20	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10629.20	
Station	183+00.00				-10629.20
	EMBANK	1951.40	1806.85	12436.05	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1951.40	1806.85	12436.05	
Station	183+50.00				-12436.05
	EMBANK	2020.60	3677.77	16113.82	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2020.60	3677.77	16113.82	
Station	184+00.00				-16113.82
	EMBANK	2059.23	3777.62	19891.44	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2059.23	3777.62	19891.44	
Station	184+50.00				-19891.44
	EMBANK	2106.87	3857.50	23748.93	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2106.87	3857.50	23748.93	
					-23748.93

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	7 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

Station	185+00.00					
		EMBANK	2097.36	3892.80	27641.73	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	2097.36	3892.80	27641.73	
						-27641.73
Station	185+50.00					
		EMBANK	0.00	1942.00	29583.73	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	0.00	1942.00	29583.73	
						-29583.73
Station	186+00.00					
		EMBANK	2883.23	2669.66	32253.39	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	2883.23	2669.66	32253.39	
						-32253.39
Station	186+50.00					
		EMBANK	3012.85	5459.34	37712.73	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	3012.85	5459.34	37712.73	
						-37712.73
Station	187+00.00					
		EMBANK	3281.63	5828.22	43540.95	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	3281.63	5828.22	43540.95	
						-43540.95
Station	187+50.00					
		EMBANK	3625.79	6395.75	49936.70	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	3625.79	6395.75	49936.70	
						-49936.70
Station	188+00.00					
		EMBANK	4067.84	7123.73	57060.43	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	4067.84	7123.73	57060.43	
						-57060.43
Station	188+50.00					
		EMBANK	4410.29	7850.12	64910.55	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	4410.29	7850.12	64910.55	
						-64910.55
Station	189+00.00					
		EMBANK	4799.05	8527.17	73437.72	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	8 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	USABLE	0.00	0.00	0.00	
	FILL	4799.05	8527.17	73437.72	
Station 189+50.00					-73437.72
	EMBANK	5137.77	9200.76	82638.48	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	5137.77	9200.76	82638.48	
Station 190+00.00					-82638.48
	EMBANK	5160.20	9535.16	92173.64	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	5160.20	9535.16	92173.64	
Station 190+50.00					-92173.64
	EMBANK	5047.40	9451.48	101625.12	
	EXCAV	7.06	6.54	6.54	
	CUT	7.06	6.54	6.54	
	USABLE	7.06	6.54	6.54	
	FILL	5047.40	9451.48	101625.12	
Station 191+00.00					-101618.58
	EMBANK	4805.04	9122.63	110747.76	
	EXCAV	21.01	26.00	32.54	
	CUT	21.01	26.00	32.54	
	USABLE	21.01	26.00	32.54	
	FILL	4805.04	9122.63	110747.76	
Station 191+50.00					-110715.22
	EMBANK	4470.67	8588.62	119336.38	
	EXCAV	90.58	103.33	135.87	
	CUT	90.58	103.33	135.87	
	USABLE	90.58	103.33	135.87	
	FILL	4470.67	8588.62	119336.38	
Station 192+00.00					-119200.51
	EMBANK	4203.40	8031.54	127367.92	
	EXCAV	106.13	182.14	318.01	
	CUT	106.13	182.14	318.01	
	USABLE	106.13	182.14	318.01	
	FILL	4203.40	8031.54	127367.92	
Station 192+50.00					-127049.92
	EMBANK	4017.48	7611.92	134979.85	
	EXCAV	111.35	201.37	519.38	
	CUT	111.35	201.37	519.38	
	USABLE	111.35	201.37	519.38	
	FILL	4017.48	7611.92	134979.85	
Station 193+00.00					-134460.47
	EMBANK	3903.11	7333.88	142313.73	
	EXCAV	115.95	210.47	729.85	
	CUT	115.95	210.47	729.85	
	USABLE	115.95	210.47	729.85	
	FILL	3903.11	7333.88	142313.73	
Station 193+50.00					-141583.88

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	9 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	EMBANK	3543.00	6894.55	149208.28	
	EXCAV	174.75	269.17	999.01	
	CUT	174.75	269.17	999.01	
	USABLE	174.75	269.17	999.01	
	FILL	3543.00	6894.55	149208.28	
Station	194+00.00				-148209.26
	EMBANK	3359.78	6391.46	155599.74	
	EXCAV	122.53	275.26	1274.28	
	CUT	122.53	275.26	1274.28	
	USABLE	122.53	275.26	1274.28	
	FILL	3359.78	6391.46	155599.74	
Station	194+50.00				-154325.46
	EMBANK	3158.10	6035.07	161634.81	
	EXCAV	134.54	238.03	1512.31	
	CUT	134.54	238.03	1512.31	
	USABLE	134.54	238.03	1512.31	
	FILL	3158.10	6035.07	161634.81	
Station	195+00.00				-160122.50
	EMBANK	2949.27	5654.97	167289.78	
	EXCAV	359.79	457.71	1970.02	
	CUT	359.79	457.71	1970.02	
	USABLE	359.79	457.71	1970.02	
	FILL	2949.27	5654.97	167289.78	
Station	195+50.00				-165319.76
	EMBANK	2783.40	5308.03	172597.81	
	EXCAV	382.90	687.67	2657.69	
	CUT	382.90	687.67	2657.69	
	USABLE	382.90	687.67	2657.69	
	FILL	2783.40	5308.03	172597.81	
Station	196+00.00				-169940.12
	EMBANK	2970.24	5327.44	177925.25	
	EXCAV	222.37	560.43	3218.13	
	CUT	222.37	560.43	3218.13	
	USABLE	222.37	560.43	3218.13	
	FILL	2970.24	5327.44	177925.25	
Station	196+50.00				-174707.12
	EMBANK	3329.51	5833.10	183758.35	
	EXCAV	109.58	307.36	3525.49	
	CUT	109.58	307.36	3525.49	
	USABLE	109.58	307.36	3525.49	
	FILL	3329.51	5833.10	183758.35	
Station	197+00.00				-180232.86
	EMBANK	3790.22	6592.34	190350.69	
	EXCAV	0.00	101.46	3626.95	
	CUT	0.00	101.46	3626.95	
	USABLE	0.00	101.46	3626.95	
	FILL	3790.22	6592.34	190350.69	
Station	197+50.00				-186723.73
	EMBANK	4060.34	7269.03	197619.72	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	10 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	FILL	4060.34	7269.03	197619.72	-193992.77
Station 198+00.00	EMBANK	0.00	3759.57	201379.29	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	0.00	3759.57	201379.29	
Station 198+50.00	EMBANK	0.00	0.00	201379.29	-197752.34
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	0.00	0.00	201379.29	
Station 199+00.00	EMBANK	4371.27	4047.48	205426.77	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	4371.27	4047.48	205426.77	
Station 199+50.00	EMBANK	6301.33	9882.04	215308.81	-201799.82
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	6301.33	9882.04	215308.81	
Station 200+00.00	EMBANK	6781.88	12114.08	227422.89	-211681.86
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	6781.88	12114.08	227422.89	
Station 200+50.00	EMBANK	6785.10	12562.02	239984.92	-223795.94
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	6785.10	12562.02	239984.92	
Station 201+00.00	EMBANK	6452.99	12257.49	252242.41	-236357.96
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	6452.99	12257.49	252242.41	
Station 201+50.00	EMBANK	5575.04	11137.07	263379.48	-248615.46
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	5575.04	11137.07	263379.48	
Station 202+00.00	EMBANK	3778.62	8660.80	272040.28	-259752.52

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	11 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	3778.62	8660.80	272040.28	
Station 202+50.00					-268413.32
	EMBANK	3482.41	6723.17	278763.45	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	3482.41	6723.17	278763.45	
Station 203+00.00					-275136.50
	EMBANK	2770.08	5789.34	284552.80	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	2770.08	5789.34	284552.80	
Station 203+50.00					-280925.84
	EMBANK	2549.22	4925.28	289478.08	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	2549.22	4925.28	289478.08	
Station 204+00.00					-285851.12
	EMBANK	2700.92	4861.24	294339.32	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	2700.92	4861.24	294339.32	
Station 204+50.00					-290712.36
	EMBANK	2462.50	4780.95	299120.27	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	2462.50	4780.95	299120.27	
Station 205+00.00					-295493.31
	EMBANK	2204.16	4320.99	303441.26	
	EXCAV	0.00	0.00	3626.95	
	CUT	0.00	0.00	3626.95	
	USABLE	0.00	0.00	3626.95	
	FILL	2204.16	4320.99	303441.26	
					-299814.30

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	12 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

 CAiCE Visual Roads Design System
 EarthWork Report from C:\Kcdata\231220\revisedf.EAR : Thu Mar 31 08:15:25 2005

 EarthWork Class Table : C:\CAICE\EWCLASS\GDOTEWRK.TBL
 Description : GDOT Earthwork Class Table

Station	Area Type	Area	Inc.Vol.	Cum.Vol.	MassHaul
Station 177+00.00	EMBANK	446.15			
	EXCAV	0.00			
	CUT	0.00			
	USABLE	0.00			
	FILL	446.15			
Station 177+50.00	EMBANK	0.00	413.11	413.11	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	413.11	413.11	
					-413.11
Station 178+00.00	EMBANK	1666.45	1543.01	1956.12	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1666.45	1543.01	1956.12	
					-1956.12
Station 178+50.00	EMBANK	1882.73	3286.28	5242.40	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1882.73	3286.28	5242.40	
					-5242.40
Station 179+00.00	EMBANK	2009.25	3603.68	8846.08	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2009.25	3603.68	8846.08	
					-8846.08
Station 179+50.00	EMBANK	0.00	1860.42	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	1860.42	10706.50	
					-10706.50
Station 180+00.00	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
					-10706.50
Station 180+50.00	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	13 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
Station 181+00.00					-10706.50
	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
Station 181+50.00					-10706.50
	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
Station 182+00.00					-10706.50
	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
Station 182+50.00					-10706.50
	EMBANK	0.00	0.00	10706.50	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	0.00	0.00	10706.50	
Station 183+00.00					-10706.50
	EMBANK	1579.79	1462.77	12169.27	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1579.79	1462.77	12169.27	
Station 183+50.00					-12169.27
	EMBANK	1547.56	2895.70	15064.97	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1547.56	2895.70	15064.97	
Station 184+00.00					-15064.97
	EMBANK	1491.61	2814.05	17879.01	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1491.61	2814.05	17879.01	
Station 184+50.00					-17879.01
	EMBANK	1438.60	2713.16	20592.17	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1438.60	2713.16	20592.17	
					-20592.17

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	14 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

Station	185+00.00					
		EMBANK	1353.67	2585.44	23177.61	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	1353.67	2585.44	23177.61	
						-23177.61
Station	185+50.00					
		EMBANK	0.00	1253.40	24431.02	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	0.00	1253.40	24431.02	
						-24431.02
Station	186+00.00					
		EMBANK	1847.07	1710.25	26141.27	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	1847.07	1710.25	26141.27	
						-26141.27
Station	186+50.00					
		EMBANK	1871.86	3443.45	29584.72	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	1871.86	3443.45	29584.72	
						-29584.72
Station	187+00.00					
		EMBANK	1984.48	3570.69	33155.41	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	1984.48	3570.69	33155.41	
						-33155.41
Station	187+50.00					
		EMBANK	2183.72	3859.45	37014.85	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	2183.72	3859.45	37014.85	
						-37014.85
Station	188+00.00					
		EMBANK	2427.96	4270.07	41284.92	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	2427.96	4270.07	41284.92	
						-41284.92
Station	188+50.00					
		EMBANK	2607.59	4662.55	45947.47	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	
		USABLE	0.00	0.00	0.00	
		FILL	2607.59	4662.55	45947.47	
						-45947.47
Station	189+00.00					
		EMBANK	2845.16	5048.85	50996.32	
		EXCAV	0.00	0.00	0.00	
		CUT	0.00	0.00	0.00	

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	15 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	USABLE	0.00	0.00	0.00	
	FILL	2845.16	5048.85	50996.32	
Station 189+50.00					-50996.32
	EMBANK	3057.20	5465.15	56461.47	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	3057.20	5465.15	56461.47	
Station 190+00.00					-56461.47
	EMBANK	2989.05	5598.38	62059.85	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2989.05	5598.38	62059.85	
Station 190+50.00					-62059.85
	EMBANK	2810.60	5370.05	67429.90	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2810.60	5370.05	67429.90	
Station 191+00.00					-67429.90
	EMBANK	2534.21	4948.90	72378.80	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2534.21	4948.90	72378.80	
Station 191+50.00					-72378.80
	EMBANK	2204.48	4387.68	76766.48	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	2204.48	4387.68	76766.48	
Station 192+00.00					-76766.48
	EMBANK	1917.44	3816.60	80583.08	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1917.44	3816.60	80583.08	
Station 192+50.00					-80583.08
	EMBANK	1701.72	3351.08	83934.16	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1701.72	3351.08	83934.16	
Station 193+00.00					-83934.16
	EMBANK	1542.76	3004.15	86938.31	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1542.76	3004.15	86938.31	
Station 193+50.00					-86938.31

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	16 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	EMBANK	1195.95	2535.84	89474.16	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1195.95	2535.84	89474.16	
Station 194+00.00					-89474.16
	EMBANK	1035.15	2065.84	91539.99	
	EXCAV	0.00	0.00	0.00	
	CUT	0.00	0.00	0.00	
	USABLE	0.00	0.00	0.00	
	FILL	1035.15	2065.84	91539.99	
Station 194+50.00					-91539.99
	EMBANK	930.72	1820.25	93360.24	
	EXCAV	0.16	0.15	0.15	
	CUT	0.16	0.15	0.15	
	USABLE	0.16	0.15	0.15	
	FILL	930.72	1820.25	93360.24	
Station 195+00.00					-93360.09
	EMBANK	848.21	1647.16	95007.40	
	EXCAV	3.40	3.29	3.44	
	CUT	3.40	3.29	3.44	
	USABLE	3.40	3.29	3.44	
	FILL	848.21	1647.16	95007.40	
Station 195+50.00					-95003.96
	EMBANK	830.51	1554.37	96561.77	
	EXCAV	61.88	60.44	63.88	
	CUT	61.88	60.44	63.88	
	USABLE	61.88	60.44	63.88	
	FILL	830.51	1554.37	96561.77	
Station 196+00.00					-96497.89
	EMBANK	875.61	1579.74	98141.52	
	EXCAV	0.00	57.29	121.18	
	CUT	0.00	57.29	121.18	
	USABLE	0.00	57.29	121.18	
	FILL	875.61	1579.74	98141.52	
Station 196+50.00					-98020.34
	EMBANK	1081.46	1812.10	99953.62	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	
	FILL	1081.46	1812.10	99953.62	
Station 197+00.00					-99832.45
	EMBANK	1324.42	2227.67	102181.29	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	
	FILL	1324.42	2227.67	102181.29	
Station 197+50.00					-102060.12
	EMBANK	1441.23	2560.80	104742.09	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	17 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	FILL	1441.23	2560.80	104742.09	-104620.91
Station 198+00.00	EMBANK	0.00	1334.48	106076.56	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	
	FILL	0.00	1334.48	106076.56	-105955.39
Station 198+50.00	EMBANK	0.00	0.00	106076.56	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	
	FILL	0.00	0.00	106076.56	-105955.39
Station 199+00.00	EMBANK	1818.82	1684.09	107760.65	
	EXCAV	0.00	0.00	121.18	
	CUT	0.00	0.00	121.18	
	USABLE	0.00	0.00	121.18	
	FILL	1818.82	1684.09	107760.65	-107639.48
Station 199+50.00	EMBANK	3128.09	4580.46	112341.12	
	EXCAV	9.37	8.67	129.85	
	CUT	9.37	8.67	129.85	
	USABLE	9.37	8.67	129.85	
	FILL	3128.09	4580.46	112341.12	-112211.27
Station 200+00.00	EMBANK	3504.49	6141.27	118482.39	
	EXCAV	0.00	8.67	138.52	
	CUT	0.00	8.67	138.52	
	USABLE	0.00	8.67	138.52	
	FILL	3504.49	6141.27	118482.39	-118343.86
Station 200+50.00	EMBANK	3658.78	6632.65	125115.04	
	EXCAV	0.53	0.49	139.02	
	CUT	0.53	0.49	139.02	
	USABLE	0.53	0.49	139.02	
	FILL	3658.78	6632.65	125115.04	-124976.02
Station 201+00.00	EMBANK	3631.98	6750.70	131865.75	
	EXCAV	0.00	0.49	139.51	
	CUT	0.00	0.49	139.51	
	USABLE	0.00	0.49	139.51	
	FILL	3631.98	6750.70	131865.75	-131726.24
Station 201+50.00	EMBANK	3128.95	6260.12	138125.87	
	EXCAV	1.19	1.10	140.61	
	CUT	1.19	1.10	140.61	
	USABLE	1.19	1.10	140.61	
	FILL	3128.95	6260.12	138125.87	-137985.26
Station 202+00.00	EMBANK	2148.62	4886.64	143012.51	

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-1.0
PAGE NUMBER:	18 of 18

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

	EXCAV	0.00	1.10	141.70	
	CUT	0.00	1.10	141.70	
	USABLE	0.00	1.10	141.70	
	FILL	2148.62	4886.64	143012.51	
Station	202+50.00				-142870.81
	EMBANK	2197.72	4024.39	147036.90	
	EXCAV	0.00	0.00	141.70	
	CUT	0.00	0.00	141.70	
	USABLE	0.00	0.00	141.70	
	FILL	2197.72	4024.39	147036.90	
Station	203+00.00				-146895.19
	EMBANK	1746.42	3651.98	150688.88	
	EXCAV	0.00	0.00	141.70	
	CUT	0.00	0.00	141.70	
	USABLE	0.00	0.00	141.70	
	FILL	1746.42	3651.98	150688.88	
Station	203+50.00				-150547.18
	EMBANK	1705.17	3195.92	153884.80	
	EXCAV	0.00	0.00	141.70	
	CUT	0.00	0.00	141.70	
	USABLE	0.00	0.00	141.70	
	FILL	1705.17	3195.92	153884.80	
Station	204+00.00				-153743.10
	EMBANK	1875.40	3315.34	157200.14	
	EXCAV	0.00	0.00	141.70	
	CUT	0.00	0.00	141.70	
	USABLE	0.00	0.00	141.70	
	FILL	1875.40	3315.34	157200.14	
Station	204+50.00				-157058.44
	EMBANK	1829.21	3430.19	160630.34	
	EXCAV	16.32	15.11	156.81	
	CUT	16.32	15.11	156.81	
	USABLE	16.32	15.11	156.81	
	FILL	1829.21	3430.19	160630.34	
Station	205+00.00				-160473.53
	EMBANK	1720.31	3286.59	163916.93	
	EXCAV	0.00	15.11	171.92	
	CUT	0.00	15.11	171.92	
	USABLE	0.00	15.11	171.92	
	FILL	1720.31	3286.59	163916.93	
					-163745.01

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW – 2.0
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (IM) LOWER EASTBOUND I-20 LANES TO ACHIEVE VERTICAL CLEARANCE FOR THE SR 142 OVERHEAD BRIDGE.

ORIGINAL DESIGN: The current design does not include any work on I-20 mainline under SR 142.

PROPOSED CHANGE: The proposed recommendation is to lower the Eastbound lanes on I-20 (-3 feet) and shift away from the current I-20 centerline in order to lower the design profile on IM-20-2 profile project as part of SR 142.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:			
PROPOSED CHANGE:	\$ (295,500)		\$ (295,500)
SAVINGS:			\$ 295,500

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

Total life cycle cost savings of \$ 295,500

- Reduces borrow significantly by ± 50% (See RW -1.0 for adjustments)
- Reduces right-of-way impacts and cost
- Makes maintenance of traffic on SR 142 and access to SR 142 less complicated
- Allows the widening of I-20 in the future with minor impact on traffic.

DISADVANTAGES:

- Disrupts traffic on I-20 corridor during construction
- Removal of existing two lanes of pavement eastbound.

JUSTIFICATION:

Lesser impacts to adjacent property and a substantial reduction in borrow requirements combined with quicker restoration of traffic to SR 142 to justify this recommendation. Interstate ramps would not have to be closed as long and Hazelbrand Road would have a more desirable finished grade for SKC property owners.

COST ESTIMATING WORKSHEET

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

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
Earthwork reduction on SR142	1	CY	73,500	4.50	(330,750)
Pavement structure	1	SY	34,000	55.00	186,800
Grassing	1	Mile	0.40	40,000	16,000
Traffic Control	1	LS			10,000
Re-design	1	LS			30,000
Stripping	1	LS			2,000
Right-of-way (Potential \$\$)		LS			(171,000)
SUBTOTAL:					(256,959)
15 % MARK UP:					(38,543)
TOTAL:					(295,493)

SOURCES

- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Project Cost Estimate 2. CES Data Base 3. CACES Data Base 4. Means Estimating Manual | <ul style="list-style-type: none"> 5. Richardson's Estimating Manual 6. Vendor (Specify) 7. Other (Specify) |
|--|--|

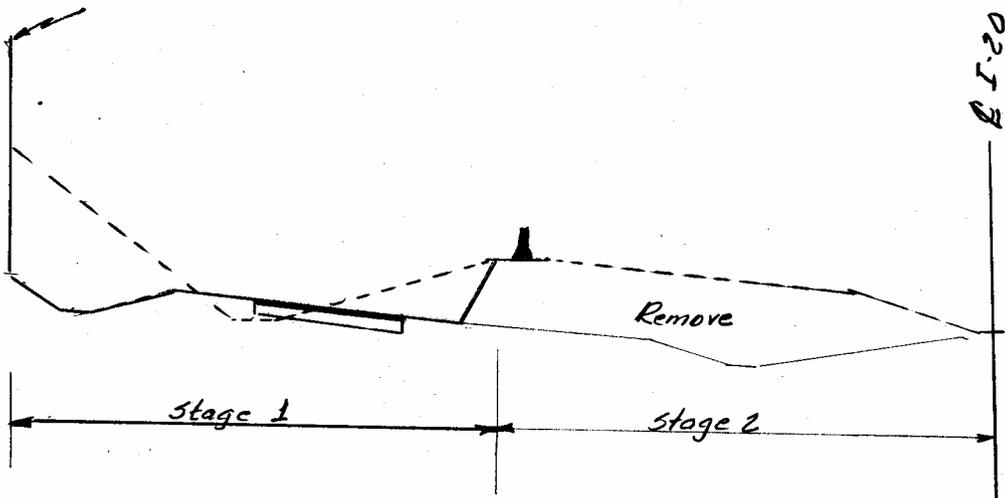
PROPOSED DESIGN SKETCH/DETAIL

PROPOSAL NUMBER: RW-2.0

PAGE NUMBER: 4 of 5

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA



PROPOSED CHANGE CALCULATIONS

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

Lower I-20 W/B Lanes (Additional Costs)

• Earthwork	11,000 cy @ \$4.50 =	\$49,500
• Pavement		
GAB (12")	3400 sy @ \$21.00 =	\$71,400
Asphaltic Conc.	2,420 tons @ 47.69 =	\$115,400
		186,800
• Grassing	0.40 mi @ 40,000	16,000
• Traffic Control	LS	10,000
• Stripping	LS	2,000
• Reengineering	LS	10,000
		\$274,300

Lower SR142 (Cost Reduction)

• Earthwork	84,500 cy @ 4.50	(380,250)
• Right-of-Way	104,544 sf @ 2.46	(171,000)
• Reengineering	LS	20,000
		\$531,000

Savings

Cost reduction – additional costs	Savings
\$531,250 - \$274,300 =	\$256,950

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Utilizes the same equipment as asphalt pavements
Strength of RCCP hardens fast enough to open for traffic in a short period of time
Drying shrinkage is small => joint spacing increases
Flexural strength is very high
Currently been used on GDOT I-285 project.

DISADVANTAGES:

Removal is more difficult than asphalt pavement removal.
Application in Georgia has been limited to shoulder work.=> broad knowledge of RCCP may not exist in the contracting industry.

JUSTIFICATION:

RCCP provides sufficient structural value to be left in place and overlaid with asphaltic concrete topping. Currently been used on GDOT I-285 project.

Rapid to Construct, Rapid to Open for Traffic, Concrete Pavement

RCCP (Roller Compacted Concrete Pavement)

RCCP (Roller Compacted Concrete Pavement) is a concrete pavement that uses ultra hard concrete with decreased water content compared to ordinary concretes. RCCP is constructed with the same equipment as asphalt pavements, laid by the same pavers and compacted by rollers.

Merits

- As the same equipment for those of asphalt pavement are used, rapid construction is achieved.
- The strength grows fast enough to permit opening for traffic in a short time.
- As the drying shrinkage is small, the interval between joints can be maximized.



Fit Places to Apply

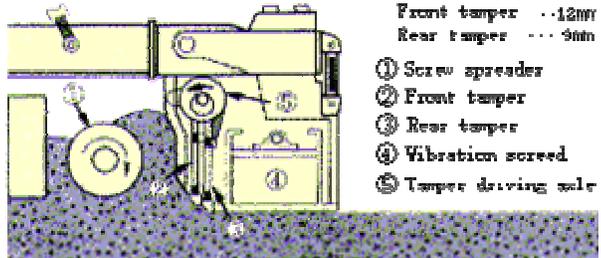
- Ordinary roads, roads in factories, temporary roads for construction works
- Parking areas, service areas
- Container yards, material handling yards
- Apron and carriageway of airports
- for Binder course of Expressway and Heavily trafficked roads

Construction Procedures

- **Concrete Mixing and Transportation:**
Concrete mixing is done at concrete plants and transportation is done by dump trucks.
- **Laying and Spreading:**
In order to achieve evenness, pavers of high compaction type with double tamper screeds are used for laying and spreading. (see the Figure right side)

Specification of High Compaction type of Paver with Double Tamper

Type ... TAITAN#11 Maximal capacity
 Width 2.5~7.0m Tamper 1485rpm
 Paving rate .. 0.5~2.5m/min Vibrator 3000rpm
 Tamper stroke

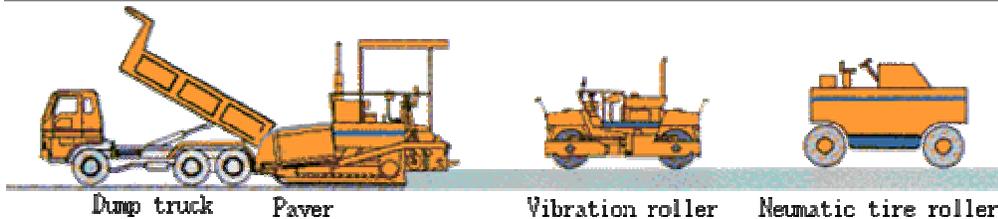


Front tamper .. 12mm
 Rear tamper ... 9mm

- ① Screw spreader
- ② Front tamper
- ③ Rear tamper
- ④ Vibration screed
- ⑤ Tamper driving roller

- **Compaction and Curing:**
First and second compaction is done by vibrating roller (first without vibration, second with vibration) and finishing compaction is done by pneumatic tire roller. After the compaction, the paved surface is covered by curing mat and cured by water spray.

Standard Machines Configuration



Dump truck

Paver

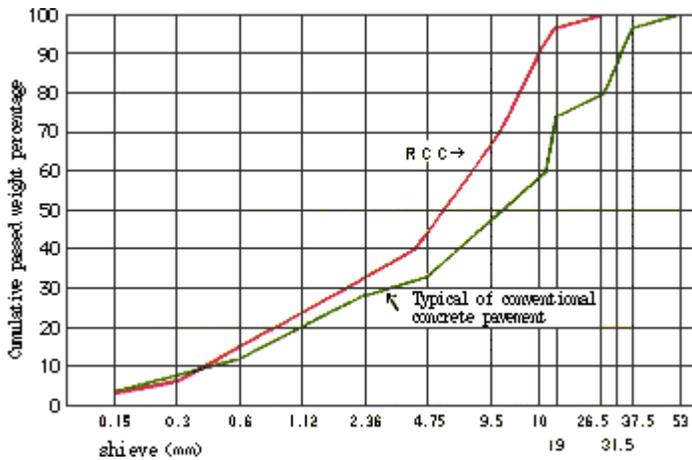
Vibration roller

Pneumatic tire roller

An example of mix design

Kind of concrete	flexural strength after 28 days kgf/cm ²	Maximum size coarse aggregate (mm)	Fine aggregate ratio s/a (%)	Water/cement ratio W/C (%)	Unit Coarse aggregate volume	unit weight(kg/m ³)					Weight ratio of cement (%)	Water content (%)
						Water (%)	Cement C	Fine aggregate S	Coarse aggregate G	Additive agent		
for RCCP	60	20	44.0	40.6	0.80	104	256	936	1,241	0.640	10.6	5.4
for conventional*	53	40	33.0	42.5	0.81	138	325	599	1,341	0.812	14.5	7.8

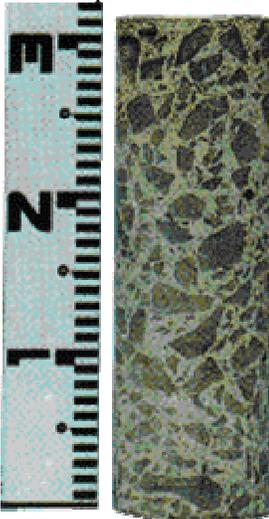
Combined Gradation of Aggregates



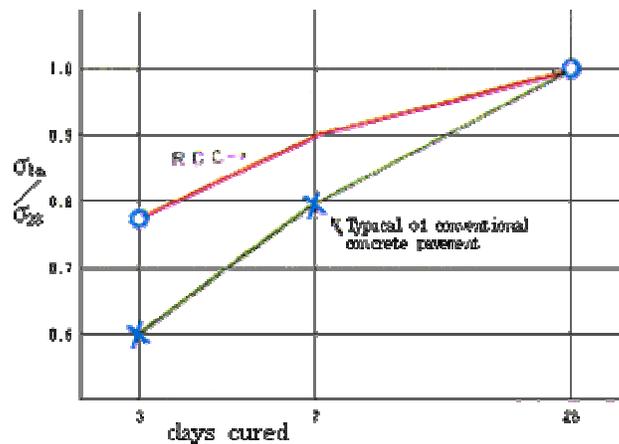
The concrete for RCCP is continuously graded in order to attain high density and special consideration is paid for the grading of fine aggregates in order to attain smooth texture of slab surface. And unit water volume is nearly 100 kg less than conventional concrete pavement enabling to decrease unit cement weight to 250-300 kg. As a result the mix design becomes more economical than a typical concrete mix.

The photograph below is a sample cut from RCCP pavement.

It is seen that this sample is tightly compacted from top to bottom



Trend of Growth of Flexural Strength



The figure above shows the relation between flexural strength and time elapsed. It can be seen that the concrete for RCCP achieves strength from an early stage.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-4.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

PROPOSAL DESCRIPTION: (IM) REDUCE RIGHT-OF-WAY
REQUIREMENTS BY UTILIZING AN URBAN
SECTION NORTH OF THE INTERCHANGE
ON SR 142.

ORIGINAL DESIGN: The original design stipulates a 10 ft rural shoulder with 6½ ft paved portion thereof.

PROPOSED CHANGE: The proposed change recommends the continuation of the urban typical section from the ramps to the end of the end of the project.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Uniform typical section throughout both projects.

DISADVANTAGES:

Current design standards require 16 ft shoulder width for an urban section with sidewalk => additional embankment would be required.

Would require amending the speed zone ordinance to extend the 45 mph to the end of the project.

Urban section would require drainage systems.

JUSTIFICATION:

The proposed change cannot be supported when comparing the planned rural typical section of 10 ft with the current urban typical requirement for a 16 ft wide shoulder.

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

PROPOSAL DESCRIPTION: (IM) INSTALL PCC PAVEMENT ON ALL
RAMPS.

ORIGINAL DESIGN: The original design's typical section requires graded aggregate base with courses of asphaltic concrete to achieve the desired structural value on the four (4) ramps.

PROPOSED CHANGE: The proposed change recommends the installation of PCC pavement on all four ramps.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Resists rutting, pushing and shoring.
Lifespan of PCC pavement with equivalent structural numbers is longer.
Maintenance effort is less for PCC pavement.

DISADVANTAGES:

More expensive to install.
Requires more temporary pavement at tie-ins.
Eradication of temporary striping is more difficult.

JUSTIFICATION:

Current standard practice within GDOT is to install PCC pavement on ramps on IM projects.

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (BOTH) VALIDATE REQUIREMENT / NEED FOR RETENTION AND / OR DETENTION BASINS.

ORIGINAL DESIGN: The current design makes no provisions for constructing retention or detention basins as part of this project. An area of easement is shown right of station 34+00 on Hazelbrand Road for construction and maintenance of a sediment basin.

PROPOSED CHANGE: The proposed change recommendation is to validate whether or not the increased runoff will require a retention or detention basin. It is also recommended that the location of the sediment basin at station 34+00 be reviewed to determine if it could be placed at least partially within the required right of way. It is recommended that a location left of station 29+00 on Hazelbrand Road be reviewed as a possible alternate location for this sediment basin.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

Politically acceptable.
Environmentally friendly.
Standard/acceptable local construction technique.

DISADVANTAGES:

Requires periodic maintenance.
May require additional right of way or easement.

JUSTIFICATION:

Construction of retention or detention basins, where required, will minimize the impacts of increased storm water runoff as a result of an increase in pavement area.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-8.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (IM) COORDINATE PROPOSED GRADES OF HAZELBRAND ROAD WITH SKC PERSONNEL.

ORIGINAL DESIGN: The current design has a grade on Hazelbrand Road of 8.75%.

PROPOSED CHANGE: It is recommended that any grade greater than the existing grade on Hazelbrand Road be coordinated with the owners of SKC located on Hazelbrand Road. This is their only access to and from SR142. This is a large industry with heavy truck traffic.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-8.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

Will allow feedback from SKC regarding design prior to beginning right of way negotiations with that Company.

DISADVANTAGES:

May result in a design change.

JUSTIFICATION:

Hazelbrand Road was constructed as a State Aid contract between GDOT and Newton County with coordination from SKC regarding grades. This coordination should continue prior to any major grade changes.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (BOTH) ELIMINATE PROPOSED 4" CONCRETE MEDIAN AND CURB & GUTTER AROUND MEDIAN ISLANDS ON SR142.

ORIGINAL DESIGN: The original design consists of raised concrete medians with curb & gutter for all medians on SR142.

PROPOSED CHANGE: The proposed change would eliminate the raised concrete medians and curb & gutter and would replace them with depressed grass medians and a 2' full depth asphalt shoulder.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$881,110		\$881,110
PROPOSED CHANGE:	\$433,032		\$433,032
SAVINGS:			\$448,078

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

Cost Savings \$448,078.
Adds a space for Green Architecture.

DISADVANTAGES:

Maintenance of grassed medians would be required.
Possibility of cars crossing median illegally at mid-block.

JUSTIFICATION:

The proposed grass medians meets functional requirements.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Curb & Gutter (Type 7) (IM)	GDOT	LF	11200*	\$10.19	\$114,128
Curb & Gutter (Type 7) (STP)	GDOT	LF	15000*	\$10.19	\$152,850
Concrete Median, 4" (IM)	GDOT	SY	7000*	\$28.32	\$198,240
Concrete Median, 4" (STP)	GDOT	SY	9500*	\$28.32	\$269,040
SUBTOTAL:					\$734,258
20% MARK UP:					\$146,852
TOTAL:					\$881,110

*Quantities for type 7 C&G and Conc Median in Preliminary are incorrect and were not used for this estimate.

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Curb & Gutter (Type 7) (IM)	GDOT	LF	3200	\$10.19	\$32,608
Curb & Gutter (Type 7) (STP)	GDOT	LF	7400	\$10.19	\$75,406
Concrete Median, 4" (IM)	GDOT	SY	2100	\$28.32	\$59,472
Concrete Median, 4" (STP)	GDOT	SY	4700	\$28.32	\$133,104
Asphalt Shoulder (IM)	GDOT	T	735	\$42.00	\$30,870
Asphalt Shoulder (STP)	GDOT	T	700	\$42.00	\$29,400
SUBTOTAL:					\$360,860
20% MARK UP:					\$72,172
TOTAL:					\$433,032

SOURCES

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Project Cost Estimate 2. CES Data Base 3. CACES Data Base 4. Means Estimating Manual | <ol style="list-style-type: none"> 5. Richardson's Estimating Manual 6. Vendor (Specify) 7. Other (Specify) |
|--|--|

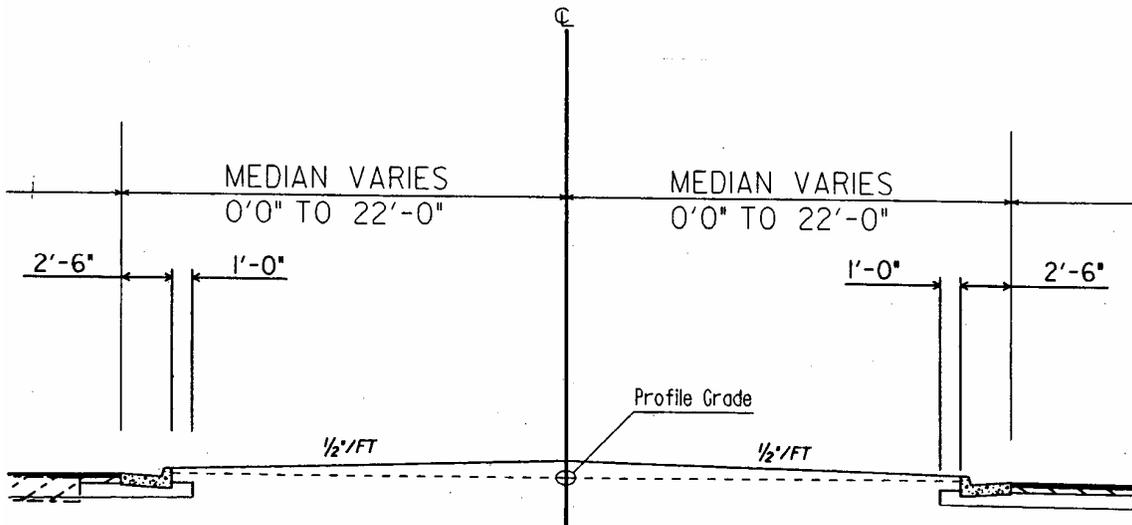
ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER: RW-9.0

PAGE NUMBER: 4 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA



TYPICAL #1
TYPICAL TANGENT SECTION
S.R. 142
STP-000S(14)

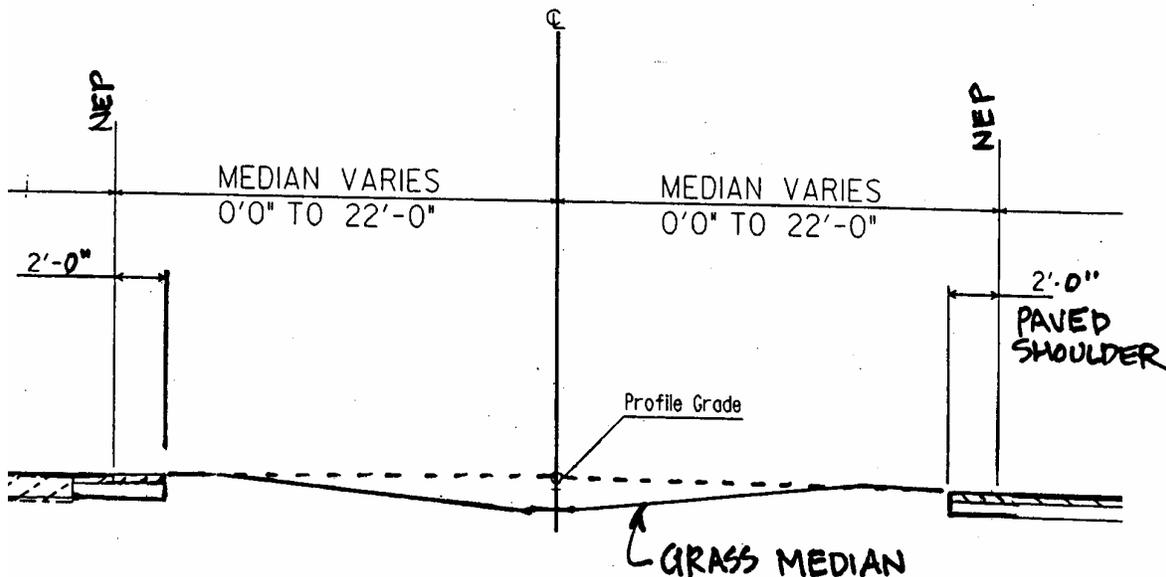
PROPOSED DESIGN SKETCH/DETAIL

PROPOSAL NUMBER: RW-9.0

PAGE NUMBER: 5 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA



TYPICAL #1
TYPICAL TANGENT SECTION
S.R. 142
STP-000S(14)

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:

RW-9.0

PAGE NUMBER:

6 of 6

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

Type 7 C&G (IM): 4 locations total of 8000LF
Type 7 C&G (STP): 7 locations total of 7600 LF

Concrete Median 4" (IM): 4 locations total of 4900 SY
Concrete Median 4" (STP): 4 locations total of 4800 SY

Asphalt Shoulder 7.5' = 825#/SY

2' Paved shoulder (IM): 8000 LF = 16000 SF = 1778 SY x 825 = 735T
2' Paved shoulder (STP): 7600 LF = 15200 SF = 1689 SY x 825 = 700T

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-9.2
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

- Potential Cost Savings by reducing ROW cost and Construction Cost: ± \$ 4 mil. (wag)
- Less Right-of-way impact
- Increased accessibility to adjacent businesses
- Easier to construct while maintaining traffic
- Usually a more popular option with landowners

DISADVANTAGES:

- Would require policy change to allow the TWLTL as base year & Design year ADT would both exceed the allowable volumes for a flush median roadway.
- Probable increase in vehicular and pedestrian accidents
- Motorists have difficulty making left turns where TWLTL converts to a left lane at signalized intersections.

JUSTIFICATION:

The major cost of the project is the Right-of-way cost. The TWLTL would significantly reduce right-of-way requirements and impact damages.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-10.0
PAGE NUMBER:	1 of 2

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA.</p>

<p>PROPOSAL DESCRIPTION: (IM) REDUCE STAGING COMPLEXITY OF RAMPS.</p>
--

<p>ORIGINAL DESIGN: The original design shows ramp profiles on the north ramps intersecting the SR 142 design profile about 14-16 ft above the existing roadway.</p>
<p>PROPOSED CHANGE: The proposed change recommends reducing the earthwork (borrow) by 50% in correlation with RW-1.0, which lowers SR 142 profile. This proposal supports RW-1.0 as the most significant way by which to improve the complexity of the ramp tie-ins.</p>

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Ramp tie-ins can be achieved under traffic.
SR 142 lane additions and reconstruction can be accomplished smoother due to continuity of operations resulting in a better finished product.
Requires less borrow.

DISADVANTAGES:

Contributes to a lower speed design on SR 142.

JUSTIFICATION:

Maintenance of traffic through the construction area is sufficient cause to re-evaluate grade differentials at ramp termini. As a stand alone proposal, this recommendation is worthwhile and certainly supports RW-1.0.

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (STP) REVISE PROFILE TO CLOSER MATCH EXISTING PAVEMENT BETWEEN STA 144+00 TO STA 170+00 ON SR142.

ORIGINAL DESIGN: The original design consists of setting a new profile grade for SR142 that causes portions of the existing pavement to be cut out and other portions to be replaced with new pavement in lieu of widening and resurfacing.

PROPOSED CHANGE: The proposed change recommendation would create a profile grade to eliminate all cuts and reduce all fill sections to better match the existing roadway pavement. This change would allow some of the existing roadway on SR142 to be widened and resurfaced.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$2,425,041		\$2,425,041
PROPOSED CHANGE:	\$2,161,169		\$2,161,169
SAVINGS:			\$ 263,872

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

Total life cycle cost savings of \$263,872.

Ease of construction, quicker to complete.
Easier to maintain access to adjacent property and drives.
Easier to maintain traffic during construction.

DISADVANTAGES:

Additional redesign cost.

JUSTIFICATION:

The proposed profile grade will still meet the minimum AASHTO requirements for a 45mph speed design.

COST ESTIMATING WORKSHEET

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

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
19mm Superpave	GDOT	Tons	8098	\$53.63/T	\$434,296
25mm Superpave	GDOT	Tons	13265	\$37.56/T	\$498,234
GAB	GDOT	Tons	26936	\$17.53/T	\$472,189
Borrow Incl Haul	GDOT	CY	114,953	\$4.50/CY	\$517,289
Unclassified Excavation	GDOT	CY	29,957	\$3.30/CY	\$98,859
SUBTOTAL:					\$2,020,867
20% MARK UP:					\$404,174
TOTAL:					\$2,425,041

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
19mm Superpave	GDOT	Tons	7335	\$53.63/T	\$393,376
25mm Superpave	GDOT	Tons	11739	\$37.56/T	\$440,917
GAB	GDOT	Tons	22221	\$17.53/T	\$389,534
Borrow Incl Haul	GDOT	CY	109953	\$4.50/CY	\$494,789
Unclassified Excavation	GDOT	CY	24957	\$3.30/CY	\$82,358
SUBTOTAL:					\$1,800,974
20% MARK UP:					\$360,195
TOTAL:					\$2,161,169

SOURCES

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

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	RW-12.0
-------------------------	---------

PAGE NUMBER:	4 of 4
---------------------	--------

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

Cost Reduction:

- 19 mm Superpave
- 25 mm Superpave
- 12 " Graded Aggregate Base
- Borrow Including Haul
- Unclassified Excavation

SR142 Pavement Costs; Sta 144+00 to Sta 170+00 (2600 LF)

24 feet x 2600 feet = 62,400 SF = 6933 SY

19 mm @ 220 #/SY = 763 Tons @ \$53.63/T = \$40,920

25 mm @ 440 #/SY = 1526 Tons @ \$37.56/T = \$57,317

12" GAB = 4715 Tons @ \$17.53/T = \$82,654

Borrow Including Haul = 5000 CY @ \$4.50/CY = \$22,500

Unclassified Excavation = 5000 CY @ \$3.30/CY = \$16,500

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-14.0
PAGE NUMBER:	1 of 4

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (BOTH) USE CURRENT GDOT POLICY REGARDING PLACEMENT OF GAB UNDER AND BEYOND CURB AND GUTTER.

ORIGINAL DESIGN: The current design has Graded Aggregate Base (GAB) extending 1'0" beyond Curb and Gutter.

PROPOSED CHANGE: The current GDOT policy extends GAB 0'6" beyond Curb and Gutter.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-14.0
PAGE NUMBER:	2 of 4

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:
Some cost savings (not calculated for this review).

DISADVANTAGES:

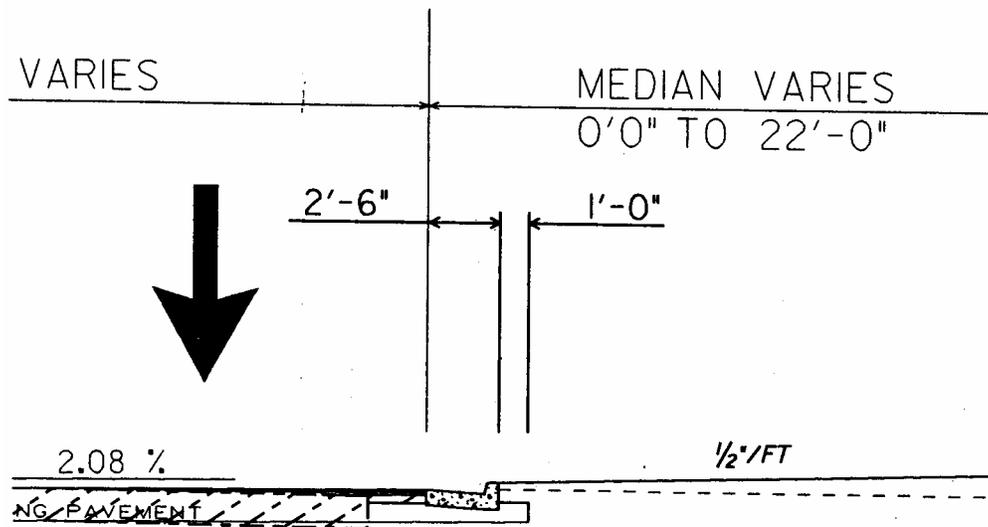
JUSTIFICATION:
The proposal would conform with current GDOT policy.

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	RW-14.0
PAGE NUMBER:	3 of 4

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA



PROPOSED DESIGN SKETCH/DETAIL

PROPOSAL NUMBER: RW-14.0

PAGE NUMBER: 4 of 4

PROJECT TITLE: WIDENING SR 142 FROM US 278 TO
HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

INTERDEPARTMENT CORRESPONDENCE

OFFICE Atlanta, Georgia

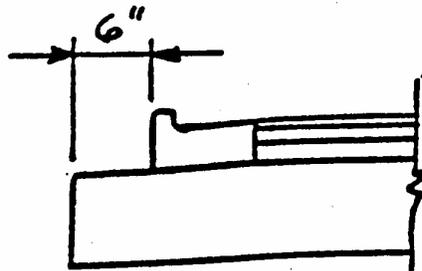
DATE January 22, 1993


Roland W. Hinners, P.E., State Road & Airport Design Engineer *OAK*

DISTRIBUTION BELOW

REVISED Guidelines for Typical Section

- c. The prepared base should extend 6" behind curb, not 1'0" as previously.



 USE THIS FOR
CURB & GUTTER
SECTIONS

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB – 1.0
PAGE NUMBER:	1 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

PROPOSAL DESCRIPTION: (IM) REDUCE SPAN FROM 4 TO 2.

ORIGINAL DESIGN: The original design is comprised of two 111'-6" main spans, one 37'-0" and one 46'-0" end spans with endrolls. The main spans go across a typical section that is comprised of 14'-0" SHLD, 60'-0" lanes & shoulders, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width.

PROPOSED CHANGE: The proposed design adopts the FHWA approved section which differs from the proposed design which is comprised of 12'-0" SHLD, 36'-0" for 3 lanes, 14'-0" SHLD, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width. Also, the endrolls and end spans are eliminated and parallel MSE walls utilized at the end bents with a 3'-0" ditch in front.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$2,500,284		\$2,500,284
PROPOSED CHANGE:	\$1,665,284		\$1,665,284
		SAVINGS:	\$ 834,405

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB – 1.0
PAGE NUMBER:	2 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Total life cycle cost savings of \$834,405.
Aesthetically beneficial.
Less Construction time.
Utilized on the Other RAMP Rehabilitation in the vicinity such as SR 11 & 12.
Meet FHWA/AASHTO/GDOT criteria.
Acceptable local technique.
Reduces span configuration.
Less Bridge component construction materials.

DISADVANTAGES:

More fill than structure construction.
No room for expansion with punch through of endrolls.

JUSTIFICATION:

Cost Savings and aesthetics and speed of construction are the drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB – 1.0
PAGE NUMBER:	3 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 4-Span	7-GDOT Mean Summary	SF	36,236	60	2,174,160
SUBTOTAL:					2,174,160
<u>15</u> % MARK UP:					326,124
TOTAL:					2,500,284

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 2 Span	7-GDOT Mean Summary	SF	24690	58.671	1,448,590
SUBTOTAL:					1,448,590
<u>15</u> % MARK UP:					217,289
TOTAL:					1,665.879

SOURCES

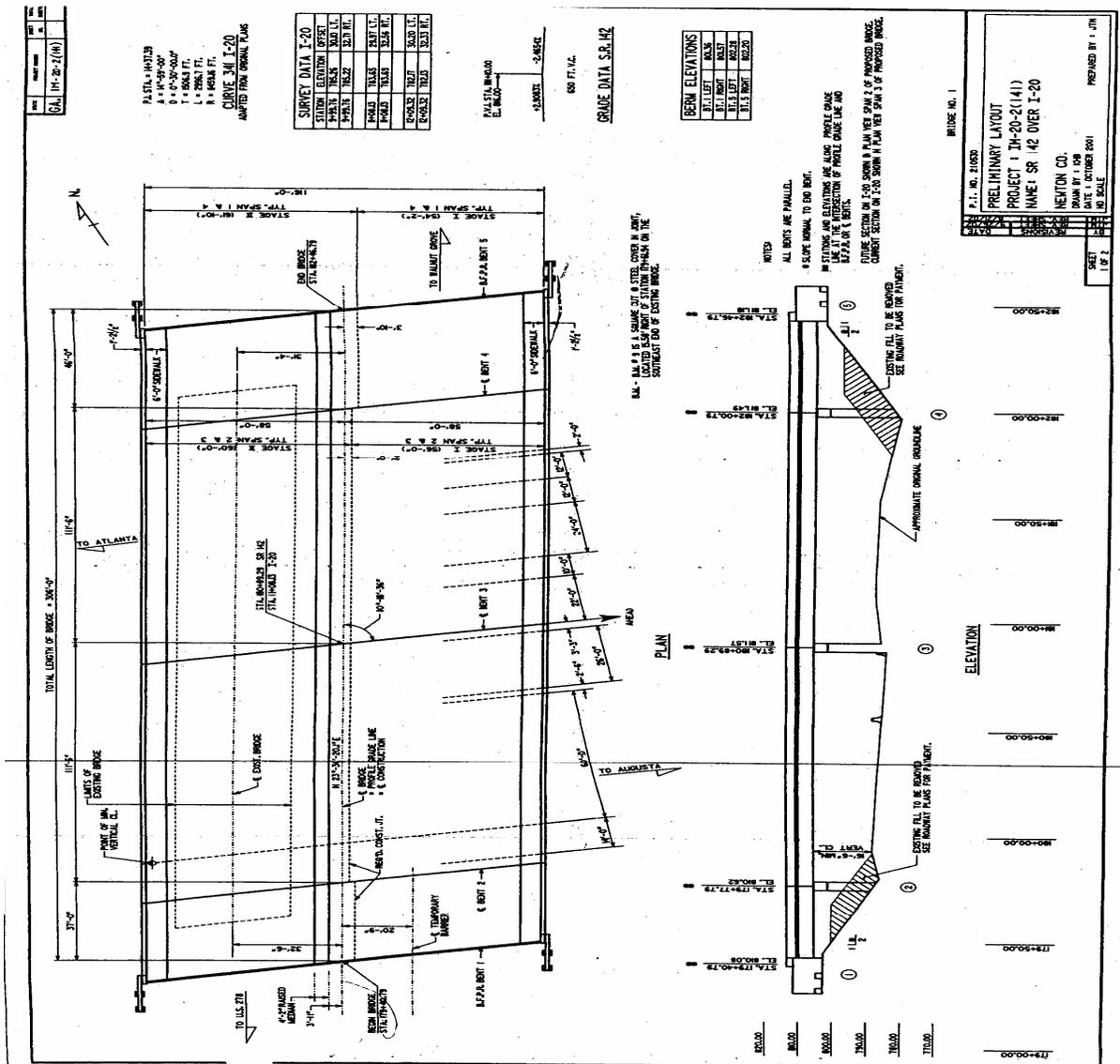
- | | |
|----------------------------|-----------------------------------|
| 1. Project Cost Estimate | 5. Richardson's Estimating Manual |
| 2. CES Data Base | 6. Vendor (Specify) |
| 3. CACES Data Base | 7. Other (Specify) |
| 4. Means Estimating Manual | |

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB - 1.0
PAGE NUMBER:	4 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GEORGIA

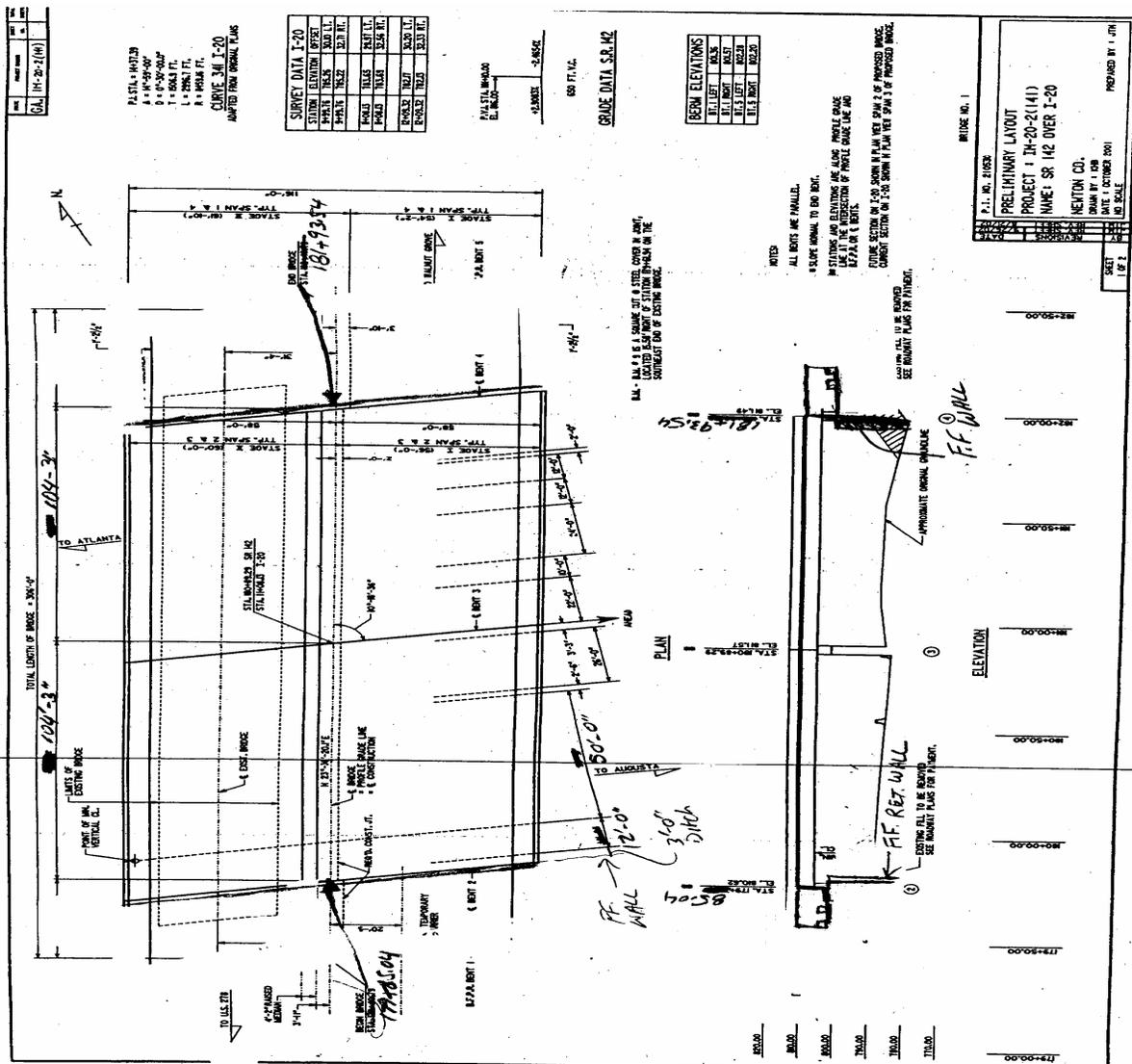


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB - 1.0
PAGE NUMBER:	5 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GEORGIA

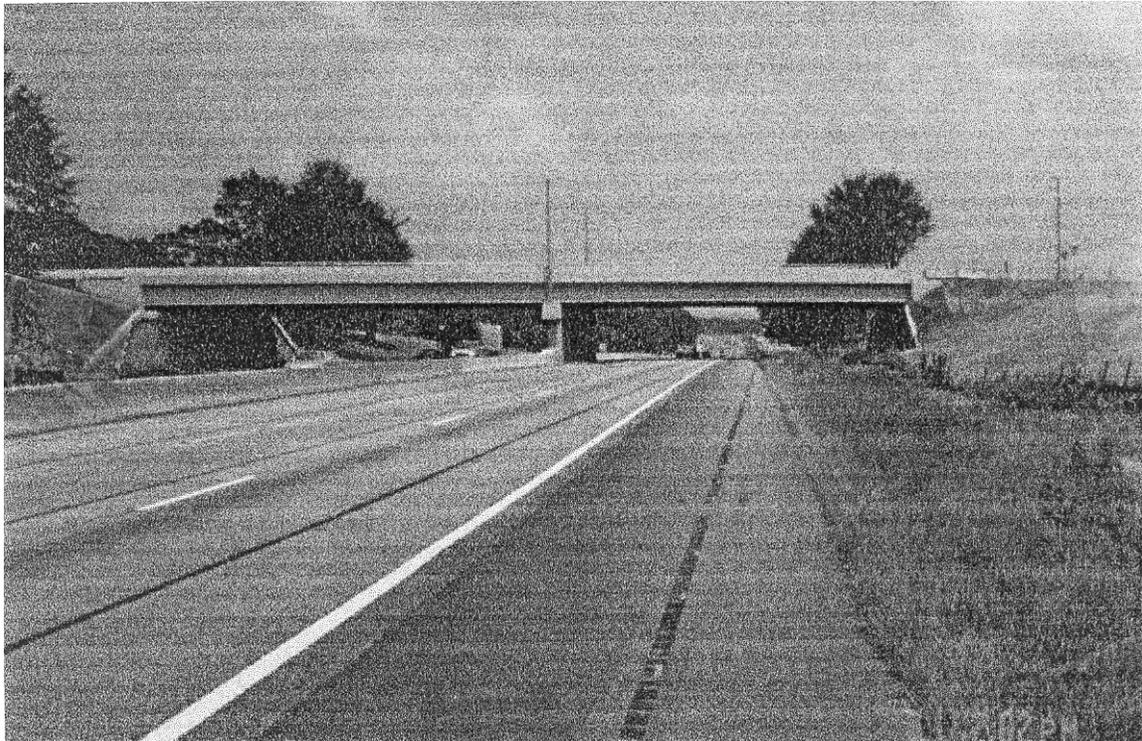


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	SB – 1.0
PAGE NUMBER:	6 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB – 1.0
PAGE NUMBER:	7 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

Width of Bridge= 118.4167'
Length of Bridge =306'-0"
Total SF of Bridge= 36,236 SF

Unit price per SF= \$60(See Preliminary Cost estimate-Urban Design 02/08/05)

Total Cost Of Left Bridge= $36,236 * 60 = \$2,174,160$

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER: SB – 1.0

PAGE NUMBER: 8 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

Length of Span=

SHLD =12'-0",

Lanes= 36'-0"

SHLD=14'-0"

Barrier= 2'-6"

HOV+SHLD=26'-0

barrier and half a column= 3'-3"

ditch= 3'-0" MSE Face to BFPR=6'-0"

Total=102.75 (Normal)

Length Of span along PGL= $102.75 / \sin(80.31) = 104.25'$

Total Length OF Bridge= $2 * 104.25 = 208.5'$

*See Cost estimate for additional information

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB - 1.0
PAGE NUMBER:	9 of 9

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GEORGIA

Cost Estimate

2 Span
54" BT

Project : SR 142 Over I-20
 Project Number : 0
 Made By : HHD Date : Mar-05
 Checked By : Date : -

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
3	500-1006	SUPERSTR CONCRETE, CL AA, BR NO-	656.0	CY	\$800.79	\$384,137
4	500-3101	CLASS A CONCRETE	216.0	CY	\$379.40	\$81,954
9	500-0100	GROOVED CONCRETE	3401.0	SY	\$4.71	\$16,019
11	500-2100	CONCRETE BARRIER	417.0	LF	\$33.63	\$14,024
12	511-3000	SUPERSTR REINF STEEL, BR NO-	174504.5	LB	\$0.54	\$94,232
13	511-1000	BAR REINF STEEL	47522.2	LB	\$0.50	\$23,761
18	507-9030	PSC BEAMS, AASHTO, BULB TEE, 54 in, BR NO -	3336.0	LF	\$104.52	\$348,679
8	522-1000	SHORING	3.0	EA	\$45,000.00	\$135,000
28	520-1147	PILING IN PLACE, STEEL H, HP 14X73	1200.0	LF	\$33.87	\$40,644
42	627-1020	MSE WALL FACE, 20 - 30 FT HT, WALL NO -	5000.0	SF	\$38.00	\$190,000
1	540-1101	REMOVAL OF EXISTING BR, STA NO -	1.0	LS	\$71,408.66	\$71,408
45	516-1100	ALUM HANDRAIL, STD 3626	834.0	LF	\$46.44	\$38,731

Bridge Sub Total = \$1,448,590

5% Mobilization	\$0
5% MOT	\$0
2% Contingency	\$0

Total Bridge Cost = \$1,448,590

Deck Area (sq ft) = BL (BW) = 24690
 Unit Cost (\$ / sq ft) = \$58.671

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB – 1.1
PAGE NUMBER:	1 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

PROPOSAL DESCRIPTION: (IM) REDUCE STRUCTURE DEPTH BY
USING STEEL BEAMS AND REDUCING
SPANS FROM 4 TO 2.

ORIGINAL DESIGN: The original design is comprised of two 111'-6" main spans, one 37'-0" and one 46'-0" end spans with endrolls. The main spans go across a typical section that is comprised of 14'-0" SHLD, 60'-0" lanes & shoulders, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width. Existing design utilizes BT 54" structure which translates into a 5.5' total structure depth.

PROPOSED CHANGE: The proposed design adopts the FHWA approved section which differs from the proposed design which is comprised of 12'-0" SHLD, 36'-0" for 3 lanes, 14'-0" SHLD, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width. Also, the endrolls and end spans are eliminated and parallel MSE walls utilized at the end bents with a 3'-0" ditch in front. The proposed design adopts a W36 beam w/cover plates or even Plate girders with a maximum depth of 36 in which translates into a 3.667' total structure depth.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
ORIGINAL DESIGN:	\$2,500,284		\$2,500,284
PROPOSED CHANGE:	\$2,081,722	-\$50,000	\$2,131,722
SAVINGS:			\$ 368,562

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB – 1.1
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Total life cycle cost savings of \$368,562.
Utilized on the Other RAMP Rehabilitation in the vicinity such as SR 11 & 12.
Meet FHWA/AASHTO/GDOT criteria.
Acceptable local technique.
Reduces span configuration.
Lowers Profile Grade.
Increases clearance.

DISADVANTAGES:

More fill than structure construction.
No room for expansion with punch through of endrolls.
More initial costs in relation to a concrete bridge.
More maintenance cost & painting.
More fabrication time and costs.

JUSTIFICATION:

Cost Savings and profile grade/borrow needed are the drivers for the justification

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB – 1.1
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 4-Span	7-GDOT Mean Summary	SF	36,236	60	2,174,160
SUBTOTAL:					2,174,160
_____ 15 % MARK UP:					326,124
TOTAL:					2,500,284

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 2 Span	7-GDOT Mean Summary	SF	24690	73.317	1,810,193
SUBTOTAL:					1,810,193
_____ 15 % MARK UP:					271,529
TOTAL:					2,081,722

SOURCES

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Project Cost Estimate 2. CES Data Base 3. CACES Data Base 4. Means Estimating Manual | <ol style="list-style-type: none"> 5. Richardson's Estimating Manual 6. Vendor (Specify) 7. Other (Specify) |
|--|--|

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB – 1.1
-------------------------	----------

PAGE NUMBER:	4 of 5
---------------------	--------

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

Width of Bridge= 118.4167'

Length of Bridge =306'-0"

Total SF of Bridge= 36,236 SF

Unit price per SF= \$60(See Preliminary Cost estimate-Urban Design 02/08/05)

Total Cost Of Left Bridge= 36,236 * 60= \$2,174,160

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER: SB – 1.1

PAGE NUMBER: 5 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

Length of Span=

SHLD =12'-0",

Lanes= 36'-0"

SHLD=14'-0"

Barrier= 2'-6"

HOV+SHLD=26'-0

barrier and half a column= 3'-3"

ditch= 3'-0" MSE Face to BFPR=6'-0"

Total=102.75 (Normal)

Length Of span along PGL= $102.75 / \sin(80.31) = 104.25'$

Total Length OF Bridge= $2 * 104.25 = 208.5'$

*See Cost estimate for additional information

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB – 1.2
PAGE NUMBER:	1 of 5

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA</p>
--

<p>PROPOSAL DESCRIPTION: (IM) REDUCE STRUCTURE DEPTH BY USING HPC TYPE III BEAMS AND REDUCING SPANS FROM 4 TO 2.</p>

<p>ORIGINAL DESIGN: The original design is comprised of two 111'-6" main spans, one 37'-0" and one 46'-0" end spans with endrolls. The main spans go across a typical section that is comprised of 14'-0" SHLD, 60'-0" lanes & shoulders, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width. Existing design utilizes BT 54" structure which translates into a 5.5' total structure depth.</p>
<p>PROPOSED CHANGE: The proposed design adopts the FHWA approved section which differs from the proposed design which is comprised of 12'-0" SHLD, 36'-0" for 3 lanes, 14'-0" SHLD, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width. Also, the endrolls and end spans are eliminated and parallel MSE walls utilized at the end bents with a 3'-0" ditch in front. The proposed design adopts a TYPE III HPC Beam with 10 KSI strengths which translates into a 4.5' total structure depth.</p>

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$2,500,284		\$2,500,284
PROPOSED CHANGE:	\$1,628,927		\$1,628,927
		SAVINGS:	\$ 871,357

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB – 1.2
PAGE NUMBER:	2 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Total life cycle cost savings of \$871,357.
Utilized on the Other GDOT Projects 14th Street.
Meet FHWA/AASHTO/GDOT criteria.
Acceptable local technique.
Reduces span configuration.
Lowers Profile Grade.
Increases clearance.

DISADVANTAGES:

More fill than structure construction.
No room for expansion with punch through of endrolls.
More fabrication time and costs.

JUSTIFICATION:

Cost Savings and profile grade/borrow reduction are the drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB – 1.2
PAGE NUMBER:	3 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 4-Span	7-GDOT Mean Summary	SF	36,236	60	2,174,160
SUBTOTAL:					2,174,160
_____ 15 % MARK UP:					326,124
TOTAL:					2,500,284

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 2 Span	7-GDOT Mean Summary	SF	24690	57.3697	1,416,458
SUBTOTAL:					1,416,458
_____ 15 % MARK UP:					212,469
TOTAL:					1,628,927

SOURCES

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Project Cost Estimate 2. CES Data Base 3. CACES Data Base 4. Means Estimating Manual | <ol style="list-style-type: none"> 5. Richardson's Estimating Manual 6. Vendor (Specify) 7. Other (Specify) |
|--|--|

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB – 1.2
-------------------------	----------

PAGE NUMBER:	4 of 5
---------------------	--------

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

Width of Bridge= 118.4167'

Length of Bridge =306'-0"

Total SF of Bridge= 36,236 SF

Unit price per SF= \$60(See Preliminary Cost estimate-Urban Design 02/08/05)

Total Cost Of Left Bridge= 36,236 * 60= \$2,174,160

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER: SB – 1.2

PAGE NUMBER: 5 of 5

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: Georgia DOT – NEWTON COUNTY, GEORGIA

Length of Span=

SHLD =12'-0",

Lanes= 36'-0"

SHLD=14'-0"

Barrier= 2'-6"

HOV+SHLD=26'-0

barrier and half a column= 3'-3"

ditch= 3'-0" MSE Face to BFPR=6'-0"

Total=102.75 (Normal)

Length Of span along PGL= $102.75'/\sin(80.31)=104.25'$

Total Length OF Bridge= $2*104.25=208.5'$

*See Cost estimate for additional information

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB – 2.0
PAGE NUMBER:	1 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

PROPOSAL DESCRIPTION: (IM) REDUCE INTERIOR SPANS BY 13'-0."

ORIGINAL DESIGN: The original proposed design is comprised of two 111'-6" main spans, one 37'-0" and one 46'-0" end spans with endrolls. The main spans go across a typical section that is comprised of 14'-0" SHLD, 60'-0" lanes & shoulders, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half a column width.

PROPOSED CHANGE: The proposed design adopts the FHWA approved section which differs from the proposed design which is comprised of 12'-0" SHLD, 36'-0" for 3 lanes, 14'-0" SHLD, 2'-6 barrier separation, 26'-0" HOV lane and shoulders, 3'-3" barrier and half an Interior column width.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	\$2,500,284		\$2,500,284
PROPOSED CHANGE:	\$2,287,833		\$2,287,833
SAVINGS:			\$ 212,451

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB – 2.0
PAGE NUMBER:	2 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Total life cycle cost savings of \$212,451.
Less Construction time.
Meet FHWA/AASHTO/GDOT criteria.
Acceptable local technique.
Reduces span configuration.
Less Bridge component construction materials.

DISADVANTAGES:

No room for additional expansion.

JUSTIFICATION:

Cost Savings and speed of construction are the drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB – 2.0
PAGE NUMBER:	3 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 4-Span	7-GDOT Mean Summary	SF	36,236	60	2,174,160
SUBTOTAL:					2,174,160
<u>15</u> % MARK UP:					326,124
TOTAL:					2,500,284

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge 2 Span	7-GDOT Mean Summary	SF	33,157	60	1,989,420
SUBTOTAL:					1,989,420
<u>15</u> % MARK UP:					298,413
TOTAL:					2,287,833

SOURCES

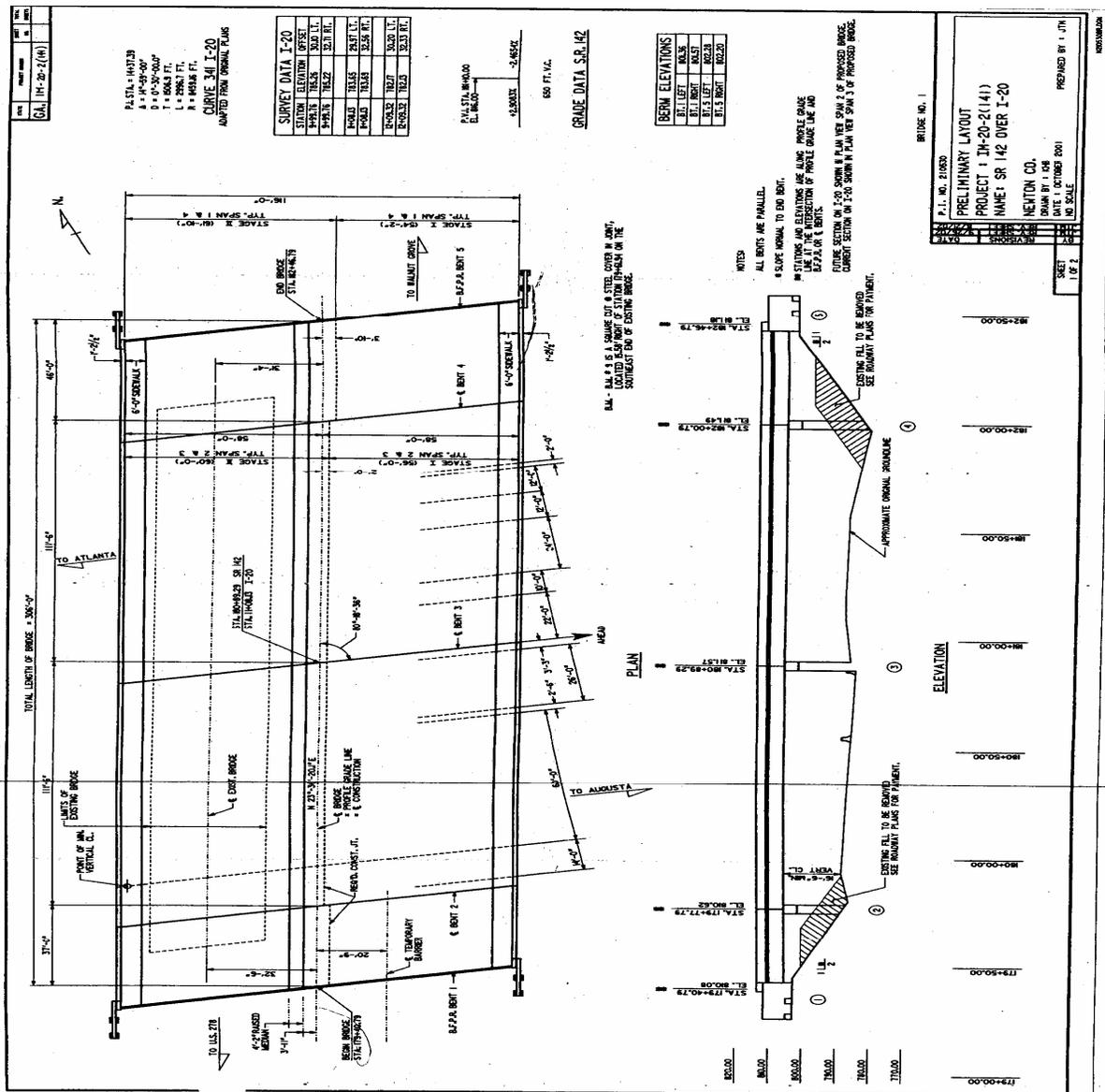
- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Project Cost Estimate 2. CES Data Base 3. CACES Data Base 4. Means Estimating Manual | <ol style="list-style-type: none"> 5. Richardson's Estimating Manual 6. Vendor (Specify) 7. Other (Specify) |
|--|--|

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	SB - 2.0
PAGE NUMBER:	4 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GEORGIA



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB – 2.0
-------------------------	----------

PAGE NUMBER:	6 of 8
---------------------	--------

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

Width of Bridge= 118.4167'

Length of Bridge =306'-0"

Total SF of Bridge= 36,236 SF

Unit price per SF= \$60(See Preliminary Cost estimate-Urban Design 02/08/05)

Total Cost Of Left Bridge= 36,236 * 60= \$2,174,160

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER: SB – 2.0

PAGE NUMBER: 7 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

Length of Span=

SHLD =12'-0",

Lanes= 36'-0"

SHLD=14'-0"

Barrier= 2'-6"

HOV+SHLD=26'-0

2-barrier and half a column= 3'-3"

Total=97.0' (Normal)

Length Of span along PGL= $97.0'/\sin(80.31)=98.5'$

Total Length OF Bridge= $2*98.5+37'+46'=280'$

*See Cost estimate for additional information

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB - 2.0
PAGE NUMBER:	8 of 8

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY,
GEORGIA

Cost Estimate

4 Span
Type III /54 BT

Project : SR 142 Over I-20
 Project Number : 0
 Made By : HHD Date : Mar-05
 Checked By : - Date : -

Tag	Pay Item	Description	Quantity	Unit	Unit Cost	Cost
3	500-1006	SUPERSTR CONCRETE, CL AA, BR NO-	881.1	CY	\$600.79	\$529,332
4	500-3101	CLASS A CONCRETE	539.9	CY	\$379.40	\$204,844
9	500-0100	GROOVED CONCRETE	4306.7	SY	\$4.71	\$20,284
11	500-2100	CONCRETE BARRIER	580.0	LF	\$33.63	\$18,833
12	511-3000	SUPERSTR REINF STEEL, BR NO-	234362.0	LB	\$0.54	\$126,555
13	511-1000	BAR REINF STEEL	118781.4	LB	\$0.50	\$59,391
18	507-9030	PSC BEAMS, AASHTO, BULB TEE, 54 in, BR NO -	4480.0	LF	\$104.52	\$468,250
8	522-1000	SHORING	3.0	EA	\$45,000.00	\$135,000
28	520-1147	PILING IN PLACE, STEEL H, HP 14X73	2000.0	LF	\$33.87	\$67,740
42	627-1020	MSE WALL FACE, 20 - 30 FT HT, WALL NO -	5000.0	SF	\$38.00	\$190,000
1	540-1101	REMOVAL OF EXISTING BR, STA NO -	1.0	LS	\$71,408.66	\$71,409
45	516-1100	ALUM HANDRAIL, STD 3626	1120.0	LF	\$46.44	\$52,013

Bridge Sub Total = \$1,943,680

5% Mobilization	\$0
5% MOT	\$0
2% Contingency	\$0

Total Bridge Cost = \$1,943,680

Deck Area (sq ft) = BL (BW) = 33157
 Unit Cost (\$ / sq ft) = \$58.6202

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB – 5.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

PROPOSAL DESCRIPTION: (IM) INCLUDE RAIL ROAD BRIDGE IN
CONTRACT.

ORIGINAL DESIGN: The original design excludes the Railroad bridge contract past Hazelbrand Road where SR 142 project ties in. The difference in grade is approximately 5' ±.

PROPOSED CHANGE: The proposed design suggests the inclusion of the railroad bridge contract and tie-ins as well as coordinating construction to minimize disruption to traffic grade mitigation.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB - 50
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Improves overall traffic with one contract duration versus two separate ones.
Less Construction time.
Utilized on the other projects.
Meet FHWA/AASHTO/GDOT criteria.
Acceptable local technique.
One letting process.

DISADVANTAGES:

More construction costs in one contract.
More equipment and labor.

JUSTIFICATION:

The grade tie-in mitigation and minimization of disruption of traffic are the drivers for the justification.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CO -1.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDEINGING SR 142 FROM US 218 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (BOTH) UTILIZE TEMPORARY BARRIERS TO REDUCE ENCROACHMENT OF STAGING FILLS ONTO EXISTING PAVEMENTS AND REDUCE THE AMOUNT OF TEMPORARY PAVING.

ORIGINAL DESIGN: The original design staging cross sections do not indicate the use of temporary barriers to retain temporary fills.

PROPOSED CHANGE: The proposed recommended change is to include temporary barriers as a pay item to the contractor.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CO-1.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDEINGING SR 142 FROM US 218 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

ADVANTAGES:

- Leaves some area between travel path & toe of fill for drainage.
- Provides at least some amount of clear zone during construction.
- Provides refuge for construction workers and equipment.

DISADVANTAGES:

- Can inhibit cornering sight distance.
- Requires maintenance during construction.
- Must be placed and removed under traffic conditions.
- Sometimes difficult to achieve design compactions when fills are to be left in place.

JUSTIFICATION:

- Maximum capacity of existing roadways need to be retained during construction.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CO – 2.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: WIDEINGING SR 142 FROM US 218 TO HAZELBRAND RD.

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GA

PROPOSAL DESCRIPTION: (IM) COORDINATE I-20 INTERCHANGE (IM-20-2) PROJECT WITH ALCOVY ROAD (NH-20-2 {167}) PROJECT.

ORIGINAL DESIGN: The current programmed let date of June 2006 for I-20 Interchange (IM-20-2) project coincides with Alcovy Road Interchange project (NH-20-2) which is approximately one (1) mile West of this project.

PROPOSED CHANGE: The proposed recommended change is to coordinate projects so that when ramp closures are necessary on one project , traffic can be diverted to the other interchange with proper signage and minimal disruption to commuters.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CO – 2.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDEINGING SR 142 FROM US 218 TO HAZELBRAND RD.
PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GA

ADVANTAGES:

- Developed areas near I-20 are reasonably served by either interchange and surface streets with little inconvenience on a temporary or short term basis.
- Contractor can complete final stage work and restore traffic sooner.
- Work will not be segmented, therefore better results can be achieved.

DISADVANTAGES:

- Requires additional signage and advertisement to convey message to traveling traffic.
- Disruption of established commuter habits and routes

JUSTIFICATION:

The ability to close ramps and divert traffic will reduce overall construction time and the net time traffic is disrupted or displaced.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CO – 3.0
PAGE NUMBER:	1 of 2

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA</p>
--

<p>PROPOSAL DESCRIPTION: (IM) INVESTIGATE CLOSING I-20 RAMPS DURING CONSTRUCTION.</p>
--

<p>ORIGINAL DESIGN: The original design provides for reconstruction of the I-20 bridge and interchange along with a section of SR 142 under traffic.</p>
<p>PROPOSED CHANGE: The proposed change recommends the consideration of an option that allows long term closure of the ramps with detours signed to shorten total construction time.</p>

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Shorten construction time.

DISADVANTAGES:

Would require delay of Alcovy Road/I-20 interchange project.
Would probably require a public hearing.
Disruption to commuter patterns.
Increased travel times.
Potential congestion & delay increased on detour routes.
Would require intermediate completion date in contract.

JUSTIFICATION:

The IM project construction time could be significantly shortened and traffic restored uninterrupted much earlier.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CO – 4.0
PAGE NUMBER:	1 of 2

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA</p>
--

<p>PROPOSAL DESCRIPTION: (BOTH) CONSIDER INCENTIVES TO SHORTEN THE ANTICIPATED CONSTRUCTION SCHEDULE OF 18-24 MONTHS.</p>
--

<p>ORIGINAL DESIGN:</p>	<p>The original design does not mention the inclusion of contractor incentives in the contract.</p>
<p>PROPOSED CHANGE:</p>	<p>The proposed change recommends the consideration of contractor incentives to shorten construction time.</p>

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CO-4.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Reduce inconvenience to commuters in terms of length or disruption.
Reduces work zone exposure time.

DISADVANTAGES:

Initial project cost would probably increase.
Require the waiver of restricted working hours.
Contract documents would need to be very expressive.

JUSTIFICATION:

Total motorist delay and inconvenience would be reduced with reduced construction time.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CO – 5.0
PAGE NUMBER:	1 of 3

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA</p>
--

<p>PROPOSAL DESCRIPTION: (IM) COMBINE I-20/ ALCOVY ROAD INTERCHANGE AND I-20/SR 142 INTO ONE PROJECT FOR LETTING.</p>
--

<p>ORIGINAL DESIGN: The original design stipulates the reconstruction of SR 142 as an STP project and the I-20/SR 142 interchange as an IM project. The I-20/Alcovy road interchange is scheduled for the same fiscal years.</p>
<p>PROPOSED CHANGE: The proposed change recommends the construction of both I-20/Alcovy road and I-20/SR 142 interchange as one project.</p>

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA

ADVANTAGES:

Allows work on I-20 to occur in one construction zone.

Mainline I-20 work is already required at Alcovy road=> proposed mainline I-20 work at SR 142 would be of the same nature.

Project supervision could be provided by common personnel out of a common office.

DISADVANTAGES:

Could increase total time if not pursued concurrently.

Would require more contractor resource commitment and could result in fewer bidders=> higher prices.

Engineering and Right-of-way acquisition would need to be completed concurrently.

JUSTIFICATION:

A common contract and contractor could coordinate construction sequences between the two interchanges to optimally handle traffic for the entire area.

PROPOSED CHANGE CALCULATIONS

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT - NEWTON COUNTY, GEORGIA

PROJ ID	COUNTY	DESCRIPTION	SCHED LET DATE	MGMT. DIR. LET DATE
210810-	Newton	I-20 FM ALCOVY ROAD INCL INTERCHANGE TO SR 142 IN COVINGTON	Dec-06	Jun-06
NH-20-2(167)		FIELD DIST: 2		
TIP #: NE-AR-002A		TWIN: US: I-20		
MPO: Atlanta TMA		EST DATE: 3/11/04		
		Phase	Approved	Proposed
		PE	1999	1999
		ROW	2005	2005
		CST	2006	2006
			1,625,000.00	6,129,000.00
			24,583,000.00	GRVA
			Q05	AUTHORIZED
			Q05	PRECST
			GRVA	PRECST

PROJ MGR: Wheeler, Joe **PROJ LENGTH:** 2.73
PROG TYPE: Reconstruction/Rehabilitation **TYPE WORK:** Widening

CONCEPT: ADD 6U(CMB) **LET RESP:** DOT

SCHED START	SCHED FINISH	ACTIVITY	ACTUAL START	ACT/EST FINISH	PCT	DISTRICT COMMENTS
		Define Project Concept	1/1/99	9/20/99	100	R/W Revisions (Renee Decker) 6/27/00
		Concept Meeting	10/27/99	10/27/99	100	Concept appr; incl replacing Alcovy Rd
		Concept Submittal and Review	3/22/00	3/22/00	100	brdg & widening Alcovy Rd to 4 lns/20'
		Receive Preconstruction Concept Approval	3/23/00	3/23/00	100	med c, g, bike, & s.w.: widen csx railroad
		Management Concept Approval Complete	4/13/00	6/27/00	100	brdgs 2/6/02 15 parcels on Alcovy Rd,
		Revise or Re-validate Approved Concept	12/15/03	3/11/04	100	none on I-20 6/3/03 Util est:
		Value Engineering Study	1/8/04	6/24/04	100	pvt=\$415,030; pub=\$523,927 12/3/03
5/9/05	5/9/05	Public Information Open House Held			0	FHWA wants to ext access on Alcovy Rd
		Environmental Approval	7/1/00	7/3/02	100	which would reloc truck stop 1/9/04
		Public Hearing Held	7/3/02	7/3/02	100	Pre-Acq work by (C) 3/11/04 Rev concept
		Field Surveys/SDE	3/22/04	4/18/04	100	apprvd; nurl shldr on westside of Alcovy Rd;
		Preliminary Plans	1/2/02	4/18/04	95	urb on eastside; Util=\$511,500 5/4/04
		Preliminary Bridge Design	11/6/02	1/6/03	100	Sponsor:Dist; needed proj 6/21/04
4/18/05	5/23/05	Underground Storage Tanks			0	Governor's "Fast Forward" prog
		PFPR Inspection	5/1/03	5/1/03	100	
		R/W Plans Preparation	6/12/03	4/14/04	100	
		R/W Plans Final Approval	11/6/03	2/4/04	100	
		L & D Report Development and Approval	7/11/03	7/15/03	100	
4/18/05	10/26/06	R/W Acquisition			13	
		Stake R/W	9/20/04	10/14/04	100	
4/18/05	5/30/05	Soil Survey			0	
		Bridge Foundation Investigation	4/30/03	3/18/05	100	
4/18/05	11/18/05	Final Design	6/12/03		26	
4/26/05	6/20/05	Final Bridge Plans Preparation			0	
12/12/05	12/13/05	FFPR Inspection			0	
12/27/05	1/9/06	FFPR Response			0	

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

PDD: FF>>
Bridge: SWW 11/12/03 CONSUL-B&A
Design: QK4 - Working on final plans
EIS: WIGGINS - CE 7-3-02 ; 2/21/05 Reeval. by E/P underway
LGPA: NEWTON SGN DO UTL 10-21-99/CITY RENEG DO PUB UTL 10-21-02.
Programming: PR2/P=1-27-99#1 1-02
ROW: Pre-Acq Cons: Pat Fitch; Cons Coor: Rhonda Barnett
Traffic Op: RJC:REVWD PFPR PLANS/CMNTS TO SCOTT 3-25-03 \$+*!!
Utility: (JL) Need 2nd Sub - SUE Level B compl 02/14/03 - Acc. Loc.

R/W INFORMATION:
Prel Parcel Cnt: 15 **TOTAL PARCEL CT:** 22 **ACQUIRED BY:** DOT **ACQ MGR:** Peterson, Lee (Acq Cons)
UNDER-REVIEW CT: 0 **RELEASED CT:** 0 **OPT-PEND CT:** 0 **DEEDS CT:** 0 **COND-PEND CT:** 0 **COND-FILED CT:** 0
RW CERT DT: **ACQUIRED CT:** 0 **RELOCATION CT:** 0

VALUE ENGINEERING PROPOSAL

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

<p>PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO NORTH OF HAZELBRAND ROAD</p> <p>PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY, GEORGIA</p>
--

<p>PROPOSAL DESCRIPTION: (IM) PROVIDE HIGH MAST SIGNAGE ON I-20 TO REPLACE EXISTING SIGNS MOUNTED ON SR 142 BRIDGE.</p>
--

<p>ORIGINAL DESIGN:</p>	<p>The original signing plans do not address signing changes that will be required on I-20.</p>
<p>PROPOSED CHANGE:</p>	<p>The proposed change recommends providing advanced overhead signage on I-20 for the interchange.</p>

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: WIDENING OF SR 142 FROM SR 278 TO
NORTH OF HAZELBRAND ROAD

PROJECT LOCATION: GEORGIA DOT – NEWTON COUNTY,
GEORGIA

ADVANTAGES:

Requires additional work along I-20 corridor.
Improves traffic flow along I-20 and on project.

DISADVANTAGES:

Additional cost of \$75000±.

JUSTIFICATION:

Upgrading approach signing should routinely be included in a project.

VE STUDY SIGN-IN SHEET

Project Nos.: STP-0005(14) & IM-20-2(141) County: Newton PI Nos.: 231220 & 210530 Date: March 29, 30, 31, 2005

NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
Lisa L. Myers	00244168	Engineering Services	404-651-7468	lisa.myers@dot.state.ga.us
JERRY BROOKS		MORELAND ALTOBELLI	770 263 5945	jbrooks@maai.net
LINDSEY GARDNER		L.S. COST INC	7574963055	LGARDNER@USCOST.COM
Laland Owens		Moreland Altabelli	706-845-4316	Moreland Altabelli
Sam Jones		Moreland Altabelli	7-263-5925	Saljeeb@maai.net
Altabelli		GDOT - DEZ	4-699-4415	kim.cennel@dal.state...
Jerry Milligan		GDOT R/W	7-916 1541	
THOMAS FAMBRO	00276727	GDOT - TRAF. SAFETY DESIG	4-635-8159	THOMAS.FAMBRO@DOT.STATE.GA.US
Neal O'Brien		GDOT-URBAN	404-654-5442	neal.obrien@DOT.STATE.GA.US
Tommy Eadie	00356960	" "	"	anthony.eadie@dot....
Rusty Merritt		GDOT - TENNILE	478-552-4603	Russell.Merritt@dot....
JAMES H. SMITH	00280956	GDOT - TENNILE	478-553-2331	SMITH.JAMES@dot....
BRYAN K. GIBBS	00293107	GDOT - DZ MADISON	706-343-5836	Gibbs.Bryan@dot....

VALUE ENGINEERING TEAM STUDY

COST MODEL/DISTRIBUTION		
WIDENING SR 142 (I-20 Bridge)		
NEWTON COUNTY, GEORGIA		
IM-20-2(141)		
	COST \$	% OF TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$19,000,000	69.65%
EARTHWORK	\$2,807,000	10.29%
MAJOR STRUCTURES	\$2,234,000	8.19%
BASE AND PAVING	\$1,100,000	4.03%
ENGINEERING & CONTINGENCIES (10%)	\$752,745	2.76%
INFLATION FOR 1 YEARS (5% PER YEAR)	\$358,450	1.31%
CONCRETE WORK	\$264,000	0.97%
DRAINAGE	\$259,000	0.95%
SIGNS, STRIPS, SIGNALS & LIGHTS	\$159,000	0.58%
TRAFFICE CONTROL	\$100,000	0.37%
CLEARING AND GRUBBING	\$98,000	0.36%
EROSION CONTROL TEMPORARY	\$86,000	0.32%
GUARDRAIL	\$29,000	0.11%
GRASSING AND LANDSCAPING	\$29,000	0.11%
MISCELLANEOUS	\$4,000	0.01%
EROSION CONTROL PERMANENT	\$0	0.00%
TOTALS (\$)	\$27,280,195	100.00%

VALUE ENGINEERING TEAM STUDY

COST MODEL/DISTRIBUTION		
WIDENING SR 142 (I - 20 Bridge)		
NEWTON COUNTY, GEORGIA		
IM-20-2(141)		
	COST \$	% OF TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$0	0.00%
EARTHWORK	\$2,807,000	33.90%
MAJOR STRUCTURES	\$2,234,000	26.98%
BASE AND PAVING	\$1,100,000	13.28%
ENGINEERING & CONTINGENCIES (10%)	\$752,745	9.09%
INFLATION FOR 1 YEARS (5% PER YEAR)	\$358,450	4.33%
CONCRETE WORK	\$264,000	3.19%
DRAINAGE	\$259,000	3.13%
SIGNS, STRIPS, SIGNALS & LIGHTS	\$159,000	1.92%
TRAFFICE CONTROL	\$100,000	1.21%
CLEARING AND GRUBBING	\$98,000	1.18%
EROSION CONTROL TEMPORARY	\$86,000	1.04%
GUARDRAIL	\$29,000	0.35%
GRASSING AND LANDSCAPING	\$29,000	0.35%
MISCELLANEOUS	\$4,000	0.05%
MARKET CONDITIONS - CONCRETE STEEL, PETROLEUM	\$0	0.00%
TOTALS (\$)	\$8,280,195	100.00%

VALUE ENGINEERING TEAM STUDY

COST MODEL/DISTRIBUTION		
WIDENING SR 142		
NEWTON COUNTY, GEORGIA		
STP-000S		
	COST \$	% OF TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$2,670,975	29.17%
BASE AND PAVING	\$1,823,852	19.92%
INFLATION FOR 4 YEARS (5% PER YEAR)	\$1,045,421	11.42%
DRAINAGE	\$905,601	9.89%
EARTHWORK	\$616,148	6.73%
ENGINEERING & CONTINGENCIES (10%)	\$589,642	6.44%
CONCRETE WORK	\$506,289	5.53%
SIGNS, STRIPS, SIGNALS & LIGHTS	\$262,800	2.87%
EROSION CONTROL TEMPORARY	\$240,000	2.62%
CLEARING AND GRUBBING	\$162,949	1.78%
TRAFFICE CONTROL	\$100,000	1.09%
GRASSING AND LANDSCAPING	\$79,200	0.86%
MAJOR STRUCTURES	\$77,622	0.85%
MISCELLANEOUS	\$56,000	0.61%
GUARDRAIL	\$16,029	0.18%
EROSION CONTROL PERMANENT	\$0	0.00%
TOTALS (\$)	\$9,152,528	100.00%

VALUE ENGINEERING TEAM STUDY

COST MODEL/DISTRIBUTION		
WIDENING SR 142		
NEWTON COUNTY, GEORGIA		
STP-000S		
	COST \$	% OF TOTAL
RIGHT OF WAY - ESTIMATED WAG	\$0	0.00%
BASE AND PAVING	\$1,823,852	28.14%
INFLATION FOR 4 YEARS (5% PER YEAR)	\$1,045,421	16.13%
DRAINAGE	\$905,601	13.97%
EARTHWORK	\$616,148	9.51%
ENGINEERING & CONTINGENCIES (10%)	\$589,642	9.10%
CONCRETE WORK	\$506,289	7.81%
SIGNS, STRIPS, SIGNALS & LIGHTS	\$262,800	4.05%
EROSION CONTROL TEMPORARY	\$240,000	3.70%
CLEARING AND GRUBBING	\$162,949	2.51%
TRAFFICE CONTROL	\$100,000	1.54%
GRASSING AND LANDSCAPING	\$79,200	1.22%
MAJOR STRUCTURES	\$77,622	1.20%
MISCELLANEOUS	\$56,000	0.86%
GUARDRAIL	\$16,029	0.25%
EROSION CONTROL PERMANENT	\$0	0.00%
TOTALS (\$)	\$6,481,553	100.00%

VALUE ENGINEERING TEAM STUDY

FUNCTION ANALYSIS

The following functions for Widening SR 142 to Four Lanes and new four lane SR 142 Bridge and Interchange Replacement project were identified during discussions with the Georgia DOT design representatives 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 Widening SR 142 to Four Lanes and I-20 Interchange and SR 142 Bridge Replacement project, and assist the V.E. team in becoming familiar with the needs of both projects and the long-term goals for these improvements of Widen SR 142 to Four Lanes and new four lane SR 142 Bridge Replacement over I-20 and I-20 Interchange Improvements. The Basic Function of the project is to “Improve Safety”. The following are considered by the V.E. team to be Secondary and Supporting Functions.

<i>Verb</i>	<i>Noun</i>	<i>Verb</i>	<i>Noun</i>
Construct	Bridge	Reduce	Congestion
Reduce	Cost	Bridge	Interstate
Add	Lanes	Construct	Bridges
Re-Construct	Intersections	Identify	Centerline
Adjust	Grades	Identify	Edge
Serve	Communities	Reuse	Materials
Serve	Public	Package	Contracts
Protect	Commuters	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

VALUE ENGINEERING TEAM STUDY

FUNCTION ANALYSIS

<i>Verb</i>	<i>Noun</i>	<i>Verb</i>	<i>Noun</i>
Improve	Flow	Expedite	Intersection
Increase	Capacity	Reduce	Risks
Add	Lanes	Accommodate	Breakdowns
Decrease	Speeds	Protect	Species
Reduce	Delays	Import	Fill
Straighten	Alignment	Segregate	Materials
Improve	Line-of-Sight	Store	Materials
Improve	Visibility	Access	Materials
Enhance	Visibility	Access	Storage
Straighten	Road	Remove	Soils
Reduce	Interruptions	Communicate	Changes
Reduce	Delays	Relocate	Soils
Identify	Passing	Demolish	Bridge
Accommodate	Passing	Demolish	Ramps
Minimize	Intersections	Contain	Flow
Improve	Intersections	Control	Flow
Reduce	Accidents	Stage	Materials
Improve	Safety	Improve	By-Pass
Separate	Lanes	Reduce	Congestion
Provide	Detours	Satisfy	Codes
Install	Medians	Meet	Schedules
Enhance	Definition	Accommodate	Re-alignment
Assure	Safety	Improve	Functions
Accommodate	Hauling	Satisfy	County
Expedite	Hauling	Utilize	Guidelines
Minimize	Hauling	Construct	Bridge
Control	Traffic	Support	County
Control	Erison	Support	Tourism
Phase	Construction	Access	Businesses
Utilize	Resources	Relocate	Utilities
Maximize	Utilization	Improve	Weaving
Protect	Landmarks	Help	Commuters
Guide	Traffic	Satisfy	Public
Transmit	Information	Satisfy	Commuters
Manage	Traffic	Support	Weight

VALUE ENGINEERING TEAM STUDY

COST DRIVER ANALYSIS

The V.E. team reviewed the project cost elements and identified the controlling element or cost driver for Widen SR 142 to Four Lanes (STP-000S) and construction of a new four lane SR 142 Bridge and Interchange Improvements (IM-20-2). The cost drivers are used in the brainstorming process as a focal point of discussion and for idea generation.

<u><i>Element</i></u>	<u><i>Function</i></u>	<u><i>Cost Driver</i></u>
Excavation	Improve Interchange Relieve Congestion Adjust Grade Improve Alignment Improve Drainage	Borrow Distance Demolition/Removal Shoulder Width Road Length & Width
Road Section	Support Weight Maintain Surface Support Vehicles Distribute Load Install Medians Widen Road Detour Traffic Demolish Road	Base Course Materials Source of Materials Wearing Surface Drainage System Road Length & Width Median Width Shoulder Width
Bridge	Bridge Interstate Improve Safety Support Weight Support Vehicles Widen Bridge Replace Bridge	Bridge Heights Foundation Protection Materials Used Structural Design Depth of Beams Lengths of Bridge Number of Spans
Traffic Management	Insure Safety Reduce Risk Maintain Passage Avoid Delays Assist Commuters Assist Tourist	Methods of Control Frequency of Control Duration of Control Installation of barriers

BRAINSTORMING OR SPECULATION

PROJECT TITLE: WIDEN SR 142 TO FOUR LANES (STP-000S)
 REPLACE SR 142 BRIDGE OVE I-20
 PROJECT LOCATION: NEWTON COUNTY, GEORGIA

NUMBER	IDEA	RANK
ROADWAY (RW)		
1.0	(IM) Reduce new profile closer to the existing profile between Sta. 186+00 to Sta. 205+00 on SR 142	5/5
2.0	(IM) Lower I-20 under new bridge and install two new eastbound I-20 lanes and abandon the existing two east bound lanes until a new project can lower them to a correct elevation	3/3
3.0	(IM) Consider roller compacted concrete for temporary ramp installation. This can serve as base course under new final pavement. Currently being used on I 285	DS
4.0	Reduce ROW procurement since it is a Urban Section	DS
5.0	(IM & STP) Evaluate deleting the bike lane requirement since it is not on the State of Georgia bike map	Drop
6.0	(IM) Construct new ramps in CIP concrete ilo asphalt as currently shown	DS
7.0	(STP) Validate there is no requirement for detention or retention basins	DS
8.0	(IM) Validate with SKC that a new 8% grade on Hazelbrand Road is acceptable (currently grade is 5%)	DS
9.0	(STP) Eliminate curb and gutter in median	2/4
9.1	(STP) Consider/evaluate depressed grass median ilo raised concrete median	Drop
9.2	(STP) Consider a complete paved five-lane section with center lane for left and right hand turns. (Reduces the width of the section)	2/5
10.0	(IM) Reduce/revisit the staging complexity of the construction of new I-20 ramps to SR 142	DS
11.0	(STP) Revisit roadway egress on and off SR 142 to commercial businesses (alignment in existing location)	Drop
12.0	(STP) Match existing grade at Wheat Street when widening SR –142 Between Sta. 144+00 to Sta. 179+00	5/3
13.0	(STP) Reuse existing two lane roadway ilo demolishing and rebuilding.	Drop
14.0	Use current GDOT policy regarding placement of Graded Aggregate Base (GRB) under and beyond curb and gutter sections	DS

BRAINSTORMING OR SPECULATION

PROJECT TITLE: WIDEN SR 142 TO FOUR LANES (STP-000S)
 REPLACE SR 142 BRIDGE OVE I-20
 PROJECT LOCATION: NEWTON COUNTY, GEORGIA

NUMBER	IDEA	RANK
--------	------	------

STRUCTURAL/BRIDGES (SB)

- | | | |
|-----|---|------|
| 1.0 | (IM) Reduce the width of the new bridge by 2'-0" | Drop |
| 2.0 | (IM) Reduce the number of spans from four (4) spans to two (2) spans and install MSE walls | 5/5 |
| 3.0 | (IM) Reduce the length of spans by 10'-0" | 4/3 |
| 4.0 | (IM) Substitute steel beams and reduce structural depth ilo 54" bulb tee (BT 54H) | 4/4 |
| 5.0 | (IM) Eliminate bike lanes on new bridge and reduce width by 8'-0" | Drop |
| 6.0 | (IM) Use High Performance Concrete (10,000 psi HPC) ilo 8000 psi HPC concrete (reduces beam depth and # of spans) | 4/5 |
| 7.0 | (IM) Include the railroad bridge North of Hazelbrand Road as park of this project. | DS |

CONSTRUCTIBILITY/OTHER (CO)

- | | | |
|-----|---|----------------|
| 1.0 | (IM) Clarify/revisit staging and construction conflicts of new I-20 ramps and widening of SR 142 | DS |
| 2.0 | (IM) Monitor/evaluate conflicts of awarding Alcovy Road project at the same time as IM-20 project | DS |
| 3.0 | (IM) Re-evaluate closing existing ramps during construction of new ramps: such as closing east side ramps and then west side ramps | DS |
| 4.0 | (IM & STP) Re-evaluate current 18-24 month construction by including incentives to the contractor for early completion | DS |
| 5.0 | (IM) Award/combine Alcovy Road project and IM-20 as a single project to avoid coordination and scheduling problems. Save conflicts, change orders, and commuter complaints. | DS
\$\$\$\$ |
| 6.0 | (IM) Provide new high mast signage on I-20 ilo of mounting signage on new bridge. Adds cost | DS |

VALUE ENGINEERING WORKSHOP AGENDA

WIDENING SR 142 FROM US 278 TO NORTH OF HAZELBRAND ROAD

NEWTON COUNTY, GEORGIA

24 HOUR - V.E. STUDY

29-31 March 2005

The value engineering workshop for the subject project will be conducted for three (3) days from 29-31 March 2005, at the Georgia Department of Transportation General Office, Urban Design Conference Room #352, #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)
		<i>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.</i>	
	0815 - 1000	Review of Project Plans	V.E. Team Only
		<i>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.</i>	
	1000 - 1200	Project Design Briefing	V.E. Team; (A/E), GDOT
		<i>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).</i>	
	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 e-mail: lgardner@uscost.com or;

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

E. BASE AND PAVING

Aggregate Base

Graded Aggregate (12 inches)	17,508	Tons @	\$17.53	\$306,916.00
Graded Aggregate (6 inches)	0	Tons @	\$7.50	\$0.00

Asphalt Paving

12.5 mm Superpave	3,948	Tons @	\$44.12	\$174,186.00
19 mm Superpave	5,264	Tons @	\$37.27	\$196,190.00
25 mm Superpave	8,622	Tons @	\$37.56	\$323,843.00
Leveling	2,389	Tons @	\$39.95	\$95,441.00
Tack Coat	2,609	Gal @	\$1.08	\$2,818.00

SUBTOTAL \$1,099,394.00

F. DRAINAGE

Longitudinal System

15" Conc. Pipe	0	lf @	\$26.50	\$0.00
18" Conc. Pipe	2738	lf @	\$34.00	\$93,092.00
24" Conc. Pipe	441	lf @	\$44.00	\$19,404.00
30" Conc. Pipe	585	lf @	\$47.00	\$27,495.00
36" Conc. Pipe	233	lf @	\$63.00	\$14,679.00

Drainage Structures

Catch Basins	42	EA @	\$1,959.00	\$82,278.00
Drop Inlets	3	EA @	\$2,153.00	\$6,459.00
FES	30	EA @	\$494.03	\$14,820.90

Drainage Lump Sum

0	mile @	\$326,000.00	\$0.00
---	--------	--------------	--------

SUBTOTAL \$258,227.90

G. CONCRETE WORK

Curb and Gutter (Type 2)	200	lf @	\$13.60	\$2,720.00
Curb and Gutter (Type 7)	580	lf @	\$10.19	\$5,910.20
Concrete Valley Gutter 8"	40	sy @	\$39.16	\$1,567.00
Concrete Median, 4"	880	sy @	\$28.32	\$24,922.00
Approach Slabs	787	sy @	\$143.65	\$113,053.00
Class B Conc., Base/Pvmt Wdng	0	sy @	\$143.65	\$0.00
Concrete Sidewalk, 4 in.	3,212	sy @	\$36.00	\$115,632.00

SUBTOTAL \$263,804.20

H. TRAFFIC CONTROL

lump sum	\$100,000.00	\$100,000.00
----------	--------------	--------------

SUBTOTAL \$100,000.00

I. EROSION CONTROL	0.71 miles @	\$121,000.00	\$85,910.00
		SUBTOTAL	\$85,910.00
J. SIGNS, STRIPING, SIGNALS, LIGHTING			
Striping	0.71 miles @	\$12,000.00	\$8,520.00
Traffic Signals	3 EA @	\$50,000.00	\$150,000.00
OH signs with lights	0 EA @	\$20,000.00	\$0.00
		SUBTOTAL	\$158,520.00
K. GRASSING/LANDSCAPING	0.71 miles @	\$40,000.00	\$28,400.00
		SUBTOTAL	\$28,400.00
L. MISCELLANEOUS			
Field Engineer Office (Type 3)	0 EA @	\$51,337.09	\$0.00
Fencing	0 lf @	\$11.52	\$0.00
Right-of-Way Markers	50 EA @	\$79.96	\$3,998.00
		SUBTOTAL	\$3,998.00
M. MAJOR STRUCTURES			
Bridges	35711 sf @	\$60.00	\$2,142,660.00
Retaining walls	60 sy @	\$452.05	\$27,123.00
Box Culverts			
Concrete	121 cy @	\$476.70	\$57,681.00
Bar Reinf. Steel	8,940 lbs @	\$0.64	\$5,721.60
Jack existing bridge	0 LS @	\$150,000.00	\$0.00
		SUBTOTAL	\$2,233,185.60
N. GUARDRAIL			
W-beam Rail	2,000 lf @	\$11.31	\$22,620.00
Type 12 Anchors	4 EA @	\$1,392.00	\$5,568.00
		SUBTOTAL	\$28,188.00

ESTIMATE SUMMARY

A. Right of Way	\$19,002,000.00
B. Reimbursable Utilities (By Locals)	LPGA

CONSTRUCTION COST SUMMARY

C. Clearing And Grubbing	\$98,000.00
D. Earthwork	\$2,807,000.00
E. Base and Paving	\$1,100,000.00
F. Drainage	\$259,000.00
G. Concrete Work	\$264,000.00
H. Traffic Control	\$100,000.00
I. Erosion Control	\$86,000.00
J. Signs, Striping, Signals, Lighting	\$159,000.00
K. Grassing/Landscaping	\$29,000.00
L. Miscellaneous	\$4,000.00
M. Major Structures	\$2,234,000.00
N. Guardrail	\$29,000.00

ROADWAY SUBTOTAL \$7,169,000.00

CONSTRUCTION TOTAL \$7,169,000.00

1 years of inflation at 5% \$358,450.00

10% E & C \$752,745.00

CONSTRUCTION ESTIMATE SUBTOTAL \$8,280,195.00

TOTAL CONSTRUCTION ESTIMATE \$8,281,000.00

E. BASE AND PAVING

Aggregate Base

Graded Aggregate	(12 inches)	26,936	Tons @	\$17.53	\$472,189.00
Graded Aggregate	(6 inches)	0	Tons @	\$7.50	\$0.00

Asphalt Paving

12.5 mm Superpave		6,073	Tons @	\$44.12	\$267,941.00
19 mm Superpave		8,098	Tons @	\$53.63	\$434,296.00
25 mm Superpave		13,265	Tons @	\$37.56	\$498,234.00
Leveling		3,676	Tons @	\$39.95	\$146,857.00
Tack Coat		4,013	Gal @	\$1.08	\$4,335.00

SUBTOTAL \$1,823,852.00

F. DRAINAGE

Longitudinal System

18" Conc. Pipe		13027	lf @	\$34.00	\$442,918.00
24" Conc. Pipe		1192	lf @	\$44.00	\$52,448.00
30" Conc. Pipe		625	lf @	\$47.00	\$29,375.00
36" Conc. Pipe		55	lf @	\$63.00	\$3,465.00
42" Conc. Pipe		77	lf @	\$69.00	\$5,313.00
48" Conc. Pipe		285	lf @	\$103.00	\$29,355.00
60" Conc. Pipe		73	lf @	\$133.00	\$9,709.00

Drainage Structures

Catch Basins		118	EA @	\$1,959.00	\$231,162.00
Drop Inlets		34	EA @	\$2,153.00	\$73,202.00
FES		58	EA @	\$494.03	\$28,653.74

Drainage Lump Sum

		0	mile @	\$326,000.00	\$0.00
--	--	---	--------	--------------	--------

SUBTOTAL \$905,600.74

G. CONCRETE WORK

Curb and Gutter (Type 2)		12,349	lf @	\$13.60	\$167,947.00
Curb and Gu Gutter (Type 7)		1,269	lf @	\$10.19	\$12,931.11
Concrete Valley Gutter 8"		134	sy @	\$39.16	\$5,248.00
Concrete Median, 4"		1,095	sy @	\$28.32	\$31,011.00
Approach Slabs		0	sy @	\$88.61	\$0.00
Class B Conc., Base/Pvmt Wdng		0	sy @	\$143.65	\$0.00
Concrete Sidewalk, 4 in.		8,032	sy @	\$36.00	\$289,152.00

SUBTOTAL \$506,289.11

H. TRAFFIC CONTROL			lump sum \$100,000.00	\$100,000.00
			SUBTOTAL	\$100,000.00
I. EROSION CONTROL	1.98	miles @	\$121,000.00	\$239,580.00
			SUBTOTAL	\$239,580.00
J. SIGNS, STRIPING, SIGNALS, LIGHTING				
Striping	1.9	miles @	\$12,000.00	\$22,800.00
Traffic Signals	4	EA @	\$50,000.00	\$200,000.00
OH signs with lights	2	EA @	\$20,000.00	\$40,000.00
			SUBTOTAL	\$262,800.00
K. GRASSING/LANDSCAPING	1.98	miles @	\$40,000.00	\$79,200.00
			SUBTOTAL	\$79,200.00
L. MISCELLANEOUS				
Field Engineer Office (Type 3)	1	EA @	\$51,337.09	\$51,337.09
Fencing	0	lf @	\$11.52	\$0.00
Right-of-Way Markers	50	EA @	\$79.96	\$3,998.00
			SUBTOTAL	\$55,335.09
M. MAJOR STRUCTURES				
Bridges	0	sy @	\$405.00	\$0.00
Retaining walls	42	sy @	\$452.05	\$18,987.00
Box Culverts				
Concrete	111	cy @	\$476.70	\$52,914.00
Bar Reinf. Steel	8,940	lbs @	\$0.64	\$5,721.60
Jack existing bridge	0	LS @	\$150,000.00	\$0.00
			SUBTOTAL	\$77,622.60
N. GUARDRAIL				
W-beam Rail	1,171	lf @	\$11.31	\$13,245.00
Type 12 Anchors	2	EA @	\$1,392.00	\$2,784.00
			SUBTOTAL	\$16,029.00

ESTIMATE SUMMARY

A. Right of Way (By Locals)	\$2,671,000.00
B. Reimbursable Utilities (By Locals)	LPGA

CONSTRUCTION COST SUMMARY

C. Clearing And Grubbing	\$163,000.00
D. Earthwork	\$617,000.00
E. Base and Paving	\$1,824,000.00
F. Drainage	\$906,000.00
G. Concrete Work	\$507,000.00
H. Traffic Control	\$100,000.00
I. Erosion Control	\$240,000.00
J. Signs, Striping, Signals, Lighting	\$263,000.00
K. Grassing/Landscaping	\$80,000.00
L. Miscellaneous	\$56,000.00
M. Major Structures	\$78,000.00
N. Guardrail	\$17,000.00

ROADWAY SUBTOTAL \$4,851,000.00

CONSTRUCTION TOTAL \$4,851,000.00

4 years of inflation at 5% \$1,045,420.82

**2011
10% E & C \$589,642.08**

CONSTRUCTION ESTIMATE SUBTOTAL \$6,486,062.90

TOTAL CONSTRUCTION ESTIMATE \$6,487,000.00