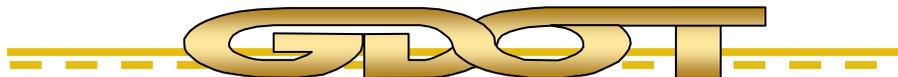


# VALUE ENGINEERING WORKSHOP

## I-85 INTERCHANGE AT CR 98/GABBETTville ROAD PROJECT NO. CSNHS-0008-00(232) Troup County, Georgia

PREPARED FOR:



Georgia Department of Transportation

#2 Capitol Square, SW  
Atlanta, Georgia 30334-1002

PREPARED BY:

**U.S. COST**



1200 Abernathy Road, NE  
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Atlanta, Georgia 30328

29 September 2006

VALUE ENGINEERING TEAM STUDY

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## VALUE ENGINEERING TEAM STUDY

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### PROJECT DESCRIPTION AND BACKGROUND

#### **Description of the proposed project:**

The project is located in Troup County, near M.P. 6. The proposed project consists of constructing a diamond interchange with relocated Gabbettville Road. Gabbettville Road will be relocated and upgraded to a 4 lane divided roadway and cross I-85 providing an approximate 86 degree intersection with I-85. A two-lane exit ramp will be constructed for the northbound and southbound direction and a two-lane entrance ramp will be constructed in the northbound direction. One lane will be dropped just past the nose of the entrance ramp and the parallel lane along I-85 will be dropped 2000' beyond the end of the taper of the first lane drop. A two-lane entrance ramp will be constructed southbound, which will taper down to one lane before reaching the entrance taper at the nose.

Relocated Gabbettville Road will start at the intersection of Sandtown Road and existing Gabbettville Road and widen to 4 lanes with a 20'-32' raised median. This section will be carried over I-85 with a 4-lane bridge with a closed 20'-32' wide median on the bridge to provide room for turn lanes to the I-85 ramps (double lefts are required to the northbound I-85 entrance ramp). The 4-lane section will T-intersect and end at CR 94/Warner Road. Warner Road will be upgraded at this intersection to provide turn lanes and intersection sight distance.

This project entails a cooperative effort between the Georgia DOT and the Georgia Department of Economic Development to develop an interchange for the West Point Economic Development site. Associated with this project will be a four-lane divided frontage road along the west side of I-85 between SR 18 and Relocated Gabbettville Road.

The Georgia Department of Economic Development (GDEcD) is in the process of purchasing more than 2,200 acres of property, which will contain the proposed West Point Economic Development site. The site is located near the City of West Point along the west side of I-85, north of SR 18 extending up to Gabbettville Road in Troup County. Safe, convenient and efficient access to/from I-85 is critical of the site, as it would generate thousands of daily auto and truck trips, most of which would use I-85 en route to/from the site vicinity. Existing site access to/from I-85 is provided by SR 18/I-85, a full diamond interchange at SR 18 located at milepost 2 (identified as Exit 2). The next interchange to the north of Exit 2 is Exit 13, which is 11 miles to the north and is the first of three exits that provide access to the City of LaGrange. The proposed project would identify and construct the interchange improvements necessary to provide safe, convenient and efficient I-85 access for site-generated traffic.

## VALUE ENGINEERING TEAM STUDY

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### PROJECT DESCRIPTION AND BACKGROUND

The purpose of the proposed project is to provide safe, convenient and efficient access to/from I-85 for the proposed economic development site adjacent to I-85 between SR 18 and Gabbettville Road. I-85 is a major interstate route that crosses the state of Georgia from southwest to northeast, linking Montgomery, Alabama; Atlanta, Georgia; and Greenville, South Carolina. The Town of West Point is located directly on the Alabama/Georgia State line with access to I-85 at SR 18 in Georgia and at US 29 in Alabama. Although the economic development site is directly adjacent to I-85 and approximately three miles north of SR 18, the site has no direct connection to I-85 or SR 18. Currently site-area traffic en route to I-85 (at Exit 2) can use one of two routes: (1) Gabbettville Road to US 29 to SR 18, or (2) I-85/Gabbettville Road to Webb Road to Shoemaker Road to SR 18/I-85. The distance from the economic development site to the existing I-85 access at Exit 2 ranges from 6-8 miles, much of which is through rural residential areas. These existing roads and circuitous connections to the interstate would not provide efficient access to the economic development site, and the large volume of truck and vehicle traffic generated by the large industrial facilities anticipated to locate at the economic development site would have significant impacts on the site access roads and adjacent land uses. The provision of efficient site access is critical, as large industries and other major employers would not choose to establish in this area without such access. Efficient access for freight/goods movement and for employees is clearly an important factor for the successful establishment of the planned industrial and commercial uses in this region of the County.

#### **Description of the Approved Concept:**

The Design Cost Estimates for the four alternates for the I-85 Interchange projects indicate the project has an estimated construction cost in the range of \$±73 Million to \$±90 Million, plus ROW cost of \$±12.0 Million.

## VALUE ENGINEERING TEAM STUDY

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### PROJECT DESCRIPTION AND BACKGROUND

#### CONCERNS AND OBJECTIVES:

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

#### I-85 Interchange at CR 98 Gabbettville Road, Troup County

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
Soil Borings	Soil boring should be part of the Design Build RFP for the contractor to design foundations and pavement sections.
Construction Management	It is recommended that a Construction Manager be hired to manage this project since it appears that GDOT has limited resources and experience in Design Build contract management for this large project.
Design Build Award	It appears there is very little opportunity for the DB contractor to use his talents since the frontage road alignment and I-85 Interchange have been locked in. It is recommended that GDOT hire a CM and award the project in typical procedure.
Anticipated Traffic Patterns	It was stated that 67% of traffic will come from Alabama and return to Alabama; therefore, it is recommended that a slip ramp be incorporated off the Frontage Road heading west to Alabama.
Specification and RFP 01010	The VE team cannot fully address the DB process since the RFP 01010 requirements and the specification has not been developed and are not available at this time.
Construction Conflicts	It is highly likely there may be a labor shortage in this area due to several large projects such as: manufacturing plant construction, ±\$200 Million dollar I-85 road improvements project in Meriwether County and other potential construction projects along the corridor.

## VALUE ENGINEERING TEAM STUDY

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### PROJECT DESCRIPTION AND BACKGROUND

Existing Gabbettville Road and Webb-Bartley Road	These roads will be completely torn up during construction and there is no current line item in the estimate for repairs and maintenance during construction. These are County roads and the county will be seeking some financial relief from GDOT.
Accelerated Construction	The term of accelerated construction is interpreted as the completion date of December 2008 is not negotiable. This forces the early award of contract by GDOT and a 24 month construction schedule
Temporary Ramp off I-85 & Queuing	It was stated that there would be 70 trucks per hour entering the site. Assuming some delay at the entrance from time to time, consider provisions for truck parking or truck queuing other than on Gabbettville Road.
Quarry Availability	It was discussed that the only available Quarry (Harris County) is currently not able to meet demand. VE team is concerned that the \$200 Million I-85 improvement contract and the DB contract will be delayed due to availability of material.
Soils and Erosion Plans	The DB contractor is required to develop and submit EPD for approval. Recommend confirming adequate time is included in schedule for EPD approval.
Traffic Flow	Recommend confirming that traffic study was done on hourly flow or peak flow. This has a large impact on the Frontage Road design requirements.
Interchange with Loop for trucks	There is a major concern that if a truck turns over on the Interchange Loop that a major delay in traffic to the industrial site could cause a major back-up on the Interstate.

# VALUE ENGINEERING TEAM STUDY

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## KEY INFORMATION/NOTES

### Introduction

U.S. Cost Incorporated conducted the Value Engineering Team Study on I-85 Interchange at CR 98 Gabbettville Road in Troup County, Georgia. The V.E. study was conducted for three (3) days, 27-29 September 2006, at the Georgia Department of Transportation Urban Planning Conference Room #352 in Atlanta, GA. The study team was furnished with four projects for I-85 Interchange at CR 98 Gabbettville Road which included Schematic Design submittal packages. The following individuals were members of the V.E. team:

<b>Name</b>	<b>Firm</b>	<b>Discipline</b>
Lindsey Gardner, P.E., CVS	U.S. Cost, Inc.	VETL
Maurice Sheehan, P.E.	MAAI	Roadway Design
Sam Deeb, P.E.	MAAI	Bridge Engineer
Laland Owens	MAAI	Construction
Lisa Myers	GDOT	VE Director
Mike Dover, P.E.	GDOT	Project Manager

### Information Phase/Function Analysis

The V.E. team was first briefed on the project design by GDOT and Jordan Jones and Gouling Engineer representatives in an orientation meeting the first day of the V.E. Study. The briefing gave insight into the current design, and also into the aspects of the I-85 Interchange at CR-98 Gabbettville Road. The briefing included a review of the Design Build design document requirements and rationale for the location and arrangement of the new frontage road, in addition to information on the placement of bridge structural systems. Discussions regarding project funding, required functions, and project criteria followed the design presentation.

As a basic part of the V.E. process, the team conducted a partial function analysis session on I-85 Interchange at CR-98 Gabbettville Road 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.

During the presentation the following were identified as elements of the design that are not to be Value Engineered:

- Change in the plant 600 ac pad location
- GDOT construction completion date of December 2008
- Archeological (Indian) site encroachment
- New industrial site truck entrance location off of Gabbettville Road
- Gabbettville Road and Frontage Road intersection location (1000 LF from Interchange)
- Concrete road material for Gabbettville Road construction

## VALUE ENGINEERING TEAM STUDY

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### KEY INFORMATION/NOTES

The following are areas the VE team is authorized to investigate and Value Engineer:

- Frontage road cross sections
- Recommendations for the Design Build RFP 01010
- Bridge design
- Culvert design, materials and construction techniques
- Profiles
- Loop on East (South) side of I-85
- Interchange Alternatives
- Detention pond locations

The Basic Function of the project is for *Economic Development*. A strong secondary function is to *Promote Employment* by I-85 Interchange at CR 98 Gabbettville Road. 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 I-85 Interchange at CR-98 Gabbettville Road. 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:

- Impact on industrial site requirements during construction
- Close coordination of industrial plant contractor and GDOT contractor
- Contractor Phasing, Staging, Coordination and Traffic Control
- Impact of unsuccessful timely completion
- Legation of liabilities
- Stabilizing of slopes as a result of new profiles
- Maintenance of roads during construction due to high truck traffic
- Shortage and inflated cost of petroleum, cement and steel
- Maintaining uninterrupted flow of traffic on existing roads during construction – potential accidents due to multi staging in deep excavations.
- Failure to meet GDOT Schedule
- Drainage issues now and after complete development of adjacent properties.

## VALUE ENGINEERING TEAM STUDY

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### KEY INFORMATION/NOTES

#### Project Criteria

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

#### Project Criteria Analysis:

Life Safety	10
Operational Issues	10
Compliance with approved EIS	10
Construction Completion Date	10
Constructability	8
GDOT Criteria Compliance	8
Functionality	8
Life Cycle Cost (Analysis)	8
AASHTO 2004 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 thirty-four (34) creative ideas were generated for further investigation by the team. Many of the creative ideas focused on enhancements to the roadway, bridges, revisions to Design-Build clauses, 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 I-85 Interchange at CR 98 Gabbettville Road project is included in Appendix A.

# VALUE ENGINEERING TEAM STUDY

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## KEY INFORMATION/NOTES

### Evaluation Phase

The ideas generated during the Creative Phase were reviewed and evaluated by the VE team during a meeting held on the morning of the second study day. The intent of the meeting was to allow the V.E. team an opportunity to discuss and evaluate the ideas. A few of the V.E. ideas were dropped at that time as being conceptually unacceptable or in conflict with established Criteria, Right of Way (ROW) conflicts, previous agreements, or local construction methods. The ranking system consisted of VE team representatives assigning a designation to each idea. Those ideas, which the V.E. Team felt had the most promise, were given a designation of 1-5 on acceptability and 1-5 on cost impact, for a maximum rating of 10 points. This is a time management tool to identify those proposals that have the greatest potential. Approximately twenty-two (22) out of the original thirty-four (34) creative ideas were deemed promising for further investigation and analysis by the V.E. team.

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 SAVINGS

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

## VALUE ENGINEERING TEAM STUDY

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### KEY INFORMATION/NOTES

#### **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 I-85 Interchange at CR-98 Gabbettville Road project. Each proposal represents a quality enhancing or cost saving alternative, which is documented by words, drawings and numbers. The proposal format presents the idea, describes the original design element proposed for change and the proposed change, lists the perceived advantages and disadvantages of the proposed change and supports the idea with a detailed cost estimate for the original and proposed design. Where necessary for clarity, the proposal also includes thumbnail design drawings and supporting engineering calculations.

Many of the V.E. proposals may require some level of redesign on specific portions of the project to implement the modification. Further, several of the V.E. ideas may involve modifications to the Criteria, or current goals, of I-85 Interchange at CR-98 Gabbettville Road. These ideas are presented to initiate additional discussion and investigation during the next phase of design.

#### **Presentation Phase**

A final presentation was not performed.

#### **Resolution Phase**

Upon receipt of the Final Value Engineering Report, Georgia DOT and Jordan Jones & Goulding representatives are requested to prepare written comments on the acceptability of each of the V.E. proposals. Responses should include the rationale for accepting, rejecting, or modifying the V.E. proposal.

#### **Basis of V.E. Cost Savings**

The cost information for proposals in this report is based on the cost data prepared by the design A/E, Jordan Jones & Goulding, a nationally recognized engineering firm. The savings presented in the proposals is a general order of magnitude (estimate of the potential savings) if the idea were to be accepted. These figures are solely intended to identify the most attractive design solution, and are not prepared to represent a net deduction to the overall project budget. The costs are in 2006 dollars (escalated for 2 years at 5% inflation per year). All life cycle cost analyses are prepared utilizing Present Worth methodology, a 25-year economic period, a 5.0% net discount factor (inclusive of inflation), and 3% escalation in the cost of utilities.

## VALUE ENGINEERING TEAM STUDY

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### KEY INFORMATION/NOTES

#### **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 contractor should have the option to employ construction techniques and materials to shorten the construction time.

**VALUE ENGINEERING TEAM STUDY**

**SUMMARY OF RECOMMENDATIONS  
I-85 INTERCHANGE AT CR 94**

<b>IDEA NO.</b>	<b>DESCRIPTION</b>	<b>SAVINGS</b>
	<b>ROADWAY/PROFILE (RW)</b>	
RW-1.0	Reduce shoulder width from 16'-0" to 12'-0" and reduce paved shoulder from 10'-0" to 6'-6" on Gabbettville Road and Frontage Road	1,200,000
RW-2.0	Construct a 20' raised median for Gabbettville Road and 40'-0" depressed median	50,000
RW-3.0	Reduce earthwork and retaining walls by adjusting profile on Frontage Road	Design Suggestion
RW-4.0	Move new I-85 Interchange East to tie into Sandtown Road	Design Suggestion
RW-5.0	Utilize full diamond interchange without loop – Team analysis matrix	4,000,000
RW-6.0	Construct new two lane Frontage Road on four lane right-of-way	17,000,000
RW-6.1	Construct three lane new Frontage Road on four lane right-of-way	14,000,000
RW-6.2	Construct two lane Frontage Road for approximately one half of the concept length	11,000,000
RW-6.3	Study with the possibility of classifying new Frontage Road as a local county road	Design Suggestion
RW-7.0	Provide a Slip Ramp to I-85 Southbound from the new Frontage Road	Design Suggestion
	<b>STRUCTURAL/BRIDGE (SB)</b>	
SB-1.0	Maintain a single full width bridge over creeks and dual bridge	17,000
SB-2.0	Construct one bridge length on Gabbettville regardless of Interchange option chosen	3,800,000
SB-3.0	Reroute double 9'X9' culvert and eliminate 90 degree bend by relocating detention pond	800,000

**VALUE ENGINEERING TEAM STUDY**

**SUMMARY OF RECOMMENDATIONS  
I-85 INTERCHANGE AT CR 94**

<b>IDEA NO.</b>	<b>DESCRIPTION</b>	<b>SAVINGS</b>
	<b>DESIGN BUILD RFP (DB)</b>	
DB-1.0	Provide incentive clause for timely completion	Design Suggestion
DB-2.0	Award Frontage Road work as a separate contract form the Gabbettville Interchange	Design Suggestion
DB-3.0	Documents should stipulate what is expected of the roadway contractor in maintaining access to the site building contractor	Design Suggestion
DB-4.0	Identify who maintains existing access roads during construction (GDOT, contractor or Troup County)	Design Suggestion
DB-4.1	Determine responsible party to repair county road after construction	Design Suggestion
DB-5.0	Identify in the RFP milestones for approval of design and shop drawings	Design Suggestion
DB-7.0	Confirm/conduct a full Hydro/Drainage analysis of entire site prior to issuing RFP	Design Suggestion
DB-8.0	Include clear and concise insurance coverage and limits of liability	Design Suggestion
DB-10.0	Hire an independent Construction Management firm to manage the Design Build contract, inspections and QA/QC	Design Suggestion

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-1.0
<b>PAGE NUMBER:</b>	1 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** FOR THE FRONTAGE RD. AND  
GABBETTVILLE RD. REDUCE SHOULDER  
FROM 16' TO 12'. REDUCE PAVED  
SHOULDER FROM 10' TO 6.5'.

**ORIGINAL DESIGN:** The current design proposes 16' outer shoulders with 10' paved with 8" GAB, 330#/sy of 19mm, and 165#/SY of 12.5mm Asphaltic Concrete Superpave.

**PROPOSED CHANGE:** The proposed recommendation is to install 12' outer shoulder with 6.5' paved with 8" GAB, 330#/sy of 19mm, and 165#/SY of 12.5mm Asphaltic Concrete Superpave.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 5,703,600		\$ 5,703,600
<b>PROPOSED CHANGE:</b>	\$ 4,472,568		\$ 4,472,568
<b>SAVINGS:</b>			\$ 1,231,032

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-1.0
<b>PAGE NUMBER:</b>	2 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Total life cycle cost savings of \$1,231,032.
- Exceeds design criteria for local road shoulder.
- Twelve foot width of shoulder good for trucks.
- Still have 6.5 ft. paved shoulder width.

**DISADVANTAGES:**

None apparent.

**JUSTIFICATION:**

This recommendation recognizes the 25,000 projected ADT and percentage trucks and higher speed of these local roads. The recommendation like the original design exceeds local road standards and acts similar to arterial design.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-1.0
<b>PAGE NUMBER:</b>	3 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
GAB	1	TON	48,522	\$25.00	1,213,050
19 MM	1	TON	19,081	\$80.00	1,526,480
12.5 MM	1	TON	9,541	\$80.00	763,280
Earthwork	1	CY	192,740	\$5.50	1,060,070
<b>SUBTOTAL:</b>					4,562,880
<b>25 % MARK UP:</b>					1,140,720
<b>TOTAL:</b>					5,703,600

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
GAB	1	TON	19,730	\$25.00	493,250
19 MM	1	TON	19,081	\$80.00	1,526,501
12.5 MM	1	TON	9,541	\$80.00	763,250
Earthwork	1	TON	144,555	\$5.50	795,053
<b>SUBTOTAL:</b>					3,578,054
<b>25 % MARK UP:</b>					894,514
<b>TOTAL:</b>					4,472,568

### SOURCES

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

## ORIGINAL DESIGN CALCULATIONS

**PROPOSAL NUMBER:**

RW-1.0

**PAGE NUMBER:**

4 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### GAB

$6.16 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 16 \text{ ft} \times .6666 \text{ ft} = 346,584 \text{ cu. ft. per side}$

$346,584 \text{ cu. ft.} \times 140 \# / \text{cu. ft.} / 2000 \# / \text{ton} = 48,522 \text{ tons}$

$48,522 \text{ tons} \times \$25.00 = \$ 1,213,050$

### Asphalt

$6.16 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 16 \text{ ft} / 9 \text{ ft}^2 / \text{yd}^2 = 57,822 \text{ sy per side}$

$19 \text{mm} \Rightarrow 115,644 \text{ sy} \times 330 \# / \text{SY} / 2000 \# / \text{ton} \times \$80.00 / \text{ton} = \$ 1,526,501$

$12.5 \text{mm} \Rightarrow 115,644 \text{ sy} \times 165 \# / \text{SY} / 2000 \# / \text{ton} \times \$80.00 / \text{ton} = \$ 763,250$

### Earthwork

$6.16 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 16 \text{ ft} \times 5 \text{ ft} / 27 \text{ ft}^3 / \text{CY} \times \$5.5 / \text{Cy} \times 2 = \$ 1,060,068$

## PROPOSED CHANGE CALCULATIONS

**PROPOSAL NUMBER:** RW-1.0

**PAGE NUMBER:** 5 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### GAB

6.16 mi x 5280 ft / mi x 6.5ft x .6666 ft = 140,927 cu. ft. per side

281,853 cu. ft. x 140#/cu. ft. /2000 #/ton = 19,730 tons

19,730 tons x \$25.00 = \$ 493,250

### Asphalt

6.16 mi x 5280 ft / mi x 6.5 ft / 9 ft<sup>2</sup> /yd<sup>2</sup> = 23,490 sy per side

19mm=> 46,980 sy x 330 #/SY /2000#/ton x \$80.00 /ton = \$ 620,136

12.5mm=> 46,980 sy x 165 #/SY /2000#/ton x \$80.00 /ton = \$ 310,068

### Earthwork

6.16 mi x 5280 ft/mi x 12 ft x 5 ft /27 ft<sup>3</sup> / CY x \$5.5/Cy x 2 = \$ 795,051

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-2.0
<b>PAGE NUMBER:</b>	1 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** UTILIZE 20' RAISED MEDIAN FOR  
GABBETTVILLE RD.

**ORIGINAL DESIGN:** The original design is a 44' depressed median on Gabbettville Road (1.65 miles)

**PROPOSED CHANGE:** The proposed change recommendation is to reduce the median to a 20' raised median on Gabbettville Road.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 631,100		\$ 631,100
<b>PROPOSED CHANGE:</b>	\$ 582,079		\$ 582,079
		<b>SAVINGS:</b>	\$ 49,021

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-2.0
<b>PAGE NUMBER:</b>	2 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Total life cycle cost savings of \$ 50,000.
- Reduce earthwork costs.
- Exceeds a local road standards.
- Provides a more finished look with an Urban.
- Consider a semi-urban design feature.

**DISADVANTAGES:**

- Could be consider less safe.

**JUSTIFICATION:**

Design would meet 45 mph design exceeding local road standards while still reducing cost of earthwork.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-2.0
<b>PAGE NUMBER:</b>	3 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTville ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Earthwork	1	CY	55,519	\$5.5	305,355
GAB	1	TON	2,365	\$25.0	59,125
19mm	1	TON	619	\$80.0	49,520
12.5mm	1	TON	310	\$80.0	24,800
25mm	1	TON	826	\$80.0	66,080
<b>SUBTOTAL:</b>					504,880
25 % MARK UP:					126,220
<b>TOTAL:</b>					631,100

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Earthwork	1	CY	31,289	\$5.5	172,090
GAB	1	TON	2,957	\$25.0	73,925
Curb & Gutter	1	LF	16,896	\$13.0	219,648
<b>SUBTOTAL:</b>					465,663
25 % MARK UP:					116,416
<b>TOTAL:</b>					582,079

### SOURCES

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

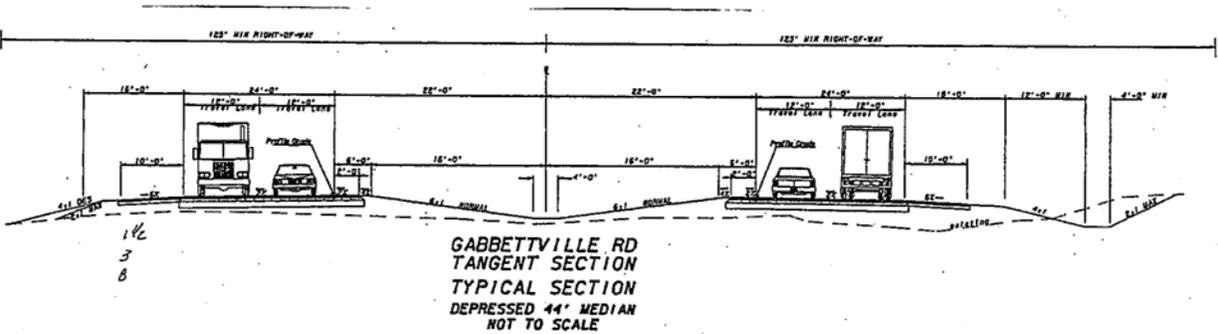
# ORIGINAL DESIGN SKETCH/DETAIL

**PROPOSAL NUMBER:** RW-2.0

**PAGE NUMBER:** 4 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



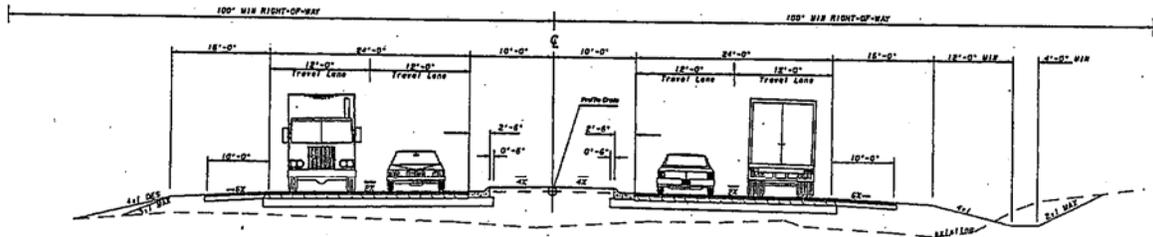
# PROPOSED CHANGE SKETCH/DETAIL

**PROPOSAL NUMBER:** RW-2.0

**PAGE NUMBER:** 5 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



SECTION 103  
TYPICAL SECTION  
RAISED 20' MEDIAN  
NOT TO SCALE

## ORIGINAL DESIGN CALCULATIONS

**PROPOSAL NUMBER:**

RW-2.0

**PAGE NUMBER:**

6 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### Earthwork

$1.6 \text{ mi} \times 5280 \text{ ft/mi} \times 177.44 \text{ ft}^2 / 27 \text{ ft}^3/\text{CY} \times \$ 5.5 / \text{CY} = \$ 305,355$

### GAB

$1.6 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 2 \text{ ft} \times 1 \text{ ft} = 16896 \text{ cu. ft. per side}$

$33,792 \text{ cu. ft.} \times 140 \#/\text{cu. ft.} / 2000 \#/\text{ton} = 2,365 \text{ tons}$

$2,365 \text{ tons} \times \$25.00 = \$ 59,125$

### ASPHALT

$1.6 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 2 \text{ ft} / 9 \text{ ft}^2/\text{yd}^2 = 1877 \text{ sy per side}$

$19 \text{ mm} \Rightarrow 3754 \text{ sy} \times 330 \#/\text{SY} / 2000 \#/\text{ton} \times \$80.00 / \text{ton} = \$ 49,553$

$12.5 \text{ mm} \Rightarrow 3754 \text{ sy} \times 165 \#/\text{SY} / 2000 \#/\text{ton} \times \$80.00 / \text{ton} = \$ 24,776$

$25 \text{ mm} \Rightarrow 3754 \text{ sy} \times 440 \#/\text{SY} / 2000 \#/\text{ton} \times \$80.00 / \text{ton} = \$ 66,070$

## PROPOSED CHANGE CALCULATIONS

<b>PROPOSAL NUMBER:</b>	RW-2.0
<b>PAGE NUMBER:</b>	7 of 7

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT – Troup County, Georgia

### Earthwork

$$1.6 \text{ mi} \times 5280 \text{ ft/mi} \times 100 \text{ ft}^2 / 27 \text{ ft}^3/\text{CY} \times \$ 5.5 / \text{CY} = \$ 172,089$$

### GAB

$$1.6 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 2.5 \text{ ft} \times 1 \text{ ft} = 21,120 \text{ cu. ft. per side}$$

$$42,240 \text{ cu. ft.} \times 140 \#/\text{cu. ft.} / 2000 \#/\text{ton} = 2,957 \text{ tons}$$

$$2,957 \text{ tons} \times \$25.00 = \$ 73,925$$

### Curb & Gutter

$$1.6 \text{ mi} \times 5280 \text{ ft} / \text{mi} \times 2 \times \$13.00 / \text{lf} = \$ 219,648$$

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-3.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** REDUCE EARTHWORK AND RETAINING WALLS BY ADJUSTING PROFILE ON FRONTAGE ROAD.

**ORIGINAL DESIGN:** The original design is a relatively straight line profile with high cuts and fills.

**PROPOSED CHANGE:** The proposed recommendation is to have a more rolling profile to minimize cuts and fills which would still meet 45 mph design speed.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-4.0
<b>PAGE NUMBER:</b>	1 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** MOVE I-85 INTERCHANGE EAST TO TIE  
INTO SANDTOWN ROAD.

**ORIGINAL DESIGN:** The original design is for the I-85 interchange to tie into relocated Gabbettville Rd.

**PROPOSED CHANGE:** The proposed recommendation is for I-85 diamond interchange to be moved approximately 2100 ft . east to tie into a relocated Sandtown Rd.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-4.0
<b>PAGE NUMBER:</b>	2 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Utilizes existing Sandtown Rd corridor, rather than rebuilding Gabbettville Rd on new alignment.

Possible reduction in right of way cost.

No relocation of GA. Power to East of I-85.

Fewer Impacts to streams and environmental areas.

No relocation of Warner Rd.

Satisfactory traffic.

Easily expandable.

**DISADVANTAGES:**

Right of Way and access agreements may be underway.

Might require a new EA.

Require purchasing Pine Wood and Hernietta property (ROW).

May be too late to consider.

**JUSTIFICATION:**

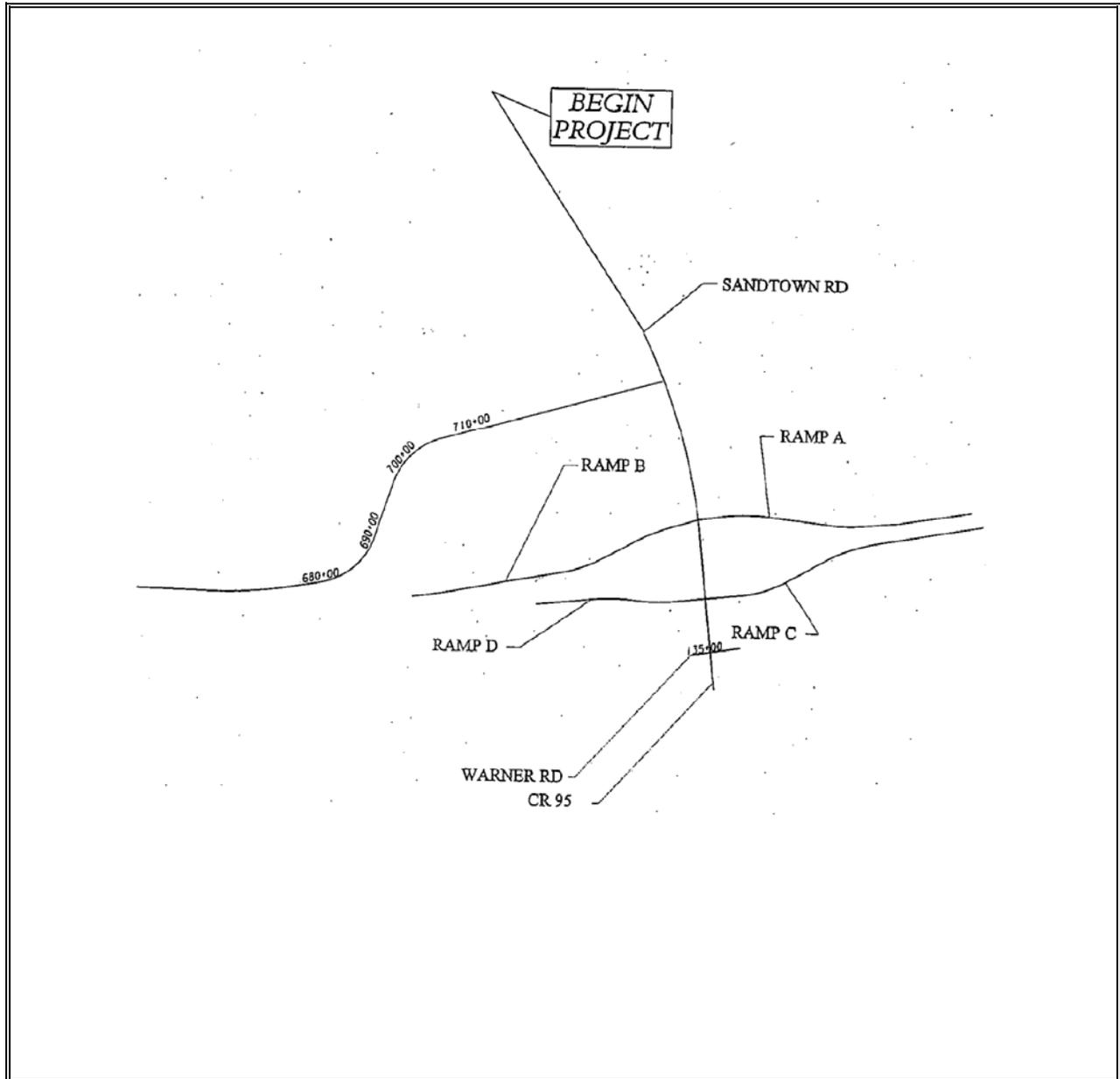
Reduction in construction and right of way costs due to utilization of Sandtown Rd.

# PROPOSED CHANGE SKETCH/DETAIL

<b>PROPOSAL NUMBER:</b>	RW-4.0
<b>PAGE NUMBER:</b>	3 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-5.0
<b>PAGE NUMBER:</b>	1 of 4

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** Utilize full diamond interchange.

**ORIGINAL DESIGN:** The other considered alternative is a  $\frac{3}{4}$  diamond with loop in eastern quadrant.

**PROPOSED CHANGE:** The proposed recommendation is for a full diamond interchange.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 86,790,000		\$ 86,790,000
<b>PROPOSED CHANGE:</b>	\$ 82,625,000		\$ 82,625,000
<b>SAVINGS:</b>			<b>\$ 4,165,000</b>

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-5.0
<b>PAGE NUMBER:</b>	2 of 4

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Total life cycle cost savings of \$4,165,000.

Reduced footprint.

Reduced right of way cost.

No relocation of GA. Power to East of I-85.

No relocation of Warner Rd.

Satisfactory traffic project.

Easily expandable.

**DISADVANTAGES:**

None apparent.

**JUSTIFICATION:**

A diamond interchange functions similar to the  $\frac{3}{4}$  diamond with loop interchange. The loop is signal controlled to avoid weaving, meaning no free flow of traffic would occur. This results in a similar traffic pattern as the diamond. The diamond interchange has a smaller footprint and lower right of way and construction costs.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-5.0
<b>PAGE NUMBER:</b>	3 of 4

<b>PROJECT TITLE:</b> I-85 INTERCHANGE AT CR 98 GABBETTVILLE ROAD  <b>PROJECT LOCATION:</b> Georgia DOT - Troup County, Georgia
--

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
3/4 Diamond with Loop					86,790,000
<b>SUBTOTAL:</b>					86,790,000
<b>% MARK UP:</b>					incl
<b>TOTAL:</b>					86,790,000

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Full Diamond					82,625,000
<b>SUBTOTAL:</b>					82,625,000
<b>% MARK UP:</b>					incl
<b>TOTAL:</b>					82,625,000

### SOURCES

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

## PROPOSED CHANGE CALCULATIONS

<b>PROPOSAL NUMBER:</b>	RW-5.0
<b>PAGE NUMBER:</b>	4 of 4

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**Choosing by Advantages on which Interchange is Best. (Scale of 1 to 4)**

	Full Diamond w loop		¼ Diamond w loop		Full Diamond		½ Diamond W loop	
Construction Cost	83,730,000	3	76,590,000	2	73,825,000	1	86,474,560	4
Completion date impact		4		3		1		2
Construction Time	± 18 months	na	± 18 months	na	± 18 months	na	±18 months	na
ROW Cost	12,000,000	4	10,200,000	3	8,800,000	1	9,925,000	2
Environmental Impact		4		3		1		2
Truck Queuing Impact		1		3		3		2
Safety – Truck and Public		2		4		1		3
GDOT Impact 1 <sup>st</sup> choice		3		2		1		4
KIA Impact 1 <sup>st</sup> choice		3		1		4		2
I-85 Interchange Impact		1		2		2		2
Best Travel Time for Trucks		1		2		3		2
Ease of Access to site		1		3		4		2
Impact on I-85 Traffic		4		2		1		3
Impact on future economic development of other parcels.		4		4		1		2
<b>TOTALS</b>		<b>35</b>		<b>34</b>	Winner	<b>24</b>		<b>32</b>

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-6.0
<b>PAGE NUMBER:</b>	1 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** CONSTRUCT NEW TWO LANE FRONTAGE  
ROAD ON FOUR LANE RIGHT-OF-WAY.

**ORIGINAL DESIGN:** The original design is to construct a new four lane frontage road with a 20 foot raised median on 150 feet of R/W. The original design includes 16 feet outside shoulders of which 10 feet is paved and 6 feet inside shoulders with 2 feet paved full depth.

**PROPOSED CHANGE:** The proposed design change recommendation is to construct two lanes of the proposed four lane frontage road with 10 feet shoulders.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 31,707,125		\$ 31,707,125
<b>PROPOSED CHANGE:</b>	\$ 14,216,625		\$ 14,216,625
		<b>SAVINGS:</b>	\$ 17,490,500

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-6.0
<b>PAGE NUMBER:</b>	2 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Total life cycle cost savings of \$17,490,500.

Meets capacity requirements for several years.

Allows both direction access which could be controlled by permit.

Materials demand would not be great.

Reduces construction time making direct accessibility to the development quicker.

Meets design standards.

**DISADVANTAGES:**

Accident rates are generally higher for roadways without a median.

Does not provide design year capacity.

Would require expansion at some future time.

Not as aesthetically pleasing as landscaped urban section.

**JUSTIFICATION:**

The cost savings and reduction in time combine to make the proposed change viable.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-6.0
<b>PAGE NUMBER:</b>	3 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement Structure	1	SY	195,000	46.96	9,157,700
Earthwork	1	CY	1,974,900	5.50	10,862,000
Drainage	1	LS	1	1,011,000	1,011,000
Bridge @ Long Cane Creek	1	SF	45,630	95.00	4,335,000
<b>SUBTOTAL:</b>					25,365,700
<b>25 % MARK UP:</b>					6,341,425
<b>TOTAL:</b>					31,707,125

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement	1	SY	64,920	53.00	3,440,800
Earthwork	1	CY	900,000	5.5	4,950,000
Drainage	1	LS	1	750,000	750,000
Bridge @ Long Cane Creek	1	SF	23,500	95.00	2,232,000
<b>SUBTOTAL:</b>					11,373,300
<b>25 % MARK UP:</b>					2,843,325
<b>TOTAL:</b>					14,216,625

### SOURCES

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



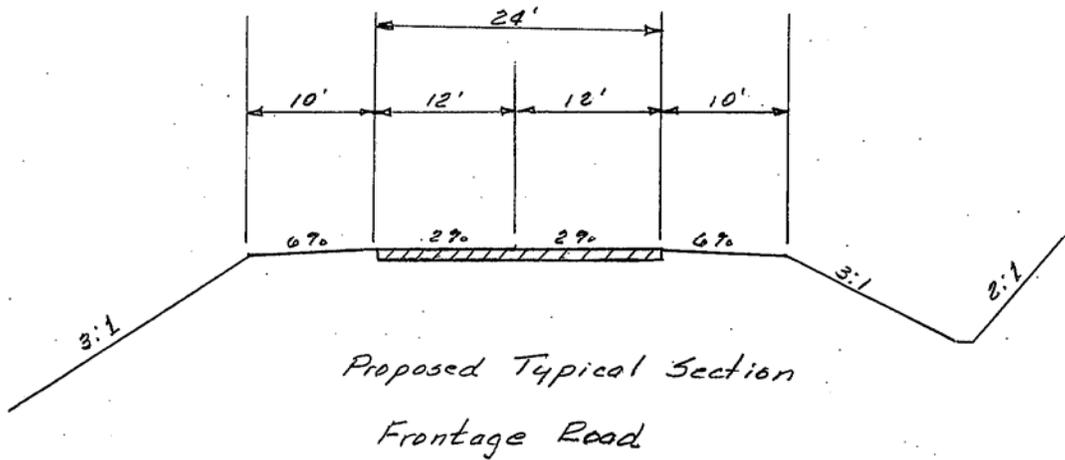
# PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER: RW-6.0

PAGE NUMBER: 5 of 5

PROJECT TITLE: I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

PROJECT LOCATION: Georgia DOT - Troup County, Georgia



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-6.1
<b>PAGE NUMBER:</b>	1 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** CONSTRUCT THREE LANE NEW FRONTAGE  
ROAD ON FOUR LANE RIGHT-OF-WAY.

**ORIGINAL DESIGN:** The original design is to construct a new four lane Frontage Road with a 20 foot raised median on 150 feet of R/W. The original design includes 16 feet outside shoulders of which 10 feet is paved and 6 feet inside shoulders with 2 feet paved full depth.

**PROPOSED CHANGE:** The proposed design change recommendation is to construct a three lane flush median roadway with 10 feet shoulders.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 31,707,125		\$ 31,707,125
<b>PROPOSED CHANGE:</b>	\$ 18,185,875		\$ 18,185,875
		<b>SAVINGS:</b>	\$ 13,521,250

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-6.1
<b>PAGE NUMBER:</b>	2 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Total life cycle cost savings of \$13,521,250.
- Meets capacity requirements.
- Reduces construction time.
- Meets design standards.
- Provides left turn capacity all along corridor.
- Could be used as a TWLTL as peak hourly volume dictated.
- Would save construction time.
- Requires less construction materials.
- Provides direct access to the development site earlier.

**DISADVANTAGES:**

- Does not meet the expectations of the developer.
- Would not be conducive to reconstruction to a standard median section.
- Would not be aesthetically pleasing as well landscaped urban section.

**JUSTIFICATION:**

The cost savings and the ability to provide quicker direct access to the development justify this recommendation.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-6.1
<b>PAGE NUMBER:</b>	3 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement Structure	1	SY	195,000	46.96	9,157,700
Earthwork	1	CY	1,974,900	5.5	10,862,000
Drainage	1	LS	1	1,011,000	1,011,000
Bridge @ Long Cane Creek	1	SF	45,630	95.00	4,335,000
<b>SUBTOTAL:</b>					25,365,700
<b>25 % MARK UP:</b>					6,341,425
<b>TOTAL:</b>					31,707,125

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement	1	SY	227,384	53.00	5,161,200
Earthwork	1	CY	1,050,000	5.5	5,775,000
Drainage	1	LS	1	810,000	810,000
Bridge @ Long Cane Creek	1	SF	29,500	95.00	2,802,500
<b>SUBTOTAL:</b>					14,548,700
<b>25 % MARK UP:</b>					3,637,175
<b>TOTAL:</b>					18,185,875

### SOURCES

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

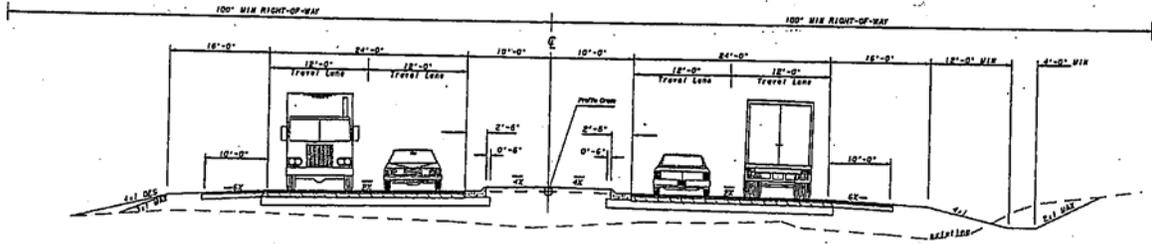
# ORIGINAL DESIGN SKETCH/DETAIL

**PROPOSAL NUMBER:** RW-6.1

**PAGE NUMBER:** 4 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



**FRONTAGE RD  
TANGENT SECTION  
TYPICAL SECTION  
RAISED 20' MEDIAN  
NOT TO SCALE**

WEST POINT INTERCHANGE 85  
AT CR 98 GABBETTVILLE ROAD  
PROJECT NUMBER CONHS-0008-00(232)  
P.I. NO. 0908232  
TROUP, COUNTY, GEORGIA  
PROPOSED TYPICAL SECTIONS  
GEORGIA DEPARTMENT OF TRANSPORTATION  
DATE: 09/21/06  
JORDAN  
JONES &  
GOULDING

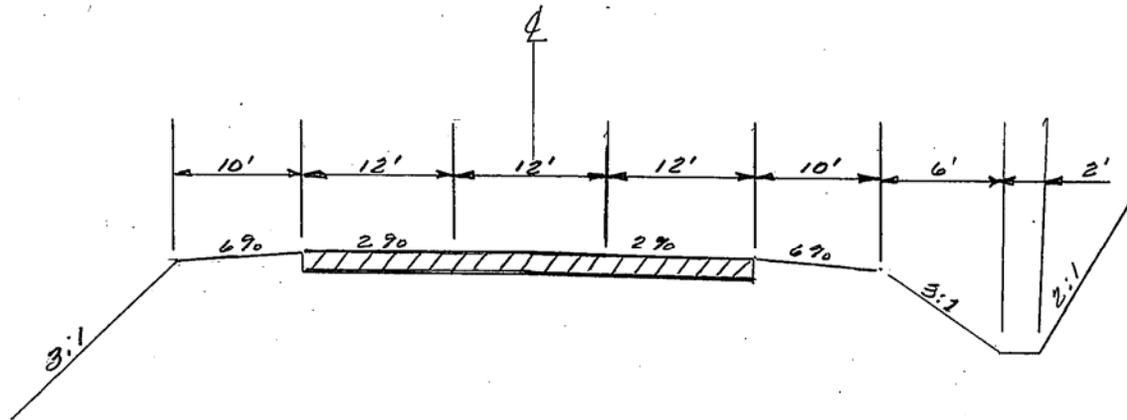
# PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER: RW-6.1

PAGE NUMBER: 5 of 5

PROJECT TITLE: I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

PROJECT LOCATION: Georgia DOT - Troup County, Georgia



PROPOSED TYPICAL SECTION  
FRONTAGE ROAD

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-6.2
<b>PAGE NUMBER:</b>	1 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** CONSTRUCT TWO LANE FRONTAGE ROAD FOR APPROXIMATELY ONE HALF THE CONCEPT LENGTH.

**ORIGINAL DESIGN:** The original design is to construct a four lane Frontage Road with a 20 raised median on 150 feet of R/W. The original design includes 16 feet outside shoulders of which 10 feet is paved and 6 feet inside shoulders with 2 feet paved full depth.

**PROPOSED CHANGE:** The proposed design change recommendation is to construct a two lane Frontage Road from SR 18 to the development site and transition to the proposed concept divided four lane facility in front of the development and on to Gabbettville road.

	<b>INITIAL COST</b>	<b>OPERATING COST</b>	<b>TOTAL LIFE-CYCLE COST</b>
<b>ORIGINAL DESIGN:</b>	\$ 31,707,125		\$ 31,707,125
<b>PROPOSED CHANGE:</b>	\$ 21,150,375		\$ 21,150,375
		<b>SAVINGS:</b>	\$ 10,556,750

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-6.2
<b>PAGE NUMBER:</b>	2 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Total life cycle cost savings of \$10,556,750.

Might be acceptable to all interested parties.

Gives developer final footprint in front of the facility.

Provides negotiated capacity at direct access points to development.

Meets standards for projected volumes relative to design.

**DISADVANTAGES:**

Requires buy-in from all interested parties.

**JUSTIFICATION:**

The proposed design would meet functional requirements and apparently would not violate any previously negotiated agreement. Should be acceptable to FHWA as the proposed design meets geometric criteria and capacity requirements.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	RW-6.2
<b>PAGE NUMBER:</b>	3 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement Structure	1	SY	195,000	46.96	9,157,700
Earthwork	1	CY	1,974,900	5.5	10,862,000
Drainage	1	LS	1	1,011,000	1,011,000
Bridge @ Long Cane Creek	1	SF	45,630	95.00	4,335,000
<b>SUBTOTAL:</b>					25,365,550
<b>25 % MARK UP:</b>					6,341,388
<b>TOTAL:</b>					31,706,938

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement	1	SY	161,000	47.00	7,567,000
Earthwork	1	CY	1,185,600	5.50	6,520,800
Drainage	1	LS	1	800,000	800,000
Bridge @ Long Cane Creek	1	SF	23,500	95.00	2,232,500
<b>SUBTOTAL:</b>					16,920,300
<b>25 % MARK UP:</b>					4,230,075
<b>TOTAL:</b>					21,150,375

### SOURCES

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

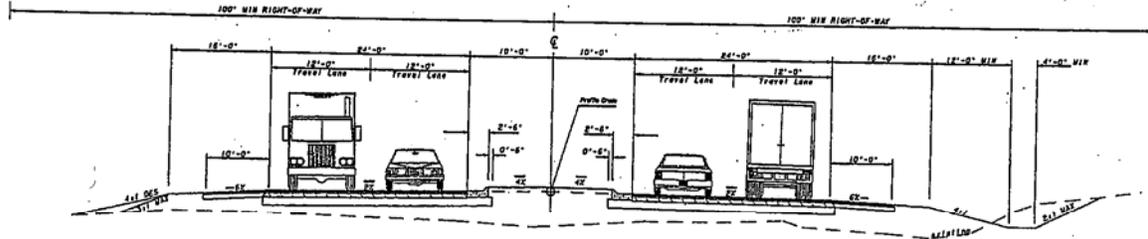
# ORIGINAL DESIGN SKETCH/DETAIL

**PROPOSAL NUMBER:** RW-6.2

**PAGE NUMBER:** 4 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



FRONTAGE RD  
TANGENT SECTION  
TYPICAL SECTION  
RAISED 20' MEDIAN  
NOT TO SCALE

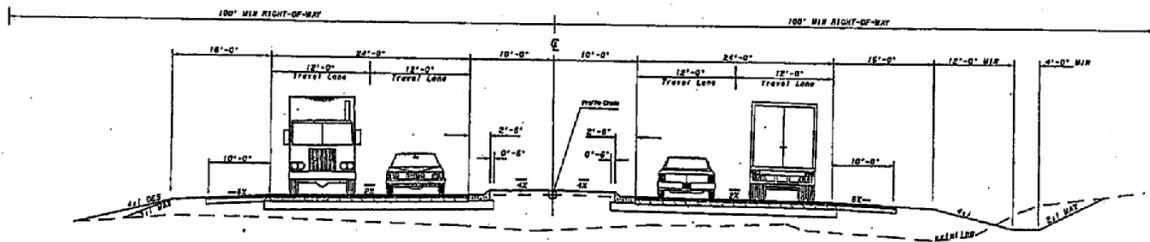
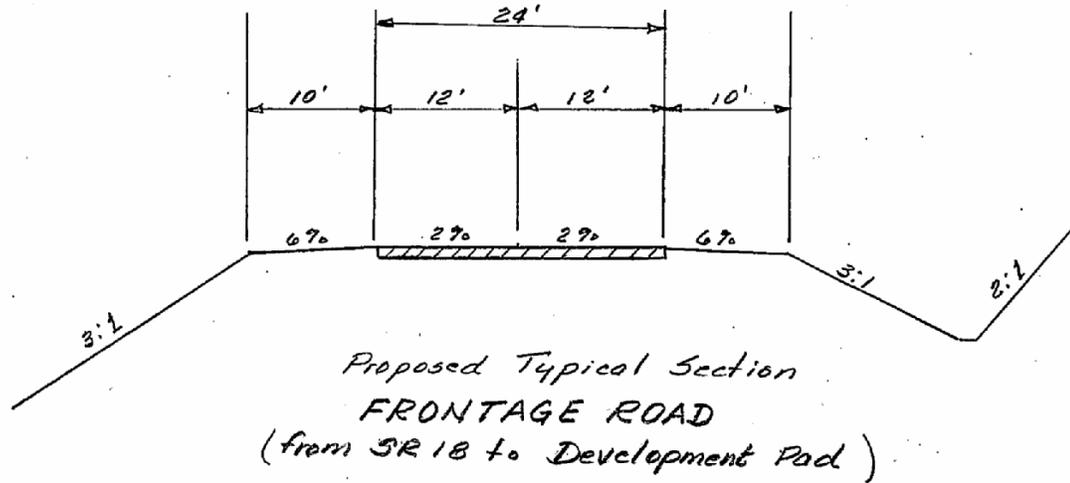
WEST POINT INTERCHANGE #3  
AT CR 98 GABBETTVILLE ROAD  
PROJECT NUMBER CSNHS-0008-00(232)  
P.I. NO. 0008232  
TROUP, COUNTY, GEORGIA  
PROPOSED TYPICAL SECTIONS  
GEORGIA DEPARTMENT OF TRANSPORTATION  
DATE: 09/21/06  
JORDAN  
SONES &  
GUILDING

# PROPOSED CHANGE SKETCH/DETAIL

<b>PROPOSAL NUMBER:</b>	RW-6.2
<b>PAGE NUMBER:</b>	5 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-6.3
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** STUDY FRONTAGE ROAD AS A LOCAL COUNTY ROAD.

**ORIGINAL DESIGN:** The original design proposes a concept for an urban type frontage road with 20 ft raised median and paving 10 ft of the 16 ft outside shoulder. The proposed profile is relatively flat with only one short section exceeding 1%. Horizontal alignment is straight except for each end of the frontage road

**PROPOSED CHANGE:** The proposed design change recommendation is to re-evaluate the frontage road at a lesser functional greater allowable grades, shoulder widths, need for median, etc. would greatly reduce the frontage road earthwork, drainage, and bridge requirements while achieving a 45 mph speed design & meeting capacity requirements.

	<b>INITIAL COST</b>	<b>OPERATING COST</b>	<b>TOTAL LIFE-CYCLE COST</b>
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-6.3
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

The potential exist to save on construction costs.

Quicker to build.

Standard & acceptable roadway design.

Could meet AASHTO criteria.

**DISADVANTAGES:**

Negotiations with all the stakeholders maybe driving the design instead of roadway engineering principles and proposing a lesser design might not be palatable to all players.

Considerable concept work has already been completed and probably would have to be redone.

Some time would be lost on a very tight schedule.

**JUSTIFICATION:**

Costs should be a controlling factor for any project and a facility that meets the needs of the planned growth is all that is required especially with tax dollars.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	RW-7.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** PROVIDE FRONTAGE RD. SLIP RAMP TO  
I-85 SB.

**ORIGINAL DESIGN:** The original design is construction of a new Frontage Road with access to I-85 via of a new Interchanges at Gabbettville Rd and I-85 existing Interchange at SR 18.

**PROPOSED CHANGE:** The proposed recommendation is to construct a slip ramp to I-85 South bound off of the new Frontage Road in front of the plant close to the employee parking lot.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	RW-7.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Relieves traffic from two interchanges.
- Provides direct access to I-85 South bound.
- Convenient to parking lot access.
- Will help Aleve employee congestion during change of shift overlap

**DISADVANTAGES:**

- Costs more.
- Requires some additional design.
- Requires FHWA & GDOT approvals.
- May require a signal on Frontage Road.

**JUSTIFICATION:**

It is anticipated a large portion of traffic exiting the site will go southbound. This slip ramp allows this traffic to enter I-85 SB without going through the SR 18 and Gabbettville Interchange. A high proportion of this traffic will be trucks.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	SB-1.0
<b>PAGE NUMBER:</b>	1 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** MAINTAIN A SINGLE FULL WIDTH  
(250'X91.25') BRIDGE OVER THE CREEKS  
ILO DUAL 250'X43.25' BRIDGE  
CONFIGURATION.

**ORIGINAL DESIGN:** The original design proposes various dual and full width bridges over the creeks (Dual 250'x38') vs. Full width 500'x91'. TOPPS 4265-9 for County routes (Frontage Road) with ADT>4000 and speed designs >50 MPH the dual bridge width gutter to gutter should have been 40' and not 38'. After which 1.5' barrier and 1 1/2" overhang is added to either side to render the full width of each bridge at 43.25'

**PROPOSED CHANGE:** The proposed design stipulates the use of full width bridges with raised median versus the dual bridge configuration since it is somewhat less costly.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 2,204,780		\$ 2,204,780
<b>PROPOSED CHANGE:</b>	\$ 2,222,167		\$ 2,222,167
		<b>SAVINGS:</b>	\$ 17,387

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	SB-1.0
<b>PAGE NUMBER:</b>	2 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Total life cycle cost savings of \$17,387.

Increased capacity for Future expansion by removing median.

Faster construction.

**DISADVANTAGES:**

Increased bridge square footage by 4.75’.

More labor.

**JUSTIFICATION:**

Future expansion due to anticipated traffic is the driver to justify the full width bridge.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	SB-1.0
<b>PAGE NUMBER:</b>	3 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Dual 250'x43.25' Bridge	7	Lump	2	880,712	1,761,424
<b>SUBTOTAL:</b>					1,764,424
<b>25 % MARK UP:</b>					440,356
<b>TOTAL:</b>					2,204,780

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Single 250'x91.25' Bridge	7	Lump	1	1,777,762	1,777,762
<b>SUBTOTAL:</b>					1,777,762
<b>25 % MARK UP:</b>					444,4405
<b>TOTAL:</b>					2,222,167

### SOURCES

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

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	SB-2.0
<b>PAGE NUMBER:</b>	1 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** USE ONE BRIDGE LENGTH ON  
GABBETTVILLE REGARDLESS OF OPTION  
BASED ON I-85 TYPICAL FUTURE SECTION

**ORIGINAL DESIGN:** The original design proposes various bridge widths and a constant length of 400' x140' max which seems excessive based on the typical section furnished for I-85.

**PROPOSED CHANGE:** The proposed design stipulates the use of constant bridge length of two spans of 135'± each that accommodate the future sections of 8'-0" inside shoulder, 5 lanes @ 12'-0" each, 12'-0" outside shoulder and 12'-0" clear zone to the 4'-0" paved ditch area. Also, allow approximately 43'-0" for enroll configuration at the ends of the bridge. The total length is 270'-0" (2 spans @135'-0" each). The width is 6 lanes @ 12', 16' median with 2' shoulder on either side, two sidewalks @ 6' and 2' shoulders plus parapet and overhang of 1-2 ½". The total is 110'-5"

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 6,650,000		\$ 6,650,000
<b>PROPOSED CHANGE:</b>	\$ 2,833,428		\$ 2,833,428
		<b>SAVINGS:</b>	\$ 3,816,572

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	SB-2.0
<b>PAGE NUMBER:</b>	2 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Total life cycle cost savings of \$3,816,572.

Reduced construction time.

Reduction in materials.

More efficient design.

Accommodates future I-85 section.

**DISADVANTAGES:**

None apparent.

**JUSTIFICATION:**

Future expansion of I-85, less construction materials and expedited construction are the drivers for the recommendation.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	SB-2.0
<b>PAGE NUMBER:</b>	3 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Single 400' x 140' Bridge	1	SF	56000	\$95	5,320,000
<b>SUBTOTAL:</b>					5,320,000
<b>25 % MARK UP:</b>					1,330,000
<b>TOTAL:</b>					6,650,000

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Single 275'x 110.4167' Bridge	7	Lump	1	2,266,742	2,266,742
<b>SUBTOTAL:</b>					2,266,742
<b>25 % MARK UP:</b>					566,686
<b>TOTAL:</b>					2,833,428

### SOURCES

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

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	SB-3.0
<b>PAGE NUMBER:</b>	1 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** REROUTE DBL 9X9 CULVERT AND  
ELIMINATE 90 DEGREE BEND BY  
RELOCATING THE DETENTION POND  
CLOSER TO THE SOUTHERNMOST SE  
CORNER POINT OF THE PAD.

**ORIGINAL DESIGN:** The original design proposes 700 LF of DBL 9x9 box culvert that extends through a 90 bend to a detention pond between the west side of relocated Gabbettville road and the frontage road.

**PROPOSED CHANGE:** The proposed design stipulates the shortening of the culvert by half the length at least and moving the pond closer to the southernmost SE corner.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>	\$ 1,656,384		\$ 1,656,384
<b>PROPOSED CHANGE:</b>	\$ 828,193		\$ 828,193
		<b>SAVINGS:</b>	\$ 828,191

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	SB-3.0
<b>PAGE NUMBER:</b>	2 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Total life cycle cost savings of \$828,191.
- Less construction materials.
- Less construction time.

**DISADVANTAGES:**

- Detention pond is within closer proximity to both Frontage and I-85.
- Faster runoff is needed and maybe a steeper slope.

**JUSTIFICATION:**

Cost savings is the driver to justify the reduction in length of the overall structure.

## COST ESTIMATING WORKSHEET

<b>PROPOSAL NUMBER:</b>	SB-3.0
<b>PAGE NUMBER:</b>	3 of 5

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
700 LF-DBL 9x9 Conc (See Cals)	7	LUMP	1	1,325,107	1,325,107
<b>SUBTOTAL:</b>					1,325,107
<b>25 % MARK UP:</b>					331,277
<b>TOTAL:</b>					1,656,384

### PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
350 LF-DBL 9x9 Conc (See Cals)	7	Lump	1	662,554	662,554
<b>SUBTOTAL:</b>					662,554
<b>25 % MARK UP:</b>					165,639
<b>TOTAL:</b>					828,193

### SOURCES

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

<b>PROPOSAL NUMBER:</b>	SB-3.0
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<b>PAGE NUMBER:</b>	4 of 5
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**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### DATA FROM GA STD Culvert design DBL 9x9

Conc=2.863 cy/lf

Rebar=293.53#/lf

Length=700 LF

Conc Unit Price (GDOT Item mean)=\$541.65 per CY

Rebar Unit Price(GDOT Item mean)=\$0.89 per Lbs

Foundation Backfill, TP II Unit Price(GDOT Item mean)=\$49.72 per CY

Total Cost=700\*(2.863\*541.65+293.53\*0.89)+700/27\*(22\*2\*49.72)

Total=1,268,390+56,718=1,325,107

## PROPOSED CHANGE CALCULATIONS

<b>PROPOSAL NUMBER:</b>	SB-3.0
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<b>PAGE NUMBER:</b>	5 of 5
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**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

### DATA FROM GA STD Culvert design DBL 9x9

Conc=2.863 cy/lf

Rebar=293.53#/lf

Length=350 LF

Conc Unit Price (GDOT Item mean)=\$541.65 per CY

Rebar Unit Price(GDOT Item mean)=\$0.89 per Lbs

Foundation Backfill, TP II Unit Price(GDOT Item mean)=\$49.72 per CY

Total Cost=350\*(2.863\*541.65+293.53\*0.89)+350/27\*(22\*2\*49.72))

Total=634,195+28,359=662,554

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-1.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** PROVIDE INCENTIVE CLAUSE FOR TIMELY COMPLETION.

**ORIGINAL DESIGN:** The original design contract documents do not presently address incentive clauses for early completion.

**PROPOSED CHANGE:** The proposed design change recommends including incentive/disincentive clauses in the contract documents for early/on-time completion.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-1.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Potential cost savings.

On time use of development facilities.

Potential reduction in liabilities and litigations from the developer due to delay in facility opening.

Entices the contractor to finish on time with no delays.

Disincentives may have the potential effect as an incentive in pushing the contractor into finishing on time or face major penalties.

**DISADVANTAGES:**

Disincentives can be costly to litigate in court for GDOT.

Contractor may build in cost into contract thereby costing the GDOT bidding to be higher than expected.

Early completion Incentives have no effect on the final outcome since the facilities will not be used earlier than the anticipated date.

**JUSTIFICATION:**

The cost savings in the event of delay and the ability to provide quicker access to the development justify this recommendation.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-2.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** AWARD FRONTAGE ROAD AS A SEPARATE  
CONTRACT FROM THE GABBETTVILLE  
INTERCHANGE

**ORIGINAL DESIGN:** The original design contract document combines both the interchange at Gabbettville and the frontage road as one full contract.

**PROPOSED CHANGE:** The proposed design change recommends separating the frontage road portion and the Gabbettville interchange portion into two separate contracts thereby ensuring completion on time and eliminating major scheduling problems for one single contractor.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-2.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Assures on time completion.
- Reduces pressure on one contractor to deal with both portions of the project.
- Reduces scheduling problems per contractor.
- Frontage portion can go faster since the R/W has already been acquired.
- The frontage road can become the access road for the Gabbettville contract construction portion.

**DISADVANTAGES:**

- Additional overhead.
- Additional mobilization.
- Additional costs.
- Contractor conflicts.
- Management of two contracts versus one.

**JUSTIFICATION:**

The already acquired R/W along the frontage road and the possibility of it becoming the access road for the construction of Gabbettville road justifies the recommendation.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-3.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** COORDINATION BETWEEN DEVELOPMENT  
SITE CONTRACTOR AND ROADWAY  
CONTRACTOR.

**ORIGINAL DESIGN:** The stage of the current documents provided does not address coordination of access to the development site during roadway construction.

**PROPOSED CHANGE:** It is recommended in the final RFP design / build documents should allow the engineering firm to stipulate what is expected of the roadway contractor in regard to providing access to the site / building contractor.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-3.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Defines expectations of major participants upfront.

Allows roadway contractor to reflect associated cost in bid.

Critical path would help all participants to plan.

**DISADVANTAGES:**

Would require acceptance / agreement of site contractor.

GDOT might want to dictate coordination requirements instead of design / build contractor.

**JUSTIFICATION:**

Access to the area is limited with the potential for multiple contractors & sub contractors needing to use common space. Guidance relative to sequence & priority activities need to be addressed.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-4.0
<b>PAGE NUMBER:</b>	1 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** IDENTIFY WHO MAINTAINS EXISTING  
ACCESS ROADS DURING CONSTRUCTION.

**ORIGINAL DESIGN:** The current documents show access to the site is limited to existing county roads with weight restrictions. Tremendous volumes of loaded construction trucks will damage these roads well beyond both projects.

**PROPOSED CHANGE:** The final RFP design build documents should address who will repair damage to access roads during construction. The document should also provide which roads will be acceptable or if some are to be restricted. If restricted who will sign and enforce restrictions. Troup county will have to be included. Define who will pay for maintenance during construction and maintenance level expected.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-4.0
<b>PAGE NUMBER:</b>	2 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Cost of maintenance can be addressed.

No construction related traffic has an interest.

Restrictions during construction can be implemented before hand.

Status of 7-8 miles of county roads will be addressed before complaints begin and a methodology developed defining responsibility and level of maintenance require.

**DISADVANTAGES:**

None apparent.

**JUSTIFICATION:**

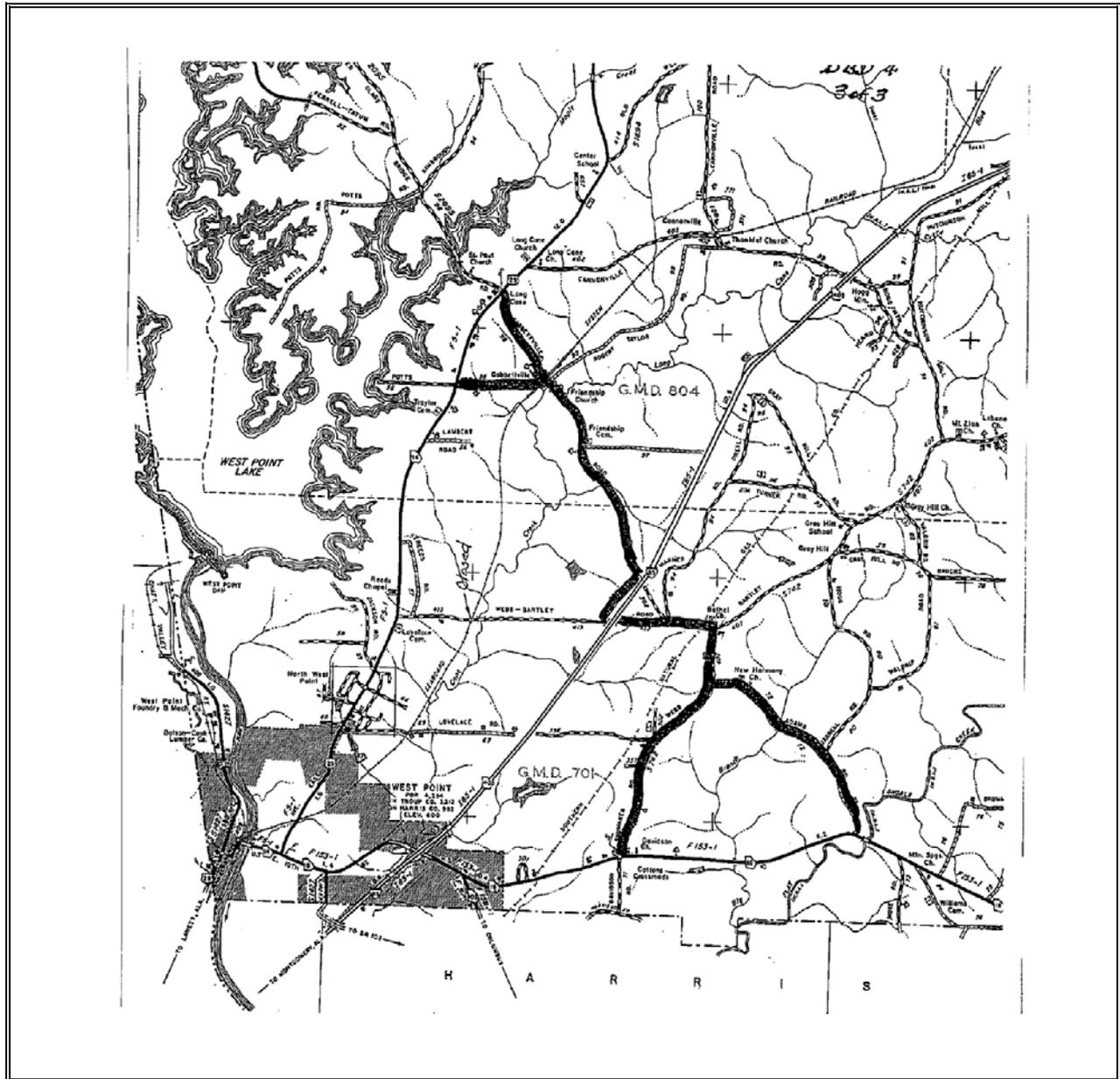
At some point conflicts & complaints will arise during construction about deterioration of the access roads to the sites. Maintenance during construction will be necessary and depending on how that maintenance is handled could influence roadway contract cost.

# ORIGINAL DESIGN SKETCH/DETAIL

<b>PROPOSAL NUMBER:</b>	DB-4.0
<b>PAGE NUMBER:</b>	3 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-4.1
<b>PAGE NUMBER:</b>	1 of 3

<p><b>PROJECT TITLE:</b> I-85 INTERCHANGE AT CR 98 GABBETTVILLE ROAD</p> <p><b>PROJECT LOCATION:</b> Georgia DOT - Troup County, Georgia</p>
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<p><b>PROPOSAL DESCRIPTION:</b> ACCESS ROADS WILL BE DAMAGED DURING CONSTRUCTION FROM CONSTRUCTION TRUCKS PROBABLY RESULTING IN REPAIR COSTS.</p>
---

<p><b>ORIGINAL DESIGN:</b> The design/build documents provided does not address restoration of county roads damaged as a result of heavy loads along county roads during construction.</p>
<p><b>PROPOSED CHANGE:</b> The proposed recommendation is to recognize that permanent damage will result from construction traffic on county roads that are not restricted. The proposal is to identify a methodology to restore these roads to an acceptable service level, define that level and determine who pays for the restoration.</p>

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-4.1
<b>PAGE NUMBER:</b>	2 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Presents all shareholders in the project as recognizing problems created by the projects and addressing them.

Access to the completed facility will attract some vehicular traffic along these routes.

Property owners along these county roads should not experience long-term degradation of access to their property.

**DISADVANTAGES:**

Could drive up project cost if included in the roadway project.

Source of funding will have to be identified.

**JUSTIFICATION:**

Restoration of county roads should be restored to their previous level of rideability and safety as minimum requirements after conclusion of the development & roadway projects.

# ORIGINAL DESIGN SKETCH/DETAIL

**PROPOSAL NUMBER:**

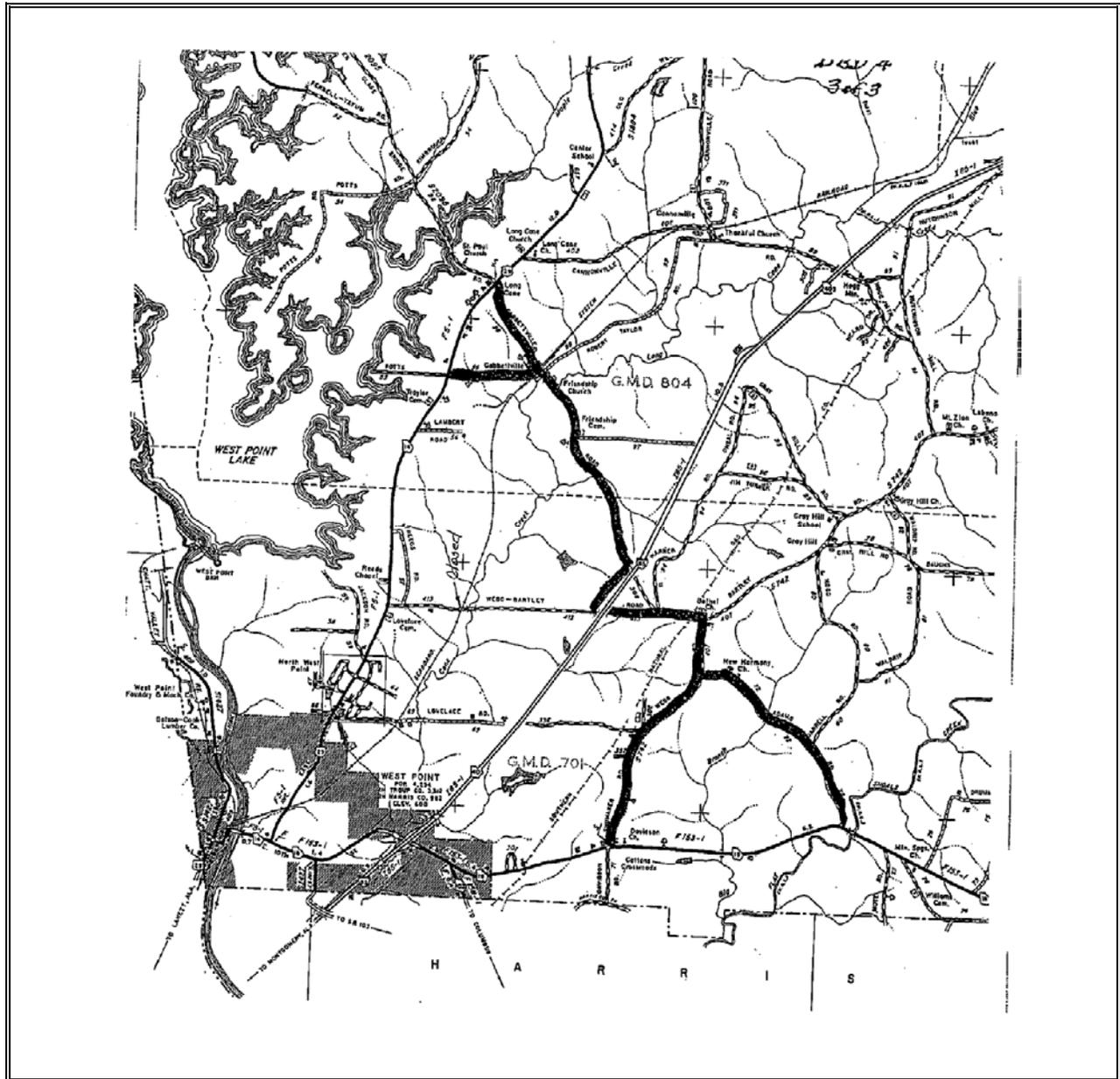
DB-4.1

**PAGE NUMBER:**

3 of 3

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia



## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-5.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** IDENTIFY MILESTONES FOR APPROVAL.

**ORIGINAL DESIGN:** The original design contract documents do not presently include milestone timelines at which to evaluate and/or approve the various disciplines, materials, construction methods, etc.

**PROPOSED CHANGE:** The proposed design change recommends including a full set of anticipated and critical milestones at which various disciplines and GDOT personnel can evaluate and approve the upcoming events according to a project specific timeline.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-5.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Assures a review process prior to progressing.

Insures a quality control process.

Divulges any variances from the prior approved processes or plans.

Exposes any errors or omissions and/or discrepancies that could be costly.

**DISADVANTAGES:**

Delay in timeline due to revisions.

Delay in timeline due to errors.

Delay in timeline due review process.

**JUSTIFICATION:**

The presence of milestones for reviews and approval is an essential part of any construction project which justifies this recommendation.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-7.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** CONFIRM A FULL HYDRO/DRAINAGE  
ANALYSIS IS PRODUCED.

**ORIGINAL DESIGN:** The original design contract documents do not presently include a site hydrology, drainage design, and watershed basin study as well as studies of the adjacent streams as an effect of the proposed and future development.

**PROPOSED CHANGE:** The proposed design change recommends including a hydrological study of the basin area and the effect of the proposed and future developments included as well as drainage and hydraulic studies performed on the area and adjacent streams.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-7.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Clearly states the effect of development on the basin.
- Clearly shows the corresponding flood stage elevations for county and insurance flood maps.
- Dictates what length of openings under the proposed bridges is required to maintain the freeboard stipulations as indicated by GDOT policies for stream crossings.
- Assists in erosion control plan production and placement of BMP's for the site.
- Determines various needed locations of detention ponds and runoffs etc.
- May decrease costs of bridges due to bridge length and profile requirements.

**DISADVANTAGES:**

- May affect the overall layout of the concept.
- May increase costs of bridges due to increased lengths and profile adjustments.

**JUSTIFICATION:**

The presence of various streams, flat slope of the industrial site pad, as well as increase in imperviousness of the basin that may create many hydrological problems if not studied justifies this recommendation.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-8.0
<b>PAGE NUMBER:</b>	1 of 2

<p><b>PROJECT TITLE:</b> I-85 INTERCHANGE AT CR 98 GABBETTVILLE ROAD</p> <p><b>PROJECT LOCATION:</b> Georgia DOT - Troup County, Georgia</p>
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<p><b>PROPOSAL DESCRIPTION:</b> IDENTIFY INSURANCE COVERAGE ISSUES/LIABILITY.</p>
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<p><b>ORIGINAL DESIGN:</b> The original design contract documents do not presently include insurance coverage and liability limits.</p>
<p><b>PROPOSED CHANGE:</b> The proposed design change recommends including clear and concise insurance coverage and limits of liability that exceed the normal that is required for regularly bid projects. With a design build contract the chances for liabilities and errors and omissions is drastically increased and copious coverage is imperative.</p>

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-8.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

- Insures ample coverage.
- Protects all involved parties at the onset.
- Assures GDOT better diligence in pursuing the work.
- Insures clear stipulations and coverage limits in case of a potential liability.

**DISADVANTAGES:**

None apparent.

**JUSTIFICATION:**

The presence of insurance coverage and liability limits protects all involved which justifies this recommendation.

## VALUE ENGINEERING PROPOSAL

<b>PROPOSAL NUMBER:</b>	DB-10.0
<b>PAGE NUMBER:</b>	1 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**PROPOSAL DESCRIPTION:** HIRE INDEPENDENT CONSTRUCTION  
MANAGEMENT FIRM TO MANAGE THE  
DESIGN BUILD CONTRACT AND ACT AS  
QA/QC.

**ORIGINAL DESIGN:** The original design contract documents do not presently include the possibility of contracting Construction Management firm with design builds experience to manage and QA/QC a design build project since GDOT lacks that type of experience.

**PROPOSED CHANGE:** The proposed design change recommends including construction management firm as part of the design build team to manage the project thereby eliminating major problems and litigations.

	INITIAL COST	OPERATING COST	TOTAL LIFE- CYCLE COST
<b>ORIGINAL DESIGN:</b>			
<b>PROPOSED CHANGE:</b>			
<b>SAVINGS:</b>			Design Suggestion

**ADVANTAGES/DISADVANTAGES/JUSTIFICATION**

<b>PROPOSAL NUMBER:</b>	DB-10.0
<b>PAGE NUMBER:</b>	2 of 2

**PROJECT TITLE:** I-85 INTERCHANGE AT CR 98  
GABBETTVILLE ROAD

**PROJECT LOCATION:** Georgia DOT - Troup County, Georgia

**ADVANTAGES:**

Diverts the liability from GDOT to the Construction Management (CM) firm.

CM’s experience can eliminate potential problems that would be overlooked by GDOT personnel since they lack experience in this field.

The CM acts as an outside QA/QC which can minimize discrepancies in the contract drawings and process.

The CM may be capable of managing the schedule and budget better than GDOT and therefore insuring the completion of the project on time

**DISADVANTAGES:**

CM use has not been documented as efficient within GDOT’s realm.

CM inclusion will increase the final bid costs.

CM is not experienced in GDOT methods

**JUSTIFICATION:**

The possibility of the project proceeding smoother with the least amount of budgeting, scheduling, errors and omissions justify this recommendation.

## VALUE ENGINEERING TEAM STUDY

### CONTACT DIRECTORY VE STUDY SIGN-IN SHEET

Project No.: CSNHS-0008-00(232) County: Troup PI No.: 0008232 Date: September 27, 28, 29, 2006

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MIKE DOVER	00270815	GDOT	41463-0523	MIKE DOVER
Ken Anderson		JJG	678-333-0642	kanderson@jjg.com
Brian Summers	00208175	GDOT FES		

## VALUE ENGINEERING TEAM STUDY

### FUNCTION ANALYSIS

The following functions for I-85 Interchange at CR 98 Gabbettville Road were identified during discussions with the Georgia DOT and Jordan Jones & Goulding Engineers representatives (design team consultants) on the first day of the study. These two word functions consist of an active verb, and a quantifiable (measurable) noun. The functions represent the proposed capital improvement expenditures of I-85 Interchange at CR 98 Gabbettville Road, and assist the V.E. team in becoming familiar with the needs of the project and the long-term goals for this expansion of the I-85 Interchange at CR 98 Gabbettville Road. The Basic Function of the project is to “Economic Development”. The following are considered by the V.E. team to be Secondary and Supporting Functions.

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

VALUE ENGINEERING TEAM STUDY

**FUNCTION ANALYSIS**

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

VALUE ENGINEERING TEAM STUDY

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**COST DRIVER ANALYSIS**

The V.E. team reviewed the project cost elements and identified the controlling element or cost driver for the I-85 Interchange at CR 98 Gabbettville Road project. The cost drivers are used in the brainstorming process as a focal point of discussion and for idea generation.

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

VALUE ENGINEERING TEAM STUDY

**COST MODEL**

<b>I-85 INTERCHANGE AT CR-94</b>	<b>COST \$</b>	<b>% OF TOTAL</b>
EARTHWORK - unclassified excavation	\$14,357,750	15.48%
CONCRETE PAVING	\$14,180,650	15.29%
RIGHT OF WAY (ROW)	\$13,800,000	14.88%
ASPHALT PAVEMENT	\$11,176,200	12.05%
BRIDGE STRUCTURES	\$8,372,000	9.03%
12 AGGREGATE BASE COURSE	\$6,765,450	7.30%
CULVERTS	\$4,313,650	4.65%
MSE WALLS & SOUND WALLS	\$3,829,500	4.13%
CLEARING AND GRUBBING 328 AC	\$3,773,000	4.07%
TRAFFIC CONTROL & FIELD ENGINEER	\$2,300,000	2.48%
SIGNS, MARKINGS, TRAFFIC SIGNAL MODS	\$2,171,200	2.34%
LANDSCAPING	\$1,840,000	1.98%
EROSION CONTROL	\$1,664,050	1.79%
SIDEWALK, SIDE BARRIER, & TEMP BARRIER	\$925,750	1.00%
DRAINAGE Longitudinal SYSTEM	\$704,950	0.76%
CONCRETE CURB AND GUTTER (TYPE #2 & #7)	\$685,000	0.74%
DRAINAGE CROSS PIPES	\$623,300	0.67%
ACCESS FENCE AND APPROACH SLABS	\$509,450	0.55%
GRASSING	\$454,250	0.49%
GUARD RAILS	\$243,800	0.26%
TACK COAT	\$43,550	0.05%
<b>TOTALS - Est. dated 9/27/06</b>	<b>\$92,733,500</b>	<b>100.00%</b>

BRAINSTORMING OR SPECULATION

PROJECT TITLE: I-85 Interchange at CR 98 Gabbettville Road

PROJECT LOCATION: Troup County, Georgia

**NUMBER** **IDEA** **RANK**

**ROADWAY (RW)**

- 1.0 Reduce shoulder width from 16'-0" to 12'-0" & pavement from 10'-0" to 6'-6"
- 2.0 Install raised median 20'-0" ilo depressed median of 40'-0"
- 3.0 Look at alternates to MSE retaining walls on Frontage Road in front of industrial site pad (profile controls)
- 4.0 Investigate moving new I-86 Interchange to the East (requires more ROW)
- 5.0 Re-evaluate a Diamond Interchange vs.  $\frac{3}{4}$  Diamond with loop
- 6.0 Build 2 lane road on 4 lane ROW
- 6.1 Build 3 lane road on 4 lane ROW
- 6.2 Reduce to 2 lanes ilo 4 lanes from industrial site pad westward to Rt. 18
- 6.3 Remove median and study as local road with 45 mph ilo arterial road as currently design
- 6.4 Build a four lane road with a 32'-0" depressed median since it does not need Type "B" median breaks for Frontage Road
- 6.5 Build a 2 lane road with a 10.5' median with barrier for Frontage Rd
- 7.0 Build a slip ramp to I-85 from new Frontage Road heading West to Alabama to handle heavy truck and employee traffic
- 8.0 Recommend roller compacted concrete subbase for a wearing service during construction to avoid damage to final road
- 9.0 On concrete paved roads specify continuous steel reinforcement

**DESIGN BUILD DOCUMENTS (DB)**

- 1.0 Provide and "Incentive Clause" for the contractor to ensure a timely completion of the contract.
- 2.0 Break Out and Award Frontage Road portion of the contract as a separate contract.
- 2.1 Break Out and Award the new I-85 Interchange as a separate contract
- 3.0 Ensure coordination between the industrial building contractor and the GDOT construction contractor.
- 4.0 Identify in the DB documents who is responsible for maintaining the existing roads during construction

## BRAINSTORMING OR SPECULATION

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PROJECT TITLE: I-85 Interchange at CR 98 Gabbettville Road

PROJECT LOCATION: Troup County, Georgia

- 4.1 Identify in the DB documents who is responsible for maintaining the existing and new frontage road after construction.
- 5.0 Make sure a total hydrographic/drainage study is conducted to include all Economic Development land in this corridor.
- 6.0 Develop project specific specifications for this DB contract such as: hours of construction, liability, insurance requirements and etc.
- 7.0 Identify milestones for approval of documents
- 8.0 Identify any unusual insurance requirements and liability issues
- 9.0 Identify in DB documents the chain of command (GDOT) for administrative management and construction development process
- 10.0 Hire and experienced independent CM to administer DB contract from start to finish, including QA and QC review
- 11.0 Provide soil boring for all work areas (frontage road, Interchange, bridges, culverts, and Rt. 18 intersection)
- 12.0 Reference design requires at AASHTO standards, FHWA, or GDOT and let the contractor do the work
- 13.0 Let the contractor design the pavement section for GDOT/CM approval
- 14.0 Specify reasonable minimum standards, avoid being rigid and specific

### **BRIDGE**

- 1.0 Construct a full 500' X 91.25' bridge ilo dual 250' X 43.5' as currently shown
- 2.0 Use only one bridge length on Gabbettville Road regardless of interchange option chosen
- 3.0 Reduce 9' X 9' double box 700' long culvert length and relocate retention pond
- 4.0 Eliminate loop option on Interchanges to avoid truck accidents and truck turnover's

# VALUE ENGINEERING WORKSHOP AGENDA

## I-85 INTERCHANGE AT CR98/GABBETTVILLE ROAD PROJECT NUMBER: CSNHS-0008-00(232)

### TROUP COUNTY, GEORGIA

**24 HOUR - V.E. STUDY**  
27-29 SEPTEMBER 2006

The value engineering workshop for the subject project will be conducted for three (3) days from 27-29 September 2006, at **Georgia Department of Transportation, Urban Planning Office Conference Room #352, #2 Capitol Square, Atlanta, GA; POC – Lisa Myers @ (404) 651-7468 voice, (404) 463-6161 FAX**

<b>WEDNESDAY</b>	0800 - 0815	<b>Introduction Phase</b>	Lindsey Gardner, P.E., CVS Team Leader, U.S. Cost, Inc. <b>(V.E. Team Only)</b>
			<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	<b>Review of Project Plans</b>	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	<b>Project Design Briefing</b>	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. Photos of the project site may also be presented for review by the design team. 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	<b>Lunch</b>	

**WEDNESDAY (CONTINUED)**

1300 - 1500      **Function Analysis Phase**      V.E. Team

*The V.E. team will discuss the required functions of the facility to meet the mission of the project.*

1500 - 1800      **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. Each project feature 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.*

**THURSDAY**

0800 - 1000      **Analysis Phase**      V.E. Team

*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 GDOT, Engineering 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, geotechnical, constructability, etc..*

1200 – 1300      **Lunch**

1300 - 1800      **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 designer, GDOT representatives, 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, each team member will prepare estimates of costs 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.*

**FRIDAY**      0800 - 1200      **Development Phase**      VE Team

1200 - 1300      Lunch

1300 - 1500      **Development Phase & Quality Review**      V.E. Team

1600 -      **Summary of Results/Workshop Conclusion**      VETL

*The study will be concluded. Mutually exclusive items will be identified in the summary. The final report will be delivered to interested parties within two weeks of the study's conclusion.*

# Briefing for VE Study Team

## West Point 85

Wednesday, September 27, 2006

### Layout Orientation:

- Magnitude of site.
- Current Status

### Brief Project History:

DEcD moves on West Point site – November 05

State Officials with KIA – December 05

Property Assemblage – 1<sup>st</sup> quarter 06

GDOT contacts JIG – March 06

Begin work – May 06 – providing concept, IJR, environmental document, soil survey, BFI, SUE, mapping and survey, traffic analysis, design-build specs., costing plans and right of way plans.

### Procurement Method:

Design-Build. The actual construction and final plans will follow GDOT's new policy on design-build procurement which is low bid. This method should further expose the opportunities to value engineer this project.

### Proposed Infrastructure:

Four interchange configurations were studied. Analysis and numbers lead to full diamond configuration. However, three quarter diamond with loop configuration has merit also. Coordination with DEcD this week should shake out preferred alternate. FHWA is on board with this approach. Below are major comparison areas used in analyzing the interchange configurations. Four mile frontage road remains the same relative to alignments.

Area	Interchange Configuration			
	Full Diamond w/ Loop <sup>1</sup>	1/2 Diamond w/ Loop	¾ Diamond w/ Loop	Full Diamond
Construction	\$80,730,000	\$76,549,000	\$76,590,000	\$73,825,000
Right of Way	\$12,000,000	\$9,925,560	\$10,200,000	\$8,800,000
Utilities	\$750,000	\$750,000	\$750,000	\$0
Concepted Costs - Current	\$93,481,000	\$87,974,560	\$87,540,000	\$82,625,000
Savings	n/a	\$5,506,440	\$5,940,000	\$10,855,000
Property Owners and Displacements	34 affected properties. 4 to 5 displacements.	31 affected properties. 3 to 4 displacements.	31 affected properties. 3 to 4 displacements.	25 affected properties. No displacements.
ROW Acquisition Time	Best case – 5 months	Best case – 5 months	Best case – 5 months	Best case – 3 months.

1. Most costly scenario



**Public Involvement:**

- Majority of the public support the project.

**Utilities:**

Utilities are minor on this job with the exception of the GA Power transmission line. Interchange configuration will determine extent of reimbursable.

**Coordination and Commitments:**

- Public players – GSFIC, GDOT, DEcD, - FHWA, SHPO, EPD, COE – Urban Design, Utilities, R/W, Construction, Maintenance, Environmental, and Bridges
- Consultants – multiple
- Documents – Coordinating Agencies
- Frontage Road – Location and grades
- Culverts
- Webb Road - Grades

**Resources:**

- Archaeology site
- Grave site
- Wetlands and streams

**Critical Schedules:**

Concept and Environmental Document

- VE Study – September 27-29
- Concept Meeting – October 17
- Draft EA to FHWA – October 29
- Concept approval – November 8
- FHWA approval of EA – November 9
- PHOH – December 14
- Letting – Early March
- Beneficial Occupancy – December 08

Right of Way

- Pre-acquisition and negotiations – October 16
- Mini-CEs prepared for all parcels (about 25 total) in support of Early Acquisition – September 27 to October 24
- All closings complete – February 9 (No displacements – Full Diamond) or April 6 (4 to 5 displacements – ¾ diamond with loop)

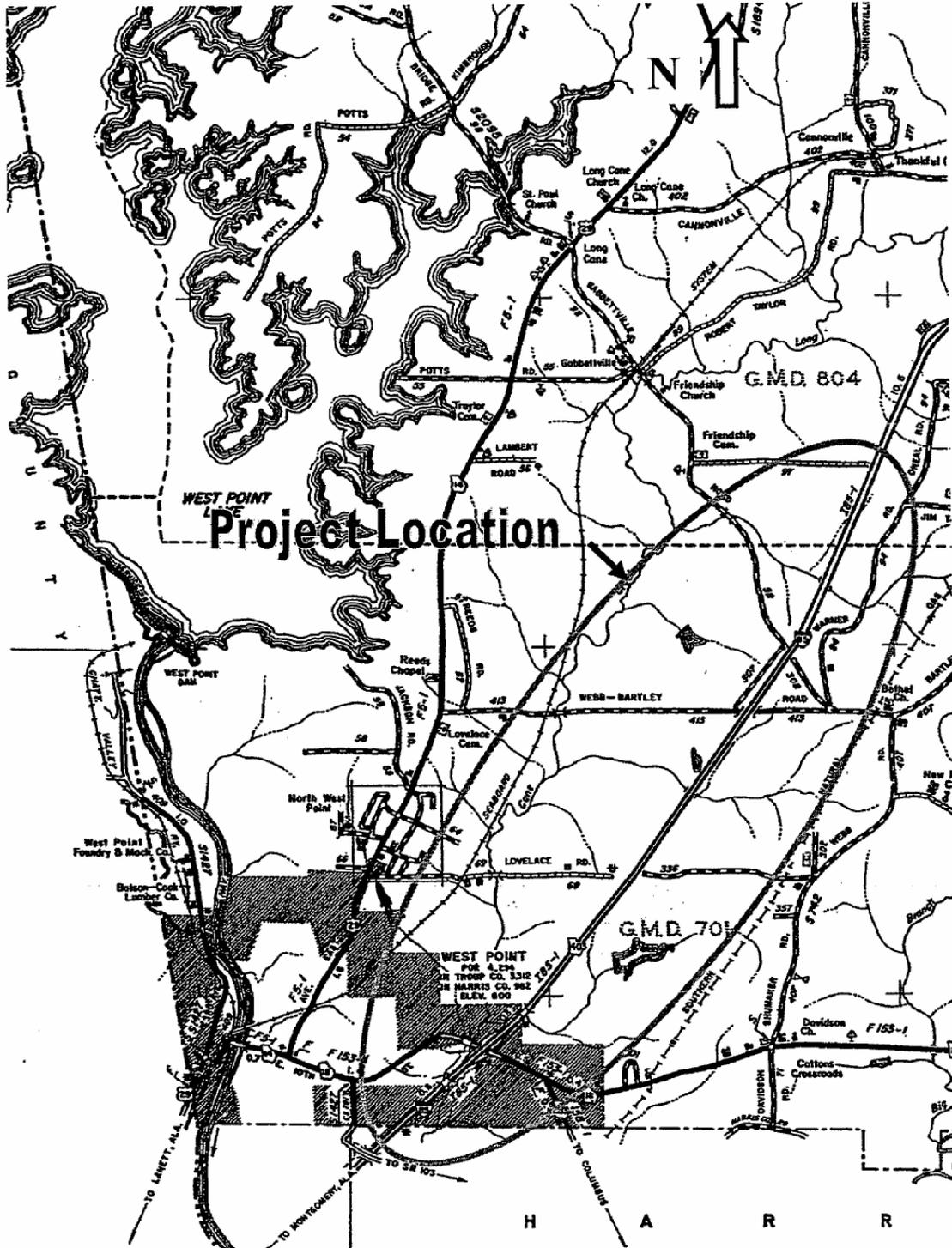
Advertisement for Design-Build Contract

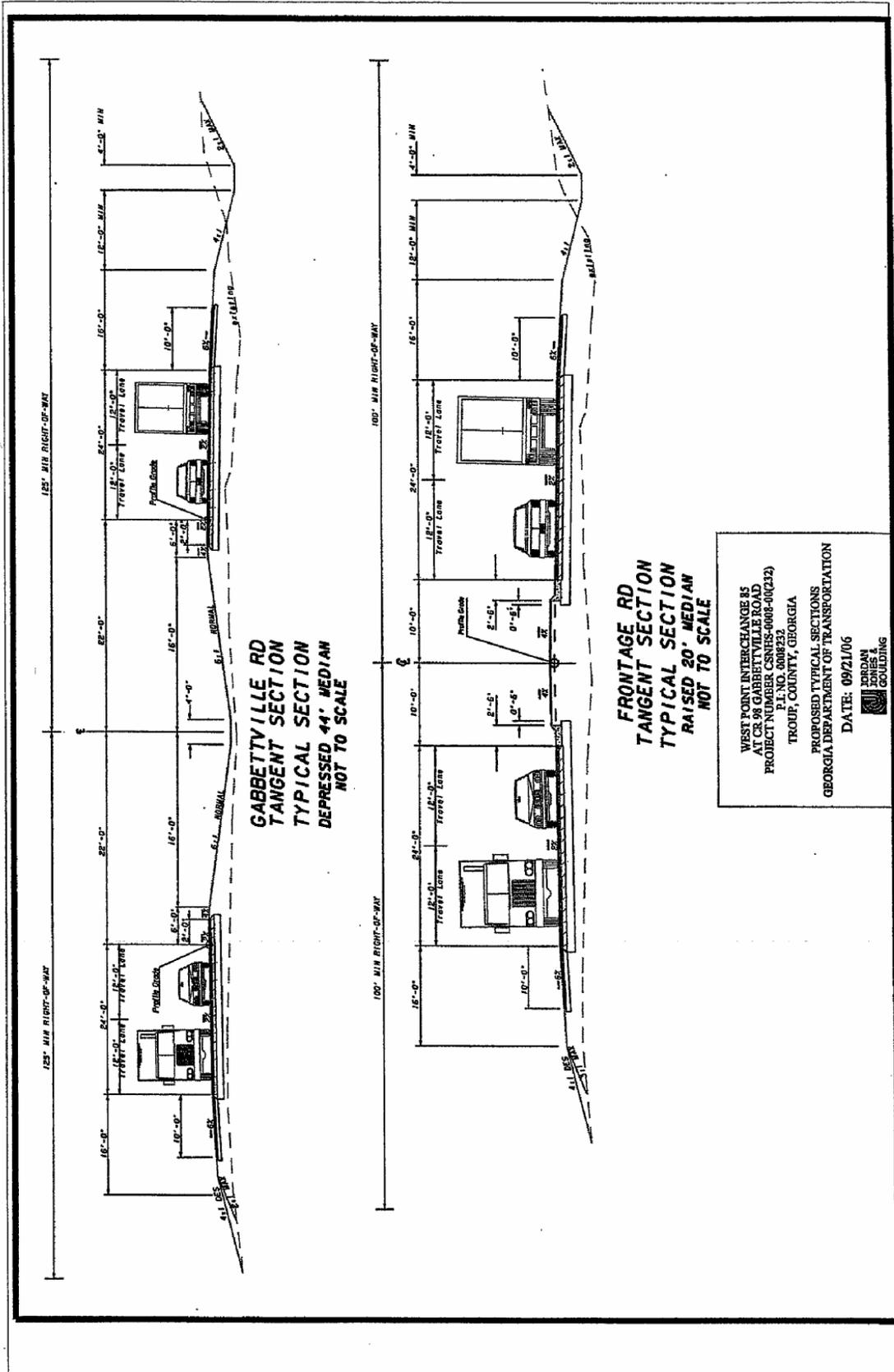
- Pre-notice – Late November
- Evaluate qualified teams – late November
- Advertise and make costing plans available to team – Early January 2008

**Questions on Concepts:**



PROJECT MAP-Project No. : CSNHS-0008-00(232), Troup County





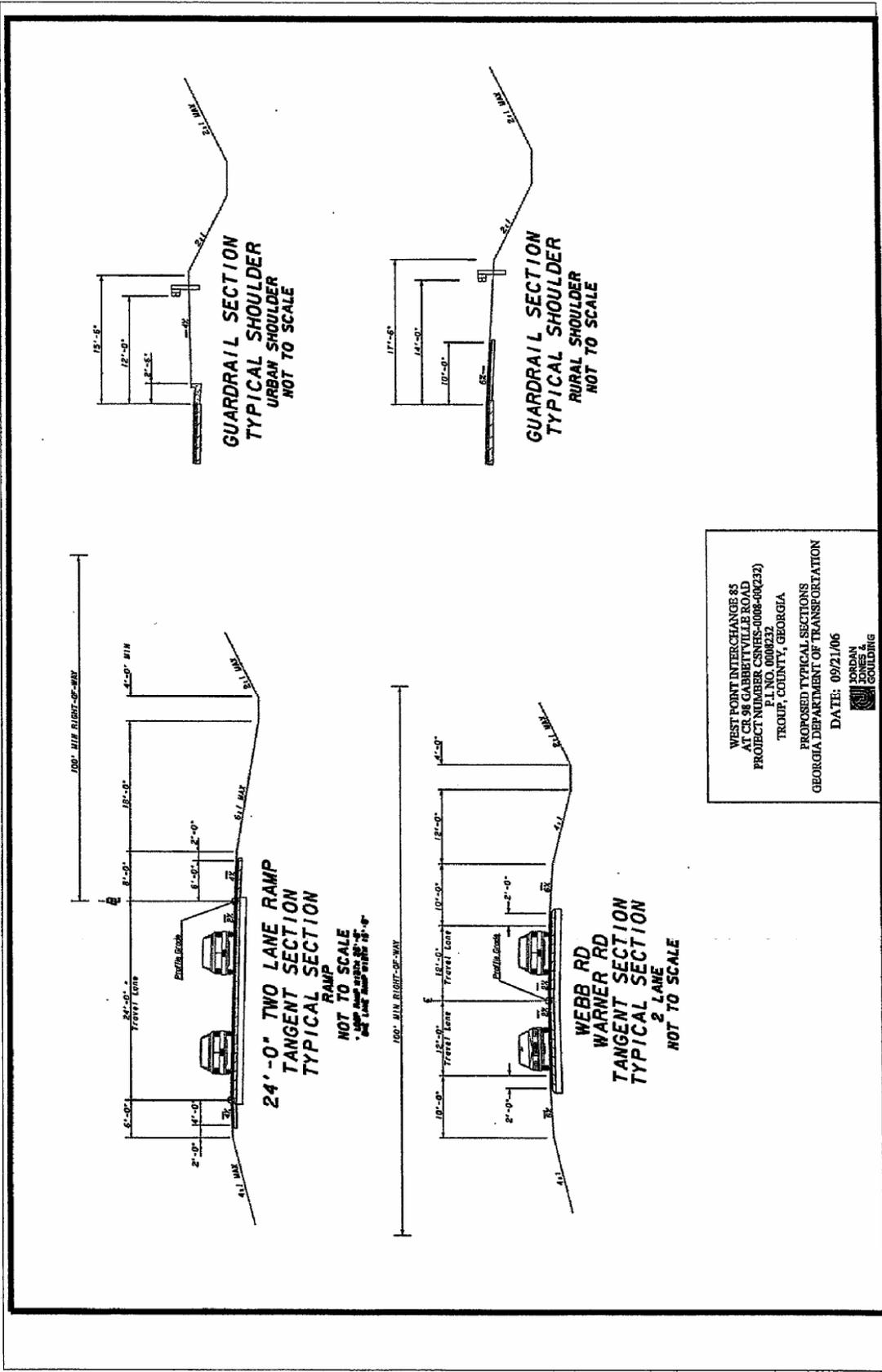
WEST POINT INTERCHANGE #5  
 AT CR 98 GABBETTVILLE ROAD  
 PROJECT NUMBER CSNHS-0008-00(232)  
 P.I. NO. 9008232  
 TROUP, COUNTY, GEORGIA

PROPOSED TYPICAL SECTIONS  
 GEORGIA DEPARTMENT OF TRANSPORTATION

DATE: 09/21/06

JORDAN  
 JONES &  
 GOULDING

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WEST POINT INTERCHANGE 25  
 AT CR 98 CABBETTVILLE ROAD  
 PROJECT NUMBER: 0808-02(232)  
 DRAWING NUMBER: 0808-02-08  
 TROUP COUNTY, GEORGIA  
 PROPOSED TYPICAL SECTIONS  
 GEORGIA DEPARTMENT OF TRANSPORTATION  
 DATE: 09/21/06  
 JORDAN  
 CONSULTING  
 BUILDING

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