VALUE ENGINEERING STUDY

WIDEN AND INSTALL HOV LANES ON I-20 WEST WESTCORRIDOR

DOUGLAS, COBB & FULTON COUNTIES, GA

PREPARED FOR:

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EXECUTIVE SUMMARY

INTRODUCTION

This Value Engineering Study Report summarizes the events of the VE Workshop facilitated by U.S. Cost, Inc. for the Georgia Department of Transportation (GDOT). The subject of the study is Widen I-20 from Thornton Road to SR 28 for installation of barrier separated HOV Lanes, through Fulton, Cobb & Douglas Counties, Georgia. The project is being designed by Earth Tech Transportation Engineers of Atlanta, Georgia.

The three-day study was conducted 25-27 October 2005 in Georgia Department of Transportation Conference Room #344 and followed an abbreviated job plan established by GDOT. The team was furnished a concept design package, including layout, traffic safety records, traffic count and projections, "HOV Strategic Implementation Plan" of October 2003, cross sections, bridge layout, etc. ***The VE team was advised that it was an un-written GDOT policy that all future constructed HOV lanes will have a barrier separation.***

PROJECT DESCRIPTION

This project proposes the addition of High Occupancy Vehicle (HOV) lanes on I-20 from SR 6/Thornton Road in Douglas County, through Cobb County, to SR-280/H.E Holmes Drive in Fulton County. The proposed project includes widening I-20 to accommodate two HOV lanes in each direction, reconstruction of existing interchanges, the addition of HOV-only interchanges to provide direct HOV access, and coordination with Single Occupancy Vehicle (SOV) or general use lanes.

Improvements include ramp and bridge reconstruction at SR 6/Thornton Road, Riverside Parkway, Six Flags Parkway, SR 70/Fulton Industrial Boulevard, and I-285; bridge replacement or widening at Factory Shoals Road, Six Flags Parkway, Fulton Industrial Boulevard, and Fairburn Road. In addition, HOV only interchanges are proposed at four new locations: N. Blairs Bridge Road (just east of Thornton Road), Six Flags (between Riverside Parkway and Six Flags Parkway), Wendell Drive (just west of Fulton Industrial Boulevard), and Martin Luther King Jr. Drive (west of 1-285). The project will terminate at H.E. Holmes Drive, allowing access to the MARTA heavy rail station.

EXECUTIVE SUMMARY

Twenty Major structures over I-20 are proposed to be constructed or widened as follows:

- New Thornton Road Bridge (420'X102')
- New Blairs Bridge Road Bridge (350'X63')
- New Blairs Bridge Road Bridge (200'X63')
- New Factory Shoals Road Bridge (400'43')
- New Riverside Parkway Bridge (300'X79')
- New Six Flags Bridge Interchange bridge EB (115'X112')
- New Six Flags Bridge Interchange bridge WB (115'X114')
- Widen Six Flags Bridge - Lt & Rt. (147'X252')
- Widen Chattahoochee River Bridge - Lt & Rt (453'X±231')
- Widen CSX Railroad Bridge (148'X±265')
- New Fulton Industrial Circle Bridge EB (160'X63')
- New Fulton Industrial Circle Bridge WB (320'X63')
- Widen Fulton Industrial Blvd. Bridge WB (242'X±210')
- New MLK Drive Bridge EB (159'X75')
- New MLK Drive Bridge WB (159'X75')
- Widen MLK Drive Bridge (159'X78')
- New Fairburn Road Bridge (300'X43')
- New I-20 flyover ramp to I 285 (1560'X58')
- Widen I-20 EB over I-285 (555'X114')
- Widen 1-20 EB over I-20 WB to I-285 SB Ramp (190'X67')
- New I-20 WB over I –285 (570'X79')
- Widen I-285 SB lane over Collier Drive
- New I-285 SB to I-20 WB Ramp over Collier Drive

EXECUTIVE SUMMARY

BACKGROUND

The growth in traffic congestion in the Metro Atlanta area over the years has been well documented. Efforts to accommodate this growing congestion have included many major additions and improvements to the area's arterial streets, freeways and transit rail lines.

During 1973, the Atlanta Regional Commission (ARC), in cooperation with the affected local governments, the Metropolitan Atlanta Rapid Transit Authority (MARTA), and the Georgia Department of Transportation (GDOT), began a comprehensive planning process designed to develop a long-range guide for regional growth and development. In 1975, the Commission adopted a guide for growth, known as the Regional Development Plan (RDP). Extensive detailed analysis and evaluation of the transportation element of the RDP resulted in the preparation of the Regional Transportation Plan (RTP), which indicated that a system of good arterial and collector roads would be needed to complement the major transit facilities of the Atlanta region.

Today, this program of major facility construction is reaching the point where additional such projects carry increasing economic, social and environmental costs. This situation has been addressed in two major Legislative acts ~ the Clean Air Act Amendment of 1990, and the Intermodal Surface Transportation and Efficiency Act of 1991. These legislative acts encourage and prescribe more efficient use of the existing transportation system in order to both improve the air quality and to provide an effective transportation system. One of the major strategies promoted by these acts is to increase the vehicle occupancy rate. The creation of high occupancy vehicle (HOV) lanes in major commuter corridors is an effective means to promote and encourage higher occupancy rates in the metro area's vehicles.

Express or HOV lanes are intended to provide choice, mobility and relief from congestion for HOV users, particularly during peak hours. During this time period, auto occupancy rates tend to be higher overall, and the origins and destinations of work trips are more concentrated, lending themselves to ride sharing and transit usage. There are other objectives of HOV lanes, including reduced energy consumption, improved air quality, reduced total person travel time and improved efficiency of public transit operations and reliability of transit service in order to induce mode shifts.

DEFICIENCIES

There currently is no HOV service within the I-20 corridor. However, traffic studies estimate that ±10 percent of the 2030 projected Daily Traffic Volumes and Peak Hour Traffic Volumes will be High Occupancy Vehicles. For I-20, the 2030 AADT forecasts show 17,500 to 30,400 (24,000 avg.) high occupancy vehicles in the proposed lanes and ± 228,000 in general lanes. Therefore effective opportunities exist to accommodate the current volumes and encourage greater volumes of HOV traffic along the I-20 Corridor. Along with projected changes in SOV lanes, the proposed project could maintain a 2030 Level of Service (LOS) C in HOV lanes under these conditions. Currently, LOS F exists during peak hours and would continue to operate at LOS F in 2030 without both SOV and HOV improvements.

EXECUTIVE SUMMARY

CONCERNS AND OBJECTIVES:

These projects are part of an overall program to widen I-20 from I-285 interchange to Thornton Road for HOV Lanes through Fulton, Cobb & Douglas Counties, Georgia. The following are some of the highlighted concerns and objectives noted by the VE team for this project:

WIDEN I-20 FROM I-285 INTERCHANGE TO THORNTON ROAD FOR HOV LANES

CONCERNS/OBSERVATIONS	PROBLEMS/OBJECTIVES
GDOT HOV with Barrier Walls Policy	The un-written GDOT design policy to construct HOV with barriers is a costly solution for this section of I-20 corridor and the low number of vehicles projected for its use in 2030
Project reflects a cost of $ 18,000,000 per mile	The high cost is a result of requiring barrier HOV lanes with movable barriers and the complete reconstruction of all existing I-20 lanes and the requirement for complete replacement of numerous bridges, and widening of others (20 total)
Presentation requested to change to Concrete Pavement ilo Asphalt as shown	The cost of demolition of all existing asphalt pavement and replacing with concrete increases the cost by 30%
Material haul distances for demolition material	The change from asphalt surface pavement to concrete will increase the cost of the project since the demolished material will not be used on this project.
Construction Award date of 2009	It appears the need for this project is urgent to relieve congestion at the I-285 Interchange
HOV Requirement	It appears the requirement to construct HOV lanes for this 8.4 mile corridor is not justified and will not serve the local Tri-County residents. The interchange locations need to be re-evaluated.
Providing for an additional CD lane	The cost of providing for a future CD lane based on traffic projections appears to be costly and un-necessary and should be re-evaluated.

EXECUTIVE SUMMARY

Project Objectives:
Widen I-20 to accommodate new HOV Lanes
Reduce travel time and reduce congestion in the Tri Counties
Benefits the 20 County Georgia Clean Air Act Policy

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

Project	ROW $	ECC $	Total $	Award Date
MSL-0003 (168)	18,500,000	120,000,000	138,500,000	June 2009

See Appendix “B” for details.

KEY INFORMATION/NOTES

Introduction

U.S. Cost Incorporated conducted a Value Engineering Team Study on Widen I-20 for HOV Lanes through Fulton, Cobb & Douglas Counties, Georgia. The V.E. study was conducted for three (3) days, 25-27 October 2005, at the Georgia Department of Transportation Conference Room #344 in Atlanta, GA. The study team was furnished with a concept design package. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Lindsey Gardner, P.E., CVS	U.S. Cost, Inc.	VETL
Jerry Brooks, P.E.	MAAI	Roadway Designer
Sam Deeb, P.E.	MAAI	Bridge Designer
Christopher Parypinski, P.E.	MAAI	Constructibility
Lisa Myers	GDOT	Value Engineer
Mitch Pierce	GDOT	Cost Engineer
Teresa Lannon	GDOT	Assistant P M

Information Phase/Function Analysis

The V.E. team was first briefed on the project designed by Earth Tech Transportation Engineers in an orientation meeting the morning of the first day of the V.E. Study. The briefing gave insight into the current design, and also into the aspects of Widening I-20 from I-285 Interchange to Thornton Road to accommodate new HOV Lanes. The briefing included a review of the design requirements and rationale for the location and arrangement of the major functional areas in addition to information on the bridge structural systems. 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 the Widen I-20 from I-285 Interchange to Thornton Road for HOV Lanes, project to identify the needs and goals of the project and facilitate the creative idea session, by addressing functions as opposed to the specific design elements.

The Basic Function of the project is to *Construct HOV***.** A strong secondary function is to *Reduce Time by* Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes. A detailed project function analysis of the characteristics of the project and their relationships is presented in Appendix A.

KEY INFORMATION/NOTES

Risk Analysis

The group identified the following project risk elements, which may impact the construction/widening of existing I-20 from I-285 Interchange to Thornton Road for HOV lanes. This exercise served as a catalyst for the Creative Phase of the study, when several ideas were suggested which would mitigate these project construction risks.

Risk Elements

- Maintaining uninterrupted flow on traffic on existing and detour roads during construction
- Disruption to Six Flags Operation during peak season.
- Commuter learning curve on entering a barrier restricted HOV lane from a non-barrier, plus signage for commuters approaching from a non-barrier HOV road
- Delays and impact on the traveling/commuting public/interstate commerce
- Contractor Phasing Coordination and traffic management for both contracts
- Poor Progress/Quality By A Low Bid Construction Contractor
- Inflationary (Market Conditions) cost of concrete, asphalt/petroleum and steel
- Failure to meet GDOT advertisement/let date currently scheduled for June 2009
- Accidents and potential lawsuits during construction
- Traffic management and detours during staging/construction
- ROW approval and procurement in a timely manner
- Wetlands mitigation
- CSX requirements/clearances
- Barrier separated ramps across I-285
- Continued congestion on I-20 EB due to lack of HOV lanes East of I-285

Project Criteria

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

KEY INFORMATION/NOTES

Project Criteria Analysis

Life Safety	10
Operational Issues	10
Interruptions	10
FHWA HOV Agreement	10
Clean Air Modeling	10
GRTA Agreement	10
Counties Buy-In Agreement	10
Atlanta Regional Commission	10
GDOT Un-Written Requirement	10
Constructibility	8
Functionality	8
Life Cycle Cost (Analysis)	8
AASHTO 2002 Compliance	7
Maintenance and Operations	6
Cost Savings Impact	5

Creative Phase

The Creative Phase of the V.E. study was initiated the morning of the second day of the study. A total of twenty-four (24) creative ideas were generated for further investigation by the team. Many of the creative ideas focused on enhancements to the roadway profile, HOV lanes, safety, excavation techniques, demolition, traffic control, roadway reconstruction, utility locations, bridge replacements, and drainage impact, plus various other design elements of the project. Additional ideas were generated reflecting alternative materials based on an understanding of local construction products and materials and the relative costs of installing them.

For listing of all creative ideas on Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, in Fulton, Cobb and Douglas Counties, Georgia, see Appendix “A”

Evaluation Phase

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

KEY INFORMATION/NOTES

Approximately twenty (20) out of the original twenty-four (24) 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 IMPACT

5 points - > $ 500,000
4 points - $400,000 to 499,999
3 points - $300,000 to 399,999
2 points - $200,000 t0 299,999
1 point – zero to $199,999
DS – Design Suggestion – sometimes reflects an increase in cost

Development Phase

The specific proposals found in the body of this report represent the positive results of Investigations by the V.E. team on the project, Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, Fulton, Cobb and Douglas Counties, Georgia. 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 the project. These ideas are presented to initiate additional discussion and investigation during the next phase of design.

KEY INFORMATION/NOTES

Presentation Phase

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

Resolution Phase

Upon receipt of the Final Value Engineering Report for the project, Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, Fulton, Cobb and Douglas Counties, GA, Earth Tech and Georgia DOT Program Management representatives are requested to prepare written comments on the acceptability of each of the V.E. proposals. Responses should include the rationale for accepting, rejecting, or modifying the V.E. proposal.

Basis of V.E. Cost Savings

The cost information for proposals in this report are based on the cost data prepared by the design A/E /Georgia Department of Transportation designers and recent bid tabs. Therefore, the savings presented in the proposals is a general order of magnitude (estimate of the potential savings) if the idea were to be accepted. These figures are solely intended to identify the most attractive design solution, and are not prepared to represent a net deduction to the overall project budget. The costs are in 2005 dollars. All life cycle cost analyses are prepared utilizing Present Worth methodology, a 25-year economic period, a 5.0% net discount factor (inclusive of inflation), and 3% escalation in the cost of utilities. Estimates assume a bid opening of June 2009 with a mark-up of 20%. All cost proposals have been marked up 10% for E & C & 5% per year (4 yrs) for inflation. The cost estimate does not address current market conditions for concrete and steel shortage and/or impact of $65/barrel for the cost of oil and petroleum products.

VALUE ENGINEERING STUDY RECOMMENDATIONS
WIDENING I-20 FROM THORNTON ROAD TO I-285 INTERCHANGE FOR NEW HOV LANES
GDOT – FULTON, COBB AND DOUGLAS COUNTIES, GEORGIA
27 OCTOBER 2005

NO.	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT PM	EARTH TECH DESIGNER	DISTRICT RECOM.	FINAL
	ROADWAY/PROFILE (RW) (with HOV barrier)							
1.0	Increase roadway pavement design section.	Design Suggestion		**DS**				
2.0	Consider/evaluate using Concrete pavement for mainline and ramps ilo asphalt pavement.	(5,000,000)		**(5,000,000)**				
3.0	Review North Blairs Bridge Road alignment due to planned housing development north of I-20.	Design Suggestion		**DS**				
4.0	Evaluate emergency access and response to barrier separated HOV lanes.	Design Suggestion		**DS**				
5.0	Consider pedestrians access at Thornton Road and Riverside Parkway Interchanges.	Design Suggestion		**DS**				
6.0	Evaluate a two lane reversible barrier separated HOV ilo two lanes in each direction.	3,700,000		**3,700,000**				
6.1	Evaluate/consider a single lane barrier separated HOV ilo two HOV lanes barrier separated in each direction.	4,600,000		**4,600,000**				
9.0**	Defer I-285 HOV to and from North ramp to future I-285/I-20 Interchange project.	16,900,000		**16,900,000**				
	STRUCTURAL/BRIDGES (SB)							
1.0***	Combine Thornton Road Bridge with North Blairs Road HOV Interchange @ Thornton Road location.	3,700,000		**3,700,000**				
2.0	Combine Six Flags Parkway Bridge with Six Flags HOV Interchange @ Six Flags Parkway.	3,350,000		**3,350,000**				
3.0	Complete replacement of CSX railroad bridge vs. widening existing bridge.	2,600,000		**2,600,000**				
4.0	Complete replacement of Chattahoochee Bridge vs widening existing bridge.	5,700,000		**5,700,000**				

VALUE ENGINEERING STUDY RECOMMENDATIONS
WIDENING I-20 FROM THORNTON ROAD TO I-285 INTERCHANGE FOR NEW HOV LANES
GDOT – FULTON, COBB AND DOUGLAS COUNTIES, GEORGIA
27 OCTOBER 2005

NO.	PROPOSAL DESCRIPTION	CAPITAL SAVINGS	OP. & MAINT. (PW)	TOTAL SAVINGS (LCC)	GDOT PM	EARTH TECH DESIGNER	DISTRICT RECOM.	FINAL
5.0	Complete replacement of Fulton Industrial Bridge vs. widening existing bridge.	2,500,000		**2,500,000**				
6.0***	Straighten Blairs Road HOV Bridge.	4,800,000		**4,800,000**				
7.0**	Utilize chorded HPC-Bulb Tee beams in lieu of CIP concrete box @ I-285 flyover.	5,400,000		**5,400,000**				
	CONSTRUCTIBILITY/OTHER (CM)							
1.0	Close Riverside Parkway during the construction of the new bridge.	360,000		**360,000**				
2.0	Construct two bridges over MLK Drive instead of three bridges.	3,600,000		**3,600,000**				
3.0	Propose lucrative incentives for early completion in the construction contract.	Design Suggestion		**DS**				
4.0	Utilize Price Indexing in Construction Contract.	Design Suggestion		**DS**				
5.0	Study the staging of the Thornton Road bridge over I-20.	Design Suggestion		**DS**				

Note *Prefix on each proposal indicates which scheme is applicable: Most require a GDOT variance from current program design directives.
** RW-9.0 mutually exclusive to SB-7.0, ***SB-1.0 is mutually exclusive to SB-6.0

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: INCREASE ROADWAY PAVEMENT SECTION.

ORIGINAL DESIGN: Concept cost estimate indicates a pavement section of:

2" Asph Conc 9.5mm
2" Asph Conc 19mm
8" Asph Conc 25mm
12"GAB

PROPOSED CHANGE: Recommend a pavement section of at least:

2" Asph Conc 9.5mm
2" Asph Conc 19mm
10" Asph Conc 25mm
16"GAB

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Pavement will last longer based on projected traffic with a thicker pavement section.
- Lower maintenance cost because of a heavier pavement section.
- Provides a more accurate cost estimate in the concept phase by using the expected pavement quantities.
- Meets GDOT criteria.

DISADVANTAGES:

- Initial cost will be higher with a thicker section.

JUSTIFICATION:

The final pavement section will be determined by the GDOT Pavement Design Committee based on current GDOT criteria and policy.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	1 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: CONSIDER CONCRETE PAVEMENT IN LIEU OF ASPHALT.

ORIGINAL DESIGN: The current design is for Asphalt pavement for all mainline, HOV, ramps and cross streets.

PROPOSED CHANGE: The proposed recommendation is to use Concrete pavement on mainline and ramps.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 14,919,302		$ 14,919,302
PROPOSED CHANGE:	$ 19,869,696		$ 19,869,696
		SAVINGS:	$ (4,950,394)

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	2 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Lower maintenance and operating cost.
- Being used on other GDOT projects.

DISADVANTAGES:

- Initial cost higher.
- May complicate staging of traffic.

JUSTIFICATION:

Concrete pavement is requires less maintenance that asphalt while meeting the functional requirements of the project and is acceptable to FHWA and GDOT.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-2.0
PAGE NUMBER:	3 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Asphalt Pavement	1	SY	236,544	32.71	7,737,354(FIO)
Asphalt Pavement	Current Bids	SY	236,544	52.56	12,432,752
				SUBTOTAL:	12,432,752
				20% MARK UP:	2,486,550
				TOTAL:	14,919,302

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
PCC Pavement	GDOT	SY	236,544	70.00	16,558,080
				SUBTOTAL:	16,558,080
				20% MARK UP:	3,311,616
				TOTAL:	19,869,696

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

2'' Asph 9.5 mm = 220#/SY = 0.11T/SY @ $36.48 = $4.01 /SY
2'' Asph 19 mm = 220#/SY = 0.11T/SY @ $38.08 = $4.19 /SY
8'' Asph 25 mm = 880#/SY = 0.44T/SY @ $34.49 = $15.18 /SY
12" GAB = 0.7 T/SY @ $13.33 = $9.33 /SY
Total = $32.71 /SY for Asphalt Pavement using Concept Report unit prices

2'' Asph 9.5 mm = 220#/SY = 0.11T/SY @ $65.00 = $7.15 /SY
2'' Asph 19 mm = 220#/SY = 0.11T/SY @ $68.00 = $7.48 /SY
8'' Asph 25 mm = 880#/SY = 0.44T/SY @ $65.00 = $28.60 /SY
12" GAB = 0.7 T/SY @ $13.33 = $9.33 /SY
Total = $52.56 /SY for Asphalt Pavement using current bid unit prices

Mainline = 8.4 miles @ 4 lanes = 236,544 SY of Pavement

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: REVIEW NORTH BLAIRS BRIDGE ROAD ALIGNMENT DUE TO PLANNED HOUSING DEVELOPMENT NORTH OF I-20.

ORIGINAL DESIGN: North Blairs Bridge Road crosses I-20 1800 feet east of Thornton Road as a HOV interchange and is on new location until approximately 500 feet from Thornton Road.

PROPOSED CHANGE: Review proposed location of North Blairs Bridge Road due to planned development and consider crossing I-20 at a 90-degree angle in lieu of a skew. (See Bridge Proposal SB-06)

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Blairs Road can be designed to meet the project's requirements while allowing the proposed development to continue with a corridor reserved for the Blairs Bridge Road alignment.
- This portion of the project will not have to be redesigned at a later date because of the proposed development.
- Development can continue without having to wait on the road project.

DISADVANTAGES:

- May require advance acquisition of right of way.

JUSTIFICATION:

Standard procedure to coordinate with proposed developments adjacent to projects.

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: EVALUATE EMERGENCY ACCESS AND RESPONSE TO BARRIER SEPARATED HOV LANES.

ORIGINAL DESIGN: HOV lanes have a 4 foot left shoulder and a 10 foot right shoulder with two 12 foot travel lanes. Access to vehicles within the HOV section could be difficult for emergency vehicles without breaks in the barrier or room to pass on the shoulders.

PROPOSED CHANGE: Develop a wider shoulder on the HOV lanes for emergency use or provide breaks in the barrier for emergency use only.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Easier access to vehicles needing assistance in the HOV lanes.
- Improves safety and security.
- Politically acceptable.

DISADVANTAGES:

- Additional construction costs.

JUSTIFICATION:

Wider shoulders would not have any effect on the HOV travel lanes while providing room for emergency vehicles to operate when necessary.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-5.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: CONSIDER PEDESTRIANS ACCESS AT THORNTON ROAD AND RIVERSIDE PARKWAY INTERCHANGES.

ORIGINAL DESIGN: The original concept replaces the bridge for Thornton Road over I-20 and replaces the bridge for Riverside Parkway over I-20 with only minor changes to the configuration of the entrance and exit ramps. Pedestrian access across the existing bridges is less than desirable due to loop ramps with free flowing traffic.

PROPOSED CHANGE: Consider pedestrian traffic in the design of all intersections because of the development around the interchanges and the proximity of the Six Flags Park.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Politically acceptable.
- Being used on other GDOT projects.

DISADVANTAGES:

- Additional design costs.
- Additional construction costs.

JUSTIFICATION:

Consideration of pedestrians is good engineering practice and meets the requirements of FHWA, GDOT and local Governments.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-6.0
PAGE NUMBER:	1 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: EVALUATE TWO LANE REVERSIBLE WITH BARRIER SEPARATED HOV IN LIEU OF TWO LANE IN EACH DIRECTION WITH BARRIER SEPARATED HOV.

ORIGINAL DESIGN: Original concept for this project has two barrier separated HOV lanes in each direction along I-20.

PROPOSED CHANGE: Evaluate using two reversible barrier separated HOV lanes in lieu of two lanes in each direction.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 4,642,168		$ 4,642,168
PROPOSED CHANGE:	$ 960,000		$ 960,000
		SAVINGS:	$ 3,682,168

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-6.0
PAGE NUMBER:	2 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Construction cost savings of $3,682,000.

DISADVANTAGES:

- Requires approval/waiver from GDOT policy for HOV lanes.
- Requires additional signage.
- May be confusing to some drivers.
- Requires additional personnel to monitor and control change over in direction.
- Different from other HOV lanes in area.

JUSTIFICATION:

Reversible HOV lanes meets the functional requirements for the project and are in use in other DOTs.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-6.0
PAGE NUMBER:	3 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
2” Asph Conc 9.5mm	1	T	13,010	36.48	474,604
2” Asph Conc 19mm	1	T	13,010	38.08	495,420
8” Asph Conc 25mm	1	T	52,040	34.49	1,794,859
12” GAB	1	T	82,790	13.33	1,103,590
				SUBTOTAL:	3,868,473
				20% MARK UP:	773,695
				TOTAL:	4,642,168

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Gates and signs	Estimate	LS	4 ea	200,000	800,000
				SUBTOTAL:	800,000
				20% MARK UP:	160,000
				TOTAL:	960,000

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-6.0
PAGE NUMBER:	4 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Project length = 8.4 miles = 44,352 LF X 12’ = 532,224 SF / 9 = 59,136 SY each direction

2’’ Asph 9.5 mm = 220#/SY = 6505 T per lane
2’’ Asph 19 mm = 220#/SY = 6505 T per lane
8’’ Asph 25 mm = 880#/SY = 26020 T per lane
12” GAB = 0.7 T/SY = 41395 T per lane

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-6.1
PAGE NUMBER:	1 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: EVALUATE SINGLE LANE BARRIER SEPARATED HOV IN LIEU OF TWO LANE BARRIER SEPARATED HOV.

ORIGINAL DESIGN: The current design concept calls for two HOV lanes in each direction for the length of the project.

PROPOSED CHANGE: The proposed recommendation is to construct one HOV lane in each direction in lieu of two.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 4,642,168		$ 4,642,168
PROPOSED CHANGE:	$ 0		$ 0
		SAVINGS:	$ 4,642,168

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-6.1
PAGE NUMBER:	2 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Cost savings of $4,642,168.

DISADVANTAGES:

- Does not meet current GDOT policy.

JUSTIFICATION:

A single HOV lane could handle to volume of traffic in this corridor.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	RW-6.1
PAGE NUMBER:	3 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
2” Asph Conc 9.5mm	1	T	6,505	36.48	237,302
2” Asph Conc 19mm	1	T	6,505	38.08	247,710
8” Asph Conc 25mm	1	T	26,020	34.49	897,430
12” GAB	1	T	41,395	13.33	551,795
				SUBTOTAL:	1,934,237
				20% MARK UP:	386,847
				EACH DIRECCTION TOTAL:	2,321,084
				TOTAL	4,642,168

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
				SUBTOTAL:	
				20% MARK UP:	
				TOTAL:	0

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	RW-6.1
PAGE NUMBER:	4 of 4

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Project length = 8.4 miles = 44,352 LF X 12’ = 532,224 SF / 9 = 59,136 SY each direction

2’’ Asph 9.5 mm = 220#/SY = 6505 T
2’’ Asph 19 mm = 220#/SY = 6505 T
8’’ Asph 25 mm = 880#/SY = 26020 T
12” GAB = 0.7 T/SY = 41395 T

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	1 of 3

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: DEFER I-285 HOV TO AND FROM THE NORTH RAMP TO FUTURE I-285/I-20 INTERCHANGE PROJECT.

ORIGINAL DESIGN: The concept for the I-20 HOV project from SR6 to SR280 includes a HOV flyover ramp to and from I-285 north. There are no HOV lanes on I-285 and there is no HOV movement provided for I-285 to and from I-285 south.

PROPOSED CHANGE: Defer the I-285 HOV flyover ramp until the I-285/I-20 Interchange is reconstructed or until HOV lanes are added to I-285.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 16,874,164		$ 16,874,164
PROPOSED CHANGE:	$ 0		$ 0
		SAVINGS:	$ 16,874,164

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	RW-9.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Construction cost savings.
- Design cost savings.

DISADVANTAGES:

- Not politically popular.
- Requires approval/wavier from GDOT.
- Back up may continue on I-20 EB to I-285 NB SOV loop because HOV traffic would not be removed from this movement.

JUSTIFICATION:

This project is an I-20 HOV corridor project and the need and purpose does not address a HOV connection to I-285.

ORIGINAL DESIGN CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

See attached Concept Cost Estimate for I-285 HOV Interchange by Earth Tech.

CONCEPT COST ESTIMATE
NHS-0001-00(760)

P.I. NO. 0001760
Douglas, Cobb, and Fulton Co.

I-285 HOV Interchange

CONSTRUCTION:

1 GRADING AND DRAINAGE:					
a. SITEWORK					
1) Unclass. Excav.	33978	CY	$ 2.49	$ 84,605.22	
2) Borrow	125240	CY	$ 5.37	$ 672,538.80	
b. DRAINAGE:					
1) Cross Drain Pipes	200	LF	$ 54.00	$ 10,800.00	
2) Longitudinal Storm Drain Pipe	6000	LF	$ 25.42	$ 152,520.00	
3) Long. Stm. Drain Catch Basins	0	EA	$ 1,628.25	$ -	
4) Drop Inlet at Median Barrier	30	EA	$ 1,487.78	$ 44,633.40	
5) Double Drop Inlet at Median Barrier	20	EA	$ 1,487.78	$ 29,755.60	
6) Drop Inlet at Retaining Wall	20	EA	$ 1,487.78	$ 29,755.60	
7) Box Culverts					
a. Concrete	5600	CY	$ 382.70	$ 2,143,120.00	
b. Reinforcement	631560	LB	$ 0.50	$ 315,780.00	
			SUBTOTAL:C-1		$ **3,483,508.62**
2 BASE AND PAVING (MAINLINE):					
a. 12 in G.A.B.	31870	TN	$ 13.33	$ 424,828.77	
b. ASPHALT PAVING:					
1) 2" Asph. Conc. 9.5 mm Sprpve	5194	TN	$ 36.48	$ 189,464.35	
2) 2"Asph. Conc. 19 mm Sprpve	5194	TN	$ 38.08	$ 197,774.19	
3) 8" Asph. Conc. 25 mm Sprpve	20775	TN	$ 34.49	$ 716,515.95	
4) Leveling	100	TN	$ 37.63	$ 3,763.00	
5) Bitum. Tack	5666	GL	$ 0.89	$ 5,042.56	
c. OTHER					
1) Median Barrier Wall	1800	LF	$ 36.80	$ 66,240.00	
2) Curb and Gutter, Type II	0	LF	$ 9.46	$ -	
3) 'V' Gutter	8000	LF	$ 13.63	$ 109,040.00	
4) Guardrail	400	LF	$ 8.67	$ 3,468.00	
5) Guardrail Anchorage-Type 12	4	EA	$ 1,188.55	$ 4,754.20	
6) 5' Sidewalk	0	SY	$ 19.00	$ -	
			SUBTOTAL:C-2		$ **1,537,388.83**
3 STRUCTURES:					
a. Bridges					
1) New Construction-Tangent	0	SF	$ 70.00	$ -	
2) New Construction-Curved	49600	SF	$ 135.00	$ 6,696,000.00	
3) Jack Existing	0	SF	$ 35.00	$ -	
b. Retaining Walls-MSE/Tie-back	70000	SF	$ 35.00	$ 2,450,000.00	

Updated Concept Cost Estimate.xls

CONCEPT COST ESTIMATE
NHS-0001-00(760)

c. Sound Walls	75135 SF	$ 26.05	$ 1,957,266.75		
		SUBTOTAL:C-3		$	**11,103,266.75**
4 LUMP ITEMS:					
a. TRAFFIC CONTROL	1 MI	$ 500,000.00	$ 500,000.00		
b. CLEARING AND GRUBBING	10 AC	$ 6,000.00	$ 60,000.00		
c. LANDSCAPING	0 AC	$ 2,000.00	$ -		
d. EROSION CONTROL	1 MI	$ 50,000.00	$ 50,000.00		
		SUBTOTAL:C-4		$	**610,000.00**
5 MISCELLANEOUS:					
a. SIGNAL					
1) New Signal	EA	$ 80,000.00	$ -		
b. SIGNING					
1) Overhead Sign Spans	2 EA	$ 70,000.00	$ 140,000.00		
2) Single Mast/Cantilever	EA		$ -		
		SUBTOTAL:C-5		$	**140,000.00**

TOTAL $16,874,164

Updated Concept Cost Estimate.xls

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: COMBINE THORNTON BRIDGE WITH NORTH BLAIRS ROAD HOV INTERCHANGE @ THORNTON ROAD.

ORIGINAL DESIGN: The original design included a staged construction of Thornton road, the addition of North Blairs Road HOV interchange and the acquisition of Right-of-Way to re-align North Blairs Road.

PROPOSED CHANGE: The proposed design incorporates the merger of both bridges and eliminating the R/W acquisition while still providing access to the park & ride lot by adding a signalized intersection on the bridge with wall ramps for the HOV drop lanes that lead up to the Thornton bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 10,584,360	$ 0	$ 10,584,360
PROPOSED CHANGE:	$ 6,861,912	$ 0	$ 6,861,912
		SAVINGS:	$ 3,722,448

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $3,722,448.
- Faster Construction time.
- Less mobilization.
- Accelerated schedule.
- Less R/W acquisition and process time.

DISADVANTAGES:

- HOV traffic merge with regular traffic on bridge.
- Signalized intersection on bridge.
- Increase traffic on a bridge.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced are the drivers for the justification.

COST ESTIMATING WORKSHEET

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Thornton	7	SF	38,048	70	2,663,360
Bridge Blairs	7	SF	32,446	70	2,271,220
Ramp Walls	7	SF	44,762	60	2,685,720
R/W	7	Lump			1,200,000
				SUBTOTAL:	8,820,300
				20 % MARK UP:	1,764,060
				TOTAL:	10,584,360

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Thornton	7	SF	43,322	70	3,032,540
Ramp Walls	7	SF	44762	60	2,685,720
				SUBTOTAL:	5,718,260
				20 % MARK UP:	1,143,652
				TOTAL:	6,861,912

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Thornton Bridge= 102.4167'
Length of Thornton Bridge =2 x (113.75+18'+4') +2 x (2:1V=2 x 25') + =371.5'
Total SF of Thornton Bridge= 38,048 SF
Replacement Unit Price Unit price per SF= $70

Total Cost Of Thornton Bridge = 38,048' sf x $70= $2,663,360

SF Of HOV MSE Ramp = 44762 SF (See original Estimate)
Unit Price per SF of Wall= $60 (Walls SF @ $45.00/SF and Coping and others @$15/sf)

Total Cost Of Ramp Wall =44762 SF x $60=2,685,720

Total Cost Of Blairs HOV Bridge = 32,446 SF x $70= $2,271,220

Total Cost of R/W (Estimate-WAG) = $1,200,000

Total Cost of Thornton/Blairs/Walls=$8,820,300

PROPOSED CHANGE CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Thornton Bridge w/o HOV Ramp= 102.4167'
Length of Thornton Bridge =2 x (113.75+18'+4') +2 x (2:1V=2 x 25')=371.5' W/o HOV Drop ramp
HOV Drop Ramp Length= 2 x (1.25'+4'+12'+6'+2.5')=51.5'
Total Length of Thornton Bridge=371.5'+51.5'=423'
Total SF of Thornton Bridge= 102.4167' x 423'= 43,322 SF
Unit price per SF= $70

Total Cost Of Thornton Bridge = 43,322' sf x = $70 = $3,032,540

SF Of HOV MSE Ramp = 44,762 SF (See original Estimate)
Unit Price per SF of wall= $60 (Walls SF @ $45.00/sf and Coping and others @$15/sf)

Total Cost Of Ramp Wall =44,762 SF x $60=2,685,720

Total Cost of Thornton/HOV =$5,718,260

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: COMBINE SIX FLAGS PARKWAY BRIDGE WITH SIX FLAGS HOV INTERCHANGE @ SIX FLAGS PARKWAY.

ORIGINAL DESIGN: The original design included a staged/widening construction of Six Flags Pkwy, the addition of Six Flags dual HOV interchange bridges and the acquisition of Right-of-Way.

PROPOSED CHANGE: The proposed design incorporates the merger of both bridges and eliminating the R/W acquisition while still providing access to the park & ride lot by adding a signalized intersection on the bridge with a wall ramps for the HOV drop lanes that lead up to the Six Flags bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 11,722,848	$ 214,100	$ 11,936,948
PROPOSED CHANGE:	$ 8,373,924	$ 0	$ 8,373,924
		SAVINGS:	$ 3,563,024

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $3,563,024.
- Ease Of construction.
- Faster Construction time.
- Less mobilization.
- Accelerated schedule.
- Less R/W acquisition and process time.
- Improve safety and sight distance on Six Flags Parkway by eliminating middle piers.

DISADVANTAGES:

- HOV traffic merge with regular traffic on bridge.
- Signalized intersection on bridge.
- Increase traffic on a bridge.
- Existing bridge materials wasted (sufficiency rating 80).

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced are the drivers for the justification.

COST ESTIMATING WORKSHEET

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Six Flags	7	SF	37,007	120	4,440,840
Bridge SF HOV	7	SF	15,252	70	1,076,640
Ramp Walls	7	SF	65,026	60	3,901,560
R/W	7	Lump			350,000
				SUBTOTAL:	9,769,040
				20 % MARK UP:	1,953,808
				TOTAL:	11,722,848

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Six Flags/HOV Single BR.	7	SF	43,953	70	3,076,170
Ramp Walls	7	SF	65,026	60	3,901,560
				SUBTOTAL:	6,978,270
				20 % MARK UP:	1,395,654
				TOTAL:	8,373,924

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Six Flags Bridge= 251.75'
Length of Six Flags Bridge =147'
Total SF of Six Flags Bridge= 37,007 SF
Unit price per SF= $120

Total Cost Of Six Flags Bridge = 37,007 x $120= $4,440,840

SF Of HOV MSE Ramp =65026 SF (See original Estimate)
Unit Price per SF of Widening= $60 (Walls SF @ $45.00/SF and Coping and others @$15/sf)

Total Cost Of Ramp Wall =65,026 SF x $60=3,901,560

Total Cost Of SF HOV Bridge = 15,252 SF x $70= $1,076,640

Total Cost of R/W (Estimate-WAG) = $350,000

Total Cost of Six Flags/SF HOV/Walls=$9,769,040

PROPOSED CHANGE CALCULATIONS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Six Flags Bridge w/o HOV Ramp=2 x (113.75+10shld)= 247.5'
Length of Six Flags Bridge =147' W/o HOV Drop ramp
HOV Drop Ramp Length= 2 x (1.25'+4'+12'+6'+2.5')=51.5'
Total Length of Six Flags Bridge=247.5'+51.5'=299.0'
Total SF of Six Flags Bridge= 147' x 299.0'= 43,953 SF
Unit price per SF= $70

Total Cost Of Six Flags Bridge = 43,953 SF x $70 = $3,076710

SF Of HOV MSE Ramp = 65,026 SF (See original Estimate)
Unit Price per SF of Walls= $60 (Walls SF @ $45.00/SF and Coping and others @$15/sf)

Total Cost Of Ramp Wall =65,026 SF x $60=$3,901,560

Total Cost of Six Flags/HOV Single bridge =$6,978,270

LIFE CYCLE COST ANALYSIS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS @ 5%

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Painting	10	1.629	50,000	81,450		
Painting	20	2.653	50,000	132,650		
SUB-TOTAL				214,100		

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		214,100		

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: REPLACEMENT OF CSX RAILROAD BRIDGE VS. WIDENING.

ORIGINAL DESIGN: The original design included a staged/widening construction of CSX Railway bridge by utilizing the existing I-20 lanes for HOV and widening to the outside on both sides of the bridge. Jacking is imperative for clearance requirements which complicate the construction process.

PROPOSED CHANGE: The proposed design incorporates complete replacement of the bridge with PSC beams that simplify the entire constructability of the bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 5,482,512	$ 214,100	$ 5,696,612
PROPOSED CHANGE:	$ 3,056,088	$ 0	$ 3,056,088
		SAVINGS:	$ 2,640,524

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $2,640,524.
- Ease of construction.
- Less mobilization.
- Accelerated schedule.
- Improve clearance over CSX Railway.
- Less maintenance.
- No future painting costs or operating costs.
- Eliminate packing.

DISADVANTAGES:

- Existing bridge materials wasted (sufficiency rating 80).
- Maintenance of Traffic.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced. All are considered main drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Widen Bridge CSX	7	SF	38,073	120	4,568,760
				SUBTOTAL:	4,568,760
				20 % MARK UP:	913,752
				TOTAL:	5,482,512

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Replace CSX Bridge	7	SF	36,382	70	2,546,740
				SUBTOTAL:	2,546,740
				20 % MARK UP:	509,348
				TOTAL:	3,056,088

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	4 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of CSX Bridge= 259.08'
Length of CSX Bridge =147'
Total SF of CSX Bridge= 38,073 SF
Unit price per SF = $120 (Jacking Included)

Total Cost Of CSX Bridge = 38073 SF x $120= $4,568,760

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	5 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of CSX Bridge= 247.5’
Length of CSX Bridge =147’
Total SF of CSX Bridge= 247.5’x 147’= 36,382SF
Unit price per SF= $70

Total Cost Of CSX Bridge = 36,382 SF x $70 = $2,546,740

LIFE CYCLE COST ANALYSIS

PROPOSAL NUMBER:	SB-3.0
PAGE NUMBER:	6 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS @ 5%

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Painting	10	1.629	50,000	81,450		
Painting	20	2.653	50,000	132,650		
SUB-TOTAL				214,100		

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		214,100		

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: REPLACEMENT OF CHATTAHOOCHEE BRIDGE VS. WIDENING.

ORIGINAL DESIGN: The original design included a staged/widening construction of I-20 bridge over the Chattahoochee river by utilizing the existing I-20 lanes for HOV and widening to the outside on both sides of the bridge. Jacking is imperative for clearance requirements which complicate the construction process**.**

PROPOSED CHANGE: The proposed design incorporates complete replacement of the bridge with PSC beams that simplify the entire constructability of the bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 14,938,128	$ 214,100	$ 15,152,228
PROPOSED CHANGE:	$ 9,417,912	$ 0	$9,417,912
		SAVINGS:	$ 5,734,316

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $5,734,316.
- Ease Of construction.
- Less mobilization.
- Accelerated schedule.
- Less maintenance.
- No future Painting costs or operating costs.

DISADVANTAGES:

- Existing bridge materials wasted (sufficiency rating 80+).
- Maintenance of Traffic.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced. All are considered main drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Chattahoochee	7	SF	103,737	120	12,448,440
				SUBTOTAL:	12,448,440
				20 % MARK UP:	2,489,688
				TOTAL:	14,938,128

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Chattahoochee Bridge	7	SF	112,118	70	7,848,260
				SUBTOTAL:	7,848,260
				20 % MARK UP:	1,569,652
				TOTAL:	9,417,912

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	4 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Chattahoochee Bridge= 229’
Length of Chattahoochee Bridge =453’
Total SF of Chattahoochee Bridge= 103,737 SF
Unit price per SF= $120 (includes Jacking)

Total Cost Of Chattahoochee Bridge = 103,737 SF x $120= $12,448,440

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	5 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Chattahoochee Bridge= 247.5’
Length of Chattahoochee Bridge =453’
Total SF of Chattahoochee Bridge= 247.5’x 453’= 112,118 SF
Unit price per SF= $70

Total Cost Of Chattahoochee Bridge = 112,118 SF x $70 = $7,848,260

LIFE CYCLE COST ANALYSIS

PROPOSAL NUMBER:	SB-4.0
PAGE NUMBER:	6 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS @ 5%

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
	10	1.629	50,000	81,450		
	20	2.653	50,000	132,650		
SUB-TOTAL				214,100		

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		214,100		

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: REPLACEMENT OF FULTON INDUSTRIAL BRIDGE VS. WIDENING.

ORIGINAL DESIGN: The original design included a staged/widening construction of I-20 bridge over the Fulton Industrial by utilizing the existing I-20 lanes for HOV and widening to the outside on both sides of the bridge. Jacking is imperative for clearance requirements which complicate the construction process.

PROPOSED CHANGE: The proposed design incorporates complete replacement of the bridge with PSC beams that simplify the entire constructability of the bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 8,951,382	$ 214,100	$ 9,165,482
PROPOSED CHANGE:	$ 6,622,872	$ 0	$ 6,622,872
		SAVINGS:	$ 2,542,610

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $2,542,610.
- Ease of construction.
- Faster construction time.
- Less mobilization.
- Accelerated schedule.
- Less maintenance.
- No future painting costs or operating costs.
- Eliminate jacking/overlay.

DISADVANTAGES:

- Existing bridge materials wasted (sufficiency rating 80+).
- Maintenance of Traffic.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced. All are considered main drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Fulton Industrial	7	SF	45,209	165	7,459,485
				SUBTOTAL:	7,459,485
				20 % MARK UP:	1,491,897
				TOTAL:	8,951,382

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Fulton Industrial Bridge	7	SF	78,758	70	5,519,060
				SUBTOTAL:	5,519,060
				20 % MARK UP:	1,103,812
				TOTAL:	6,622,872

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	4 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Fulton Industrial Bridge= 213.25'
Length of Fulton Industrial Bridge =212'
Total SF of Fulton Industrial Bridge= 45,209 SF
Widening Unit price per SF= $120
Jacking Unit price per SF=$45

Total Cost Of Fulton Industrial Bridge = 45,209 SF x ($120+$45) = $7,459,485

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	5 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Fulton Industrial Bridge= 2 x (113.75+18'+4') +2 x (2:1V=2*25')=371.5'
Length of Fulton Industrial Bridge =212'
Total SF of Fulton Industrial Bridge= 371.5' x 212'= 78,758 SF
Unit price per SF= $70

Total Cost Of Fulton Industrial Bridge = 78,758 SF x $70 = $5,519,060

LIFE CYCLE COST ANALYSIS

PROPOSAL NUMBER:	SB-5.0
PAGE NUMBER:	6 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS @ 5%

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Painting	10	1.629	50,000	81,450	0	0
Painting	20	2.653	50,000	132,650	0	0
SUB-TOTAL				214,100		

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		214,100		

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	1 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: STRAIGHTEN BLAIRS ROAD HOV BRIDGE.

ORIGINAL DESIGN: The original design included a separate HOV interchange at a 30 degree skew which may introduce complexities in design and dictating the superstructure material to be Steel VS Concrete due to the interchange that will merge with the longitudinal direction at a skew.

PROPOSED CHANGE: The proposed design incorporates the elimination of the skew with the I-20 mainline and thus the ability to utilize PSC beam superstructure which in turn translates into substantial savings.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 10,929,600	$ 214,100	$ 11,143,700
PROPOSED CHANGE:	$ 6,375,600	$ 0	$ 6,375,600
		SAVINGS:	$ 4,768,100

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	2 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $4,768,100.
- Ease Of construction.
- Faster Construction time.
- Less mobilization.
- Accelerated schedule.
- Less maintenance.
- No future Painting costs or operating costs.

DISADVANTAGES:

- May require more R/W.
- May require Sound barriers near the subdivision.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced. All are considered main drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	3 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Flyover Industrial	7	SF	75,900	120	9,108,000
				SUBTOTAL:	9,108,000
				20 % MARK UP:	1,8216,000
				TOTAL:	10,929,600

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Flyover Bridge	7	SF	75,900	70	5,313,000
				SUBTOTAL:	5,313,000
				20 % MARK UP:	1,0626,000
				TOTAL:	6,375,600

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	4 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Flyover Bridge= 2 x 63.25 = 126.5’
Length of Flyover Bridge =350’+250’=600’
Total SF of Flyover Bridge= 75,900 SF
Unit price per SF= $120

Total Cost Of Flyover Bridge = 75,900 SF x $120 = $9,108,000

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	5 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Flyover Bridge= 2 x 63.25 = 126.5’
Length of Flyover Bridge =350’+250’=600’
Total SF of Flyover Bridge= 75,900 SF
Unit price per SF= $70

Total Cost Of Flyover Bridge = 75,900 SF x $70 = $5,313,000

LIFE CYCLE COST ANALYSIS

PROPOSAL NUMBER:	SB-6.0
PAGE NUMBER:	6 of 6

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS @ 5%

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Painting	10	1.629	50,000	81,450	0	0
Painting	20	2.653	50,000	132,650	0	0
SUB-TOTAL				214,100		

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		214,100		

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	SB-6.1
PAGE NUMBER:	1 of 5

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: UTILIZE CHORDED HPC-BT BEAMS IN LIEU OF CAST IN PLACE (CIP) CONCRETEBOX AT I-285 FLYOVER.

ORIGINAL DESIGN: The original design included a CIP concrete box girder superstructure due to the tight radii.

PROPOSED CHANGE: The proposed design incorporates the utilization of PSC beam superstructure laid in chords even at short spans near I-285 which in turn translates into substantial savings.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 12,979,960		$ 12,979,960
PROPOSED CHANGE:	$ 7,567,560		$ 7,567,560
		SAVINGS:	$ 5,405,400

ADVANTAGES/DISADVANTAGES/

PROPOSAL NUMBER:	SB-6.1
PAGE NUMBER:	2 of 5

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $5,405,400.
- Ease Of construction.
- Faster Construction time.
- Less mobilization.
- Accelerated schedule.
- Less maintenance.

DISADVANTAGES:

- May require more piers.

JUSTIFICATION:

Reduced schedule, mobilization, cost; the constructability of the project is enhanced. All are considered main drivers for the justification.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	SB-6.1
PAGE NUMBER:	3 of 5

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge Flyover Industrial	7	SF	90,090	120	10,810,800
				SUBTOTAL:	10,810,800
				20 % MARK UP:	2,162,160
				TOTAL:	12,979,960

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Flyover Bridge	7	SF	90,090	70	6,306,300
				SUBTOTAL:	6,306,300
				20 % MARK UP:	1,261,260
				TOTAL:	7,567,560

SOURCES

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

ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	SB-6.1
PAGE NUMBER:	4 of 5

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Flyover Bridge= 57.75’
Length of Flyover Bridge =1560’
Total SF of Flyover Bridge= 90,090 SF
Unit price per SF= $120

Total Cost Of Flyover Bridge = 90,090 SF x $120 = $10,810,800

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	SB-6.1
PAGE NUMBER:	5 of 5

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Width of Flyover Bridge= 57.75’
Length of Flyover Bridge =1560’
Total SF of Flyover Bridge= 90,090 SF
Unit price per SF= $70

Total Cost Of Flyover Bridge = 90,090 SF x $70 = $6,306,300

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: CLOSE RIVERSIDE PARKWAY DURING THE CONSTRUCTION OF THE NEW BRIDGE.

ORIGINAL DESIGN: The original design requires for the construction of the new Riverside Pkwy bridge to be done in stages utilizing the new HOV bridge over I-20 @ Six Flags. In order to phase this construction the following stages will have to be done.

- The new SOV lanes both EB and WB will need to be constructed from Riverside Pkwy to east of Six Flags Pkwy.
- Traffic will need to be shifted onto the new alignment.
- The HOV Ramps, and the EB and WB overpasses constructed for the new interchange at Six Flags.
- Detour the NB traffic on Riverside Pkwy to the new HOV overpass, remove and construct the NB half of the bridge.
- Open the NB lanes on the new bridge, detour SB traffic onto the HOV overpass, remove SB half of bridge and construct the remaining portion of the bridge.

Note: It does not appear that there is sufficient distance between Riverside Pkwy and the new HOV interchange to shift traffic and meet AASHTO standards.

PROPOSED CHANGE: Close Riverside Parkway in order to remove the existing bridge and construct the new bridge at one time while detouring all traffic.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 3,162,000		$ 3,162,000
PROPOSED CHANGE:	$ 2,802,000		$ 2,802,000
		SAVINGS:	$ 360,000

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CM-1.0
PAGE NUMBER:	2 of 3

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $360,000.
- Faster and easier to construct.
- Reduce the number of detours and length of detour time in half for the traffic on Riverside Pkwy; as well eliminate lane shifts on I-20.

DISADVANTAGES:

- Closure of Riverside Pkwy will disrupt traffic in both directions at the same time, and motorists will have to use a longer detour route.

JUSTIFICATION:

A Road closures for bridge construction is a standard GDOT practice that shortens the necessary time for construction and minimizes the stages needed to construct the bridge.

COST ESTIMATING WORKSHEET

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Riverside Parkway Bridge	1	SF	30,500	70	2,135,000
Traffic Control	7 (Estimate based on PCE)	LS	1	500,000	500,000
				SUBTOTAL:	2,635,000
				20% MARK UP:	527,000
				TOTAL:	3,162,000

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Riverside Parkway Bridge	1	SF	30,500	70	2,135,000
Traffic Control	7 (Estimate based on PCE)	LS	1	200,000	200,000
				SUBTOTAL:	2,335,000
				20% MARK UP:	467,000
				TOTAL:	2,802,000

SOURCES

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

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	1 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: CONSTRUCT TWO BRIDGES OVER MLK DRIVE INSTEAD OF THREE BRIDGES.

ORIGINAL DESIGN: The original design calls for three bridges to span over MLK Drive, two new bridges and one bridge reconstruction. It also calls for the HOV ramps to exit from the right side down to MLK Drive, creating two intersections between the three bridges.

PROPOSED CHANGE: Retain the existing bridge over MLK Drive, redesign the HOV ramps to exit from the left side to MLK Drive and construct one new bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$7,130,988	$ 250,750	$ 7,381,738
PROPOSED CHANGE:	$3,582,168	$ 200,600	$ 3,782,768
		SAVINGS:	$ 3,598,970

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	2 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $3,598,970.
- Easier and faster to construct.
- Lessen disruption to commuters on MLK Drive.
- Lower maintenance and operating cost.

DISADVANTAGES:

- Possible additional design costs.

JUSTIFICATION:

Saving an existing bridge with a good sufficiency rating (82) is a standard engineering practice that is acceptable to FHWA and GDOT, while shortening the time of construction and having a substantial cost savings.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	3 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge LT	1	SF	11,925	70	834,750
Bridge RT	1	SF	11,925	70	834,750
Bridge Center	1	SF	11,925	70	834,750
Retaining Walls- MSE/Tie Back	7(adjusted using GDOT bid tabs)	SF	57,304	60	3,438,240
				SUBTOTAL:	5,942,490
				20%MARK UP:	1,188,498
				TOTAL:	7,130,988

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge LT	1	SF	0	70	0
Bridge RT	1	SF	18086	70	1,266,020
Retaining Walls- MSE/Tie Back	7(adjusted using GDOT bid tabs)	SF	28,652	60	1,719,120
				SUBTOTAL:	2,985,140
				20% MARK UP:	597,028
				TOTAL:	3,582,168

SOURCES

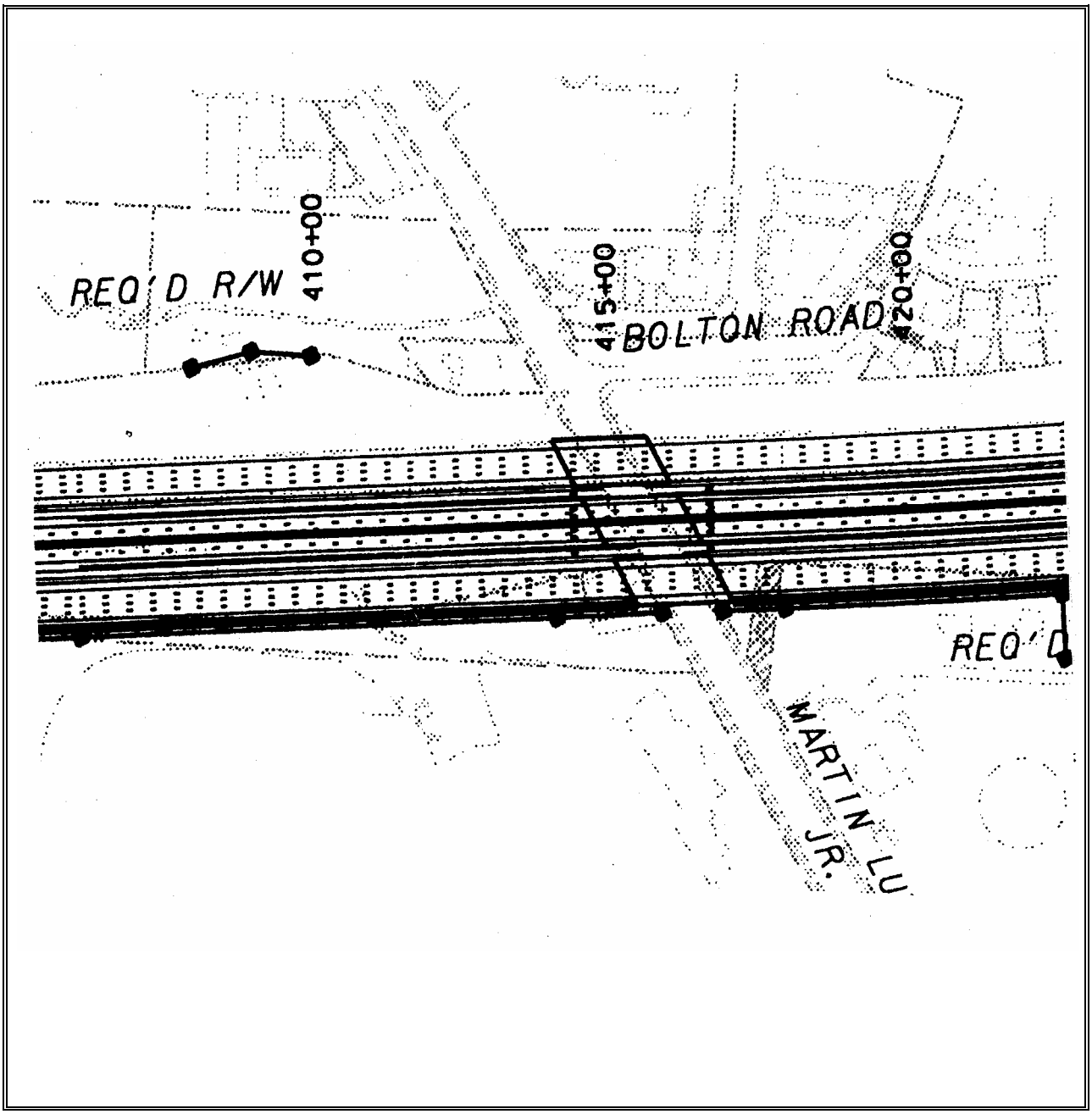
1. Project Cost Estimate
2. CES Data Base
3. CACES Data Base
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

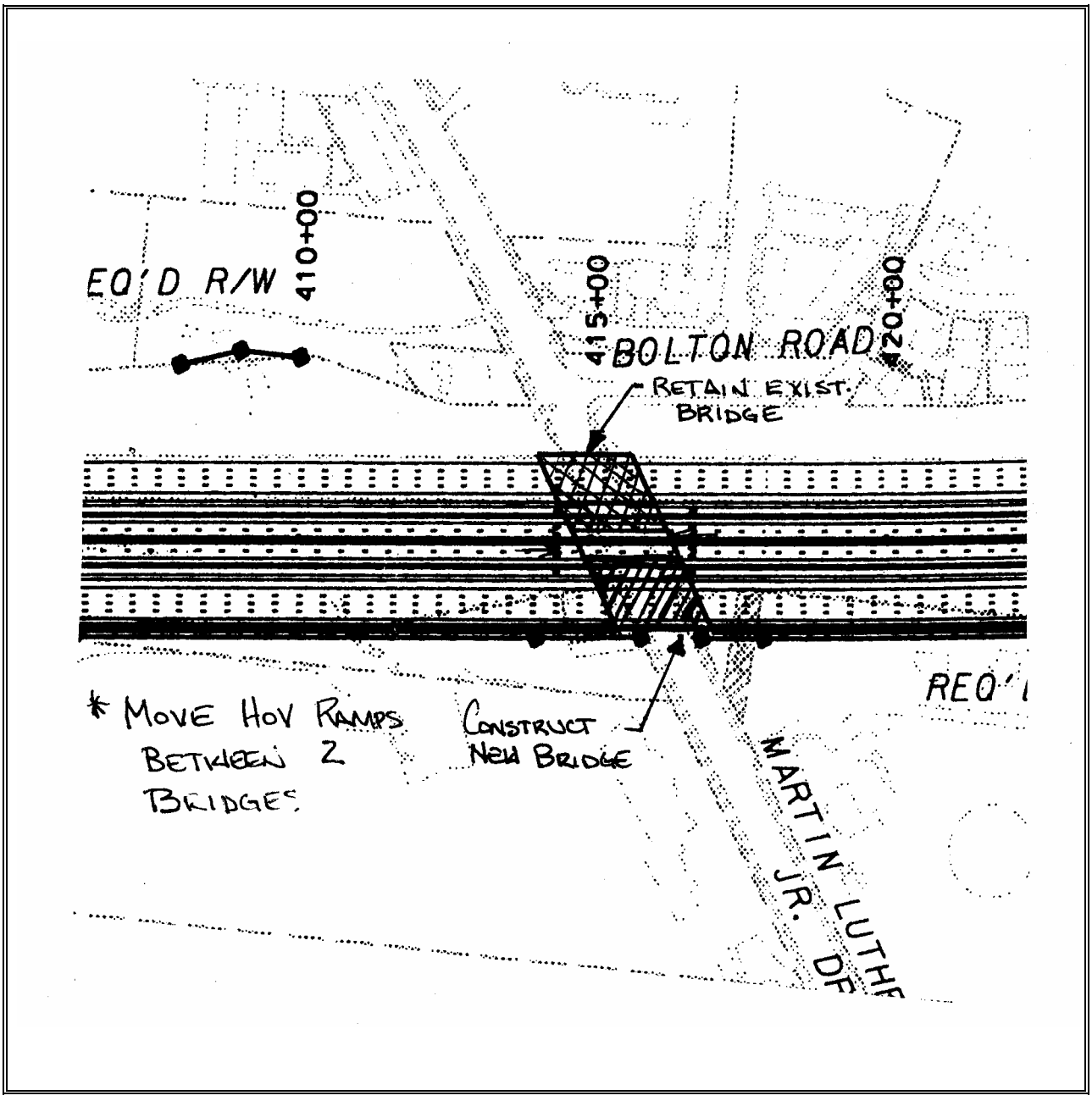


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	5 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties



ORIGINAL DESIGN CALCULATIONS

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	6 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Area for Bridge Left: (75' Wide) By (159' Long) = 11,925 SF
Area for Bridge Right: (75' Wide) By (159' Long) = 11,925 SF
Area for Bridge Center: (75' Wide) By (159' Long) = 11,925 SF

Cost of Each Bridge: (11,925 SF) ($70/SF) = $834,750

Area of Retaining walls is from the Project Cost Estimate for the MLK, Jr. Drive on sheet 1 of 2:
57,304 SF
Cost of Retaining Wall is an estimate using recent GDOT bid tabulations for a per SF price, adjusted to include the required coping and traffic barrier.
$60/SF

Cost of Retaining walls: (57,304 SF) ($60/SF) = $3,438,240

PROPOSED CHANGE CALCULATIONS

PROPOSAL NUMBER:	CM-2.0
PAGE NUMBER:	7 of 8

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

Bridge Left: 0 SF, The existing bridge will be retained.
Bridge Right: (113.75' Wide) By (159' Long) = 18,086 SF (Rounded)

Cost of Bridge: (18,086 SF) ($70/SF) = $1,266,020

Area of Retaining Walls is approximately half of the proposed design, if the HOV Ramps exit from the left at this interchange. This will eliminate 2 of the 4 walls.
(57,304 SF) (0.5) = 28,652 SF

Cost of Retaining Walls: (28,652 SF) ($60/SF) = $1,719,120

LIFE CYCLE COST ANALYSIS

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ECONOMIC LIFE: 25 YRS

INITIAL COSTS

	ORIGINAL		PROPOSED	
	EST AMT	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Initial Cost				
Other Costs				
TOTAL INITIAL COSTS				

PERIODIC AND ANNUAL OPERATING COSTS

PERIODIC COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
Bridge and Wall Maintenance	10	1.629	50,000	81,450	40,000	65,160
Bridge and Wall Maintenance	20	3.386	50,000	169,300	40,000	135,440
SUB-TOTAL				250,750		200,600

ANNUAL COSTS			**ORIGINAL DESIGN**		**PROPOSED CHANGE**	
ITEM	**YR**	**PWAF**	**EST AMT**	**PRESENT WORTH**	**EST AMT**	**PRESENT WORTH**
SUB-TOTAL						

TOTAL OPERATING COSTS		250,750		200,600

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: PROPOSE LUCRATIVE INCENTIVES FOR EARLY COMPLETION IN THE CONSTRUCTION CONTRACT.

ORIGINAL DESIGN: Unknown at this time if incentives/bonuses will be part of the construction contract for this project.

PROPOSED CHANGE: Ensue milestone incentives/bonuses to the construction contract to encourage the contractor/contractors to complete important phases of the project and/or the project ahead of schedule.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Total life cycle cost savings of $ N/A.
- Lessen disruption to commuters by completing phases and project faster.
- Faster construction.

DISADVANTAGES:

- Possible additional costs.

JUSTIFICATION:

Incentives/Bonuses in construction contracts are a current practice by GDOT.

VALUE ENGINEERING PROPOSAL

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: UTILIZE PRICE INDEXING IN CONSTRUCTION CONTRACT.

ORIGINAL DESIGN: Unknown at this time if price indexing will be part of the construction contract for this project.

PROPOSED CHANGE: Use price indexing in construction contract to allow contract prices on pay items to change as fuel and/or material prices rise and decline over the life of the project.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

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

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Potential for cost savings by removing some of the high mark up on volatile unit prices.

DISADVANTAGES:

- Potential for an increase in cost if fuel market or concrete and steel prices rise dramatically during the construction of the project.

JUSTIFICATION:

This a common practice in the construction industry.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	CM-5.0
PAGE NUMBER:	1 of 2

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

PROPOSAL DESCRIPTION: STUDY THE STAGING OF THE THORTON ROAD BRIDGE OVER I-20.

ORIGINAL DESIGN: The original design requires for the construction of the new Thornton Road bridge to be constructed in stages utilizing the new HOV bridge over I-20 @ North Blairs Bridge Road. In order to phase this construction the following stages will have to be done.

- The new SOV lanes both EB and WB will need to be constructed from Thornton Road to approximately 2500' east of the new North Blairs Bridge Road HOV interchange. Also during this stage, the new ramps for Thornton Road will need to be constructed
- Traffic will need to be shifted onto the new alignment.
- The HOV Ramps, and the EB and WB overpasses constructed for the new interchange at Six Flags.
- Detour the NB traffic on Thornton Road to the new HOV overpass, remove and construct the NB half of the bridge.
- Open the NB lanes on the new bridge, detour SB traffic onto the HOV overpass, remove SB half of bridge and construct the remaining portion of the bridge.

PROPOSED CHANGE: Look at the staging to see if it is feasible to construct the new ramps prior to construction of the bridge, as well as look at possibly eliminating the loop ramp and constructing a compressed diamond interchange to improve the traffic flow of the interchange.

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

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	CM-5.0
PAGE NUMBER:	2 of 2

PROJECT TITLE: I-20 West From SR 6 To SR 280 For HOV lanes

PROJECT LOCATION: Georgia DOT – Cobb, Douglas, Fulton Counties

ADVANTAGES:

- Adding a compressed diamond interchange will improve traffic flow at the interchange, and make the staged construction work better.

DISADVANTAGES:

- May increase the cost of construction.

JUSTIFICATION:

Diamond interchanges are preferred by GDOT.

VE STUDY SIGN-IN SHEET

Project No.: NHS-0001-00(760) County: Douglas, Cobb, Fulton PI No.: 0001760 Date: October 25, 26, 27, 2005

NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
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Teresa Lannon		GDOT	656-5441	Teresa.Lannon@dot.state.ga.us

COST MODEL/DISTRIBUTION

WIDEN I-20 to SIX FLAGS
VARIOUS COUNTIES, GEORGIA

	COST $	% OF TOTAL
BRIDGE NEW CONSTRUCTION - TANGENT (390,000 SF)	$27,300,000	100.07%
BASE AND PAVING	$25,453,080	93.30%
MSE RETAINING WALLS	$23,100,000	84.67%
RIGHT OF WAY - ESTIMATED WAG	$14,820,480	10.36%
ENGINEERING & CONTINGENCIES (10%)	$11,307,934	41.45%
DRAINAGE	$7,219,654	26.46%
SITEWORK EXCAVATION AND BORROW (1,750,000 CY(	$7,208,700	26.42%
BRIDGE NEW CONSTRUCTION - CURVED (49,600 SF)	$6,696,000	24.54%
TRAFFICE CONTROL	$5,000,000	18.33%
SOUND WALLS	$4,936,400	18.09%
INFLATION (40% OF 1a - 1c + 2a)	$3,705,120	13.58%
SIGNS, STRIPS, SIGNALS & LIGHTS	$2,710,000	9.93%
CLEARING AND GRUBBING	$1,740,000	6.38%
JACK EXISTING BRIDGE	$1,165,500	4.27%
EROSION CONTROL TEMPORARY	$550,000	2.02%
ELECTRIC TRANSMISSION LINES	$200,000	0.73%
TOTALS ($)	$143,112,868	100.00%

FUNCTION ANALYSIS

The following functions for Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, Fulton, Cobb and Douglas Counties, Georgia, project were identified during discussions with the Georgia DOT design 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 Widening I-20 project, and assist the V.E. team in becoming familiar with the needs of the project and the long-term goals for these improvements of Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, Fulton, Cobb and Douglas Counties, Georgia. The Basic Function of the project is to "Construct HOV". The following are considered by the V.E. team to be Secondary and Supporting Functions.

All the Time Functions

Verb	**Noun**		**Verb**	**Noun**
Life	Safety		Prevent	Accidents
Relieve	Congestion		Protect	Life
Satisfy	Commuters		Reduce	Maintenance
Improve	Access		Prevent	Ponding
Prevent	Smog		Encourage	Pooling
Satisfy	GRTA		Satisfy	FHWA
Enhance	Economy		Expedite	Travel
Install	Barriers		Protect	Environment

Project Functions

Verb	**Noun**		**Verb**	**Noun**
Construct	Bridge		Reduce	Congestion
Add	HOV		Construct	Bridges
Adjust	Grades		Manage	Traffic
Serve	Communities		Reuse	Materials
Serve	Public		Award	Contract
Protect	Commuters		Develop	Options
Satisfy	Users		Develop	Alternatives
Support	Councils		Define	Performance
Minimize	Lawsuits		Develop	Specification
Improve	Access		Reduce	Liability
Enhance	Image		Re-cycle	Materials
Enhance	Signage		Provide	Drainage
Reduce	Risk		Enhance	Maintainability
Relieve	Traffic		Minimize	Relocations
Reduce	Delays		Improve	Functions
Maintain	Passage		Improve	Drainage
Benefit	Community		Protect	Environment

FUNCTION ANALYSIS

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

COST DRIVER ANALYSIS

The V.E. team reviewed the project cost elements and identified the controlling element or cost driver for Widening I-20 from I-285 Interchange to Thornton Road for HOV lanes, Fulton, Cobb and Douglas Counties, Georgia. The cost drivers are used in the brainstorming process as a focal point of discussion and for idea generation.

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

BRAINSTORMING OR SPECULATION

PROJECT TITLE: Widening I-20 From I-285 Interchange To Thornton Road For HOV
PROJECT LOCATION: GDOT – Fulton, Cobb & Fulton Counties

NUMBER	IDEA	RANK
	ROADWAY (RW)	
1.0	Re-design roadway pavement section	DS
2.0	Re-evaluate using concrete materials for roadway pavement section	4/5
3.0	Re-visit Blairs Bridge Road Bridge and re-align due to developer construction new town houses	4/3
4.0	Develop a rescue scheme for the barrier separated HOV lanes	DS
5.0	Consider pedestrians when designing and construction Six Flags and Thornton Road bridges	DS
6.0	Evaluate two lane multi-directional HOV concept	5/5
7.0	Separate HOV lanes ilo four HOV lanes	4/5
8.0	Evaluate single lave HOV lane with no barrier.	3/5
9.0	Make Thornton Road a HOV Interchange & delete Blairs Bridge Road	3/5
	STRUCTURAL/BRIDGES (SB)	
1.0	Replace Thornton Road Bridge vs staging	4/5
2.0	Straighten Blairs Bridge Road Bridge ilo leaving it at a skew	5/4
3.0	Replace Riverside Road Bridge vs. staging work	4/5
4.0	Evaluate construction steel bridge ilo concrete bridge at Six Flags Bridge	4/5
5.0	Consider a new concrete bridge for Chattahoochee River Bridge ilo steel	4/5
6.0	Complete replacement of CSX bridge ilo of widening	4/5
7.0	Consider a new concrete bridge for Fulton Industrial Circle Bridge ilo steel	4/5
8.0	Consider a new two concrete bridges for MLK, Jr. Bridge ilo three steel	4/5
9.0	Consider concrete or steel girder for I-285 flyover vs box girder & re-align	5/5
10.0	Make bridge #16 & #18 two bridges	4/5
11.0	Defer I-285 HOV NB ramp to a future interchange project	3/5
	CONSTRUCTIBILITY/OTHER (CO)	
1.0	Close Riverside Road during construction	4/3
2.0	Construct only two bridges at MLK Jr. Road ilo three bridges	4/5
3.0	Proposed contractor incentives for early completion	DS
4.0	Employee price/cost indexing for asphalt, concrete, steel and fuel oil	DS

VALUE ENGINEERING WORKSHOP AGENDA

I-20 WEST FROM SR-6 TO SR 280 FOR HOV LANES

COBB, DOUGLAS, FULTON, COUNTIES, GEORGIA

24 HOUR - V.E. STUDY
25-27 October 2005

The value engineering workshop for the subject project will be conducted for three (3) days from 25-27 October 2005, **at the Georgia Department of Transportation General Office, Planning Office Conference Room #344, #2 Capitol Square, Atlanta, GA; POC – Lisa Myers @ (404) 651-7468 voice, (404) 463-6161 Fax**

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

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

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

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

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

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

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

1000 - 1200 **Project Assignments** VETL

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

1200 – 1300 Lunch

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

I-20 HOV
NHS-0001-00(760)
STRUCTURE TYPE ASSUMPTIONS

Bridge No.	Firm	Location
1	Sastry	S.R. 6/Thorton Rd. over I-20
2	Sastry	N. Blairs Bridge Rd. over I-20 EB
3	Sastry	N. Blairs Bridge Rd. over I-20 WB
4	Sastry	Factory Shoals Rd. over I-20
5	WSA	Riverside Parkway over I-20
6a	ET	I-20 EB over New HOV Interchange @ Six Flags
6b	ET	I-20 WB over New HOV Interchange @ Six Flags
7	WSA	I-20 over Six Flags Rd. (Lt & Rt Br)
8	WSA	I-20 over Chattahoochee River (Lt & Rt Br)
9	WSA	I-20 over CSX Railroad (Lt & Rt Br.)
10	ET	Fulton Ind. Circle/Wendell Drive over I-20 EB
11	ET	Fulton Ind. Circle/Wendell Drive over I-20 WB
12	WSA	I-20 over S.R. 70/Fulton Industrial Blvd. (Lt & Rt Br.)
13a	WSA	I-20 EB over S.R. 139/MLK Dr.
13b	WSA	I-20 HOV over S.R. 139/MLK Dr.
13c	WSA	I-20 WB over S.R. 139/MLK Dr.
14	WSA	Fairburn Rd. over I-20
15	ET	I-20 to I-285 HOV System Flyover Ramp
16	WSA	I-20 EB over I-285 & possibly I-20 EB to I-285 NB Ramp over I-285
17	WSA	I-20 EB over I-20 WB to I-285 SB Ramp
18	ET	I-20 WB over I-285
19	Sastry	I-285 SB Lanes over Collier Drive
20	Sastry	I-285 SB to I-20 WB Ramp over Collier Drive

Assumed Superstructure Type	New or Reconstr.	Approx. No. of Spans	Approx. Bridge Length	Skew	Alignment	# of Walls	Stage Const.
Precast P/S Concrete	new	4	420	30	tangent	2	yes
Precast P/S Concrete	new	3	350	30	tangent	2	no
Precast P/S Concrete	new	2	200	30	tangent	2	no
Precast P/S Concrete	new	4	400	52	skewed	2	no
Precast P/S Concrete	new	2	300	30	tangent	2	yes
Precast P/S Concrete	new	1	115	none	tangent	2 (tie back)	yes
Precast P/S Concrete	new	1	115	none	tangent	2 (tie back)	yes
steel	widening	3	147	2	tangent	0	yes
steel	widening	5	453	30	tangent	0	yes
steel	widening	3	148	38	tangent	0	yes
Steel or P/S Concrete	new	2	160	None	tangent	2	possibly
Steel or P/S Concrete	new	3	320	None	tangent	1	possibly
steel	widening	4	242	46	tangent	0	yes
steel or concrete	new	3	159	25	tangent	2 (tie back)	yes
steel	widen./reconst.	3	159	25	tangent	4 (tie back)	yes
steel or concrete	new	3	159	25	tangent	2 (tie back)	yes
Precast P/S Concrete	new	2	300	0	tangent	2	no
C.I.P Concrete Box	new	10	1560	0 (Radial)	on curve	2	no
steel	widen./reconst.	8	555	43	on curve	0	yes
steel	widening	3	190	45	skewed	0	yes
C.I.P Concrete Box	new	3	570	45 (Varies)	on curve	1	possibly
steel	widening	3			tangent	0	
	new	3 to 4			on curve	0	

Hisham (Sam) H. Deeb, P.E.

From: Kristen Kasmire [kkasmire@wilbursmith.com]
Sent: Wednesday, October 26, 2005 12:27 PM
To: sambo4118@aol.com
Cc: Mark.Pearson@earthtech.com; Aruna Sastry P.E.; Tom Tran
Subject: I-20 HOV Bridge Widths

Sam –

To follow are the bridge widths you requested. In some cases, these numbers are approximate and will be refined as we progress with preliminary plans. As Aruna Sastry and Mark Pearson are both out of town, I have made my "best guess" estimate of the width of their bridges. When they return, we will check with them and get more up-to-date numbers.

Bridge	Description	Width
1	SR6/Thornton Road over I-20	102'-5"
2	N. Blairs Bridge Road over I-20 EB	63'-3"
3	N. Blairs Bridge Road over I-20 WB	63'-3"
4	Factory Shoals Road over I-20	43'-3"
5	Riverside Parkway over I-20	78'-5"
6a	I-20 EB over New HOV Interchange at Six Flags	varies 111'-8" min 113'-0" max
6b	I-20 WB over New HOV Interchange at Six Flags	113'-9"
7	I-20 over Six Flags	251'-9"
8	I-20 over Chattahoochee River	varies 229'-3" min 238'-5" max
9	I-20 over CSX Transportation	varies 259'-1" min 270'-7" max
10	Fulton Ind Circle/Wendell Drive over I-20 EB	63'-3"
11	Fulton Ind Circle/Wendell Drive over I-20 WB	63'-3"
12	I-20 over SR 70/Fulton Industrial Blvd.	varies 208'-2" min 213'-3" max

13a	I-20 EB over SR 139/MLK	75'-3"
13b	I-20 HOV over SR 139/MLK	77'-9"
13c	I-20 WB over SR 139/MLK	75'-3"
14	Fairburn Road over I-20	42'-5"
15	I-20 to I-285 HOV Flyover Ramp	57'-9"
16	I-20 EB over I-285	113'-9"
17	I-20 EB over I-20 WB to I-285 SB Ramp	67'-3"
18	I-20WB over I-285	79'-3"
19	I-285 SB over Collier Drive	59'-3"
20	I-285 SB to I-20 WB Ramp over Collier Drive	33'-3"

If you have any questions or need any additional information, please let me know.

Kristen A. Kasmire, P.E.

Senior Structural Engineer

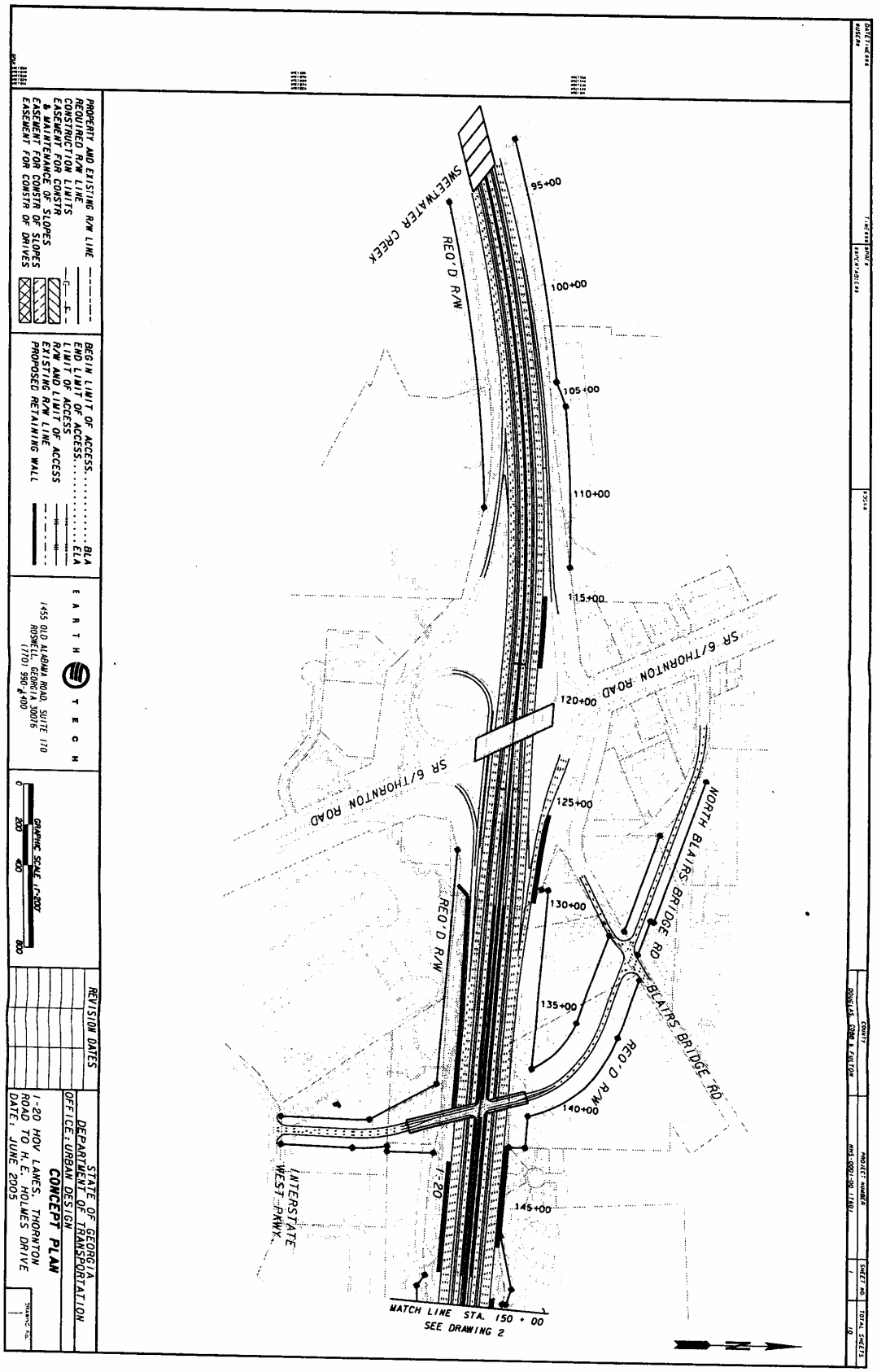
Wilbur Smith Associates

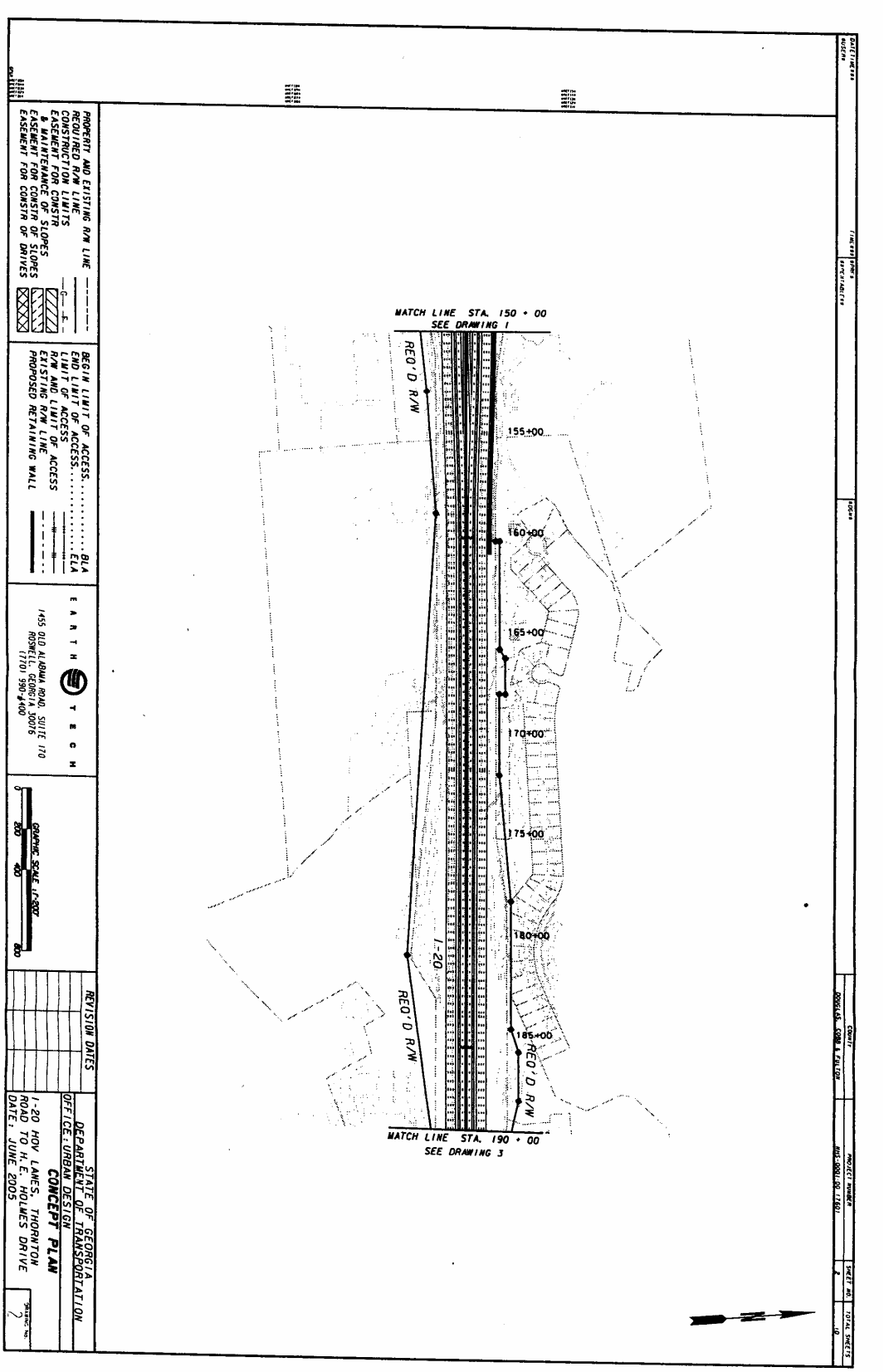
678-244-0273

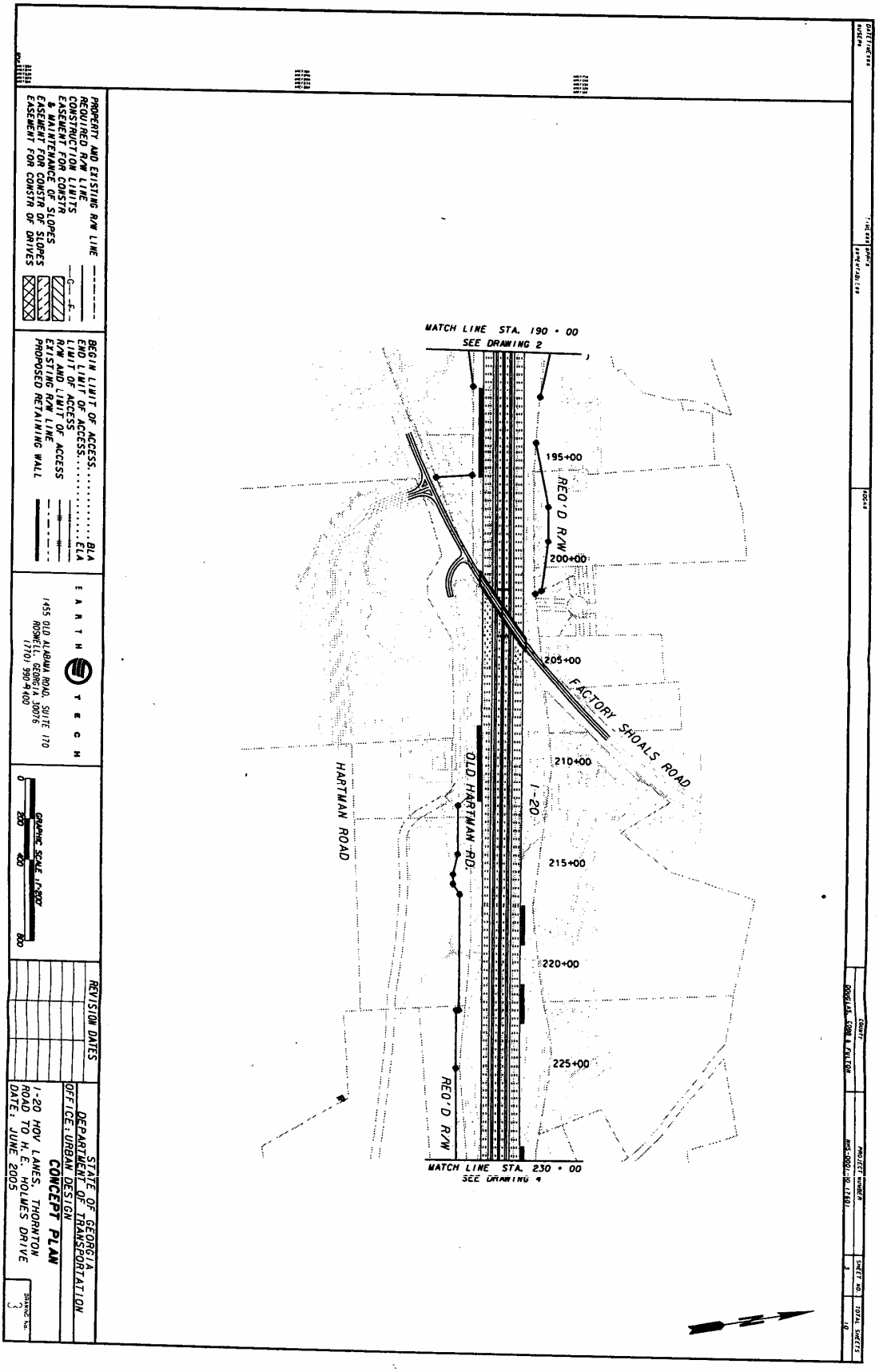
kkasmire@wilbursmith.com

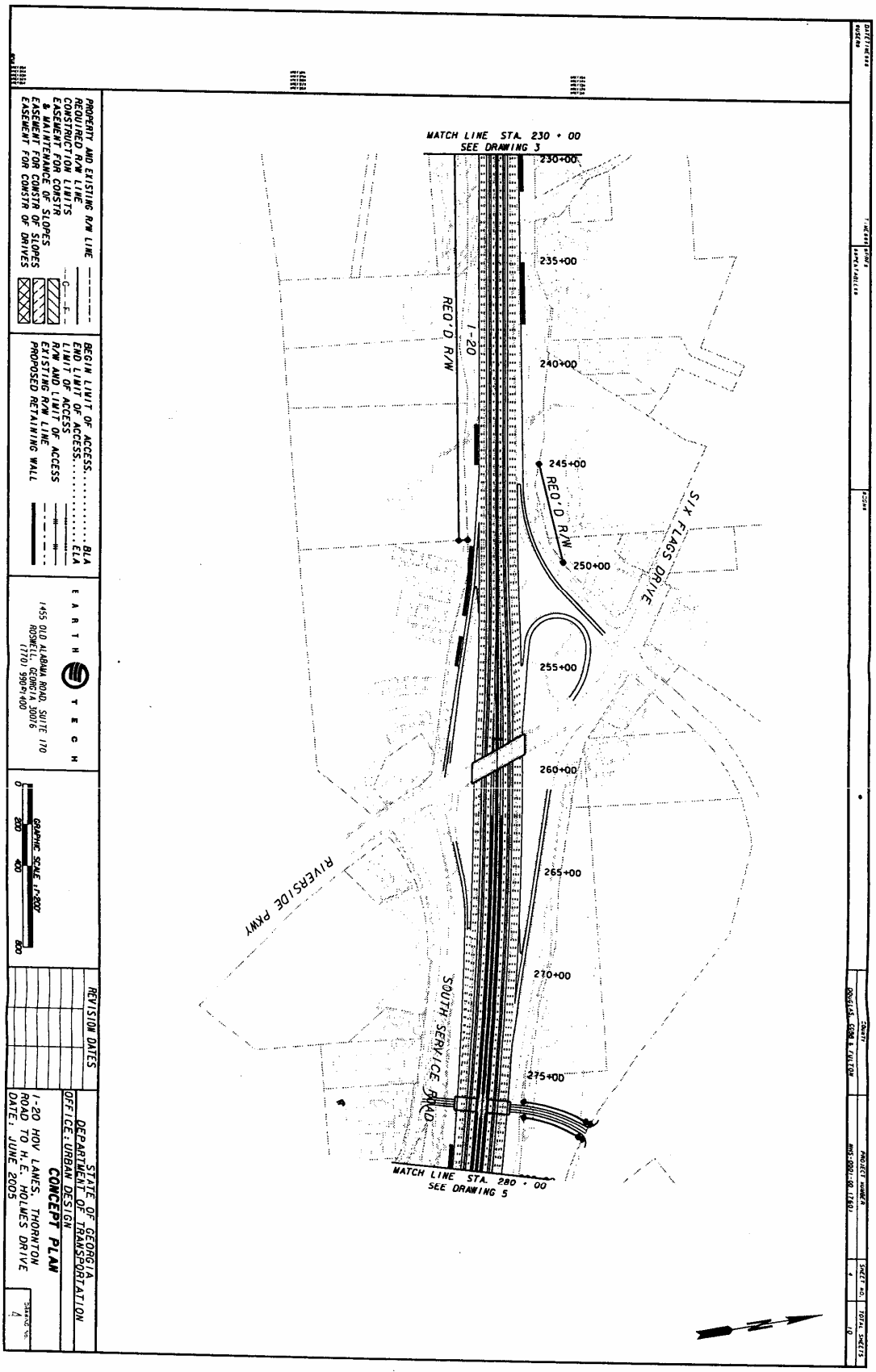
10/26/2005

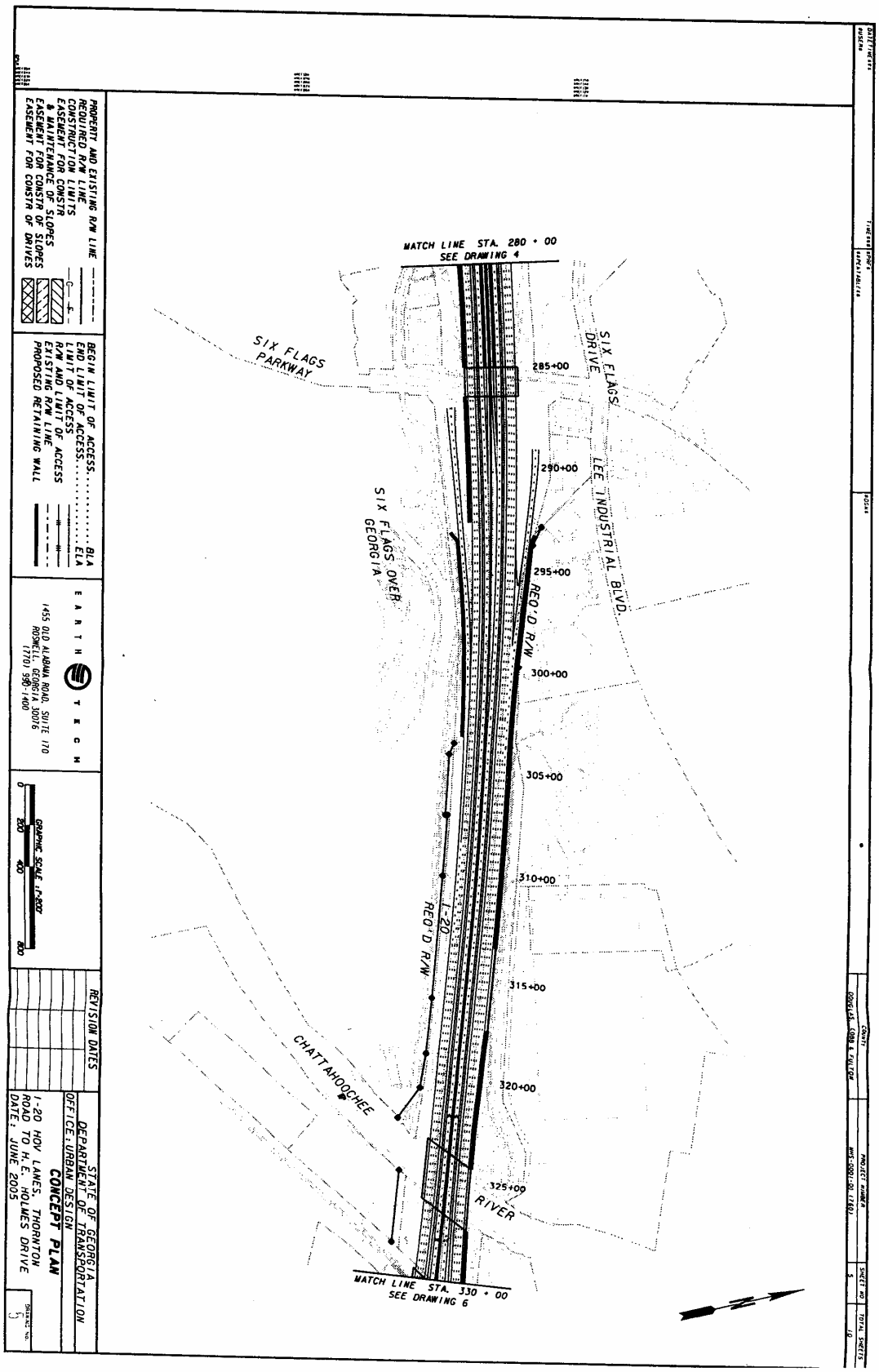
FUTURE CONDITION
2 HOV LANES
I-20 WEST OF I-285
FUTURE CONDITION
2 HOV LANES WITH DROP RAMP
I-20 WEST OF I-285
EARTH TECH
1455 OLD ALABAMA ROAD
SUITE 170
ROSWELL, GA 30076
(770) 552-1400
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
TYPICAL SECTIONS
I-20 HOV LANES FROM THORNTON
ROAD TO H. E. HOLMES DRIVE

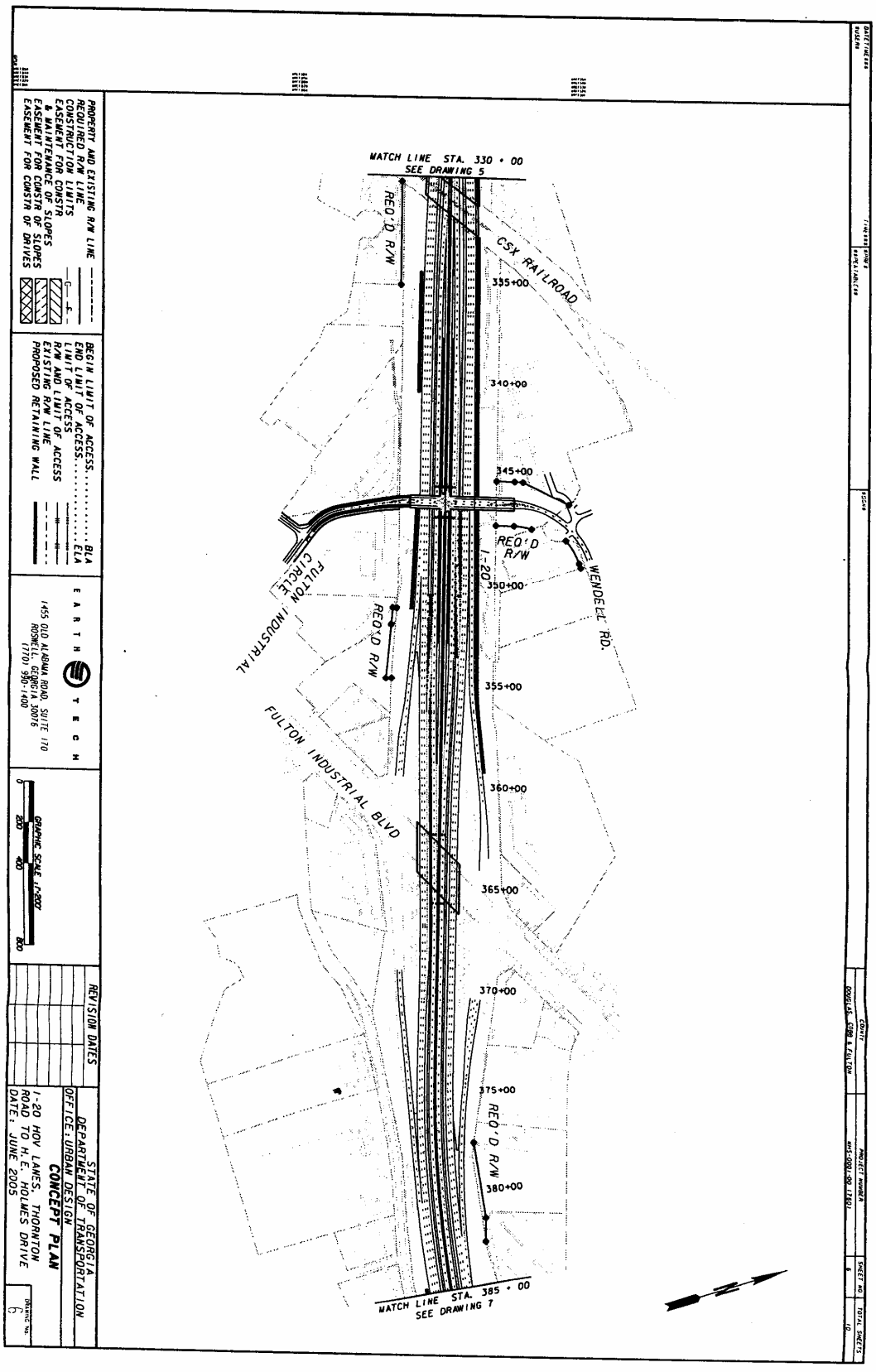

SWEETWATER CREEK
REQ'D R/W
95+00
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00
SR 6/THORNTON ROAD
SR 6/THORNTON ROAD
NORTH BLAIRS BRIDGE RD
BLAIRS BRIDGE RD
REQ'D R/W
REQ'D R/W
I-20
INTERSTATE WEST-PKWY.
MATCH LINE STA. 150 + 00
SEE DRAWING 2
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-9400
GRAPHIC SCALE 1"=200'
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DRAWING NO. 1
COUNTY: DOUGLAS, COBB & FULTON
PROJECT NUMBER: M5-0001-00(169)
SHEET NO. 1
TOTAL SHEETS 10

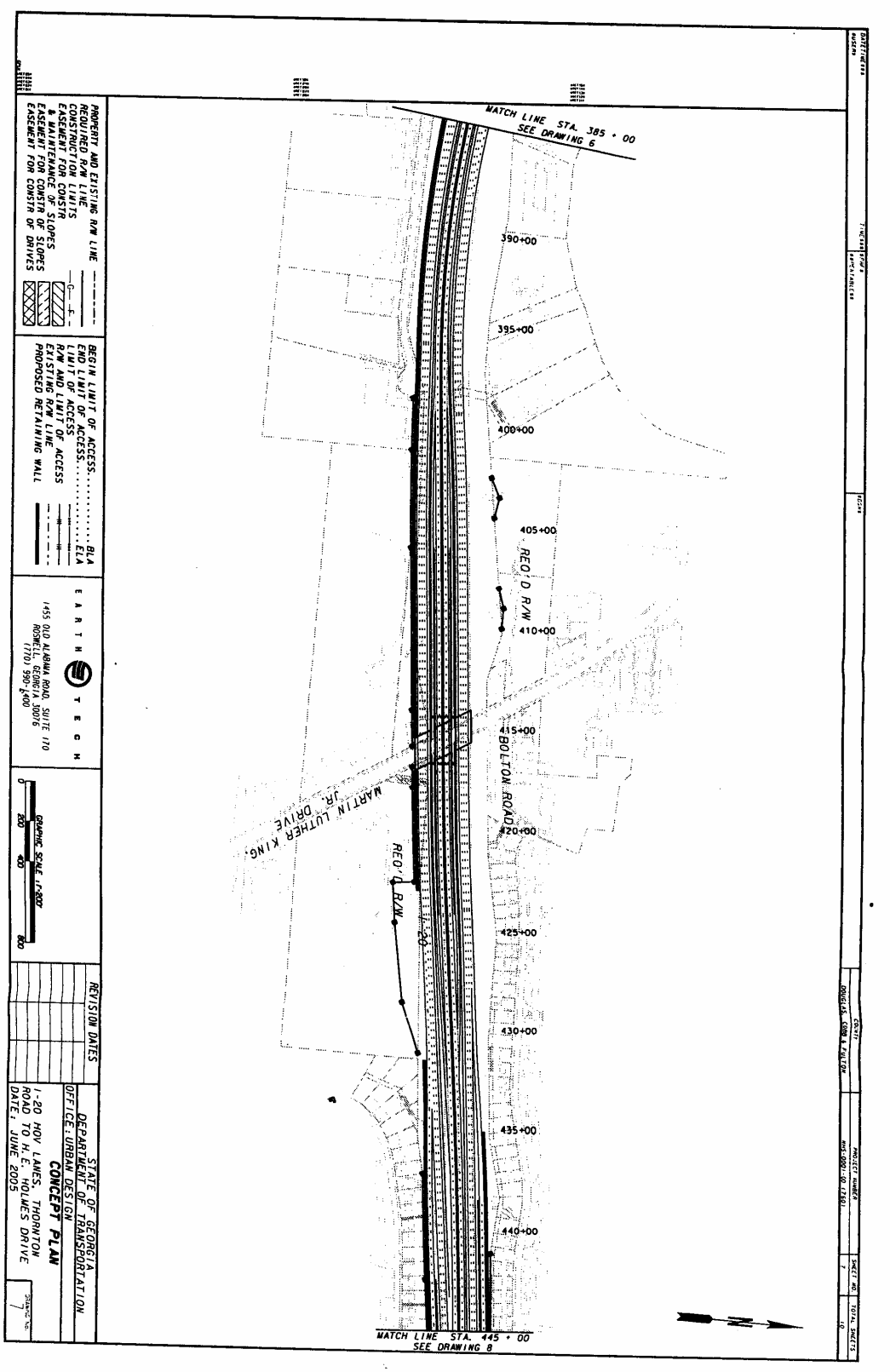

MATCH LINE STA. 150 + 00
SEE DRAWING 1
REQ'D R/W
155+00
160+00
165+00
170+00
175+00
180+00
185+00
I-20
REQ'D R/W
REQ'D R/W
MATCH LINE STA. 190 + 00
SEE DRAWING 3
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMITS OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-9400
GRAPHIC SCALE 1"=200'
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H. E. HOLMES DRIVE
DATE: JUNE 2005
DESIGNED
DRAWN
CHECKED
COUNTY
DOUGLAS, COBB & FULTON
PROJECT NUMBER
HPP-0000-00 (160)
SHEET NO.
2
TOTAL SHEETS
10

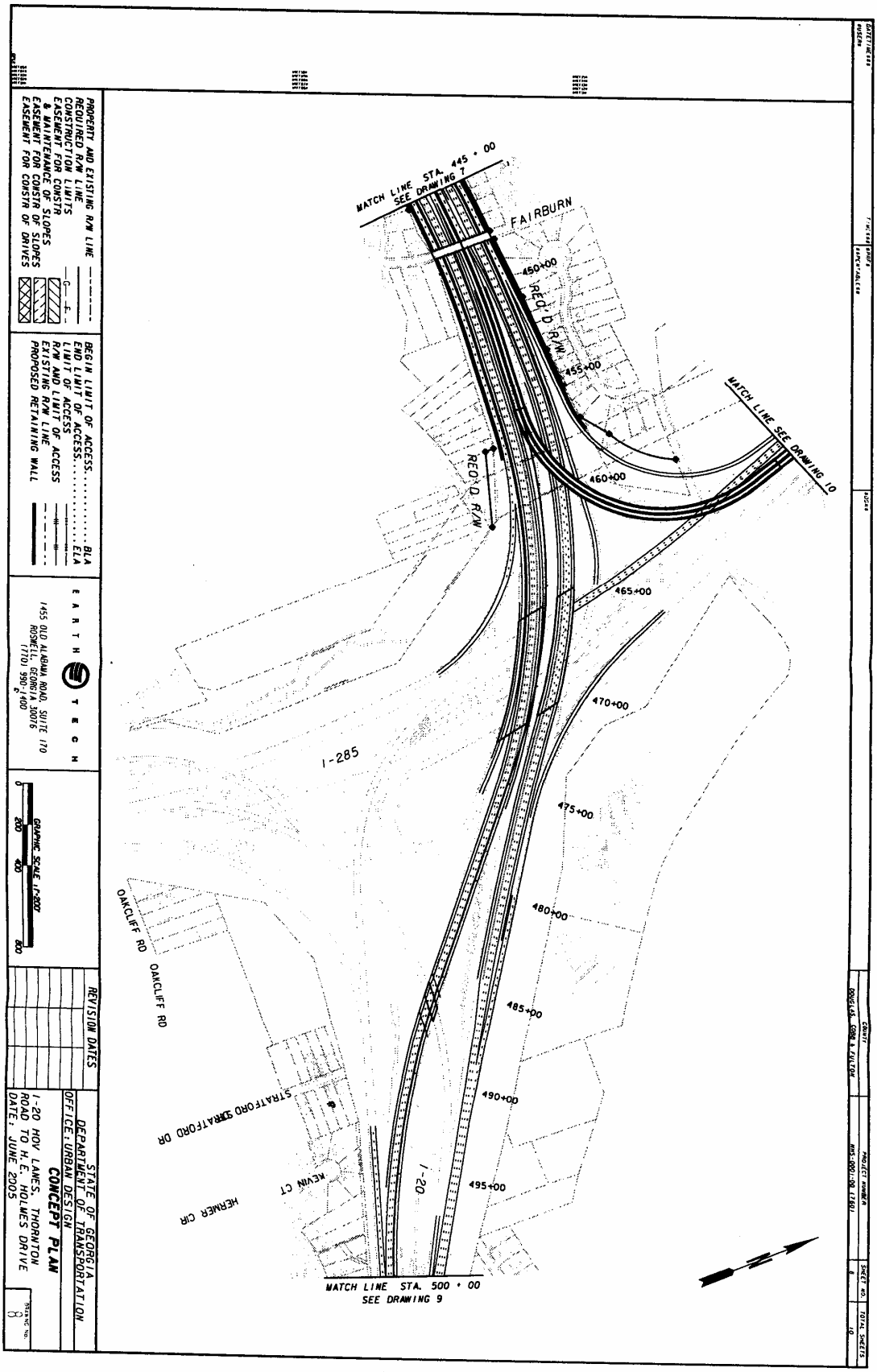

MATCH LINE STA. 190 + 00
SEE DRAWING 2
195+00
REQ'D R/W
200+00
205+00
FACTORY SHOALS ROAD
210+00
OLD HARTMAN RD.
I-20
HARTMAN ROAD
215+00
220+00
225+00
REQ'D R/W
MATCH LINE STA. 230 + 00
SEE DRAWING 4
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-4400
GRAPHIC SCALE 1:800
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DRAWING No. 3
COUNTY DOUGLAS, COBB & FULTON
PROJECT NUMBER BRS-0002-00 (116)
SHEET NO. 3
TOTAL SHEETS 10

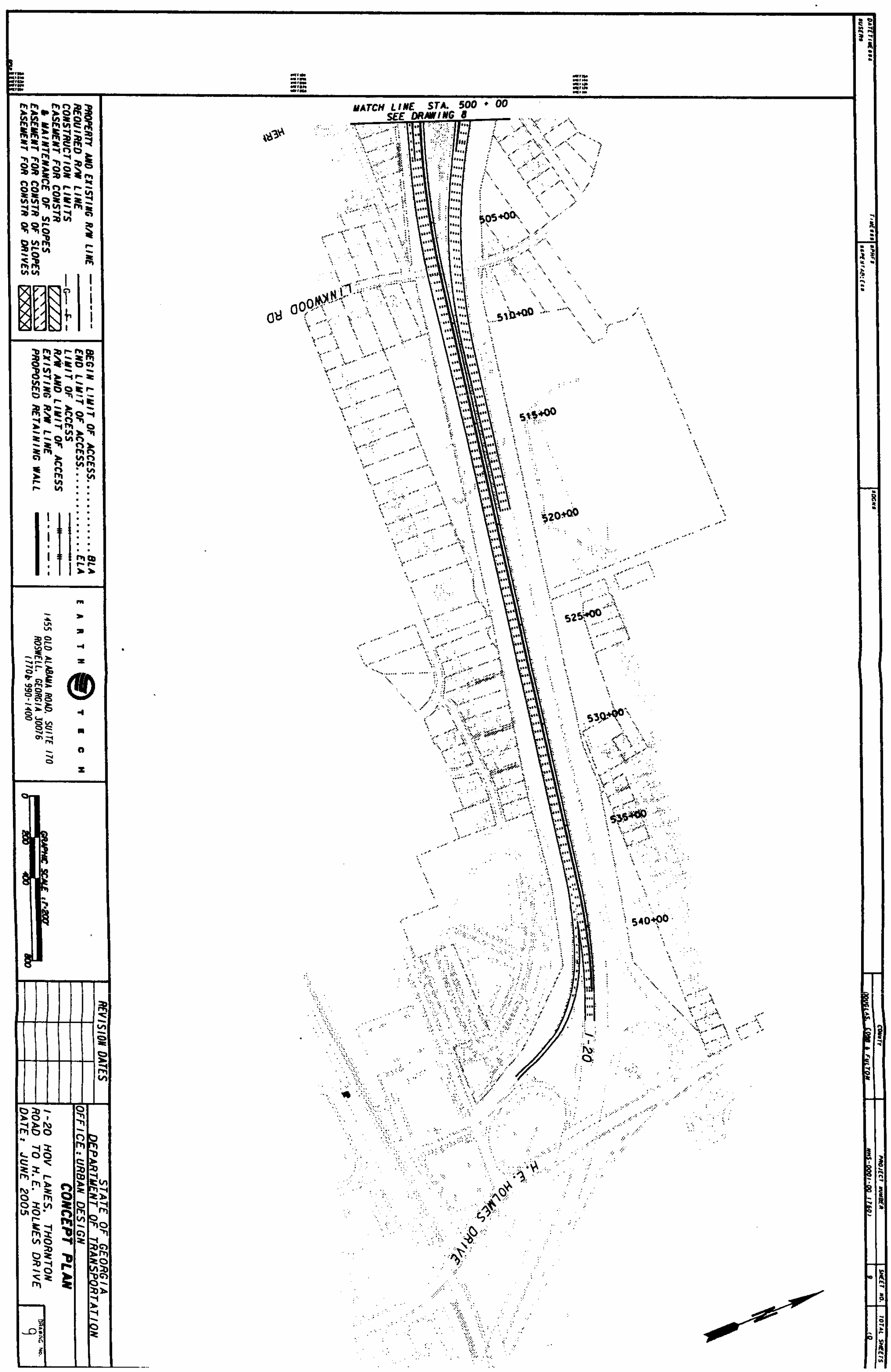

MATCH LINE STA. 230 + 00
SEE DRAWING 3
230+00
235+00
240+00
245+00
250+00
255+00
260+00
265+00
270+00
275+00
I-20
REQ'D R/W
REQ'D R/W
SIX FLAGS DRIVE
RIVERSIDE PKWY
SOUTH SERVICE RD
MATCH LINE STA. 280 + 00
SEE DRAWING 5
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS.....BLA
END LIMIT OF ACCESS.....ELA
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-1400
GRAPHIC SCALE 1:200
0 200 400 800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
SHEET NO. 4
DOUGLAS COBB & FULTON COUNTY
PROJECT NUMBER
SHEET NO. 4
TOTAL SHEETS 10

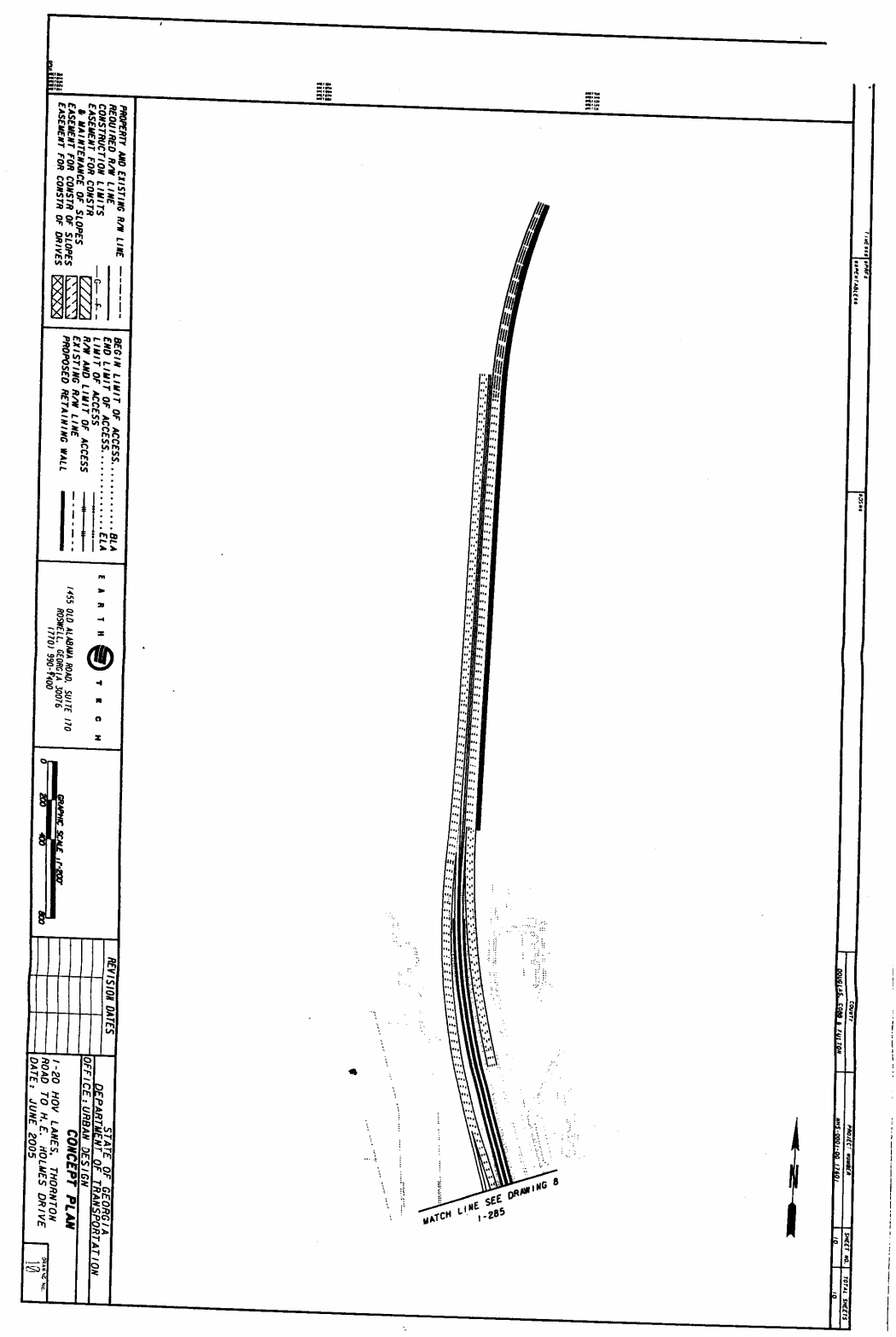

MATCH LINE STA. 280 + 00
SEE DRAWING 4
SIX FLAGS PARKWAY
SIX FLAGS DRIVE
LEE INDUSTRIAL BLVD.
SIX FLAGS OVER GEORGIA
285+00
290+00
295+00
300+00
305+00
310+00
315+00
320+00
325+00
REQ'D R/W
I-20
CHATTAHOOCHEE RIVER
MATCH LINE STA. 330 + 00
SEE DRAWING 6
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS
END LIMIT OF ACCESS
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
BLA
ELA
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 998-1400
GRAPHIC SCALE - FEET
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DRAWING NO. 5
COUNTY: DOUGLAS, COBB & FULTON
PROJECT NUMBER: HPP-0009-00 (170)
SHEET NO. 5
TOTAL SHEETS 10


MATCH LINE STA. 330 + 00
SEE DRAWING 5
REQ'D R/W
CSX RAILROAD
335+00
340+00
345+00
REQ'D R/W
I-20
WENDELL RD.
FULTON INDUSTRIAL CIRCLE
350+00
REQ'D R/W
355+00
FULTON INDUSTRIAL BLVD
360+00
365+00
370+00
375+00
REQ'D R/W
380+00
MATCH LINE STA. 385 + 00
SEE DRAWING 7
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS
END LIMIT OF ACCESS
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
BLA
ELA
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-1400
GRAPHIC SCALE 1:2000
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H. E. HOLMES DRIVE
DATE: JUNE 2005
DRAWING NO. 6
SHEET NO. 6
TOTAL SHEETS 10
PROJECT NUMBER
COUNTY
DATE/TIME PLOTTED


MATCH LINE STA. 385 + 00
SEE DRAWING 6
390+00
395+00
400+00
405+00
REQ'D R/W
410+00
415+00
BOLTON ROAD
420+00
MARTIN LUTHER KING, JR. DRIVE
REQ'D R/W
425+00
430+00
435+00
440+00
MATCH LINE STA. 445 + 00
SEE DRAWING 8
PROPERTY AND EXISTING R/W LINE
PROJECTED R/W LINES
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS..... BLA
END LIMIT OF ACCESS..... ELA
LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GA 30076
(770) 594-1400
GRAPHIC SCALE 1"=800'
0
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DRAWING NO. 7
DOUGLAS COBB & FULTON
PROJECT NUMBER
SHEET NO. 7
TOTAL SHEETS 10


MATCH LINE STA. 445 + 00
SEE DRAWING 7
FAIRBURN
450+00
REQ'D R/W
455+00
MATCH LINE SEE DRAWING 10
REQ'D R/W
460+00
465+00
470+00
I-285
475+00
480+00
OAKCLIFF RD
OAKCLIFF RD
485+00
STRATFORD DR
STRATFORD DR
490+00
MCVAN CT
HERMER CIR
I-20
495+00
MATCH LINE STA. 500 + 00
SEE DRAWING 9
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS..... BLA
END LIMIT OF ACCESS..... ELA
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-1400
GRAPHIC SCALE 1:200
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DOUGLAS COBB & FULTON COUNTY
PROJECT NUMBER
SHEET NO.
TOTAL SHEETS
10


MATCH LINE STA. 500 + 00
SEE DRAWING 8
LINKWOOD RD
505+00
510+00
515+00
520+00
525+00
530+00
535+00
540+00
I-20
H.E. HOLMES DRIVE
PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS............BLA
END LIMIT OF ACCESS............ELA
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
EARTH TECH
1455 OLD ALABAMA ROAD, SUITE 170
ROSWELL, GEORGIA 30076
(770) 990-1400
GRAPHIC SCALE
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON ROAD TO H.E. HOLMES DRIVE
DATE: JUNE 2005
DOUGLAS, COBB & FULTON
9
10


PROPERTY AND EXISTING R/W LINE
REQUIRED R/W LINE
CONSTRUCTION LIMITS
EASEMENT FOR CONSTR & MAINTENANCE OF SLOPES
EASEMENT FOR CONSTR OF SLOPES
EASEMENT FOR CONSTR OF DRIVES
BEGIN LIMIT OF ACCESS
END LIMIT OF ACCESS
LIMIT OF ACCESS
R/W AND LIMIT OF ACCESS
EXISTING R/W LINE
PROPOSED RETAINING WALL
BLA
ELA
E A R T H T E C H
1455 OLD ALABAMA ROAD, SUITE 110
ROSWELL, GEORGIA 30076
(770) 990-9100
GRAPHIC SCALE IN FEET
0
200
400
800
REVISION DATES
STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
CONCEPT PLAN
I-20 HOV LANES, THORNTON
ROAD TO E. HOLMES DRIVE
DATE: JUNE 2005
PROJECT NO.
10
COUNTY
DOUGLAS, COBB & PAULDING
PROJECT NUMBER
STP-0001-00 (118)
SHEET NO.
10
TOTAL SHEETS
10
MATCH LINE SEE DRAWING 8
I-285
N

CONCEPT COST ESTIMATE
NHS-0001-00(760)

P.I. NO. 0001760
Douglas, Cobb, and Fulton Co.

DATE: 6-June-05

PROJECT LETTING DATE: 2009

PREPARED BY: Eric J. Rickert, P.E.

PROJECT LENGTH (MILES): 8.4

( ) PROGRAMMING PROCESS (x) CONCEPTUAL DEVELOPMENT ( ) DURING PROJ DEV.

SUMMARY OF PROJECT COSTS

A.	RIGHT OF WAY:				
	1. PROPERTY (Land & Easement)				
	a. Acquisition				
	1) Commercial Property	16 AC	$ 250,000.00	$ 4,000,000.00	
	2) Industrial Property	9 AC	$ 185,000.00	$ 1,665,000.00	
	3) Residential Property	10 AC	$ 19,600.00	$ 196,000.00	
	b. Improvements	1 EA	$ 10,000.00	$ 10,000.00	
	c. Damages				
	1) Proximity	1 EA	$ 25,000.00	$ 25,000.00	
	2) Consequential	2 EA	$ 25,000.00	$ 50,000.00	
	3) Cost to Cure	4 EA	$ 7,500.00	$ 30,000.00	
	2 OTHER COSTS				
	a. Scheduling Contingency (55% of 1a-1c			$ 3,286,800.00	
	b. Admin/Court Cost (60% of 1a -1c + 2a			$ 5,557,680.00	
	c. Inflation Factor (40% of 1a -1c + 2a)			$ 3,705,120.00	
			SUBTOTAL:A		$ **18,525,600.00**
B.	REIMBURSABLE UTILITIES:				
	1 ELECTRIC TRANSMISSION LINES			$ 200,000.00	
			SUBTOTAL:B		$ **200,000.00**

Updated Concept Cost Estimate.xls

C. CONSTRUCTION:

1 GRADING AND DRAINAGE (MAINLINE):

a. SITEWORK					
1) Unclass. Excav.	760000	CY	$ 2.49	$	1,892,400.00
2) Borrow	990000	CY	$ 5.37	$	5,316,300.00
b. DRAINAGE:					
1) Cross Drain Pipes	3000	LF	$ 286.11	$	858,330.00
2) Longitudinal Storm Drain Pipe	110000	LF	$ 25.42	$	2,796,200.00
3) Long. Stm. Drain Catch Basins	36	EA	$ 1,628.25	$	58,617.00
4) Drop Inlet at Median Barrier	270	EA	$ 1,487.78	$	401,700.60
5) Double Drop Inlet at Median Barrie	40	EA	$ 1,487.78	$	59,511.20
6) Drop Inlet at Retaining Wall	200	EA	$ 1,487.78	$	297,556.00
7) Box Culverts					
a. Concrete	6200	CY	$ 382.70	$	2,372,740.00
b. Reinforcement	750000	LB	$ 0.50	$	375,000.00
SUBTOTAL:C-1					
				$	**14,428,354.80**

2 BASE AND PAVING (MAINLINE):

a. 12 in G.A.B.	550000	TN	$ 13.33	$	7,331,500.00
b. ASPHALT PAVING:					
1) 2" Asph. Conc. 9.5 mm Sprpve	140000	TN	$ 36.48	$	5,107,200.00
2) 2"Asph. Conc. 19 mm Sprpve	89000	TN	$ 38.08	$	3,389,120.00
3) 8" Asph. Conc. 25 mm Sprpve	150000	TN	$ 34.49	$	5,173,500.00
4) Leveling	11000	TN	$ 37.63	$	413,930.00
5) Bitum. Tack	170000	GL	$ 0.89	$	151,300.00
c. OTHER					
1) Median Barrier Wall	83000	LF	$ 36.80	$	3,054,400.00
2) Curb and Gutter, Type II	8000	LF	$ 9.46	$	75,680.00
3) 'V' Gutter	38000	LF	$ 13.63	$	517,940.00
4) Guardrail	7000	LF	$ 8.67	$	60,690.00
5) Guardrail Anchorage-Type 12	44	EA	$ 1,188.55	$	52,296.20
6) 5' Sidewalk	5900	SY	$ 19.00	$	112,100.00
SUBTOTAL:C-2				$	**25,439,656.20**

CONCEPT COST ESTIMATE
NHS-0001-00(760)

P.I. NO. 0001760
Douglas, Cobb, and Fulton Co.

3 STRUCTURES:					
a. Bridges					
1) New Construction-Tangent	380000	SF	$ 70.00	$ 26,600,000.00	
2) New Construction-Curved	49600	SF	$ 135.00	$ 6,696,000.00	
3) Jack Existing	33300	SF	$ 35.00	$ 1,165,500.00	
b. Retaining Walls-MSE/Tie-back	540000	SF	$ 35.00	$ 18,900,000.00	
c. Sound Walls	280000	SF	$ 17.63	$ 4,936,400.00	
			SUBTOTAL:C-3		$ **58,297,900.00**
4 LUMP ITEMS:					
a. TRAFFIC CONTROL	10	MI	$ 500,000.00	$ 5,000,000.00	
b. CLEARING AND GRUBBING	290	AC	$ 6,000.00	$ 1,740,000.00	
c. LANDSCAPING	0	AC	$ 2,000.00	$ -	
d. EROSION CONTROL	11	MI	$ 50,000.00	$ 550,000.00	
			SUBTOTAL:C-4		$ **7,290,000.00**
5 MISCELLANEOUS:					
a. SIGNAL					
1) New Signal	5	EA	$ 80,000.00	$ 400,000.00	
b. SIGNING					
1) Overhead Sign Spans	24	EA	$ 70,000.00	$ 1,680,000.00	
2) Single Mast/Cantilever	3	EA	$ 50,000.00	$ 150,000.00	
			SUBTOTAL:C-5		$ **2,230,000.00**

Updated Concept Cost Estimate.xls

CONCEPT COST ESTIMATE
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and Fulton Co.

ESTIMATE SUMMARY

A.	RIGHT OF WAY	$ 18,525,600.00	
B.	REIMBURSABLE UTILITIES	$ 200,000.00	
C.	CONSTRUCTION		
	1 GRADING AND DRAINAGE	$ 14,428,354.80	
	2 BASE AND PAVING	$ 25,439,656.20	
	3 STRUCTURES	$ 58,297,900.00	
	4 LUMP ITEMS	$ 7,290,000.00	
	5 MISCELLANEOUS	$ 2,230,000.00	
	SUBTOTAL CONSTRUCTION COST	$ 107,685,911.00	
	E. & C. (10 %)	$ 10,768,591.10	
	TOTAL CONSTRUCTION COST		$ 118,454,502.10
GRAND TOTAL PROJECT COST			**$ 137,180,102.10**

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