VALUE ENGINEERING STUDY

Project # IM000-0285-01(346) PI No. 713210-

I-75 NB C-D System from Forest Parkway to I-285
Clayton County, Georgia

Prepared for:

Georgia Department of Transportation

One Georgia Center
600 West Peachtree NW
Atlanta, Georgia 30308

25 August 2011

U.S. COST

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25 August 2011

Mr. Matt Sanders, AVS
Value Engineering Specialist
GDOT - Engineering Services
One Georgia Center - 5th Floor
600 W. Peachtree Street NW
Atlanta, GA 30308

Re: V.E. Workshop – I-75 NB C-D System from Forest Pkwy to I-285, Clayton County, GA
Project #: IM000-0285-01(346) - PI#: 713210-

Dear Mr. Sanders:

U.S. Cost, Inc. is pleased to submit two (2) hard copies and one (1) C-D of the Value Engineering Study Report on the above referenced project. We appreciate the assistance and participation of the GDOT personnel as well as the Atkins design team.

This Workshop resulted in the development of twenty-one (21) value-enhancing proposals. We hope that incorporation of some of these value improvement alternatives provided herein results in an enhanced project in relation to cost, constructability and long-term performance of the project features.

Please feel free to contact me to discuss any information within this report. We look forward to the next opportunity to be of service to the Georgia Department of Transportation.

Sincerely,

U.S. COST INCORPORATED

Tom Orr, P.E., CVS
V.E. Team Leader

CC: L. Myers, GDOT

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PROJECT DESCRIPTION

This I-75 Northbound Collector-Distributor (C-D) from Forest Parkway to I-285 project involves enhancements to an urban interchange and corridor in Clayton County, Georgia. The project begins along I-75 at Forest Parkway Interchange and extends approximately 2.0 miles to I-75 and I-285 Interchange. Multiple improvements are included under the proposed project. The improvements include reconfiguration of the Forest Parkway at I-75 Interchange ramps and the I-285 at I-75 Interchange ramps, operational improvements to the I-75 corridor between Forest Parkway and I-285, and reconfiguration of the Frontage Road along the east side of I-75.

The project documents include evaluations of existing and future traffic volumes, LOS analyses, and crash analyses, which show a need for capacity and operational improvements within the project corridor. The primary improvement included in this project is the development of a C-D roadway adjacent to northbound I-75 to service the I-75 and I-285 Interchange. The intention of the C-D is to alleviate the existing weave issues associated with the I-75 on-ramps from Forest Parkway and the I-75 off-ramps to I-285 with the development of a braided ramp. The proposed C-D begins north of Forest Parkway and passes under the realigned I-75 on-ramp from Forest Parkway. The C-D then merges with a transfer ramp from Forest Parkway and continues north for 1,600 feet before diverging prior to the I-285 at I-75 Interchange. After diverging, two lanes continue eastbound connecting with the existing I-285 C-D lanes and two lanes continue north passing under the existing end spans of the I-285 bridges. The northbound lanes form a new loop ramp before merging with the existing westbound I-285 C-D.

Additional improvements are proposed for the Forest Parkway at I-75 interchange ramps servicing northbound I-75. The existing northbound ramps would be modified to merge for approximately 800 feet before diverging, with a one-lane ramp connecting to northbound I-75 and a one-lane ramp merging with the proposed C-D. To accommodate the proposed improvements, a new bridge would need to be constructed for the ramp to northbound I-75 where it forms a braid with the C-D.

Project components include:

- Collector-Distributor for traffic from I-75 North and from Forest Parkway, to allow movements from Forest Parkway to I-285E/W & I-75N, and from I-75N to I-285E/W
- Braided ramp on C-D with bridge
- New ramp from Forest Parkway westbound to I-75 North
- Significant amount of retaining walls including tie-back and MSE walls
- Relocation of Frontage Road adjacent to State Farmer's Market property
- Approximately $4,400,000 in ROW acquisition, primarily industrial/commercial properties along Frontage Road
- Re-constructed ramps from new C-D northbound to I-285 East and to I-285 West
- Ramps and C-D are reinforced-concrete pavement
- Frontage road is asphalt
- Shoulders are full-depth pavements

KEY INFORMATION/NOTES

Introduction

U.S. Cost conducted the Value Engineering Team Study on I-75 Northbound Collector-Distributor from Forest Parkway to I-285. The V.E. study was conducted for three and ½ days, 22 - 25 August 2011, at the Georgia Department of Transportation 5th floor Conference Room in Atlanta, GA. The study team was furnished with concept stage documents for use in conducting the VE workshop. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Tom Orr, P.E., CVS	U.S. Cost, Inc.	VE Team Leader (VETL)
Al Bowman, P.E.	LPA Group	Bridge/Structures
Jerry Brooks, P.E.	Kimley-Horn	Roadway Engineer
Lori Kennedy	KEA Group	Construction

Value Engineering Study Process

The Value Engineering Study followed the Value Engineering Job Plan as certified by SAVE International as follows:

- Information Phase (Monday)
- Function Analysis Phase (Monday)
- Creative Phase (Monday)
- Evaluation Phase (Monday)
- Development Phase (Tuesday - Wednesday)
- Presentation Phase (Thursday AM)

Information Phase

The V.E. team was first briefed on the project design by Atkins personnel and Georgia DOT representatives in a Design Presentation the morning of the first day of the V.E. Study. The briefing included a review of the design requirements and rationale for the selection and arrangement of the major project features. Discussions regarding alternatives considered, adjacent properties/facilities, and project criteria and constraints were included in the design presentation.

KEY INFORMATION/NOTES

Project Design Criteria

During the meeting, project design criteria were identified. The following listing identifies the design criteria with which the project must comply:

AASHTO Design Policies
FHWA Design Policies
Environmental Restrictions (EA Requirements TBD)

Project Constraints

There are no absolute constraints for the project, but the current intention is for the project to be constructed within the ROW for future Managed Lanes project (which is controlled primarily by the relocation of the Frontage Road).

Function Analysis

As a basic part of the V.E. process, the team conducted a Function Analysis session on the I-75 Northbound Collector-Distributor from Forest Parkway to I-285 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 ***"****Improve Operations"* by relieving congestion and eliminating a weave location onto and off of I-75 Northbound. A detailed project function analysis of the characteristics of the project and the project features is presented in the Appendix.

Risk Analysis

The group identified the following project risk elements, which may impact the I-75 Northbound Collector-Distributor from Forest Parkway to I-285 project. This exercise served as a catalyst for the Creative Phase of the study when several ideas were suggested which would mitigate these project risks.

Risk Elements/Concerns

- No significant Level of Service (LOS) improvement
- Staging of I-285 loops difficult
- Drainage of depressed area difficult
- Proposed design includes short weave section on Ramp "B"
- Reduced shoulder width under I-285 bridge (for I285 West loop)
- Project benefits may not justify cost

KEY INFORMATION/NOTES

Creative Phase

The Creative Phase of the V.E. study was initiated the afternoon of the first day of the study. A total of twenty-nine (29) creative ideas were generated for further investigation by the team. The creative ideas focused on areas of the project which the VE Team felt had the most opportunity for value improvement, including:

- eliminating traffic weave locations on the C-D
- maintaining traffic movements at reduced construction cost
- reducing ROW impacts
- improving bridge concepts

Additional ideas were generated reflecting alternative project components based on an understanding of local construction products and materials and the relative costs of installing them.

A listing of all creative ideas on this project is included in the Appendix.

Alternative Idea Evaluation Criteria

The session participants identified the characteristics for evaluating the V.E. ideas for which alternatives would be the most acceptable for incorporation in the project. The highest ranked ideas would satisfy several of these criteria. The evaluation criteria for V.E. ideas were as follows:

V.E. Idea Evaluation Criteria

Reduces Costs
Reduces Construction Time
Improves Constructability
Improves Operations

KEY INFORMATION/NOTES

Evaluation Phase

The ideas generated during the Creative Phase were reviewed and evaluated by the VE session participants during an Analysis/Judgment Phase session at the end of the first study day. The intent of the meeting was to allow the participants an opportunity to discuss and evaluate the ideas. A few of the V.E. ideas were dropped at that time as being conceptually unacceptable. The ranking session consisted of the VE team members assigning a ranking for each idea. The Acceptability ranking was based on how each idea improves the value of the project when considered against the evaluation criteria listed previously. Those ideas, which the V.E. Team felt had the most promise were given a designation of 1-5 on acceptability. This is a time management tool to identify those proposals that have the greatest potential. Approximately twenty-one (21) out of the original twenty-nine (29) 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:

ACCEPTABILITY OF IDEA

5 points - Excellent Idea
4 points – Very Good Idea
3 points - Good Idea
2 points - Fair Idea
1 point - Do Not Develop

KEY INFORMATION/NOTES

Development Phase

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

Presentation Phase

A presentation of all developed V.E. proposals to the Atkins design team and GDOT representatives was conducted 25 August 2011 at 9 AM.

Basis of V.E. Cost Savings

The cost information for proposals in this report are based on the cost data prepared by the design team, GDOT Item Mean Summary (Dec. 28, 2010), VE Team member experience, and discussions with vendors/Contractors. Overhead and profit are included in the project cost estimate and the GDOT Item Mean line items. Therefore, where line item costs are taken from these sources no additional markups are applied. The savings presented in the proposals is a general order of magnitude 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 2011 dollars.

Evaluation of Alternatives

When reviewing the value engineering proposals, consider each part of an alternative on its own merit. There may be a tendency to disregard an entire alternative because of a concern about one aspect of it. We encourage partial acceptance of ideas; thus, each aspect of an alternative should be considered for incorporation into the design, even if the entire alternative is not implemented. Variations of these proposed alternatives are encouraged.

Several of these alternatives are either “mutually exclusive” or have overlapping cost savings with other alternatives. These are indicated in the Proposal Summary Table. Items indicated as mutually exclusive indicates that acceptance of one alternative precludes acceptance of the related proposal. Decision-makers are encouraged to evaluate these alternatives carefully in order to select the combination of alternatives that provides the greatest benefits to the project. Overlapping cost savings indicates that the 2 proposals have common components and if both ideas are accepted, then the cost savings for each would be reduced from the values calculated.

VALUE ENGINEERING RESULTS

The VE Team generated 29 creative ideas and developed 21 proposals for consideration by GDOT. Brief outlines of the VE proposals are as follows:

Proposal Highlights

B-1.0 - Use Alternate Beam Type/Spacing for Bridge Structure. The current design of the new bridge uses sixty-nine (69) AASHTO Type III Beams @ 7'-5" spacing with 2'-10" overhangs. Proposal B-1.0 proposes to use fifty-two (52) 36" Florida I Beams @ 9'- 10" spacing with 4'-3" overhangs. This alternative reduces the number of beams required by 25%, and by utilizing a shallower depth beam allows for a lower roadway profile, saving abutment wall costs as well as associated earthwork. This proposal is estimated to save approximately $128,000 in construction costs.

B-4.0 - Place bridge deck for vehicle travelway only. The current design includes a 790'x 45' concrete bridge braided ramp, with decking over the entire bridge area of 40,310 SF (based on the cost estimate). Proposal B-4.0 proposes to construct the bridge deck only below where it is needed for the vehicle travelway of 18,478 SF, and results in a savings of $468,000.

B-6.0 – Reduce height and length of wall between Frontage Road and Farmers Market. In the current design, a 925' x 15' retaining wall is proposed along the outside of the realigned Frontage Road with a height varying from 0' to 32.5'. In B-6.0, it is proposed to lower or remove the retaining wall between the Frontage Road and the Farmers Market from STA 213+00 to STA 216+00, to a height varying from 0' to 10.5'. This would save approximately $200,000.

B-6.1 - Eliminate wall along Frontage Road where rock outcrops are present. Cost savings overlap with B-6.0 above. In the current design, a 925' x 15' retaining wall is proposed along the outside of the realigned Frontage Road with a height varying from 0' to 32.5'. In B-6.1, it is proposed to eliminate construction of the retaining wall between STA 208+00 and 213+00 (500 ft.) where rock outcroppings are evident. This alternative is estimated to save approximately $638,000.

VALUE ENGINEERING RESULTS

R-1.0 - Eliminate entrance Ramp 'C' from Forest Parkway to I-75N. Widen flyover loop entrance ramp to 2 lanes from Forest Parkway to I-75. Do not construct C-D system. The existing Forest Parkway has two entrance ramps to I-75 Northbound. The original design realigns these ramps onto a collector distributer system for access to I-285. The exit for I-285 is relocated south of the entrance from Forest Parkway. The design creates two weaving sections, one approximately 800' long after the two entrance ramps come together and another approximately 800' long after the I-75 exit to I-285. In R-1.0, it is proposed to eliminate one of the entrance ramps from Forest Parkway (Ramp 'C') and widen the existing flyover loop ramp to 2 lanes. Do not construct the remaining portion of the project. Widen Forest Parkway bridges over I-75 to develop additional storage on Forest Parkway for 2-lane left turn from westbound onto entrance ramp for I-75N. This is a complete departure from the current approach, aids in lengthening the weave section along I-75 northbound from 2,000 to 4,300 feet, and would save approximately $33,280,000.

R-1.1 - Eliminate/Remove loop entrance ramp west of I-75 from Forest Parkway to I-75N. Widen Ramp "C" entrance ramp to 2 lanes from Forest Parkway to I-75. Do not construct C-D system. In another complete departure from the current design, R-1.1 proposes to eliminate the existing looped entrance ramp from Forest Parkway to I-75 North and widen the remaining ramp to 2 lanes. Do not construct the remaining portion of the project. Widen Forest Parkway bridges over I-75 to develop additional storage on Forest Parkway for 2-lane left turn onto the entrance ramp, and add a traffic signal at the intersection with the ramp. Similar to R-1.0, this aids in lengthening the weave section along I-75 northbound from 2,000 to 4,300 feet, and would save approximately $34,300,000.

R-2.0 - Build out Northbound C-D Managed Lane Project (NHS-0001-00(759), PI No. 0001759); to include new Forest Parkway Bridges over I-75. In another complete departure from the current design, R-2.0 proposes to build out Northbound C-D Managed Lane Project to include the new Forest Parkway Bridges over I-75 and leaving the existing one-lane SR 85/Forest Parkway EB loop ramp to I-75 NB and the I-75 NB to I-285 WB loop ramp in place. This Northbound C-D Managed Lane Project would include I-75 NB exiting south of Forest Parkway and merging with the SR 85/Forest Parkway Eastbound loop ramp to I-75 NB to I-285 traffic onto the proposed NB C-D lanes just north of Forest Parkway. Forest Parkway WB on ramp to I-75 NB would bridge over the proposed NB C-D lanes at this point to enter I-75 NB. This alternative constructs more of the long-term features for this corridor and avoids major future re-work in this area. The VE Team has concerns that if this project is built as-is, then the staging/phasing for the future Managed Lanes project to maintain all traffic movements in this corridor would be tremendously difficult. This alternative would cost an additional $4,100,000 but would avoid re-construction of $16,000,000 in features that would be "thrown away" for future construction of the Managed Lanes project.

VALUE ENGINEERING RESULTS

R-3.0 - Eliminate New Frontage Road from Forest Parkway to Falcon Drive. The current design relocates the Frontage Road to the east of the existing Frontage Road. It is proposed to eliminate the New Frontage Road from Forest Parkway to Falcon Drive, including the associated retaining wall. It is believed this segment of the Frontage Road could be eliminated because businesses within the Farmer's Market would have adequate access via Main Drive, Farm Drive, and Falcon Drive. Also, access to businesses on the North end of the Frontage Road would remain via Falcon Drive which intersects Old Dixie Highway to the East. The proposal will save a total of $1,700,000.

R-5.0 - Eliminate sidewalk at Frontage Road. The current design of the Frontage Road includes a 5' wide sidewalk running the entire length. Proposal R-5.0 proposes to eliminate the sidewalk which matches the current Frontage Road with no sidewalk, and saves $±77,000.

R-6.0 - Reduce the width of the travel lanes on the 2-lane Frontage Road from 12' to 11'. The frontage road is designed as a 35 MPH roadway with one 12'travel lane in each direction. Proposal R-6.0 reduces the width of both travel lanes on the frontage road from 12' to 11', and provides an estimated cost savings of $54,000.

R-8.0 - Move the Frontage Road toward I-75 adjacent to Ramp 'C'. In the current design, the Frontage Road is separated from Ramp 'C' by as much as 80' between STA 16+00 and STA 31+00. In R-8.0, it is proposed to move the Frontage Road adjacent to Ramp 'C' along these station lines. This alternative provides a savings in ROW acquisition of approximately $1,064,000.

R-9.0 - Reduce design speed of Loop Ramp 'A' from I-75N to I-285W to 25 mph to avoid need to reconstruct Ramp 'F'. Loop Ramp "A" is the 2-lane ramp from the proposed C-D road to I-285 westbound. The concept report states a Design Variance is required to reduce the design speed from the GDOT required 35 mph to 30 mph using a radius of 205 feet and a superelevation of 10%. The current design for reconstruction of Ramp "A" also requires reconstruction of Ramp "F", from I-285W to I-75N. In R-9.0, it is proposed to use a design speed of 25 MPH (which is allowed by AASHTO), a 175 foot radius and a maximum superelevation rate of 10% on Ramp 'A', which would allow Loop Ramp "A" to be reconstructed without requiring the reconstruction of Ramp "F". This alternative results in an estimated savings in construction costs of $705,000.

R-10.0 - Reduce Paved Shoulders for Ramps and C-D to AASHTO Minimum of 4 ft Wide Inside and 10 ft Wide Outside. The current design sections show 6 foot inside and 12 foot outside shoulders for all one-lane and two-lane ramps and C-Ds; and 10 foot inside and 12 foot outside shoulders for all three-lane C-Ds. Proposal R-10.0 reduces shoulder width to the AASHTO minimum of 4 foot inside and 10 foot outside for all one-lane and two-lane ramps and C-Ds; and three-lane C-Ds. This alternative saves approximately $406,000.

VALUE ENGINEERING RESULTS

R-11.0 - Reduce the width of the paved shoulder on the Frontage Road to 2'. The Frontage Road is designed with curb and gutter on the east side and a paved shoulder on the west side. The design includes a 4' wide paved portion (although other typical sections show 6' and 10' paved portions). It is proposed to reduce the width of the paved shoulder on the west side of the frontage road to 2'. This alternative saves approximately $54,000.

R-12.0 - Reduce Paved Shoulder Width Along I-75 NB Under I-285 Bridge to 12'. The current design of the shoulder along the main line of I-75 Northbound under the I-285 bridges is currently proposed as 24 feet wide. In R-12.0, it is proposed to reduce the width of the paved shoulder along I-75 from 24' at the I-285 bridges to 12'. Gravel would be placed in the remaining 12' outer strip. This alternative provides approximately $31,000 in cost savings.

R-13.0 - Eliminate Sound Barrier Walls Per NEPA Environmental Assessment. The current design does not show where sound barriers are proposed; however, the cost estimate includes $1,650,000 for sound barriers In R-13.0, it is proposed to eliminate the sound barriers in this project due to the NEPA Environmental Assessment stating that construction along this corridor would be infeasible. This proposal is estimated to save approximately $1,650,000.

R-15.0 - Increase profile grade of Ramp 'B' after the bridge to tie to I-75 sooner and to reduce the wall height between Ramp 'A' and Ramp 'B' and reduce wall height between Ramp 'B' and I-75. In the current design, Ramp 'B' is designed on a 2.75% grade from the PVI at STA 234+00 and enters I-75 with the ramp nose at STA 244+50. In R-15.0, it is proposed to increase the profile grade of Ramp 'B' from the PVI at STA 234+00 to 5%, move the ramp nose to approximately STA 241+00 and reduce the height of the associated walls. This proposal is estimated to save approximately $734,000.

R-16.0 - Revise the Frontage Road profile from STA 17+00 to STA 27+00 to follow existing grade and eliminate wall between Frontage Road and the Farmers Market. In the current design, **t**he Frontage Road profile is as much as 32' below the existing ground line from STA 17+00 to STA 27+00 and a 900 LF wall is required adjacent to the right of way. In R-16.0, it is proposed to revise the Frontage Road profile from STA 17+00 to STA 27+00 to more closely follow the existing ground line and eliminate the retaining wall. This proposal is estimated to save $1,047,000.

R-17.0 - Realign Ramp 'E' (I-75N to I-285E) to tie to the existing ramp sooner and eliminate a wall and reduce rework on ramp. The current design includes reconstruction of Ramp 'E', which is from I-75N to I-285E, for the entire length of the ramp from STA 505+00 to STA 520+00 (1,500 LF). In R-17.0, it is proposed to shift nose of Ramp 'E' from STA 249+50 to approximately 251+00 and tie new ramp to existing ramp at approximately STA 509+00. Eliminate rework of ramp from 509+00 to 511+50 and eliminate need for additional right of way at STA 512+00. This alternative is estimated to save $390,000.

VALUE ENGINEERING RESULTS

R-20.0 - Use asphalt shoulders in lieu of full depth PCC for ramps and collector-distributor. The current design includes full-depth Portland cement concrete (PCC) pavement shoulders for the ramps and collector-distributor sections that match the concrete pavement sections (12" GAB, 3" asphalt, 12" PCC). In R-20.0, it is proposed to construct asphalt shoulders for the ramps and collector-distributor in lieu of the full-depth PCC shoulders - the proposed section is a heavy-duty asphalt, similar to that used on the frontage road, of 12" GAB, 7-1/2" asphalt base, 3" asphalt binder course and 1-1/2" surface course. This alternative is estimated to save $1,300,000.

R-21.0 - Use reduced depth asphalt shoulder in lieu of full depth for Frontage Road. The current design includes a full-depth pavement section to match the adjacent road section (12" GAB, 7-1/2" asphalt base, 3" asphalt binder course and 1-1/2" surface course) at the Frontage Road. In R-21.0, it is proposed to reduce the depth of the paved shoulder on the west side of the Frontage Road to a section of 8" GAB, 4" asphalt base, and 1-1/2" surface course. This alternative is estimated to save $47,000.

SUMMARY OF VALUE ENGINEERING PROPOSALS

Project # IM000-0285-01(346) PI No. 713210-
I-75 NB C-D SYSTEM FROM FOREST PKWY TO I-285
CLAYTON COUNTY, GEORGIA

IDEA NO.	PROPOSAL DESCRIPTION	CONSTRUCTION SAVINGS	RELATED PROPOSALS
	Note: Brackets mean additional cost		
	BRIDGES/STRUCTURES (B)		
1.0	Use Alternate Beam Type/Spacing for Bridge Structure.	127,850	
4.0	Place bridge deck for vehicle travelway only.	468,233	
6.0	Reduce height and length of wall between Frontage Road and Farmers Market	201,580	Cost savings overlap with B-6.1 and R-16.0
6.1	Eliminate wall along Frontage Road where rock outcrops are present.	638,000	Cost savings overlap with B-6.0 and R-16.0
	ROADWAY (R) .		
1.0	Eliminate entrance Ramp 'C' from Forest Parkway to I-75N. Widen flyover loop entrance ramp to 2 lanes from Forest Parkway to I-75. Do not construct C-D system.	33,279,420	Mutually exclusive with R-1.1 and R-2.0
1.1	Eliminate/Remove loop entrance ramp west of I-75 from Forest Parkway to I-75N. Widen Ramp "C" entrance ramp to 2 lanes from Forest Parkway to I-75. Do not construct C-D system.	34,318,994	Mutually exclusive with R-1.0 and R-2.0
2.0	Build out Northbound C-D Managed Lane Project (NHS-0001-00(759), PI No. 0001759); to include new Forest Parkway Bridges over I-75	(4,105,401)	Mutually exclusive with R-1.0 and R-1.1
3.0	Eliminate New Frontage Road from Forest Parkway to Falcon Drive	1,708,453	Savings overlap with other Frontage Rd proposals

SUMMARY OF VALUE ENGINEERING PROPOSALS

Project # IM000-0285-01(346) PI No. 713210-
I-75 NB C-D SYSTEM FROM FOREST PKWY TO I-285
CLAYTON COUNTY, GEORGIA

IDEA NO.	PROPOSAL DESCRIPTION	CONSTRUCTION SAVINGS	RELATED PROPOSALS
	Note: Brackets mean additional cost		
5.0	Eliminate sidewalk at Frontage Road.	77,085	
6.0	Reduce the width of the travel lanes on the 2-lane Frontage Road from 12' to 11'.	53,957	
8.0	Move the Frontage Road toward I-75 adjacent to Ramp 'C'	1,064,250	
9.0	Reduce design speed of Loop Ramp 'A' from I-75N to I-285W to 25 mph to avoid need to reconstruct Ramp 'F'	705,930	
10.0	Reduce Paved Shoulders for Ramps and C-D to AASHTO Minimum of 4 ft Wide Inside and 10 ft Wide Outside	406,200	Cost savings overlap with R-20.0
11.0	Reduce the width of the paved shoulder on the Frontage Road to 2'	53,957	Cost savings overlap with R-21.0
12.0	Reduce Paved Shoulder Width Along I-75 NB Under I-285 Bridge to 12'	31,368	
13.0	Eliminate Sound Barrier Walls Per NEPA Environmental Assessment	1,650,000	
15.0	Increase profile grade of Ramp 'B' after the bridge to tie to I-75 sooner and to reduce the wall height between Ramp 'A' and Ramp 'B' and reduce wall height between Ramp 'B' and I-75.	734,386	
16.0	Revise the Frontage Road profile from STA 17+00 to STA 27+00 to follow existing grade and eliminate wall between Frontage Road and the Farmers Market.	1,047,378	Cost savings overlap with B-6.0 and B-6.1
17.0	Realign Ramp 'E' (I-75N to I-285E) to tie to the existing ramp sooner and eliminate a wall and reduce rework on ramp.	390,334	

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Project # IM000-0285-01(346) PI No. 713210-
I-75 NB C-D SYSTEM FROM FOREST PKWY TO I-285
CLAYTON COUNTY, GEORGIA

IDEA NO.	PROPOSAL DESCRIPTION	CONSTRUCTION SAVINGS	RELATED PROPOSALS
	Note: Brackets mean additional cost		
20.0	Use asphalt shoulders in lieu of full depth PCC for ramps and collector-distributor	1,301,230	Cost savings overlap with R-10.0
21.0	Use reduced depth asphalt shoulders in lieu of full depth for Frontage Road	46,894	Cost savings overlap with R-11.0

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: USE ALTERNATE BEAM TYPE/SPACING FOR BRIDGE STRUCTURE.

ORIGINAL DESIGN: The current design of the new bridge uses sixty-nine (69) AASHTO Type III Beams @ 7'-5" spacing with 2'-10" overhangs. (Span Length = 79 ft on skew; beam spacing = 10'-1 5/16" along Ramp A with 3'-10 5/16" overhangs)

68 spaces at 10'-1 5/16" = 687'-5 1/4"
2 overhangs at 3'-10 5/16" = 7'-8 5/8"
Bridge width = 687'-5 1/4" + 7'-8 5/8" = 695'-1 7/8" (approximately 695')

PROPOSED CHANGE: It is proposed to use fifty-two (52) 36" Florida I Beams @ 9'- 10" spacing with 4'-3" overhangs. (Span Length = 79 ft on skew; beam spacing = 13'-4 13/16" along Ramp A, with 5'-8 13/16" overhangs).

51 spaces at 13'-4 13/16" = 683'-5 7/16"
2 overhangs at 5'-9 1/2" = 11'-7"
Bridge width = 683'-5 7/16" + 11'-7" = 695'-0 7/16" (approximately 695')

JUSTIFICATION: Braided Ramp Bridges are inherently inefficient in regard to beam capacity, therefore it is advantageous to increase the beam spacing whenever possible. By utilizing a 36" Florida I-beam, the beam spacing can be increased, reducing the number of beams required by 25%. This greatly simplifies the bridge construction and reduces the associated costs for the bridge. In addition, the Florida I-beam is 9" shallower than the AASHTO Type III, allowing a lower roadway profile, saving abutment wall costs as well as associated earthwork.

ADVANTAGES:

- Saves construction costs
- Allows lowering roadway profile

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 565,487		$ 565,487
PROPOSED CHANGE:	$ 437,637		$ 437,637
SAVINGS:	$ 127,850		$ 127,850

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
AASHTO Type III Girders	3	LF	5,451	103.74	$565,487
SUBTOTAL – COST TO PRIME					$565,487
MARKUP					Incl.
TOTAL CONTRACT COST					**$565,487**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
36” Florida I Beam	7	LF	4,108	112.24	$461,082
9” Less MSE wall abutment	1	SF	-521	45.00	-$23,445
SUBTOTAL – COST TO PRIME					$437,637
MARKUP					Incl.
TOTAL CONTRACT COST					**$437,637**

Difference [Original-Proposed] **$127,850**

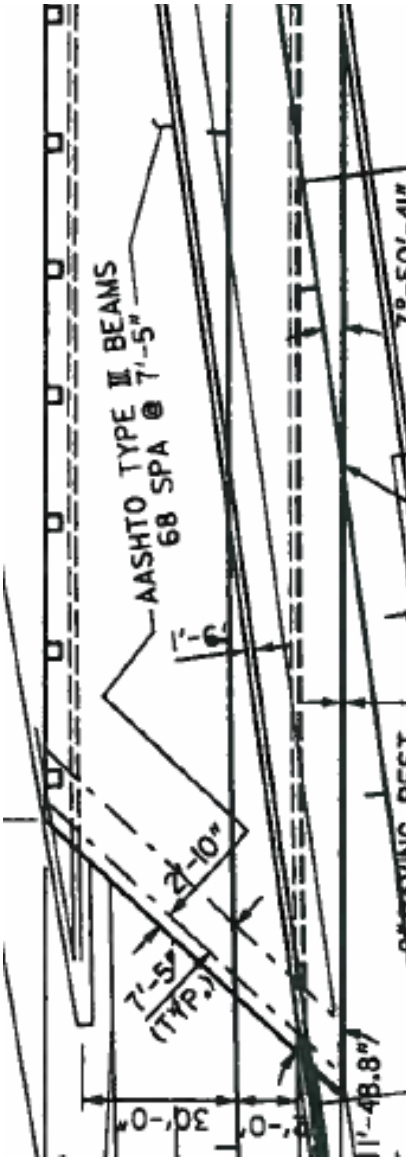
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Calculation)

ORIGINAL DESIGN SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



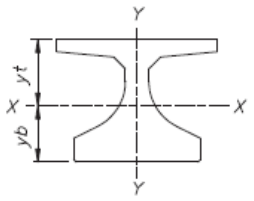
Original Design:

69 AASHTO TYPE III Beams x 79 FT x $103.74/LF = $565,487

PROPOSED CHANGE SKETCH/DETAIL

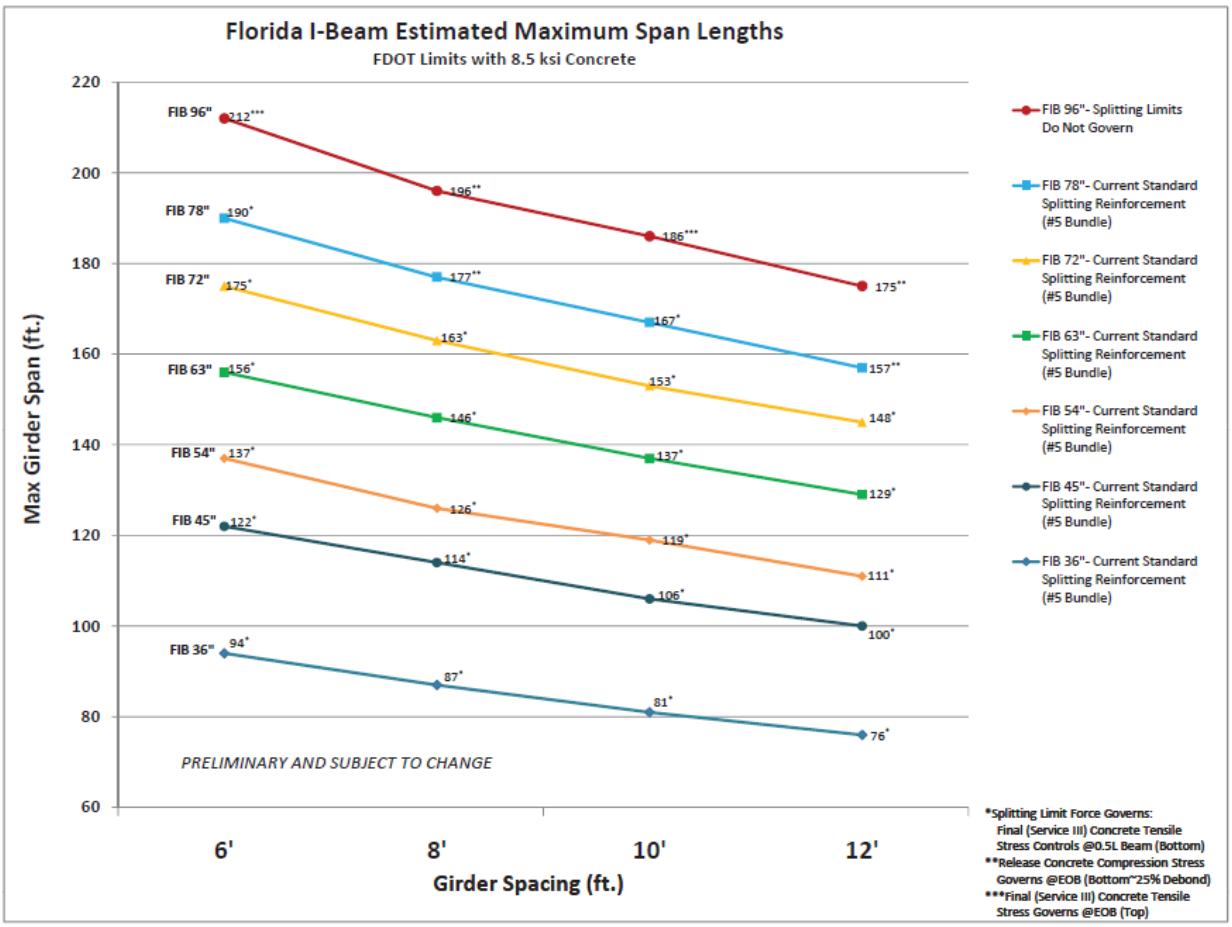
PROPOSAL NUMBER:	B-1.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



F.I.B.–36
(INDEX NO. 20036)

SECTION PROPERTIES 7" WEB	
Area (in^2)	806.58
Perimeter (in)	206.57
Ixx (in^4)	127,564
Iyy (in^4)	81,131
yt (in.)	19.51
yb (in.)	16.49



CALCULATIONS

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Proposed Change:

52 FIB 36" x 79 FT x $112.24/LF = **$ 461,082**

Unit price based on 15% markup of equivalent depth AASHTO beam per FDOT discussion with beam fabricators; GDOT Type II (36" depth) = $97.60/LF, therefore cost for FIB 36" was derived as follows: $97.60/LF x 1.15 = $112.24/LF.

MSE abutment wall savings; FIB 36" is 9" shallower than AASHTO Type III (45"), therefore MSE abutment wall savings was calculated as follows:

9/12 FT x 695 FT (2 sides x ½ bridge length) x $45.00/SF (from project cost estimate)
= **$23,456 (Less Wall Cost)**

Net Cost for FIB 36"Alternate: $461,082 - $23,456 = **$437,626**

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: PLACE BRIDGE DECK FOR VEHICLE TRAVELWAY ONLY.

ORIGINAL DESIGN: The current design includes a 790'x 45' Concrete Bridge Braided Ramp (Actual dimensions are 695'x 58' - per Bridge sheet 1 of 1). The cost estimate includes the new bridge @ $100/SF, and includes the cost of deck over entire bridge area (40,310 SF).

PROPOSED CHANGE: It is proposed to construct the Concrete Bridge elements for the 695'x58' Braided Ramp; however, placing the deck only below where it is needed for the vehicle travelway (18,478 SF).

JUSTIFICATION: On Braided Ramp Bridges, the Beams do not run parallel with the travelway, therefore many of the beams carry only a small fraction of the roadway. We can take advantage of this situation by placing concrete deck over the beams only where necessary to carry the travelway.

ADVANTAGES:

- Saves construction costs
- Reduces material hauling activities

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 864,760		$ 864,760
PROPOSED CHANGE:	$ 396,527		$ 396,527
SAVINGS:	$ 468,233		$ 468,233

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Superstructure Concrete, CL AA	3	LS/CY	1,411 CY	$612.87	$864,760
SUBTOTAL – COST TO PRIME					864,760
MARKUP					--
TOTAL CONTRACT COST					**$864,760**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Superstructure Concrete, CL AA	3	LS/CY	647 CY	$612.87	$396,527
SUBTOTAL – COST TO PRIME					$396,527
MARKUP					--
TOTAL CONTRACT COST					**$396,527**

Difference [Original-Proposed] **$468,233**

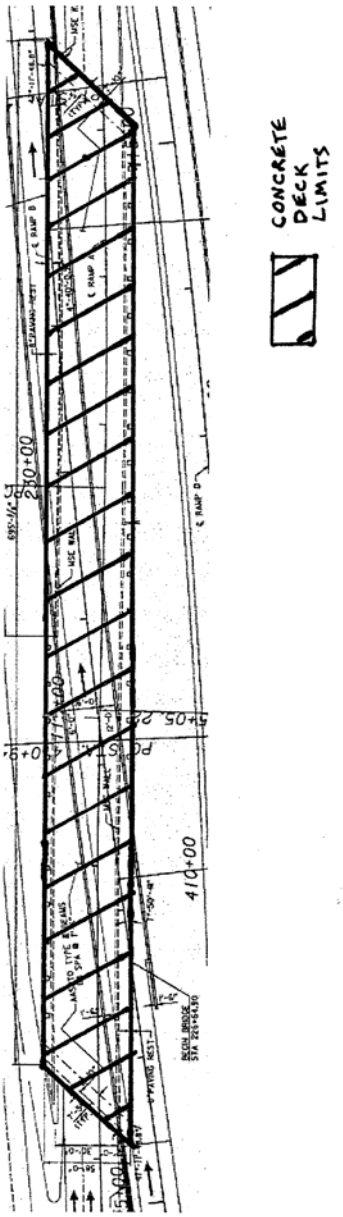
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

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

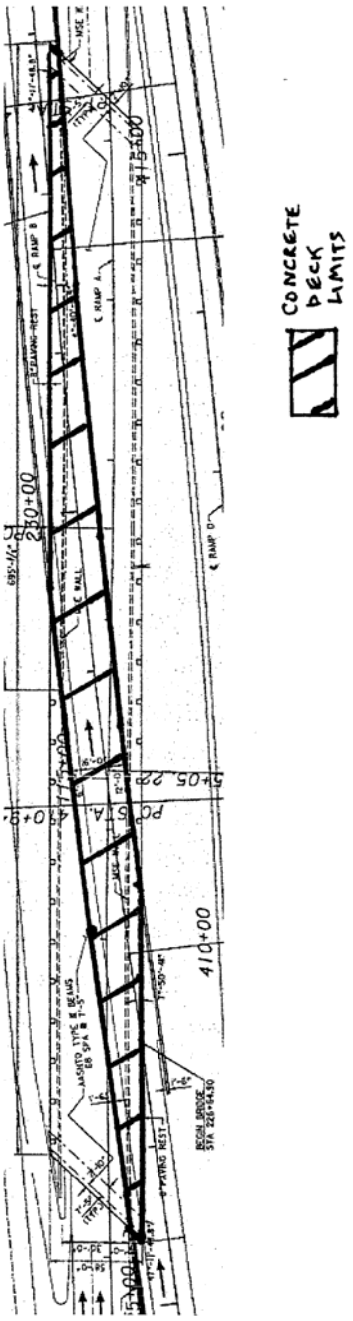
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



CALCULATIONS

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Original Design:

Bridge deck 695'x58' = 40,310 SF
40,310 SF x .035 CY/SF (Average value) = 1,411 CY
1,411 CY x $612.87 = $864,760

Proposed Change:

Bridge deck 18,478 SF (Measured in Microstation drawing "br plan.dgn")
18,478 SF x .035 CY/SF (Average value) = 647 CY
647 CY x $612.87 = $396,527

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	B-6.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REDUCE HEIGHT AND LENGTH OF WALL BETWEEN FRONTAGE ROAD AND FARMERS MARKET.

ORIGINAL DESIGN: As defined in the Concept Report, a 925' x 15' Retaining Wall is proposed along the outside of the realigned Frontage Road. Actual wall height varies from 0' to 34'.

PROPOSED CHANGE: It is proposed to lower or remove the retaining wall between Frontage Road and the Farmers Market from STA 213+00 to STA 216+00.

JUSTIFICATION: Reducing the height of the wall provides a construction cost savings and does not adversely impact any adjacent structures on the Farmers Market property.

ADVANTAGES:

- Reduces construction costs
- Simplifies construction

DISADVANTAGES:

- Requires additional right of way

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 363,915		$ 363,915
PROPOSED CHANGE:	$ 162,335		$ 162,335
SAVINGS:	$ 201,580		$ 201,580

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	B-6.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall	1	SF	8,087	45.00	$363,915
SUBTOTAL – COST TO PRIME					$363,915
MARKUP					Incl.
TOTAL CONTRACT COST					$363,915

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall	1	SF	2,763	45.00	$124,335
Easement	1	SF	15,000	2.04	$30,600
205-0001 Unclass Excav	1	CY	2,500	2.96	$7,400
SUBTOTAL – COST TO PRIME					$162,335
MARKUP					Incl.
TOTAL CONTRACT COST					$162,335

Difference [Original-Proposed] **$201,580**

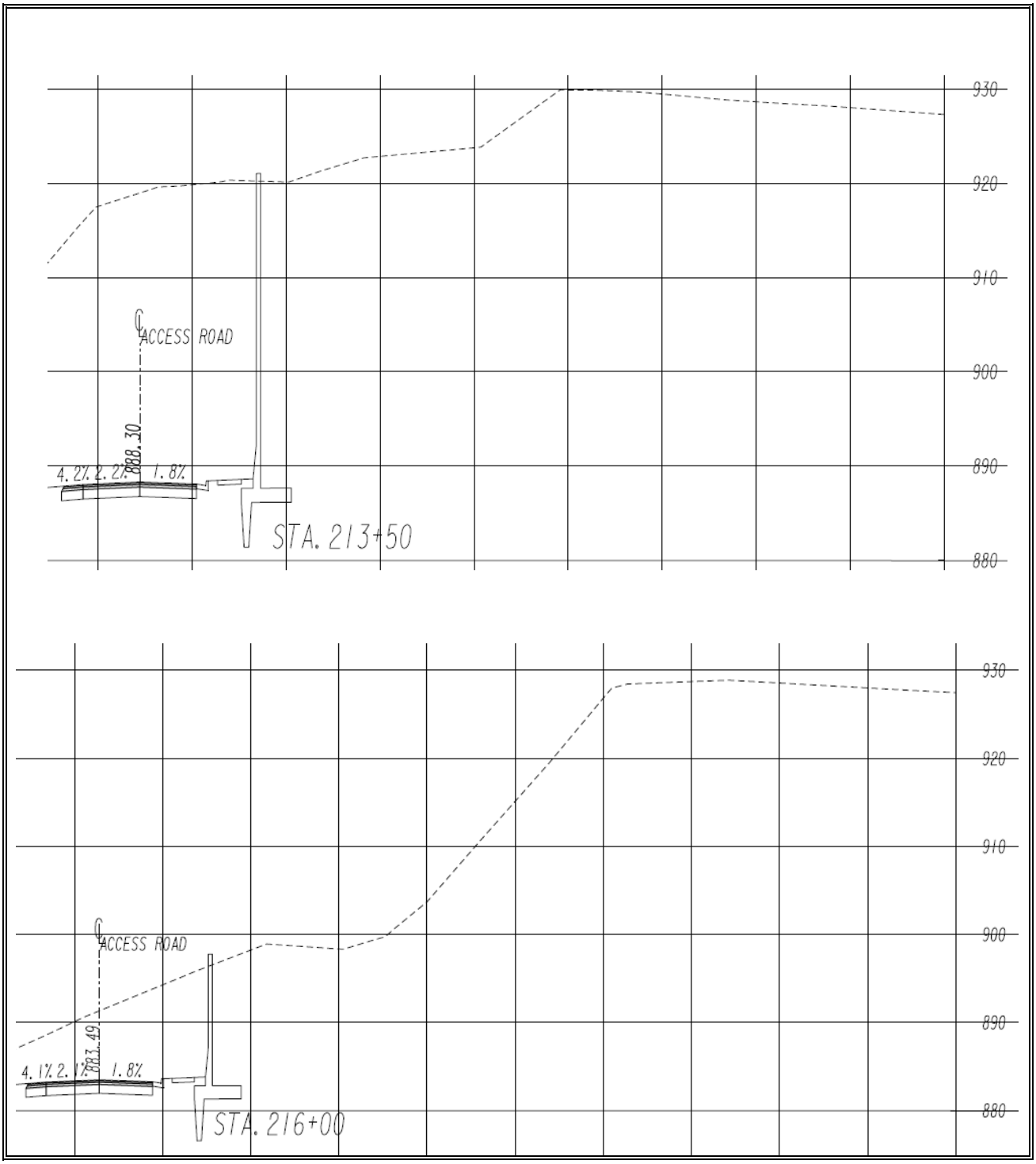
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	B-6.0	PAGE NUMBER:	3 of 5

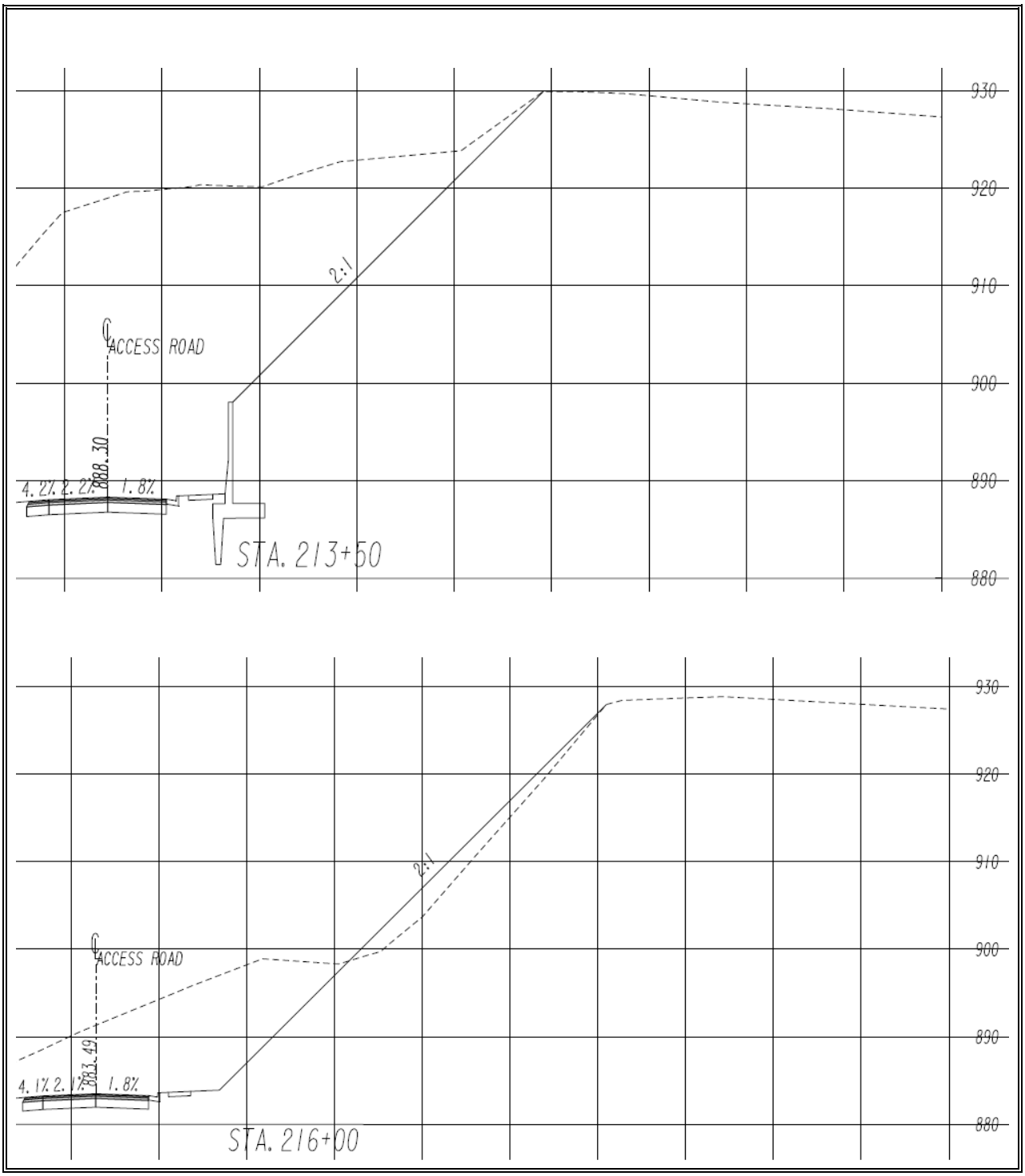
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	B-6.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



CALCULATIONS

PROPOSAL NUMBER:	B-6.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Additional industrial easement = 50’ x 300’ = 15000 SF
Industrial easement = $1.90x50% = $0.95/SF
Contingency 55% =$0.52
Admin 60% = $0.57
Total = $2.04/SF

Original wall face sta 213+00 to 216+00 = 8087 SF based on height of 32.5’ to 0’
Proposed wall face sta 213+00 to 216+00 = 2763 SF based on height of 10.5’ to 0’
Reduction in wall face = 8087 – 2763 = 5324 SF

Additional Unclassified excavation with 2:1 slope in lieu of wall = approx 200 SF per station times 213+00 – 216+00 = 200SFx300LF = 60,000 CF / 27 = 2222CY therefore assume 2500CY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	1 of 6

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: ELIMINATE WALL ALONG FRONTAGE ROAD WHERE ROCK OUTCROPS ARE PRESENT.

ORIGINAL DESIGN: The current design includes a 925' x 15' retaining wall along the outside of the realigned Frontage Road.

PROPOSED CHANGE: For several hundred feet along the Frontage road there are visible rock outcroppings. It is proposed to eliminate construction of the retaining wall between Station 208+00 and 213+00 (500 ft.) due to rock outcropping.

JUSTIFICATION: The rock outcropping may make wall construction unnecessary. Elimination of these walls takes advantage of a natural feature and provides a construction cost savings to the project.

ADVANTAGES:

- Saves construction costs
- Eliminates unnecessary retaining wall feature

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 638,000		$ 638,000
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 638,000		$ 638,000

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	2 of 6

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
MSE WALL FACE, 20-30 FT HT	3	SF	15,000	40.00	$600,000
COPING A	3	LF	500	76.43	$38,215
SUBTOTAL – COST TO PRIME					$638,000
MARKUP					Incl.
TOTAL CONTRACT COST					**$638,000**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
NO COST					
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$638,000**

SOURCES

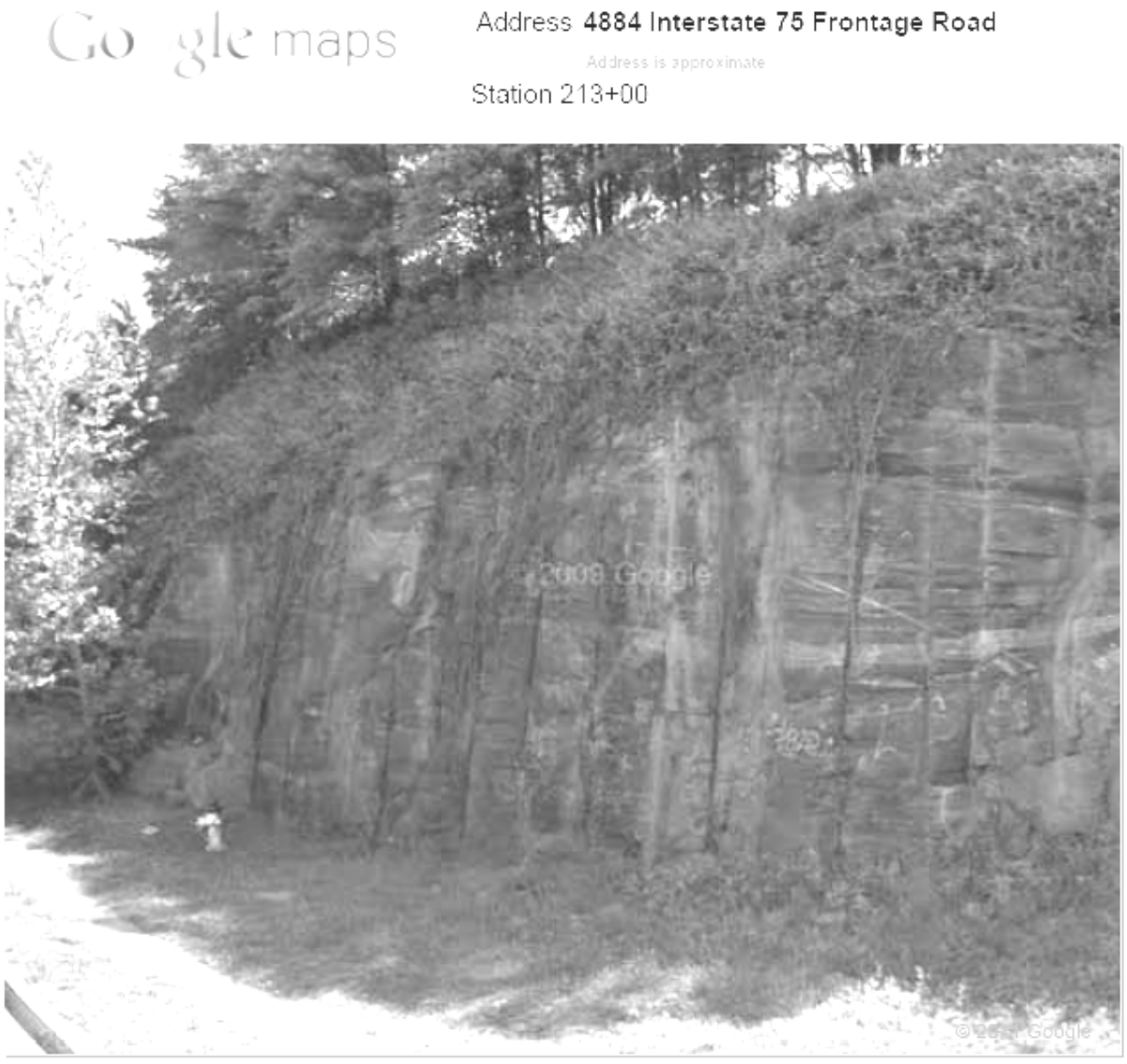
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	3 of 6

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

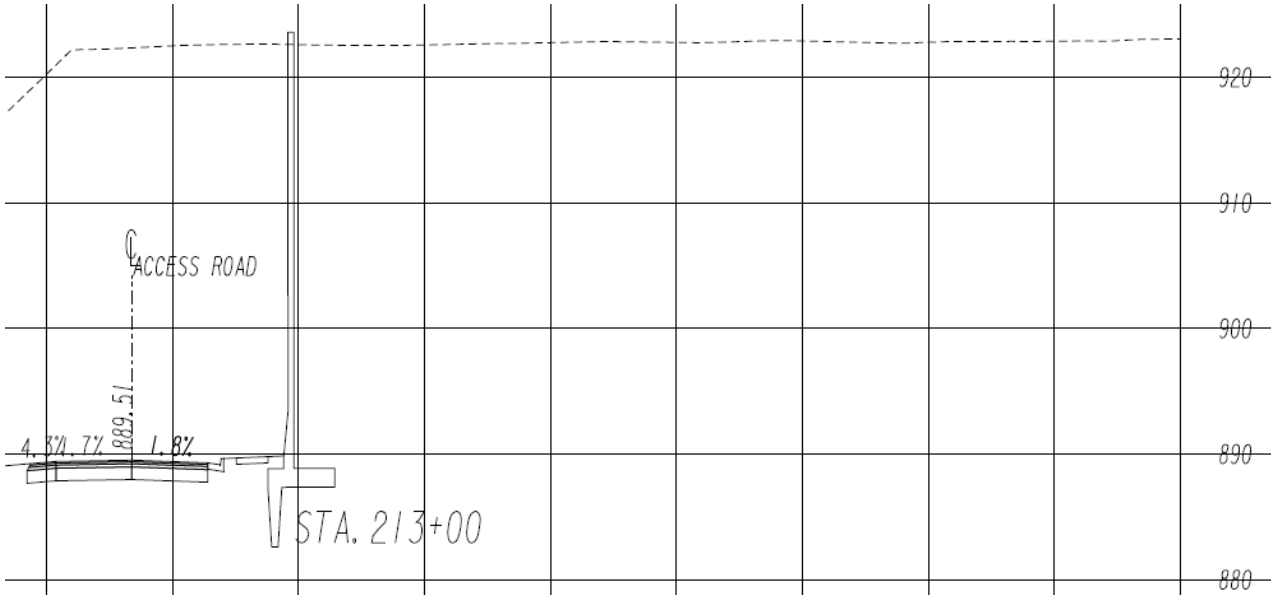
Existing Rock Outcropping at Frontage Road STA 213+00



ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	4 of 6

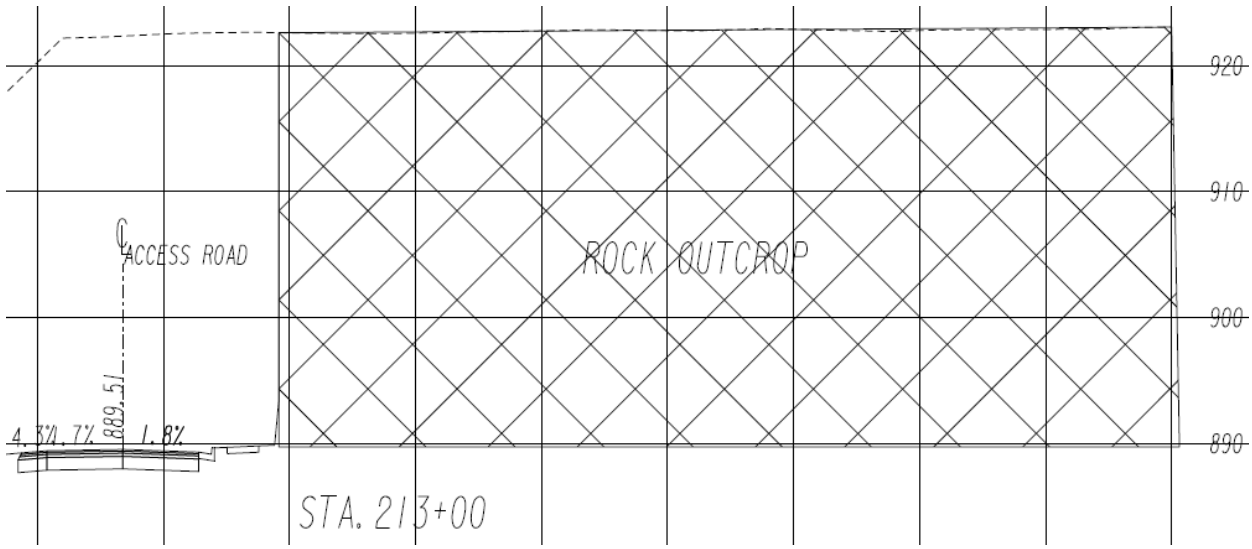
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	5 of 6

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



CALCULATIONS

PROPOSAL NUMBER:	B-6.1	PAGE NUMBER:	6 of 6

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Original Design:

Retaining Wall 500'x 30' = 15,000 SF
15,000 SF x $40/SF (MSE (per Concept report) 20' - 30' high) = $600,000
Wall Coping, Type A 500' x $76.43 = $38,215

Total cost $600,000 + $38,215 = $638,215

Proposed Change:

No cost

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	1 of 7

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	ELIMINATE ENTRANCE RAMP 'C' FROM FOREST PARKWAY TO I-75N. WIDEN FLYOVER LOOP ENTRANCE RAMP TO 2 LANES FROM FOREST PARKWAY TO I-75. DO NOT CONSTRUCT C-D SYSTEM.

ORIGINAL DESIGN: The existing Forest Parkway has two entrance ramps to I-75 Northbound. The original design realigns these ramps onto a collector distributer system for access to I-285. The exit for I-285 is relocated south of the entrance from Forest Parkway. The design creates two weaving sections, one approximately 800' long after the two entrance ramps come together and another approximately 800' long after the I-75 exit to I-285.

PROPOSED CHANGE: It is proposed to eliminate one of the entrance ramps from Forest Parkway (Ramp 'C') and widen the existing flyover loop ramp to 2 lanes. Do not construct the remaining portion of the project. Widen Forest Parkway bridges over I-75 to develop additional storage on Forest Pkwy for 2-lane left turn from westbound onto entrance ramp for I-75N.

JUSTIFICATION: By having only one entrance ramp from Forest Parkway, the length of the existing weaving section along I-75 between the entrance ramp from Forest Parkway to the exit ramp for I-285 is increased from approximately 2000 feet to approximately 4300 feet.

ADVANTAGES:

- Reduces construction cost
- Less interruption of traffic
- Construction funds can be used on other projects
- Widened 2-lane flyover loop ramp can be used in future Managed Lanes project
- Fewer Interstate signs required therefore less confusion for motorist

DISADVANTAGES:

- Traffic from westbound Forest Parkway to I-75 northbound has to make a left turn
- Heavier traffic volumes on one ramp

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 37,565,267		$ 37,565,267
PROPOSED CHANGE:	$ 4,285,847		$ 4,285,847
SAVINGS:	$ 33,279,420		$ 33,279,420

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	2 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Project 0001759 Construction	1	LS	1	32,879,075	$32,879,075
Project 0001759 Right of Way	1	LS	1	4,686,192	$4,686,192
SUBTOTAL – COST TO PRIME					$37,565,267
MARKUP					Incl.
TOTAL CONTRACT COST					$37,565,267

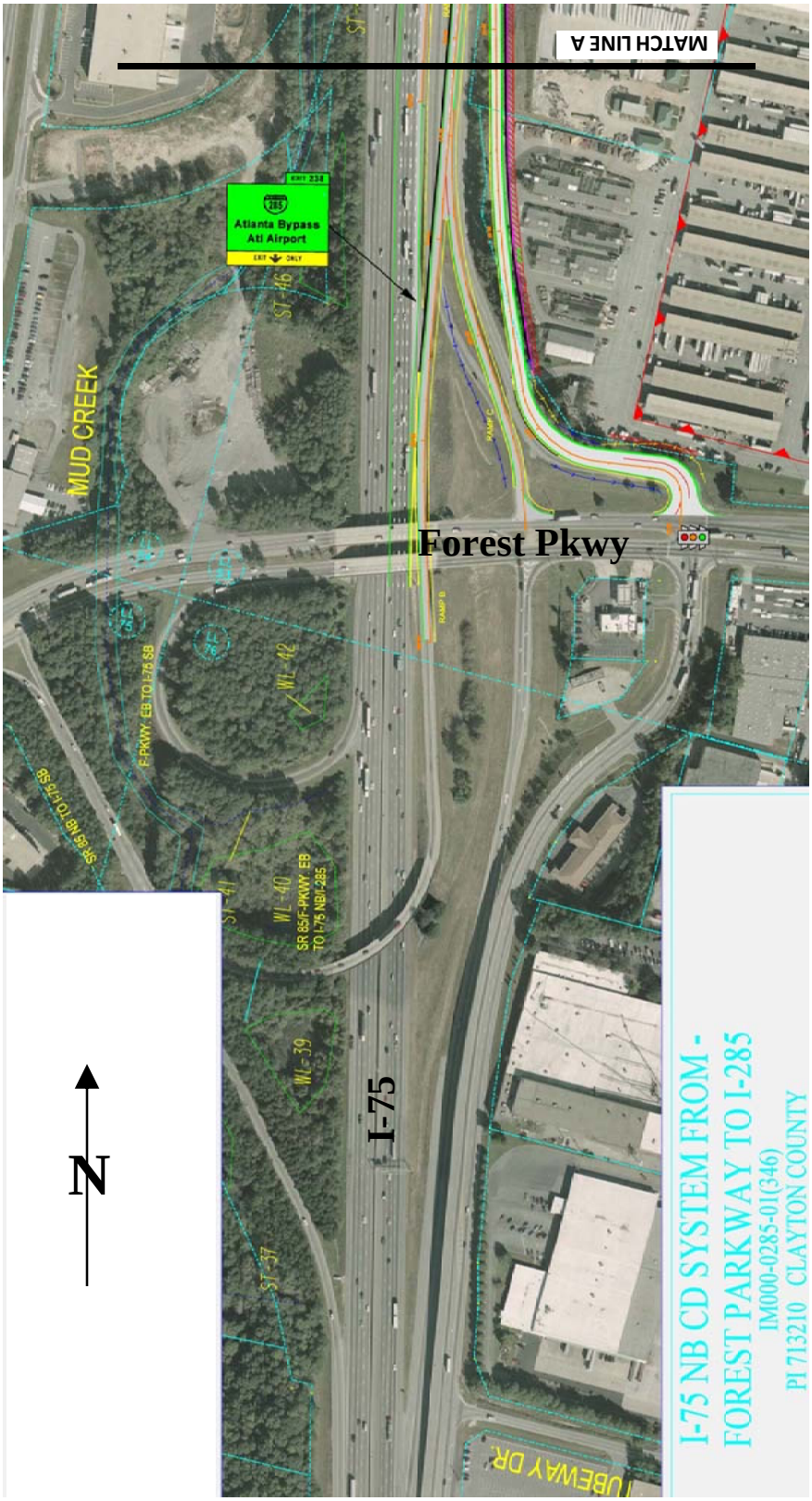
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramp Bridge	7	SF	7,500	150.00	$1,125,000
Forest Pkwy Bridge	7	SF	8,750	125.00	$1,093,750
Ramp PCC	1/7	SY	6,667	90.44	$602,963
Ramp Shoulders	1/7	SY	3,889	49.96	$194, 294
Traffic Signal	7	LS	1	100,000	$100,000
Erosion Control	7	LS	1	70,000	$70,000
Signing and Marking	7	LS	1	150,000	$150,000
Staging / MOT	7	LS	1	500,000	$500,000
Grading Complete	7	LS	1	250,000	$250,000
Forest Parkway Pavement	1/7	SY	4,000	49.96	$199,840
SUBTOTAL – COST TO PRIME					$4,285,847
MARKUP					Incl.
TOTAL CONTRACT COST					$4,285,847

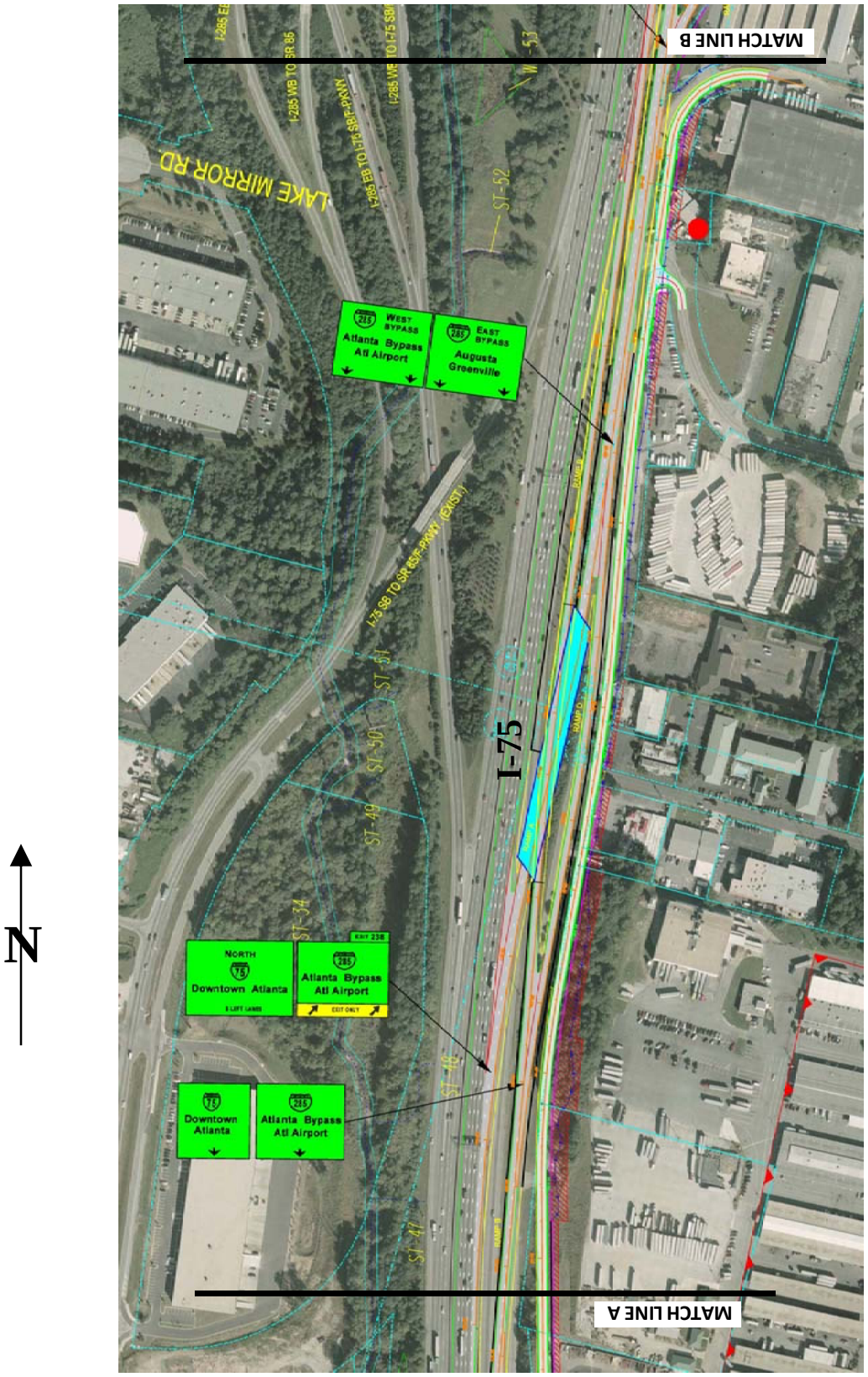
Difference [Original-Proposed] **$33,279,420**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached calculation sheet/Assumption



R-1.0 Original Design 1 of 3



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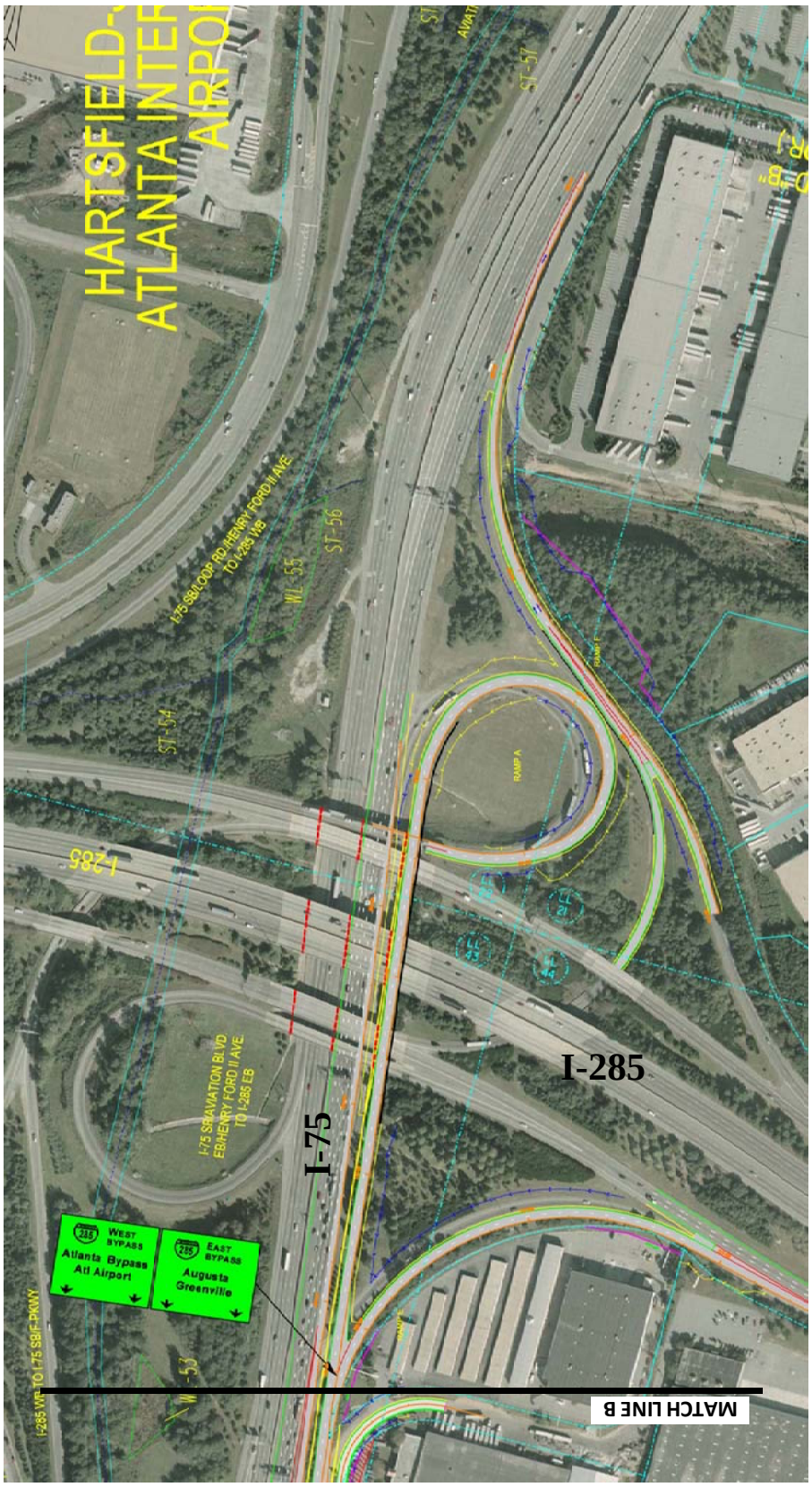
R-1.0 Original Design 2 of 3



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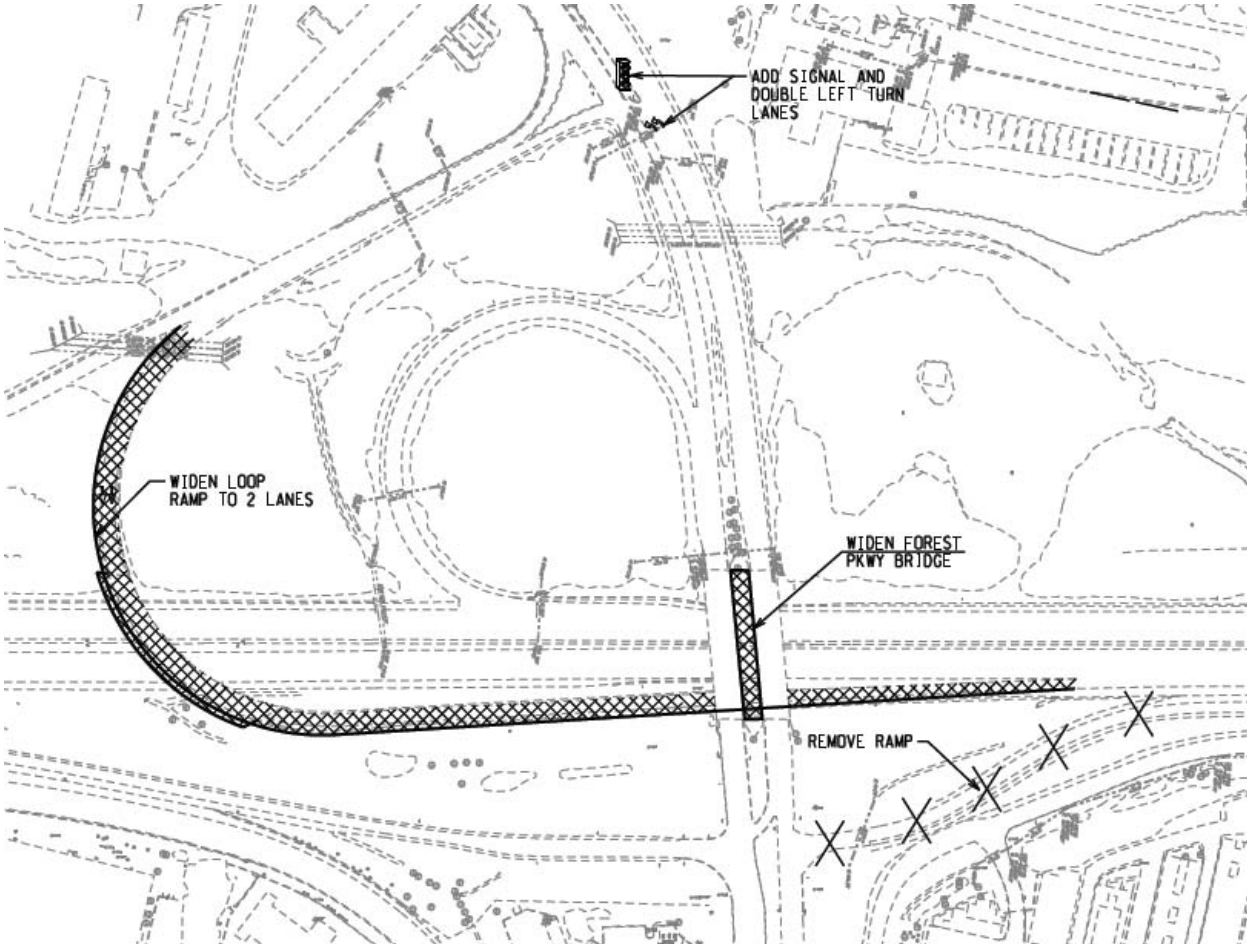
R-1.0 Original Design 3 of 3

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	6 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



Note: Proposed Change only widens the flyover ramp to 2 lanes, adds signal and double-left turn to flyover ramp, widens the Forest Parkway Bridges over I-75, removes ramp "C", and does not construct remainder of project corridor.

CALCULATIONS

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	7 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

500 LF existing single lane bridge
1300 LF existing single lane ramp before bridge
1200 LF existing single lane ramp after bridge
Widen Forest Parkway 250' bridge over I-75
Improve intersection of ramp and Forest Parkway west of I-75
Add signal at intersection of ramp and Forest Parkway west of I-75

Assume widen Ramp bridge 15' @ $150/SF
Assume all new 2 lane (24') ramp PCC pavement
Assume asphalt shoulders (10' and 4')

Ramp Pavement

12" GAB	$12.85/sy
3" superpave - (330/2000) x (58.15/ton)	$9.59/sy
12" PCC	$68.00/sy
TOTAL	$90.44/sy

Ramp Shoulder Pavement

12" GAB	$12.85/sy
7-1/2" asphalt base course (7.5)x(110/2000)x(54.65/ton)	$22.54/sy
3" asphalt binder course (3)x(110/2000)x(58.15/ton)	$9.59/sy
1-1/2" asphalt surface course (1.5)x(110/2000)x(60.36/ton)	$4.98/sy
TOTAL	$49.96/sy

500 LF bridge widened 15' = (500)(15) = 7500SF @ $150/SF = $1,125,000
2500LF of 2-lane ramp = (2500)(24) = 60,000SF / 9 = 6667SY @ $90.44/SY = $602,963
2500LF of 10' & 4' shoulders = (2500)(14) = 35,000SF / 9 = 3889SY @ $49.96 = $194, 294
250LF Forest Pkwy Bridge widen 35' = (250)(35) = 8750SF @ $125/SF = $1,093,750

1500LF widening Forest Parkway (closing median) 24'
(1500)(24) = 36000SF / 9 = 4000SY @ 49.96 = $199,840

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-1.1	PAGE NUMBER:	1 of 7

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	ELIMINATE/REMOVE LOOP ENTRANCE RAMP WEST OF I-75 FROM FOREST PARKWAY TO I-75N. WIDEN RAMP "C" ENTRANCE RAMP TO 2 LANES FROM FOREST PARKWAY TO I-75. DO NOT CONSTRUCT C-D SYSTEM.

ORIGINAL DESIGN: The existing Forest Parkway has two entrance ramps to I-75 Northbound, one from each direction on Forest Parkway. The original design realigns these ramps onto a collector distributer system for access to I-285E/W. The exit for I-285 is relocated south of the entrance from Forest Parkway. The design creates two weaving sections, one approximately 800' long after the two entrance ramps come together and another approximately 800' long after the I-75 exit to I-285.

PROPOSED CHANGE: It is proposed to eliminate the existing looped entrance ramp from Forest Parkway to I-75 North and widen the remaining ramp to 2 lanes. Do not construct the remaining portion of the project. Widen Forest Parkway bridges over I-75 to develop additional storage on Forest Parkway for 2-lane left turn onto entrance ramp. Add a traffic signal at intersection with ramp.

JUSTIFICATION: By having only one entrance ramp onto I-75 from Forest Parkway, the length of the existing weaving section along I-75 between the entrance ramp from Forest Parkway to the exit ramp for I-285 is increased from approximately 2000 feet to approximately 4300 feet. This provides an improvement to current conditions at a greatly reduce cost.

ADVANTAGES:

- Reduces construction cost
- Less interruption of traffic
- Construction funds can be used on other projects
- Fewer Interstate signs required therefore less confusion for motorist

DISADVANTAGES:

- Traffic from eastbound Forest Parkway to I-75 northbound has to make a left turn
- Heavier traffic volumes on one ramp

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 37,565,267		$ 37,565,267
PROPOSED CHANGE:	$ 3,246,273		$ 3,246,273
SAVINGS:	$ 34,318,994		$ 34,318,994

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-1.1	PAGE NUMBER:	2 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Project 0001759 Construction	1	N/A	N/A	N/A	$32,879,075
Project 0001759 Right of Way	1	N/A	N/A	N/A	$4,686,192
SUBTOTAL – COST TO PRIME					$37,565,267
MARKUP					Incl.
TOTAL CONTRACT COST					$37,565,267

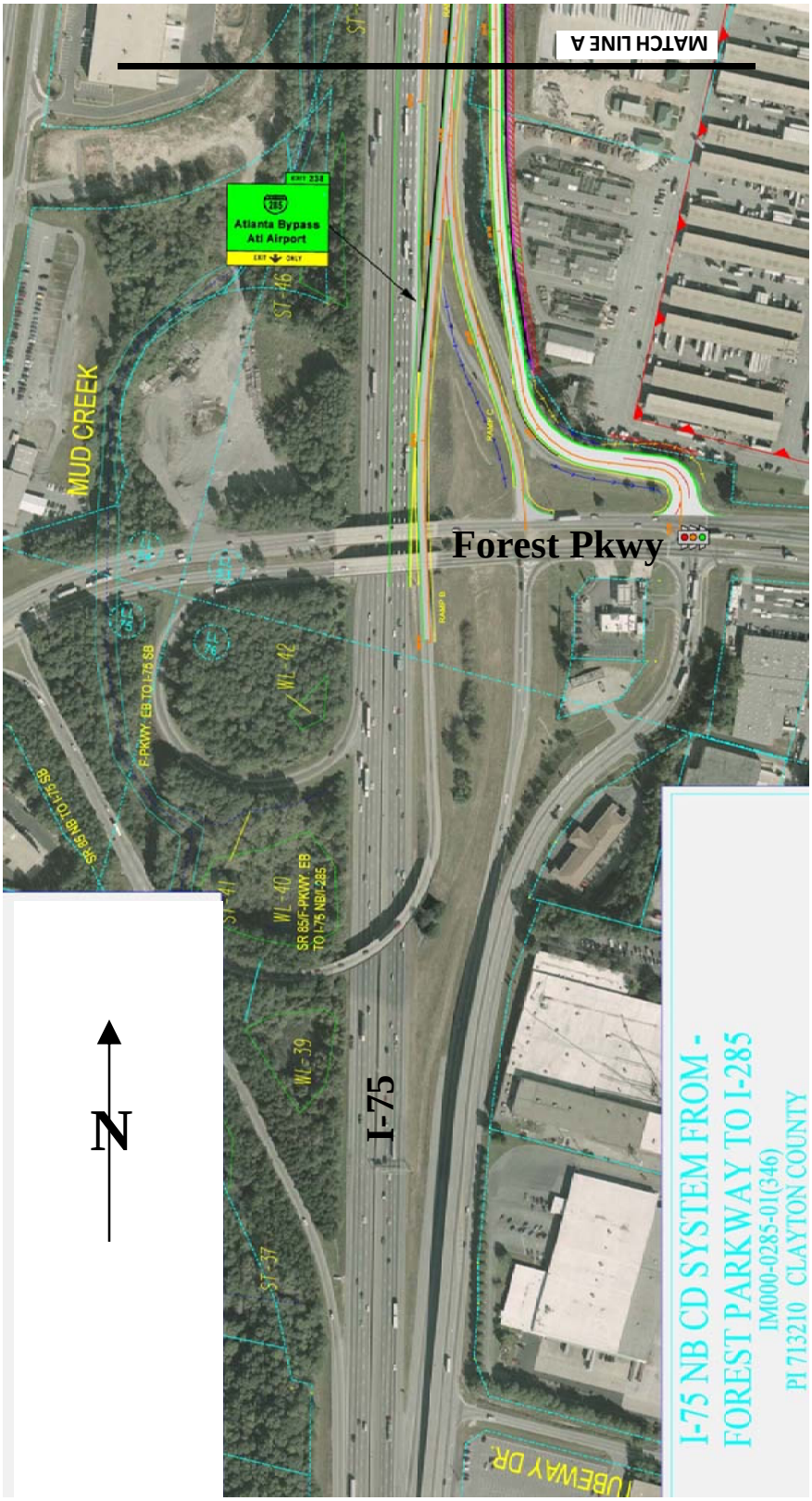
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Forest Pkwy Bridge	7	SF	8,750	125.00	$1,093,750
Ramp PCC	1/7	SY	3,200	90.44	$289,408
Ramp Shoulders	1/7	SY	1,867	49.96	$93,275
Traffic Signal	7	LS	1	100,000	$100,000
Erosion Control	7	LS	1	70,000	$70,000
Signing and Marking	7	LS	1	150,000	$150,000
Staging / MOT	7	LS	1	500,000	$500,000
Grading Complete	7	LS	1	250,000	$250,000
Forest Parkway pavement	1/7	SY	4,000	49.96	$199,840
Remove existing loop ramp bridge	7	LS	1	500,000	$500,000
SUBTOTAL – COST TO PRIME					$3,246,273
MARKUP					Incl.
TOTAL CONTRACT COST					$3,246,273

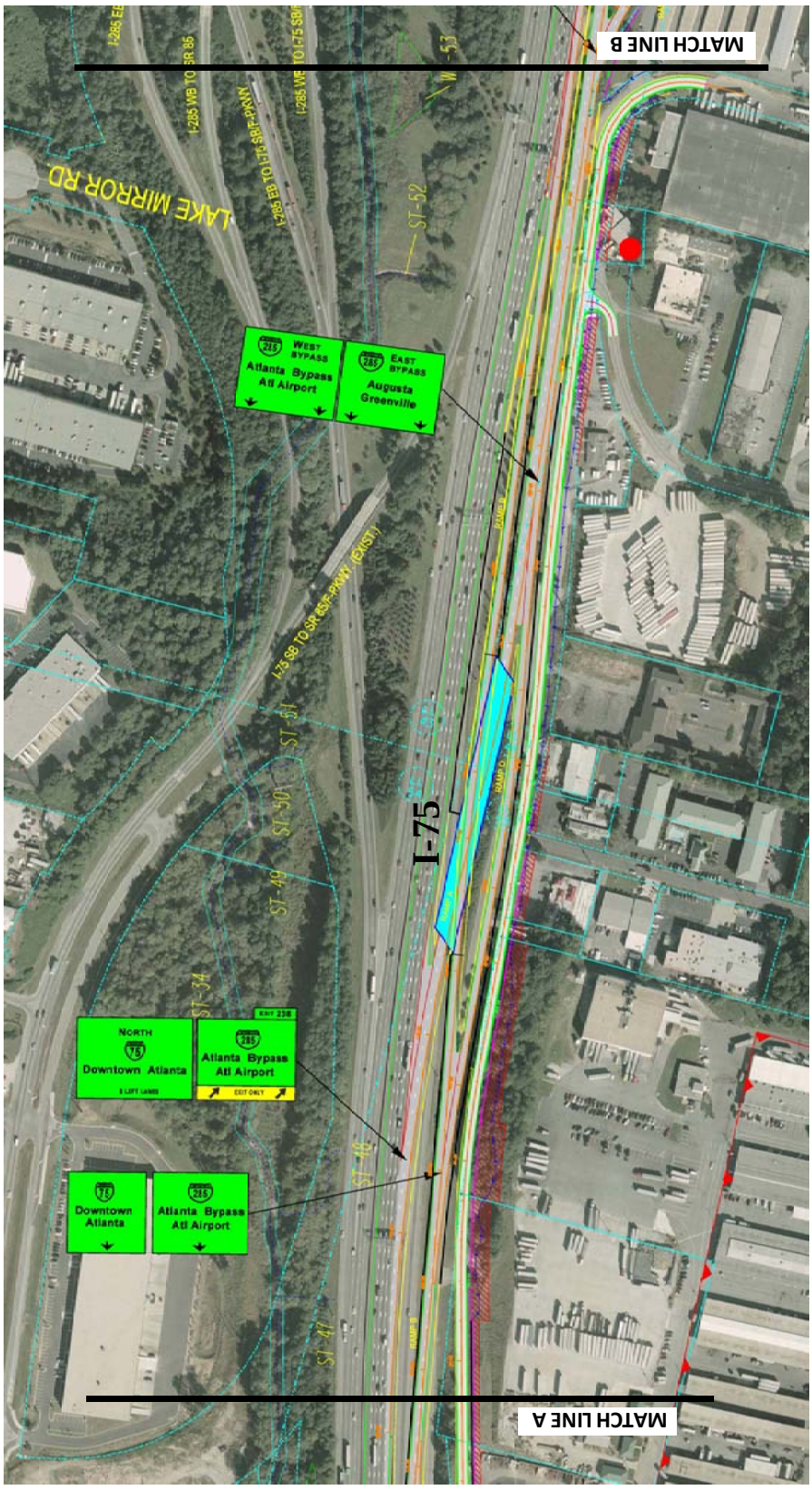
Difference [Original-Proposed] **$34,318,994**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached calculation sheet/Assumption



R-1.1 Original Design 1 of 3



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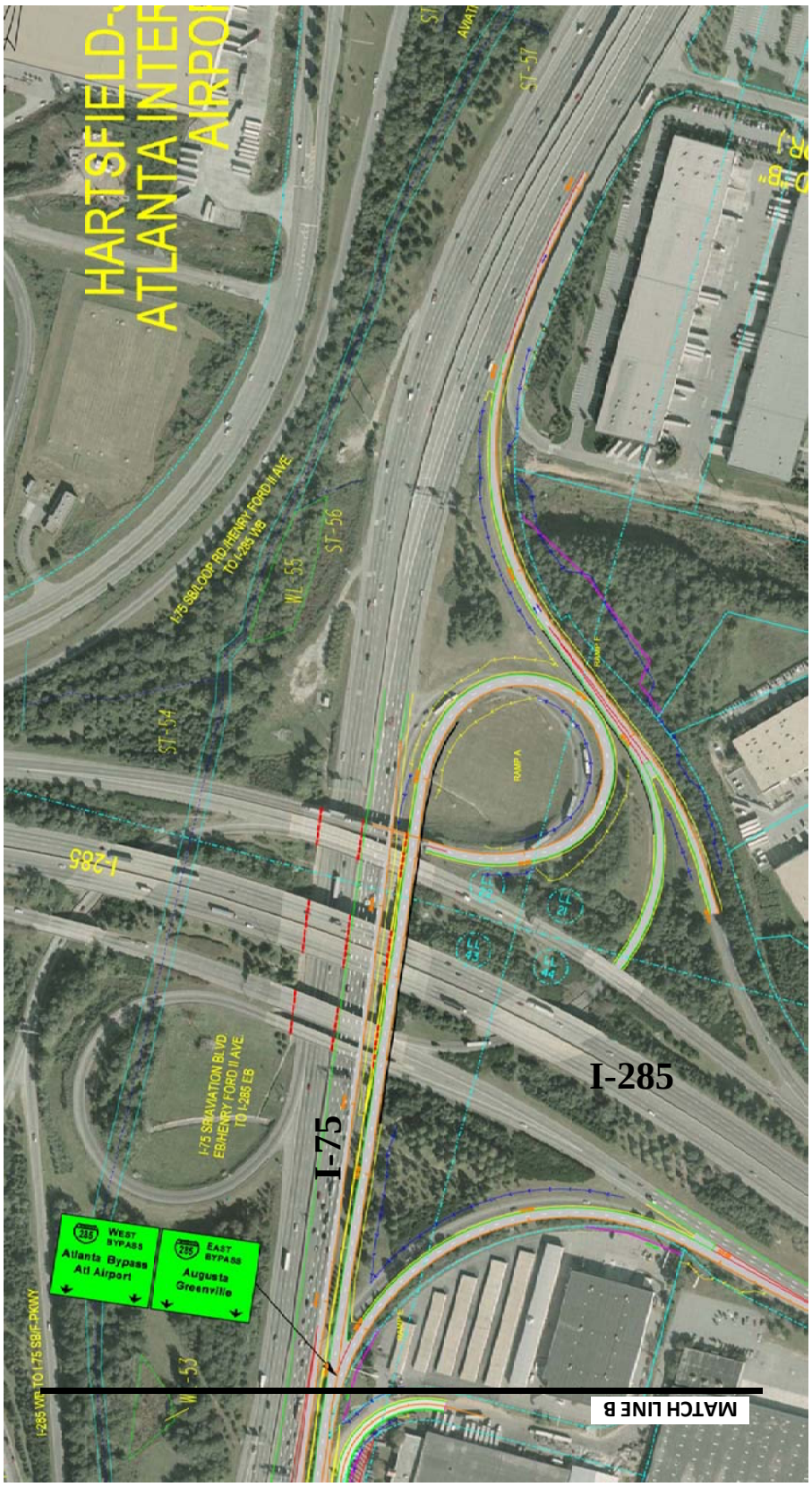
R-1.1 Original Design 2 of 3



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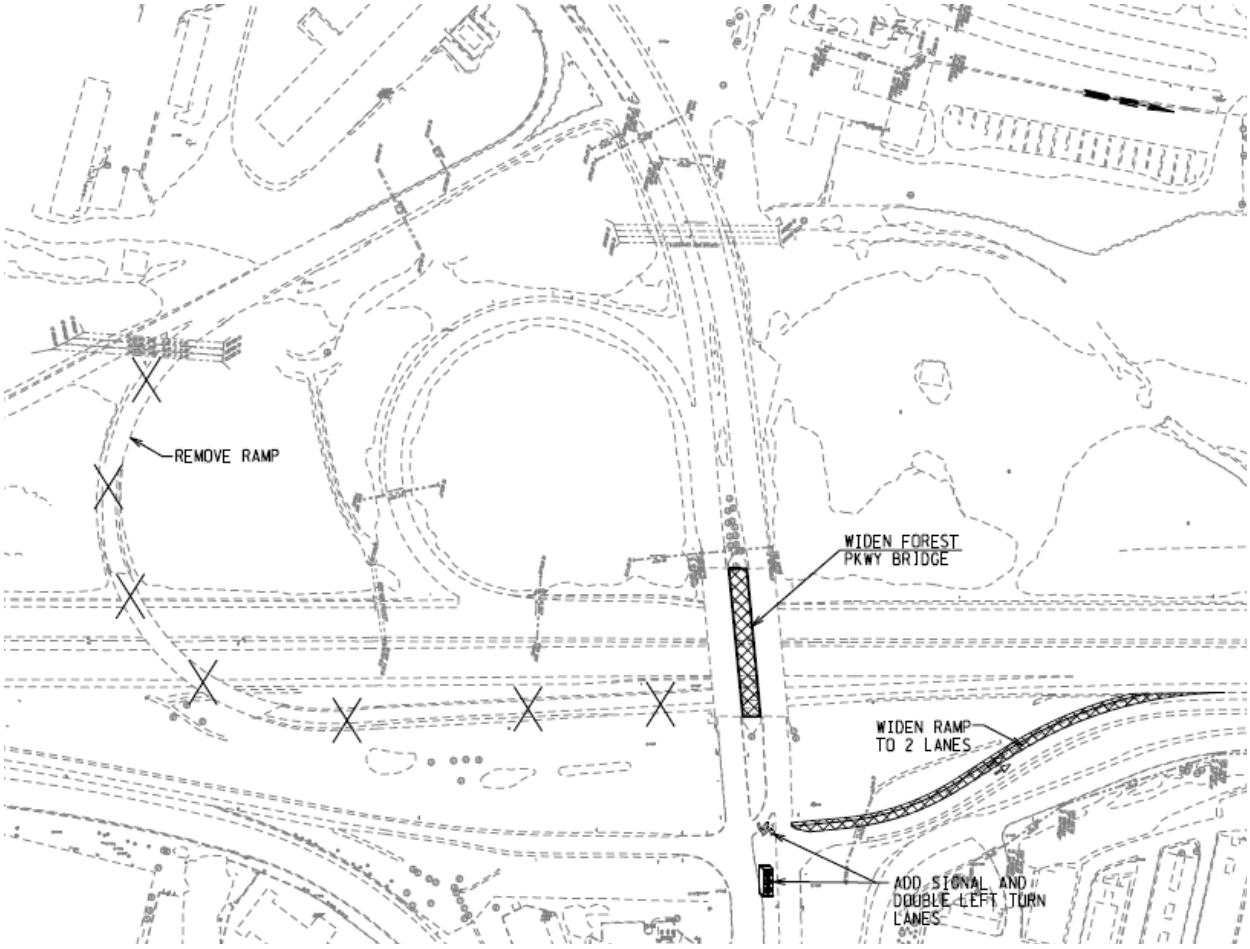
R-1.1 Original Design 3 of 3

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-1.1	PAGE NUMBER:	6 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



Note: Proposed change removes the flyover ramp, widens the Forest Parkway Bridges over I-75, adds a signal and double left-turn lanes from Forest Parkway eastbound to I-75N ramp, and widens ramp "C" to I-75N to 2 lanes. Remainder of project corridor is not constructed.

CALCULATIONS

PROPOSAL NUMBER:	R-1.1	PAGE NUMBER:	7 of 7

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

1200 LF existing single lane ramp
Widen Forest Parkway 250' bridge over I-75
Improve intersection of ramp and Forest Parkway east of I-75
Add signal at intersection of ramp and Forest Parkway east of I-75
Remove loop ramp and bridge

Assume all new 2 lane (24') ramp PCC pavement
Assume asphalt shoulders (10' and 4')

Ramp Pavement

12" GAB	$12.85/sy
3" superpave - (330/2000) x (58.15/ton)	$9.59/sy
12" PCC	$68.00/sy
TOTAL	$90.44/sy

Forest Parkway & Ramp Shoulder Pavement

12" GAB	$12.85/sy
7-1/2" asphalt base course (7.5)x(110/2000)x(54.65/ton)	$22.54/sy
3" asphalt binder course (3)x(110/2000)x(58.15/ton)	$9.59/sy
1-1/2" asphalt surface course (1.5)x(110/2000)x(60.36/ton)	$4.98/sy
TOTAL	$49.96/sy

1200LF of 2-lane ramp = (1200)(24) = 28,800SF / 9 = 3200SY @ $90.44/SY = $289,408
1200LF of 10' & 4' shoulders = (1200)(14) = 16,800SF / 9 = 1867SY @ $49.96 = $93,275
250LF Forest Pkwy Bridge widen 35' = (250)(35) = 8750SF @ $125/SF = $1,093,750

1500LF widening Forest Parkway (closing median) 24'
(1500)(24) = 36000SF / 9 = 4000SY @ 49.96 = $199,840

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	1 of 13

PROJECT #/PI #:	**IM000-0285-01(346), PI No. 713210**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	BUILD OUT NORTHBOUND C-D MANAGED LANE PROJECT (NHS-0001-00(759), PI NO. 0001759); TO INCLUDE NEW FOREST PARKWAY BRIDGES OVER I-75.

ORIGINAL DESIGN: The original design moves the existing Frontage Road east approximately 100 feet to accommodate the proposed I-75 NB C-D system between Forest Parkway and I-285 eliminating the current weave sections along I-75 northbound just south of the I-285 off ramps. This proposed I-75 NB C-D system includes the SR 85/Forest Parkway EB loop ramp to I-75 NB directing traffic onto the proposed Ramp B of the C-D system. The existing Forest Parkway WB on ramp to I-75 NB will become the proposed Ramp C of the C-D System. I-75 NB traffic going to I-285 will now exit onto Ramp A of the C-D System. Traffic on the NB C-D system will use the proposed Ramp D to proceed to I-285 EB or WB and will use the proposed Ramp B to proceed to I-75 NB.

PROPOSED CHANGE: Build out NB C-D Managed Lane Project to include the new Forest Parkway Bridges over I-75 and leaving the existing one-lane SR 85/Forest Parkway EB loop ramp to I-75 NB and the I-75 NB to I-285 WB loop ramp in place. This NB C-D Managed Lane Project would include I-75 NB exiting south of Forest Parkway and merging with the SR 85/Forest Parkway EB loop ramp to I-75 NB to I-285 traffic onto the proposed NB C-D lanes just north of Forest Parkway. Forest Parkway WB on ramp to I-75 NB would bridge over the proposed NB C-D lanes at this point to enter I-75 NB.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 8,845,169		$ 8,845,169
PROPOSED CHANGE:	$ 13,050,570		$ 13,050,570
SAVINGS:	$ (4,105,401)		$ (4,105,401)

ADVANTAGES/DISADVANTAGES/JUSTIFICATION

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	2 of 13

PROJECT #/PI #:	**IM000-0285-01(346), PI No. 713210**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

ADVANTAGES:

- Improves operations appreciably
- Eliminates proposed weave sections along the C-D system
- One permanent build out
- Cost savings in construction staging one time

DISADVANTAGES:

- Slight additional cost today (10% of the overall cost)

JUSTIFICATION:

Spending an additional $4 Million now would allow a portion of the longer term project (NB C-D Managed Lane Project) to be constructed, and would avoid construction of $16 Million or more in features that would be "thrown away" for construction of the future project. In addition, after this project is constructed it would be very difficult to phase the Managed Lanes project through this corridor and maintain all current vehicle movements.
There would also be a cost savings recognized today for the increased amount to build this portion years from now. Additionally, this would eliminate the two weaving sections on the C-D system being proposed currently; hence, operations would be improved further.

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	3 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramps & C-D Pavement – Travel Lanes	1	SY	36,579	90.44	$3,308,205
Ramps & C-D Pavement - Shoulders	1	SY	32,145	49.96	$1,605,964
Bridge over Ramp A	1	SF	40,310	100.00	$4,031,000
SUBTOTAL – COST TO PRIME					$8,945,169
MARKUP					Incl.
TOTAL CONTRACT COST					**$8,945,169**

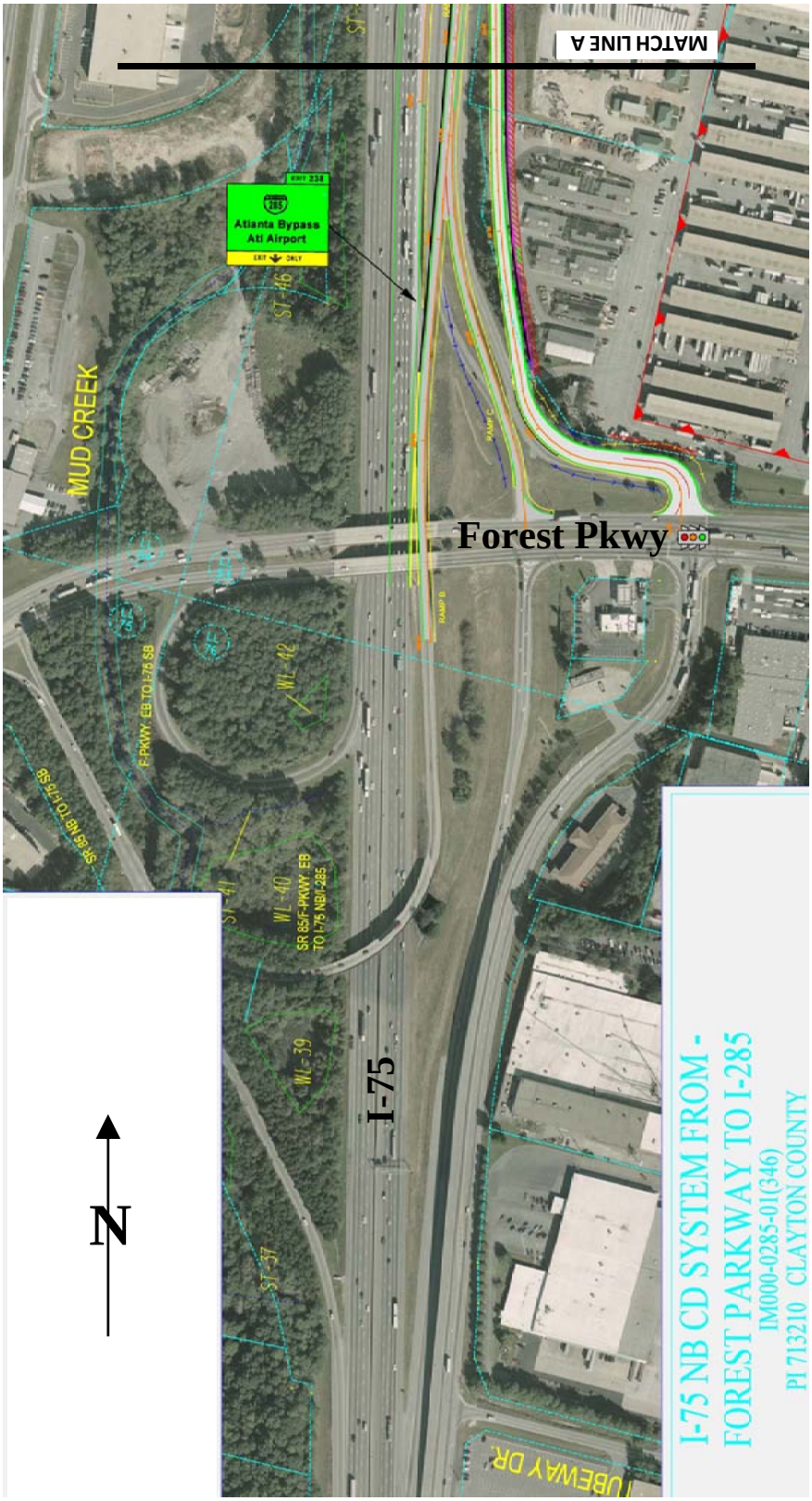
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramps & C-D Pavement – Travel Lanes	1	SY	40,568	90.44	$3,668,970
Ramps & C-D Pavement - Shoulders	1	SY	31,257	49.96	$1,561,600
Forest Parkway WB to I-75 NB On-Ramp Bridge	1	SF	37,700	100.00	$3,770,000
Forest Parkway Bridges over I-75	1	SF	40,500	100.00	$4,050,000
SUBTOTAL – COST TO PRIME					$13,050,570
MARKUP					Incl.
TOTAL CONTRACT COST					**$13,050,570**

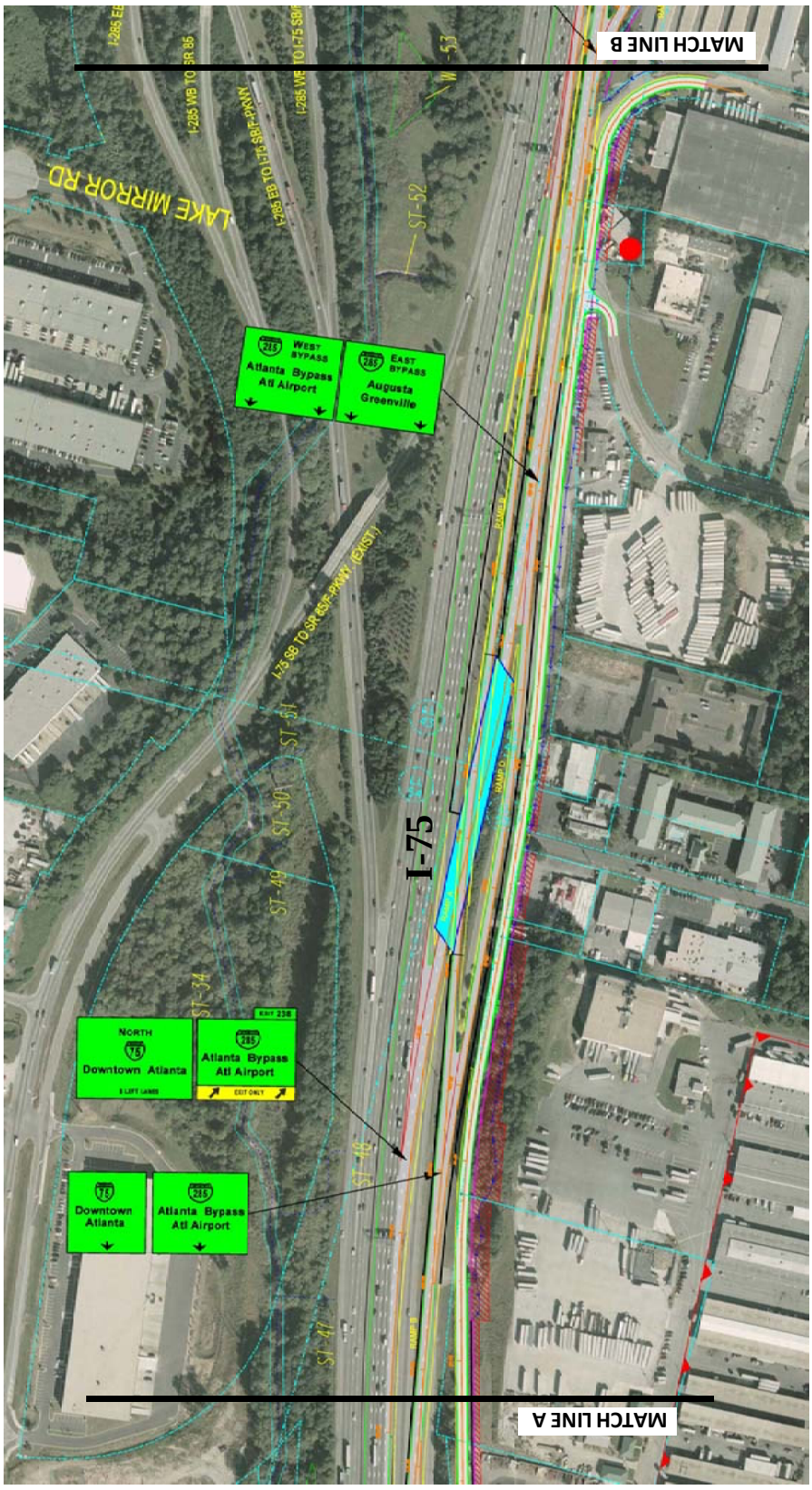
Difference [Original-Proposed] **($4,105,401)**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)



R-2.0 Original Design 1 of 3



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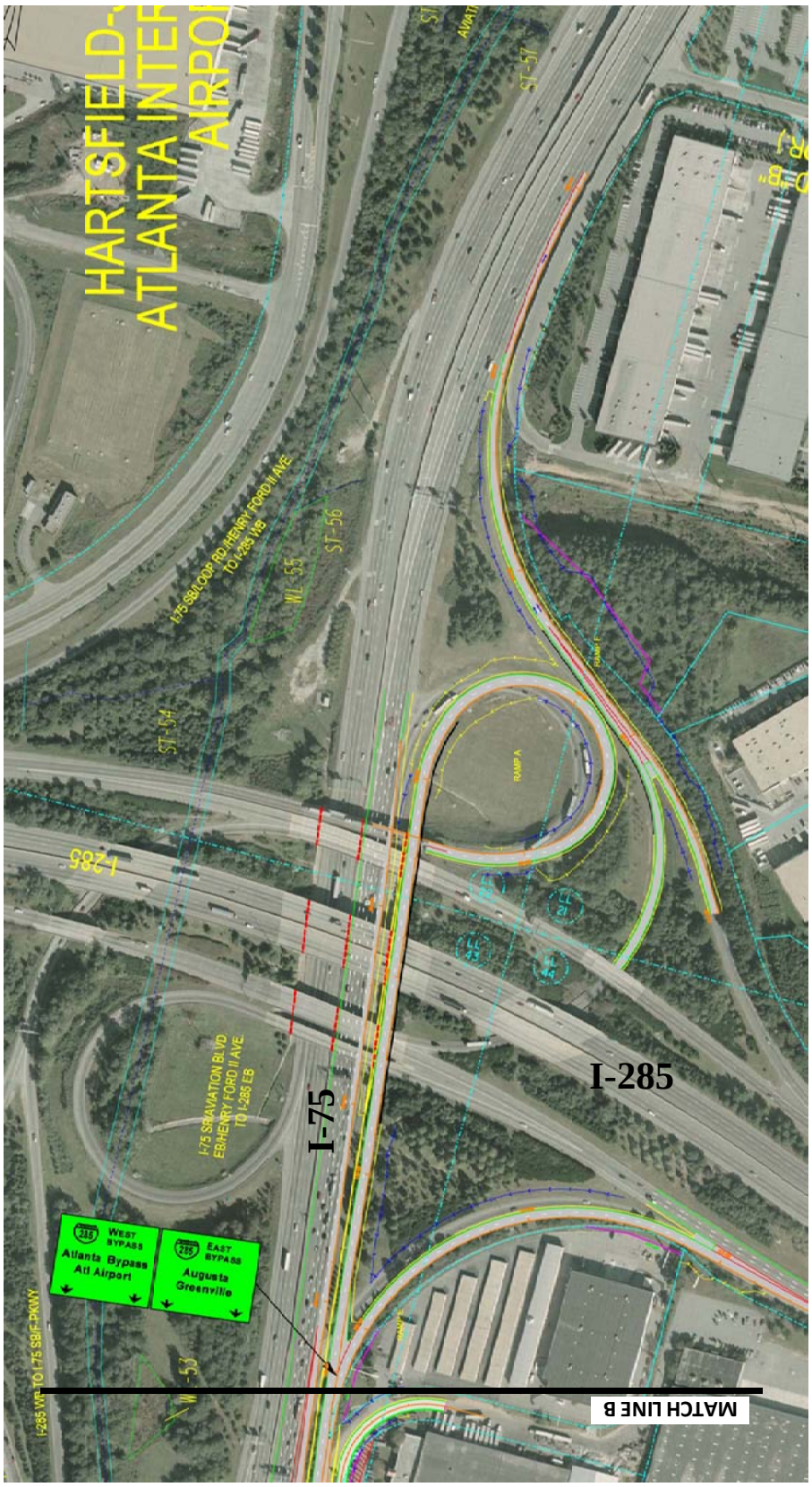
R-2.0 Original Design 2 of 3



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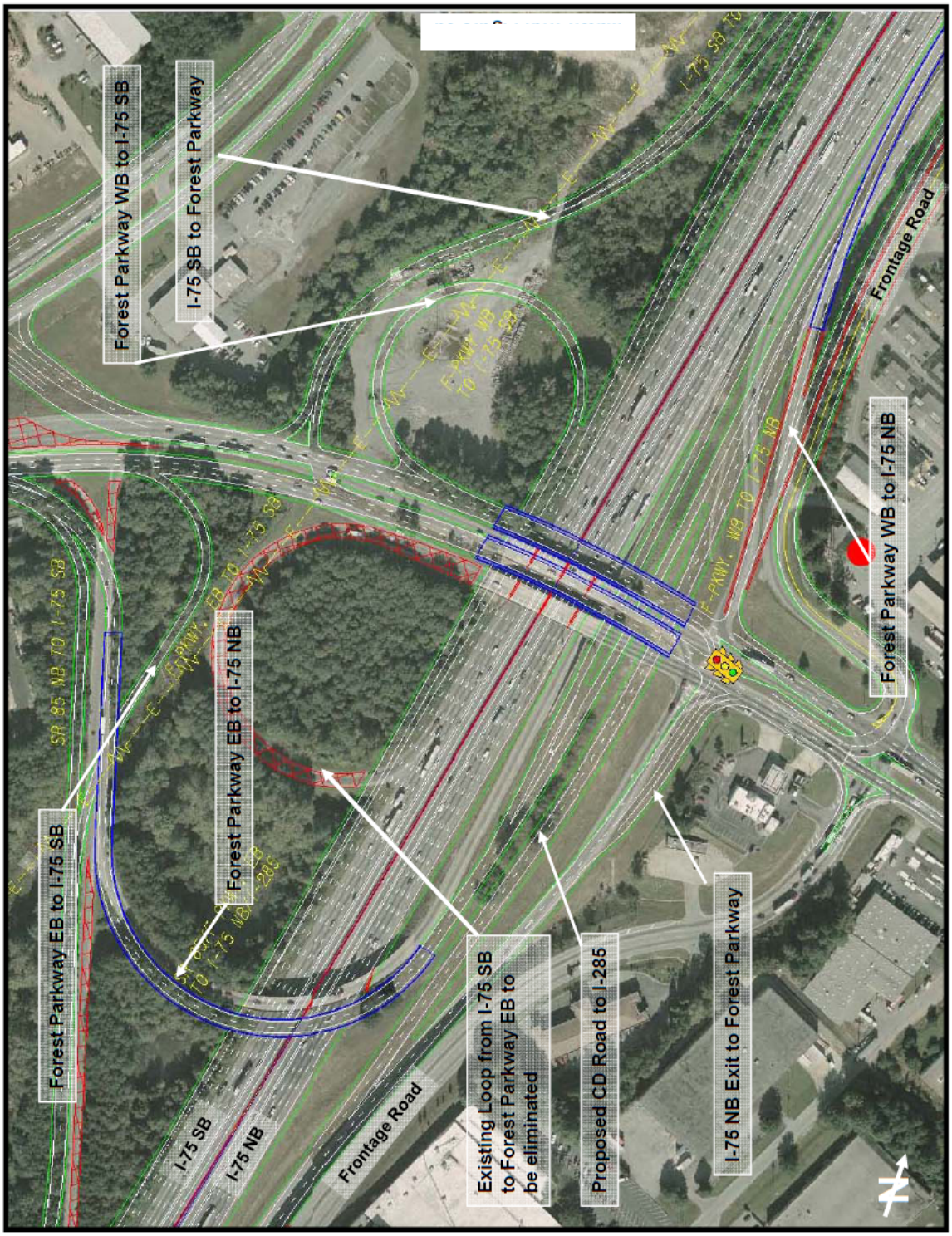
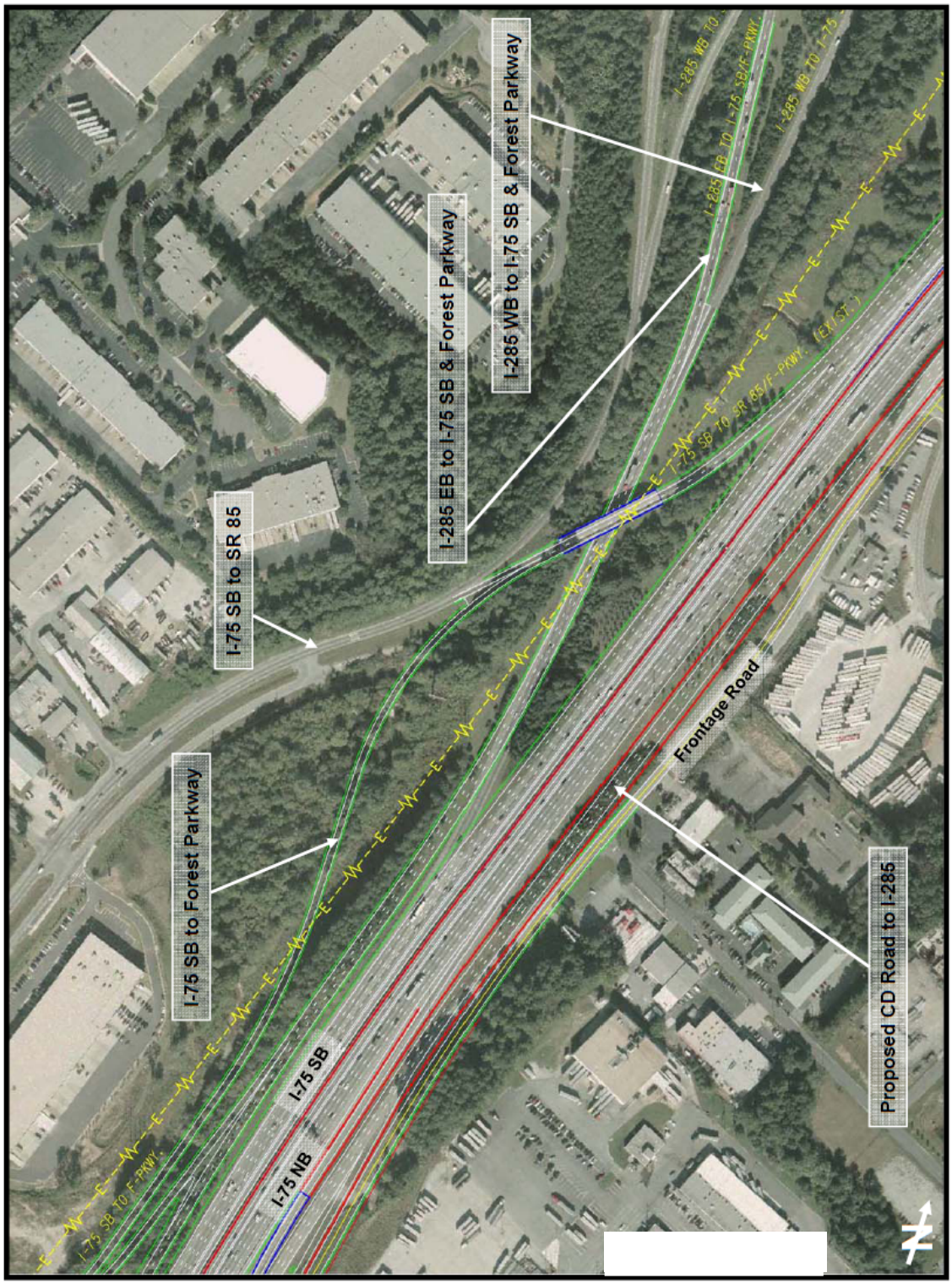
R-2.0 Original Design 3 of 3



R-2.0 Proposed Change 1 of 2

Note: Proposed change includes new (lengthened) Forest Parkway bridges over I-75, I-75 NB exiting South of Forest Parkway and merging with Forest Parkway EB loop ramp North of Forest Parkway onto the proposed NB C-D lanes. Forest Parkway WB on-ramp to I-75 NB would bridge over proposed NB C-D lanes to enter I-75 NB



R-2.0 Proposed Change 2 of 2

CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	9 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramps & C-D – Pavement

GAB	$12.85/sy
3" superpave - (330/2000) x (58.15/ton)	$9.59/sy
12" PCC	$68.00/sy
TOTAL	$90.44/sy

Frontage Road and Shoulder – Pavement

GAB	$12.85/sy
7-1/2" asphalt base course (7.5)x(110/2000)x(54.65/ton)	$22.54/sy
3" asphalt binder course (3)x(110/2000)x(58.15/ton)	$9.59/sy
1-1/2" asphalt surface course (1.5)x(110/2000)x(60.36/ton)	$4.98/sy
TOTAL	$49.96/sy

ORIGINAL DESIGN

Ramp B (One Lane Ramp Typical)
Travel lane -
16 feet x 1300 feet = 20,800 sf /9 sf/sy = 2311 sy
2311 sy x $90.44/sy = $209,007
Shoulders –
18 feet x 1300 feet = 23,400 sf/9 sf/sy = 2600 sy
2600 sy x $49.96/sy = $129,896

Ramp B between Ramp C/Ramp B split and Ramp B/Ramp D split (Two Lane Ramp Typical)
Travel lanes –
24 feet x 600 feet = 14,400 sf/9 sf/sy = 1600 sy
1600 sy x $90.44/sy = $144,704
Shoulders –
18 feet x 600 feet = 10,800 sf/9 sf/sy = 1200 sy
1200 sy x $49.96/sy = $59,952

Ramp B north of Ramp B/Ramp D split (One Lane Ramp Typical)
Travel lane –
16 feet x 3800 feet = 60,800 sf/9 sf/sy = 6756 sy
6756 sy x $90.44/sy = $611,013
Shoulders –
18 feet x 3800 feet = 68,400 sf/9 sf/sy = 7600 sy
7600 sy x $49.96/sy = $379,696

CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	10 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp C on Ramp to I-75 NB (One Lane Ramp Typical)
Travel lane-
16 feet x 1000 feet = 16,000 sf/9 sf/sy = 1778 sy
1778 sy x $90.44/sy = $160,802
Shoulders-
18 feet x 1000 feet = 18,000 sf/9 sf/sy = 2000 sy
2000 sy x $49.96/sy = $99,920

Ramp D between Ramp B/Ramp D split and Ramp A/Ramp D split (One Lane Ramp Typical)
Travel lane –
16 feet x 1500 feet = 24,000 sf/9 sf/sy = 2667 sy
2667 sy x $90.44/sy = $241,203
Shoulders-
18 feet x 1500 feet = 27,000 sf/9 sf/sy = 3000 sy
3000 sy x $49.96/sy = $149,880

Ramp D between Ramp A/Ramp D split and Ramp A/Ramp E split (Three Lane Ramp Typical)
Travel lanes –
36 feet x 1300 feet = 46,800 sf/9 sf/sy = 5200 sy
5200 sy x $90.44/sy = $470,288
Shoulders-
22 feet x 1300 feet = 28,600 sf/9 sf/sy = 3178 sy
3178 sy x $49.96/sy = $158,773

Ramp E (Two Lane Ramp Typical)
Travel lanes-
24 feet x 1100 feet = 26,400 sf/9 sf/sy = 2933 sy
2933 sy x $90.44/sy = $265,260
Shoulders-
18 feet x 1100 feet = 19,800 sf/9 sf/sy = 2200 sy
2200 sy x $49.96/sy = $109,912

Ramp E (One Lane Taper onto I-285 EB)
Travel lane-
12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy
800 sy x $90.44/sy = $72,352
Shoulder –
12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy
800 sy x $49.96/sy = $39,968

CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	11 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp A from I-75 NB (One Lane Ramp Typical)
Travel lane-
12 feet x 500 feet = 6000 sf/9 sf/sy = 667 sy
667 sy x $90.44/sy = $60,323
Shoulder-
12 feet x 500 feet = 6000 sf/9 sf/sy = 667 sy
667 sy x $49.96/sy = $33,323

Ramp A south of Ramp A/Ramp D split (Two Lane Ramp Typical)
Travel lane-
24 feet x1600 = 38,400 sf/9 sf/sy = 4267 sy
4267 sy x $90.44/sy = $385,907
Shoulders-
18 feet x 1600 feet = 28,800 sf/9 sf/sy = 3200 sy
3200 sy x $49.96/sy = $159,872

Ramp A north of Ramp E/Ramp A split (Two Lane Ramp Typical)
Travel lanes-
24 feet x 2850 feet = 68,400 sf/9 sf/sy = 7600 sy
7600 sy x $90.44/sy = $687,344
Shoulders-
18 feet x 2850 feet = 51,300 sf/9 sf/sy = 5700 sy
5700 sy x $49.96 = $284,772

Bridge over Ramp A
695 feet x 58 feet = 40,310 sf
$100 sf x 40,310 sf = $4,031,000

CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	12 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

PROPOSED DESIGN

C-D Ramp from NB I-75 Managed Lane Project to SR 85/FPkwy EB I-75NB/I-285 on Ramp split (Two Lane Ramp Typical)
Travel lanes-
24 feet x 1700 feet = 40,800 sf/9 sf/sy = 4533 sy
4533 sy x $90.44/sy = $409,995
Shoulders-
18 feet x 1700 feet = 30,600 sf/9 sf/sy = 3400 sy
3400 sy x $49.96 = $169,864

C-D Ramp from SR 85/FPkwy EB I-75 NB/I-285 on Ramp split to Ramp E/Ramp A split (Three Lane Ramp Typical)
Travel lanes-
36 feet x 4200 feet = 151,200 sf/9 sf/sy = 16,800 sy
16,800 sy x $90.44/sy = $1,519,392
Shoulders-
22 feet x 4200 feet = 92,400 sf/9 sf/sy = 10,267 sy
10,267 sy x $49.96 = $512,923

Ramp E (Two Lane Ramp Typical)
Travel lanes-
24 feet x 1100 feet = 26,400 sf/9 sf/sy = 2933 sy
2933 sy x $90.44/sy = $265,260
Shoulders-
18 feet x 1100 feet = 19,800 sf/9 sf/sy = 2200 sy
2200 sy x $49.96/sy = $109,912

Ramp E (One Lane Taper onto I-285 EB)
Travel lane-
12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy
800 sy x $90.44/sy = $72,352
Shoulders –
12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy
800 sy x $49.96/sy = $39,968

CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	13 of 13

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp A north of Ramp E/Ramp A split (Two Lane Ramp Typical)
Travel lanes-
24 feet x 2850 feet = 68,400 sf/9 sf/sy = 7600 sy
7600 sy x $90.44/sy = $687,344
Shoulders-
18 feet x 2850 feet = 51,300 sf/9 sf/sy = 5700 sy
5700 sy x $49.96 = $284,772

Forest Park WB On-ramp to I-75 NB (One Lane Ramp Typical)
Travel lane-
16 feet x 4445 feet = 71,120 sf/9 sf/sy = 7902 sy
7902 sy x $49.96 = $394,784
Shoulders-
18 feet x 4445 feet = 80,010 sf/9 sf/sy = 8890 sy
8890 sy x $49.96 = $444,144

Forest Parkway WB to I-75 NB On-ramp Bridge
650 feet x 58 feet = 37,700 sf
37,700 sf x $100/sf = $3,770,000

Forest Parkway Bridges over I-75
450 feet x 45 feet = 20,250 sf
20,250 sf x 2 bridges = 40,500 sf x $100/sf = $4,050,000

Avoidance of Future Re-construction for NB Managed Lanes project (based on project estimate):

Feature	Project Cost	% Throwaway	Throwaway $
Frontage Roadway	807,113	0	0
Ramps/C-D	16,865,206	50 (min.)	8,432,603
Bridge	3,577,500	100	3,577,500
Misc/Other	8,640,250	50 (min.)	4,320,125
Total			**16,330,228**

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346), PI No. 713210**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: ELIMINATE NEW FRONTAGE ROAD FROM FOREST PARKWAY TO FALCON DRIVE.

ORIGINAL DESIGN: The original design relocates the Frontage Road to the east of the existing Frontage Road.

PROPOSED CHANGE: It is proposed to eliminate the New Frontage Road from Forest Parkway to Falcon Drive, including the associated retaining wall.

JUSTIFICATION: The main entrance to the Farmer's Market (Main Drive/Farm Drive) is along Forest Parkway, south of the current entrance of the Frontage Road. Falcon Drive is an east/west local road that is east of Forest Parkway. Between Forest Parkway and Falcon Drive, businesses within the Farmer's Market would have adequate access via Main Drive, Farm Drive, and Falcon Drive. Access to businesses on the North end of the Frontage Road would remain via Falcon Drive which intersects Old Dixie Highway to the East.

ADVANTAGES:

- Cost savings
- Less vehicles entering/exiting the Forest Parkway/Frontage Road access point
- Additional ROW made available to move the C-D system to the east, preserving the I-75 footprint for future development of the managed lane project.

DISADVANTAGES:

- Businesses in the far southwest corner of the Farmer's Market would have to travel further to access Forest Parkway

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,708,453		$ 1,708,453
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 1,708,453		$ 1,708,453

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Frontage Road (between Forest Parkway and Falcon Drive)	1	SY	9,333	49.96	$466,277
Curb and Gutter (between Forest Parkway and Falcon Drive)	1	LF	2,800	13.19	$36,932
627-1010 MSE Wall	1	SF	22,500	45.00	$1,012,500
627-1120 Coping B	1	LF	900	214.16	$192,744
SUBTOTAL – COST TO PRIME					1,708,453
MARKUP					Incl.
TOTAL CONTRACT COST					**$1,708,453**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$1,708,453**

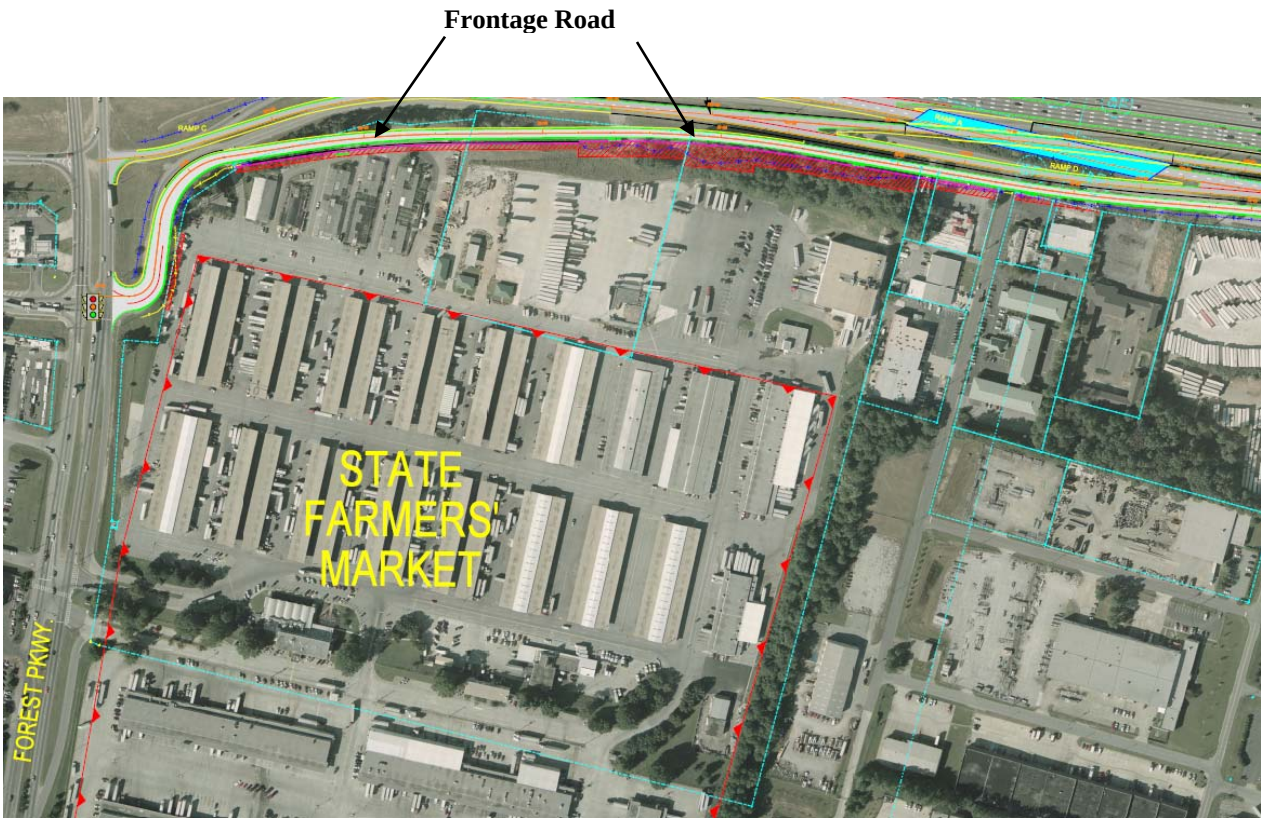
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

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

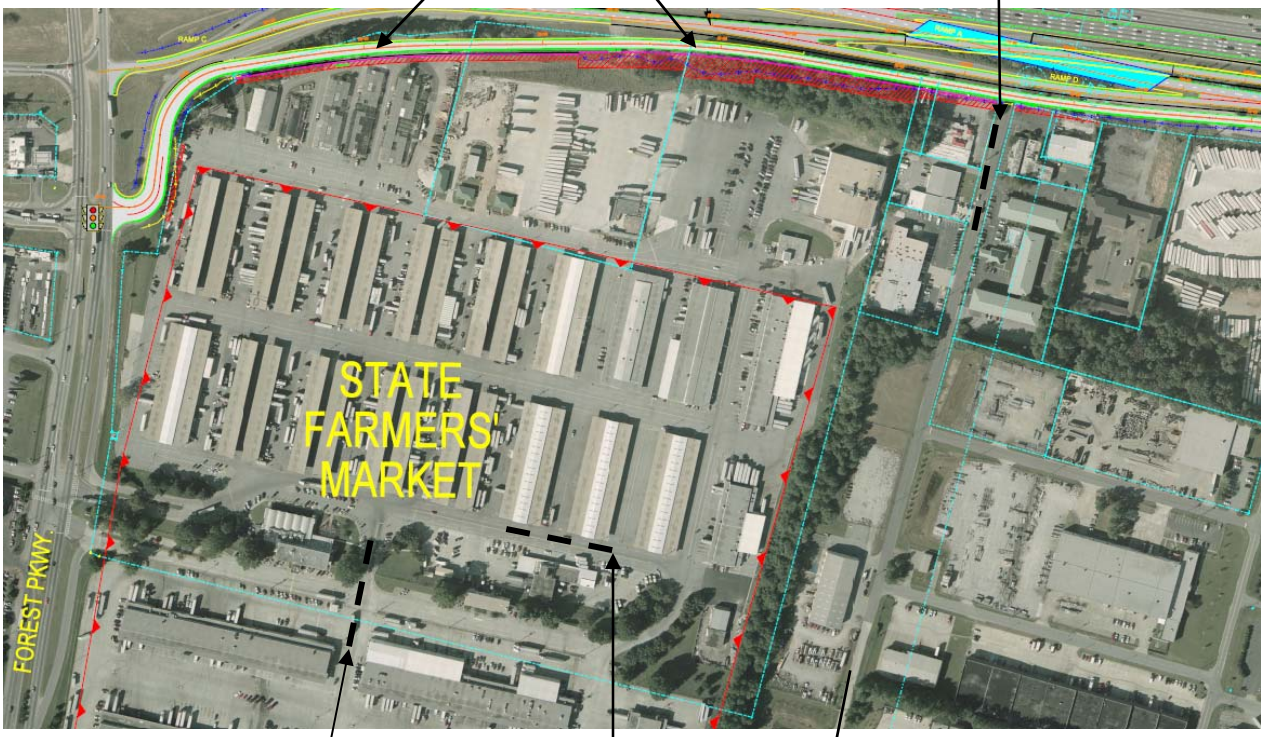
PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210



PROPOSED CHANGE SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210



CALCULATIONS

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

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

Frontage Road and Shoulder – Pavement

GAB	$12.85/sy
7-1/2" asphalt base course (7.5)x(110/2000)x(54.65/ton)	$22.54/sy
3" asphalt binder course (3)x(110/2000)x(58.15/ton)	$9.59/sy
1-1/2" asphalt surface course (1.5)x(110/2000)x(60.36/ton)	$4.98/sy
TOTAL	$49.96/sy

ORIGINAL DESIGN

Frontage Road (between Forest Parkway Drive and Falcon Drive) –
2800 feet x 30 feet = 84,000 sf/ 9 sf/sy = 9333 sy
9333 sy x $49.96/sy = $466,277

Curb and Gutter (between Forest Parkway Drive and Falcon Drive) –
2800 feet x $13.19/LF = $36,932

Retaining wall between Frontage Road and Farmers Market
900 LF with average height of 25' = (900)(25) = 22,500 SF wall face and 900 LF coping

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: ELIMINATE SIDEWALK AT FRONTAGE ROAD.

ORIGINAL DESIGN: The current design of the Frontage Road includes a 5' wide sidewalk running the entire length. Also, there is no sidewalk currently along the existing Frontage Road.

PROPOSED CHANGE: It is proposed to eliminate the proposed sidewalk along the Frontage Road.

JUSTIFICATION: The properties along the Frontage Road are primarily industrial with no residential properties. These types of properties should not generate pedestrian traffic. In addition, the project is relocating the existing frontage road and there is no existing sidewalk along this frontage road.

ADVANTAGES:

- Construction cost savings
- Removes a feature that does not seem to be warranted along an industrial frontage road

DISADVANTAGES:

- Inconvenience for limited pedestrian traffic

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 77,085		$ 77,085
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 77,085		$ 77,085

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Sidewalk, 4 in	3	SY	2,700	28.55	$77,085
(4867 ft x 5' wide /9 = 2,700 SY)					
SUBTOTAL – COST TO PRIME					$77,085
MARKUP					Incl.
TOTAL CONTRACT COST					**$77,085**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
No sidewalk					
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$77,085**

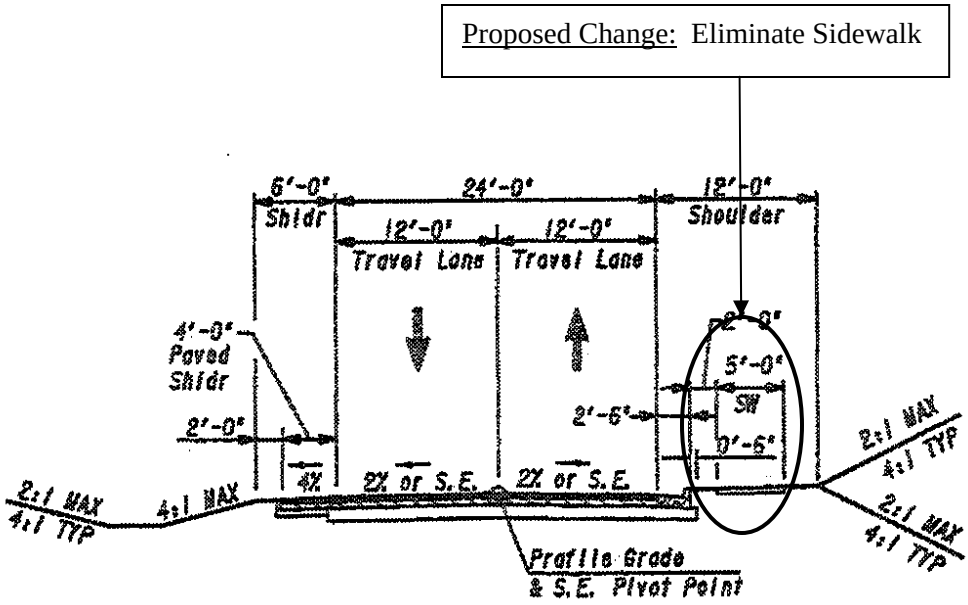
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

PROPOSED CHANGE SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



FRONTAGE ROAD
35 MPH DESIGN SPEED

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REDUCE THE WIDTH OF THE TRAVEL LANES ON THE 2-LANE FRONTAGE ROAD FROM 12' TO 11'

ORIGINAL DESIGN: In the current design, the frontage road on the east side of I-75 is designed with one 12' travel lane in each direction.

PROPOSED CHANGE: It is proposed to reduce the width of both travel lanes on the frontage road from 12' to 11'.

JUSTIFICATION: The frontage road is designed as a 35 mph local roadway and GDOT policy allows 11' lanes as indicated on Table 6.4 of the Design Policy Manual. This change also meets AASHTO guidelines for lane widths.

ADVANTAGES:

- Reduction in construction cost
- Acceptable design for low volume, low speed roadways
- Less impervious area

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 647,232		$ 647,232
PROPOSED CHANGE:	$ 593,275		$ 593,275
SAVINGS:	$ 53,957		$ 53,957

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
24’ FRONTAGE ROAD	1/7	SY	12,955	49.96	$647,232
SUBTOTAL – COST TO PRIME					$647,232
MARKUP					Incl.
TOTAL CONTRACT COST					$647,232

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
22’ FRONTAGE ROAD	1/7	SY	11,875	49.96	$593,275
SUBTOTAL – COST TO PRIME					$593,275
MARKUP					Incl.
TOTAL CONTRACT COST					$593,275

Difference [Original-Proposed] **$53,957**

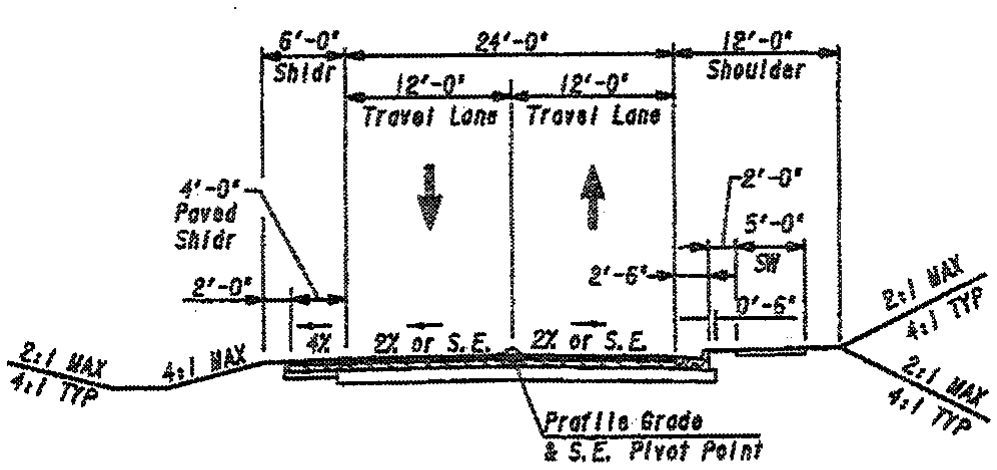
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

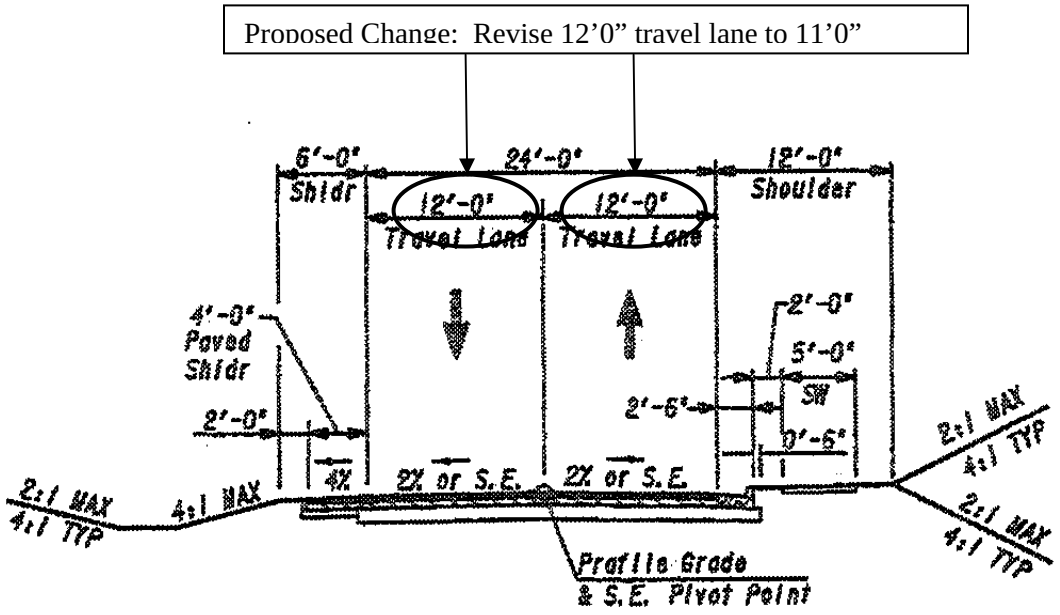


FRONTAGE ROAD
35 MPH DESIGN SPEED

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



FRONTAGE ROAD
35 MPH DESIGN SPEED

CALCULATIONS

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Frontage Road Pavement Cost Calculations

12" GAB = $12.85/SY
7.5" Asp 25MM = (7.5")(110#sy-in/2000#)($54.65/T) = $22.54/SY
3" Asph 19MM = (3")(110#sy-in/2000#)($58.15/T) = $9.59/SY
1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($60.36/T) = $4.98/SY

Total pavement cost = $49.96/SY

Frontage Road length = 0.920 miles = 4858 LF

4858 LF x 24' = 116592 SF / 9 = 12955 SY @ 24' wide

4858 LF x 22' = 106876 SF / 9 = 11875 SY @ 22' wide

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-8.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: MOVE THE FRONTAGE ROAD TOWARD I-75 ADJACENT TO RAMP 'C'.

ORIGINAL DESIGN: In the current design, the Frontage Road is separated from Ramp 'C' by as much as 80' between STA 16+00 and STA 31+00.

PROPOSED CHANGE: It is proposed to move the Frontage Road adjacent to Ramp 'C' between STA 16+00 and STA 31+00.

JUSTIFICATION: This alternative results in reduction in required right of way acquisition at the Farmers Market while creating no adverse effects to the horizontal or vertical alignment of the Frontage Road.

ADVANTAGES:

- Requires less Right of Way
- Less disruption to private property

DISADVANTAGES:

- Right of Way may have to be acquired for long range future project

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,064,250		$ 1,064,250
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 1,064,250		$ 1,064,250

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-8.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right of Way	1	SF	33,000	$32.25	$1,064,250
SUBTOTAL – COST TO PRIME					$1,064,250
MARKUP					Incl.
TOTAL CONTRACT COST					$1,064,250

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$1,064,250**

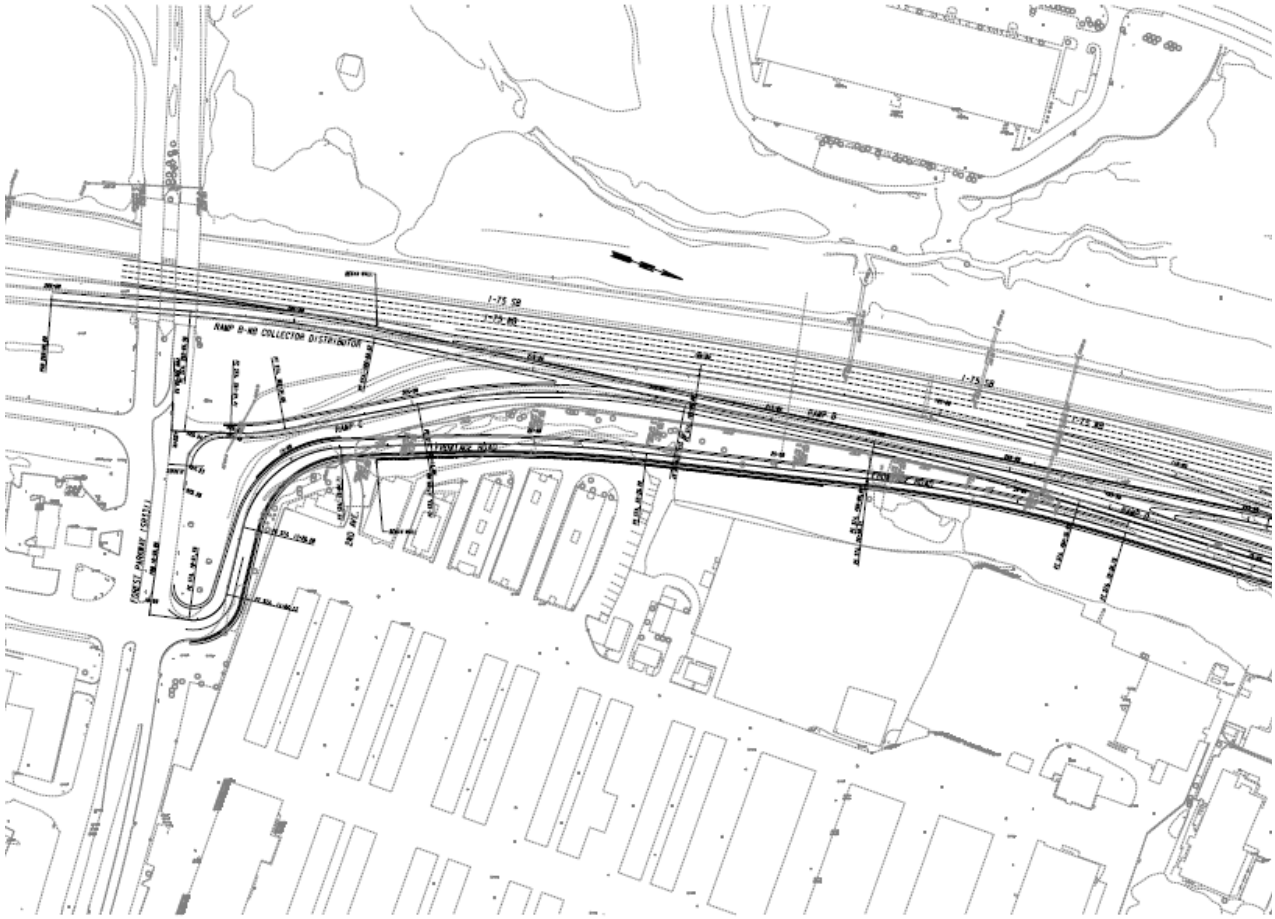
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-8.0	PAGE NUMBER:	3 of 5

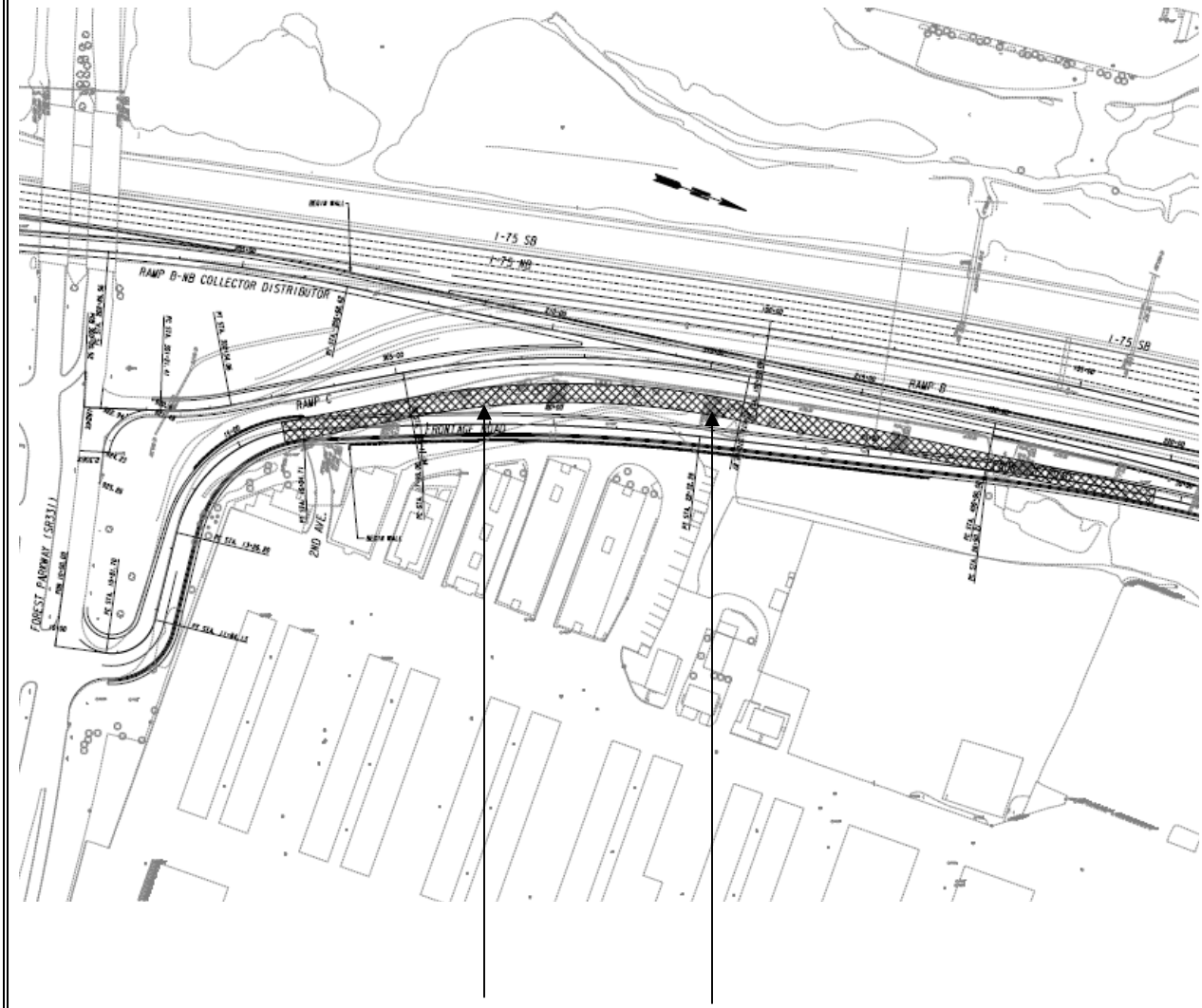
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-8.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



<u>Proposed Change:</u> Move Frontage Road toward I-75/Ramp "C"

CALCULATIONS

PROPOSAL NUMBER:	R-8.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Industrial right of way @ $15.00/SF
Contingency 55% = $8.25
Admin 60% = $9.00
Total = $32.25/SF

Reduced required right of way area at Farmers Market = 33,000 SF (scaled from plan sheet)

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	REDUCE DESIGN SPEED OF LOOP RAMP 'A' FROM I-75N TO I-285W TO 25 MPH TO AVOID NEED TO RECONSTRUCT RAMP 'F'

ORIGINAL DESIGN: Loop Ramp 'A' is the 2-lane ramp from the proposed C-D road to I-285 westbound. The concept report states a Design Variance is required to reduce the design speed from the GDOT required 35 mph to 30 mph using a radius of 205 feet and a super-elevation of 10%. The current design for reconstruction of Ramp 'A' also requires reconstruction of Ramp 'F', from I-285W to I-75N.

PROPOSED CHANGE: It is proposed to use a design speed of 25 mph, a 175 foot radius and a maximum super-elevation rate of 10% on Ramp 'A'. This would allow Loop Ramp 'A' to be reconstructed without requiring the reconstruction of Ramp 'F'.

JUSTIFICATION: AASHTO allows a design speed of 25 mph for loop ramps (page 825). This approach would avoid the need to reconstruct Ramp 'F' and would reduce construction costs and avoid construction phasing for this ramp work.

ADVANTAGES:

- Eliminates the need to replace Ramp 'F'
- Reduction in construction cost
- Avoids phasing of ramp re-construction

DISADVANTAGES:

- Requires a Design Variance on GDOT policy
- Slower speed limit and operating speed on ramp

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 705,930		$ 705,930
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 705,930		$ 705,930

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramp pavement	1/7	SY	7,555	90.44	$683,274
500-2100 Conc Barrier	1	LF	600	37.76	$22,656
SUBTOTAL – COST TO PRIME					$705,930
MARKUP					Incl.
TOTAL CONTRACT COST					$705,930

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
None					0.00
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$705,930**

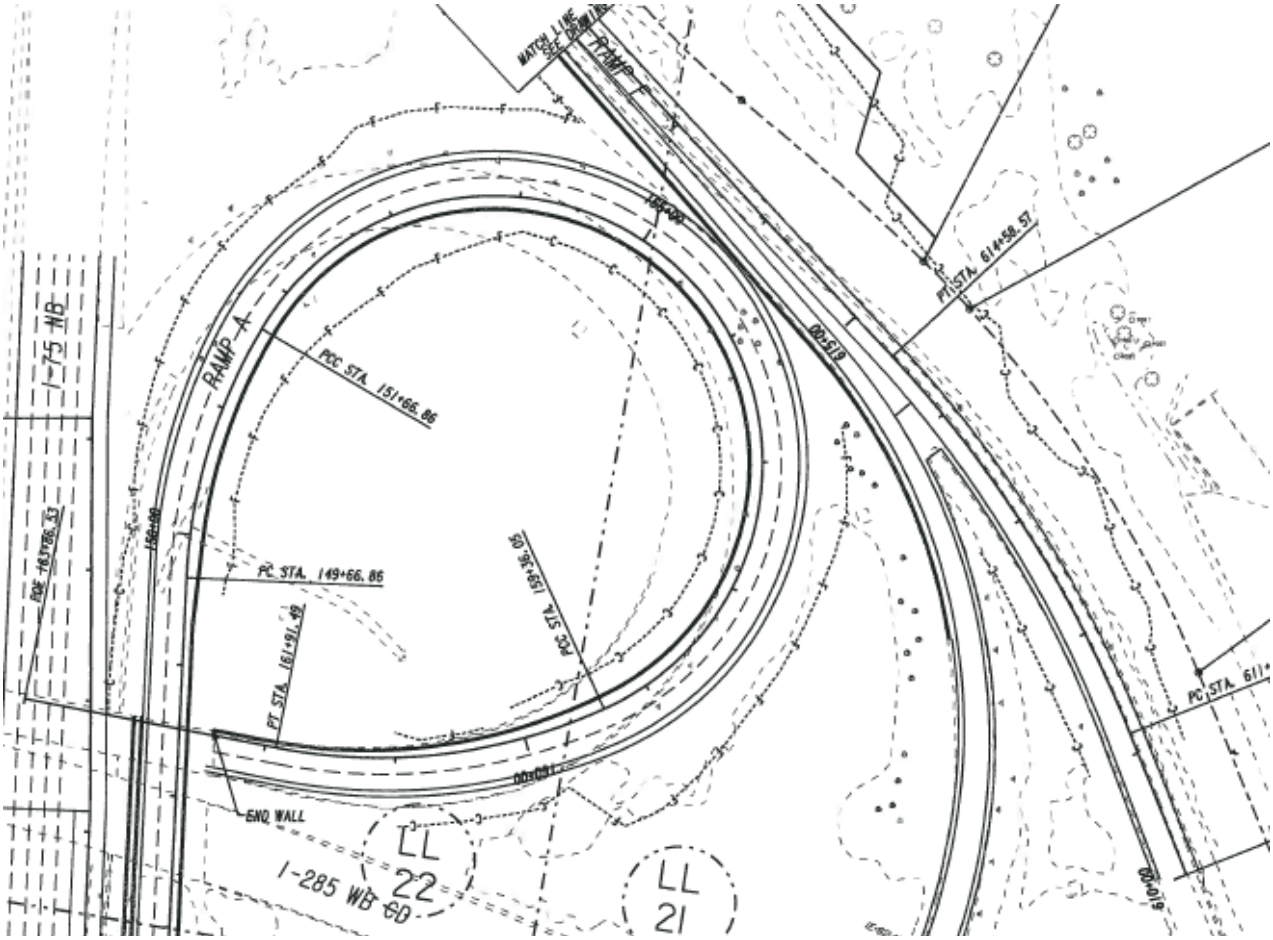
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

ORIGINAL DESIGN SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

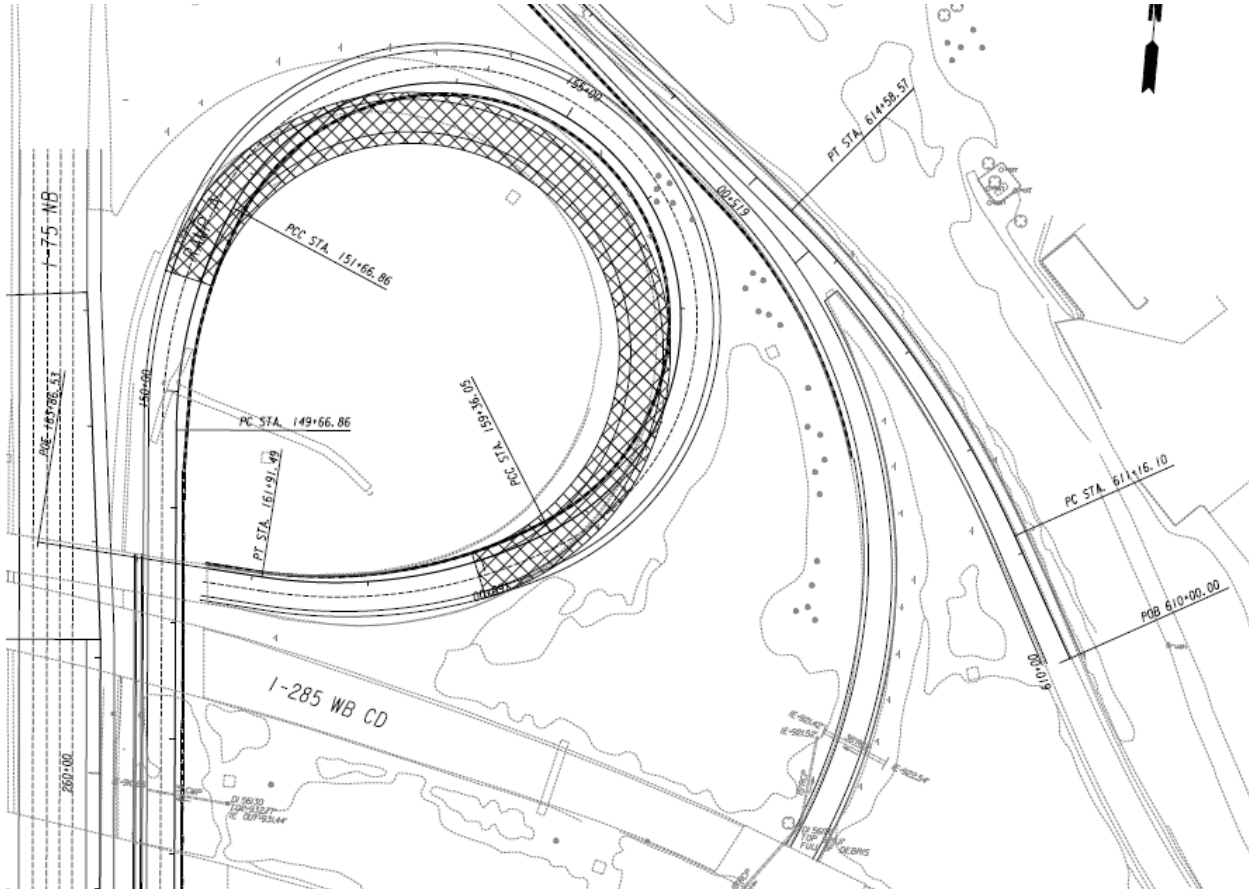


<u>Current Design:</u> Loop Ramp 'A' at 30 MPH design speed and 205' radius; Ramp 'F' requires reconstruction

PROPOSED CHANGE SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



<u>Proposed Change:</u> Loop Ramp 'A' at 25 MPH design speed and 175' radius; avoids reconstruction of Ramp 'F'

CALCULATIONS

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp 'F'
Approximately 1000 LF 2-lanes (use 24')
Approximately 1000 LF 1-lane (use 16')
Assume 4' left and 10' right full depth shoulders
600 LF wall between Ramp 'A' and Ramp 'F'

Ramp Pavement Calculations:
12" GAB = $12.85/SY
3" Asph 19MM = (330#/2000)($58.15/T) = 9.59/SY
12" PCC = $68.00/SY
Total = $90.44/SY for ramp pavement

(1000LF) (24'+10'+4') = 38000 SF / 9 = 4222 SY
(1000LF)(16'+10'+4') = 30000 SF / 9 = 3333 SY
Total = 7555 SY of ramp pavement eliminated

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	1 of 8

PROJECT #/PI #:	**IM000-0285-01(346), PI No. 713210**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REDUCE PAVED SHOULDERS FOR RAMPS AND C-D TO AASHTO MINIMUM OF 4 FT WIDE INSIDE AND 10 FT WIDE OUTSIDE (PAGES 838 AND 315 AASHTO GREEN BOOK).

ORIGINAL DESIGN: The original typical sections show 6 foot inside and 12 foot outside shoulders for all one-lane and two-lane ramps and C-Ds; and 10 foot inside and 12 foot outside shoulders for all three-lane C-Ds.

PROPOSED CHANGE: It is proposed to provide 4 foot inside and 10 foot outside shoulders for all one-lane and two-lane ramps and C-Ds; and three-lane C-Ds.

JUSTIFICATION: This alternative meets AASHTO policy while providing a cost savings to the project. Page 838 of The AASHTO Green Book states 'When paved shoulders are provided on ramps, they should have a uniform width for the full length of ramp. For one-way operation, the sum of the right and left shoulder widths should not exceed 10 to 12 feet. A paved shoulder width of 2 to 4 feet is desirable on the left with the remaining width of 8 to 10 feet used for the paved right shoulder.' Page 315 of The AASHTO Green Book States 'Where roadside barriers, walls, or other vertical elements will be offset a minimum of 2 feet from the outer edge of the usable shoulder.'

ADVANTAGES:

- Reduces construction costs
- Reduces impervious surface area; hence, reduces the amount of runoff
- Reduces the amount of material to be hauled to the project; hence reducing construction traffic

DISADVANTAGES:

- A wider shoulder may be more desirable for a vehicle that would need to be pulled completely off the traveled way

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,744,964		$ 1,744,964
PROPOSED CHANGE:	$ 1,338,764		$ 1,338,764
SAVINGS:	$ 406,200		$ 406,200

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	2 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramps & C-D Pavement - Shoulders	1	SY	32,145	49.96	$1,605,964
Bridge over Ramp A - Shoulders	1	SY	1,390	100.00	$139,000
SUBTOTAL – COST TO PRIME					$1,744,964
MARKUP					Incl.
TOTAL CONTRACT COST					**$1,744,964**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramps & C-D Pavement - Shoulders	1	SY	24,633	49.96	$1,230,664
Bridge over Ramp A - Shoulders	1	SY	1,081	100.00	$108,100
SUBTOTAL – COST TO PRIME					1,338,764
MARKUP					Incl.
TOTAL CONTRACT COST					**$1,338,764**

Difference [Original-Proposed] **$406,200**

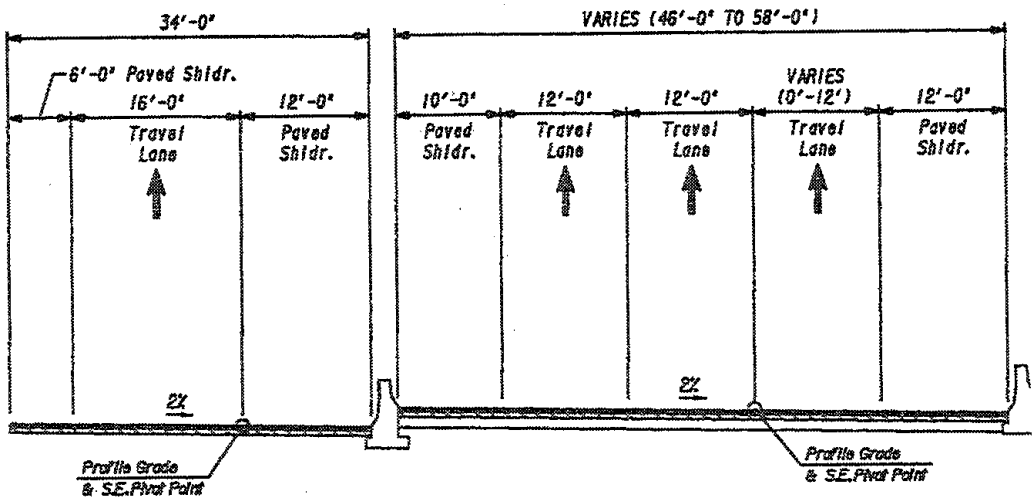
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	3 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210



RAMP FROM FOREST PARKWAY

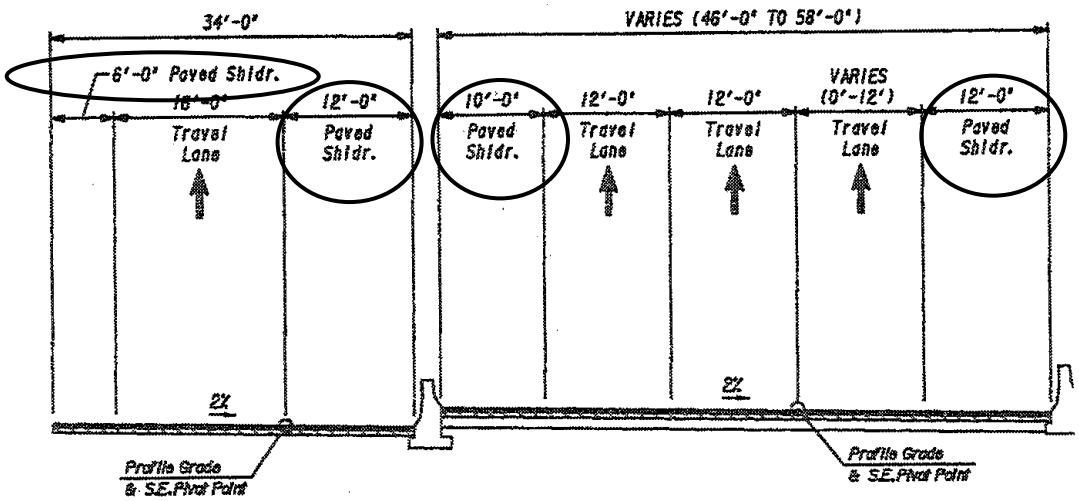
COLLECTOR-DISTRIBUTOR

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	4 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

Proposed Change: Reduce inside shoulders to 4' wide paved and outside shoulders to 10 foot paved



RAMP FROM FOREST PARKWAY

COLLECTOR-DISTRIBUTOR

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	5 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

Ramps & C-D – Pavement

GAB	$12.85/sy
3" superpave - (330/2000) x (58.15/ton)	$9.59/sy
12" PCC	$68.00/sy
TOTAL	$90.44/sy

Frontage Road and Shoulder – Pavement

GAB	$12.85/sy
7-1/2" asphalt base course (7.5)x(110/2000)x(54.65/ton)	$22.54/sy
3" asphalt binder course (3)x(110/2000)x(58.15/ton)	$9.59/sy
1-1/2" asphalt surface course (1.5)x(110/2000)x(60.36/ton)	$4.98/sy
TOTAL	$49.96/sy

ORIGINAL DESIGN

Ramp B (One Lane Ramp Typical)
Shoulders –
18 feet x 1300 feet = 23,400 sf/9 sf/sy = 2600 sy
2600 sy x $49.96/sy = $129,896

Ramp B between Ramp C/Ramp B split and Ramp B/Ramp D split (Two Lane Ramp Typical)
Shoulders –
18 feet x 600 feet = 10,800 sf/9 sf/sy = 1200 sy
1200 sy x $49.96/sy = $59,952

Ramp B north of Ramp B/Ramp D split (One Lane Ramp Typical)
Shoulders –
18 feet x 3800 feet = 68,400 sf/9 sf/sy = 7600 sy
7600 sy x $49.96/sy = $379,696

Ramp C on Ramp to I-75 NB (One Lane Ramp Typical)
Shoulders-
18 feet x 1000 feet = 18,000 sf/9 sf/sy = 2000 sy
2000 sy x $49.96/sy = $99,920

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	6 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

Ramp D between Ramp B/Ramp D split and Ramp A/Ramp D split (One Lane Ramp Typical)
Shoulders-
18 feet x 1500 feet = 27,000 sf/9 sf/sy = 3000 sy
3000 sy x $49.96/sy = $149,880

Ramp D between Ramp A/Ramp D split and Ramp A/Ramp E split (Three Lane Ramp Typical)
Shoulders-
22 feet x 1300 feet = 28,600 sf/9 sf/sy = 3178 sy
3178 sy x $49.96/sy = $158,773

Ramp E (Two Lane Ramp Typical)
Shoulders-
18 feet x 1100 feet = 19,800 sf/9 sf/sy = 2200 sy
2200 sy x $49.96/sy = $109,912

Ramp E (One Lane Taper onto I-285 EB)
Shoulders –
12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy
800 sy x $49.96/sy = $39,968

Ramp A from I-75 NB (One Lane Ramp Typical)
Shoulders-
12 feet x 500 feet = 6000 sf/9 sf/sy = 667 sy
667 sy x $49.96/sy = $33,323

Ramp A south of Ramp A/Ramp D split (Two Lane Ramp Typical)
Shoulders-
18 feet x 1600 feet = 28,800 sf/9 sf/sy = 3200 sy
3200 sy x $49.96/sy = $159,872

Ramp A north of Ramp E/Ramp A split (Two Lane Ramp Typical)
Shoulders-
18 feet x 2850 feet = 51,300 sf/9 sf/sy = 5700 sy
5700 sy x $49.96 = $284,772

Bridge over Ramp A
Shoulders-
18 feet x 695 feet = 12,510 sf/9 sf/sy = 1390 sy
$100 sy x 1390 sy = $139,000

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	7 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

PROPOSED DESIGN

Ramp B (One Lane Ramp Typical)
Shoulders –
14 feet x 1300 feet = 18,200 sf/9 sf/sy = 2022 sy
2022 sy x $49.96/sy = $101,019

Ramp B between Ramp C/Ramp B split and Ramp B/Ramp D split (Two Lane Ramp Typical)
Shoulders –
14 feet x 600 feet = 8,400 sf/9 sf/sy = 933 sy
933 sy x $49.96/sy = $46,613

Ramp B north of Ramp B/Ramp D split (One Lane Ramp Typical)
Shoulders –
14 feet x 3800 feet = 53,200 sf/9 sf/sy = 5911 sy
5911 sy x $49.96/sy = $295,314

Ramp C on Ramp to I-75 NB (One Lane Ramp Typical)
Shoulders-
14 feet x 1000 feet = 14,000 sf/9 sf/sy = 1556 sy
1556 sy x $49.96/sy = $77,738

Ramp D between Ramp B/Ramp D split and Ramp A/Ramp D split (One Lane Ramp Typical)
Shoulders-
14 feet x 1500 feet = 21,000 sf/9 sf/sy = 2333 sy
2333 sy x $49.96/sy = $116,557

Ramp D between Ramp A/Ramp D split and Ramp A/Ramp E split (Three Lane Ramp Typical)
Shoulders-
14 feet x 1300 feet = 18,200 sf/9 sf/sy = 2022 sy
2022 sy x $49.96/sy = $101,019

Ramp E (Two Lane Ramp Typical)
Shoulders-
14 feet x 1100 feet = 15,400 sf/9 sf/sy = 1711 sy
1711 sy x $49.96/sy = $85,482

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	8 of 8

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

Ramp E (One Lane Taper onto I-285 EB)
Shoulders –
10 feet x 600 feet = 6000 sf/9 sf/sy = 667 sy
667 sy x $49.96/sy = $33,323

Ramp A from I-75 NB (One Lane Ramp Typical)
Shoulders-
10 feet x 500 feet = 5000 sf/9 sf/sy = 556 sy
556 sy x $49.96/sy = $27,778

Ramp A south of Ramp A/Ramp D split (Two Lane Ramp Typical)
Shoulders-
14 feet x 1600 feet = 22,400 sf/9 sf/sy = 2489 sy
2489 sy x $49.96/sy = $124,350

Ramp A north of Ramp E/Ramp A split (Two Lane Ramp Typical)
Shoulders-
14 feet x 2850 feet = 39,900 sf/9 sf/sy = 4433 sy
4433 sy x $49.96 = $221,473

Bridge over Ramp A
Shoulders-
14 feet x 695 feet = 9,730 sf/9 sf/sy = 1081 sy
$100 sy x 1081 sy = $108,100

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-11.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REDUCE THE WIDTH OF THE PAVED SHOULDER ON THE FRONTAGE ROAD TO 2'.

ORIGINAL DESIGN: The frontage road on the east side of I-75 is designed with curb and gutter on the east side of the road and a paved shoulder on the west side. The design includes a 4' wide paved portion (although other typical sections show 6' and 10' paved portions).

PROPOSED CHANGE: It is proposed to reduce the width of the paved shoulder on the west side of the frontage road to 2'.

JUSTIFICATION: The frontage road is designed as a 35 mph local roadway and both GDOT and AASHTO policy allows a 2' wide paved shoulder for this road type. Thus, this revision would still meet design policies while reducing impervious surface areas and providing a cost savings to the project.

ADVANTAGES:

- Reduction in construction cost
- Acceptable design for local roadways
- Less impervious area

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 107,914		$ 107,914
PROPOSED CHANGE:	$ 53,957		$ 53,957
SAVINGS:	$ 53,957		$ 53,957

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-11.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
4’ wide Full-depth asphalt shoulder	1/7	SY	2,160	49.96	$107,914
SUBTOTAL – COST TO PRIME					$107,914
MARKUP					Incl.
TOTAL CONTRACT COST					$107,914

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
4’ wide Full-depth asphalt shoulder	1/7	SY	1,080	49.96	$53,957
SUBTOTAL – COST TO PRIME					$53,957
MARKUP					Incl.
TOTAL CONTRACT COST					$53,957

Difference [Original-Proposed] **$53,957**

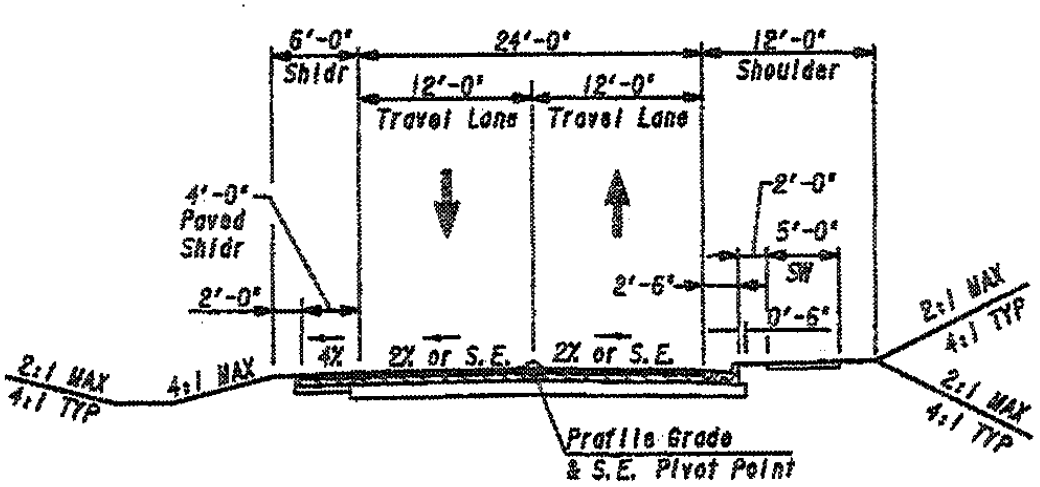
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-11.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



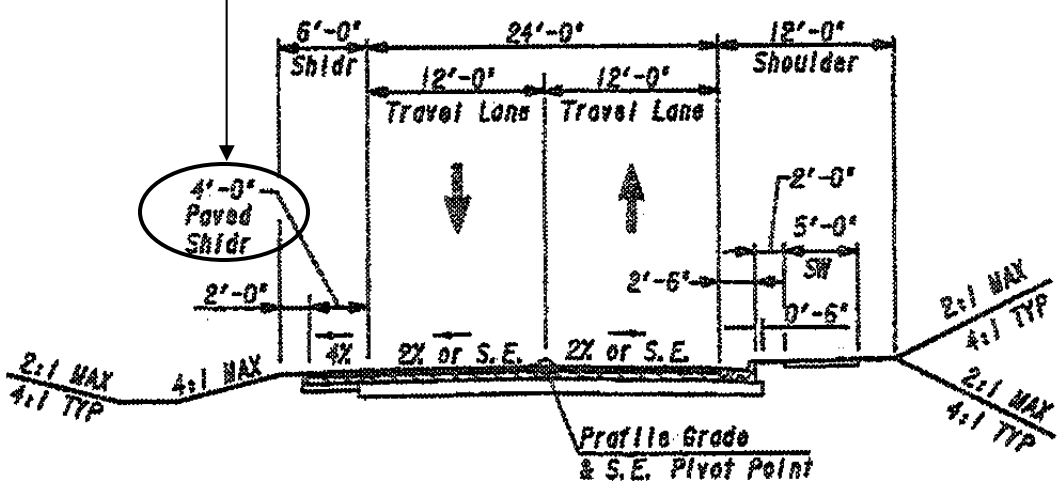
FRONTAGE ROAD
35 MPH DESIGN SPEED

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-11.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Proposed Change: Reduce 4'0" paved shoulder to 2'0"



FRONTAGE ROAD
35 MPH DESIGN SPEED

CALCULATIONS

PROPOSAL NUMBER:	R-11.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Frontage Road Pavement Cost Calculations

12” GAB = $12.85/SY
7.5” Asph 25MM = (7.5”)(110#sy-in/2000#)($54.65/T) = $22.54/SY
3” Asph 19MM = (3”)(110#sy-in/2000#)($58.15/T) = $9.59/SY
1.5” Asph 12.5MM = (1.5”)(110#sy-in/2000#)($60.36/T) = $4.98/SY

Total pavement cost = $49.96/SY

Frontage Road length = 0.920 miles = 4858 LF

4858 LF x 4’ = 19432 SF / 9 = 2160 SY

4858 LF x 2’ = 9716 SF / 9 = 1080 SY

VALUE ENGINEERING PROPOSAL

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

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REDUCE PAVED SHOULDER WIDTH ALONG I-75 NB UNDER I-285 BRIDGE TO 12'

ORIGINAL DESIGN: The current design of the shoulder along the main line of I-75 Northbound under the I-285 bridges is currently proposed as 24 feet wide. It was stated that the shoulders are to be full-depth, and are assumed to be asphalt.

PROPOSED CHANGE: It is proposed to reduce the width of the paved shoulder along I-75 from 24' at the I-285 bridges to 12'. Gravel would be placed in the remaining 12' outer strip.

JUSTIFICATION: The 12-foot wide paved shoulder meets AASHTO requirements for the interstate, results in a reduction in impervious surfaces and would provide a cost savings to the project.

ADVANTAGES:

- Construction cost savings
- Removes unnecessary impervious surfaces

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 79,936		$ 79,936
PROPOSED CHANGE:	$ 48,568		$ 48,568
SAVINGS:	$ 31,368		$ 31,368

COST ESTIMATING WORKSHEET

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12” GAB	1	SY	1,600	12.85	$20,560
7-1/2” Asph Base Course	1	SY	1,600	22.54	$36,064
3” Asph Binder Course	1	SY	1,600	9.59	$15,344
1-1/2” Asph Surface Course	1	SY	1,600	4.98	$7,968
(600 ft x 24’ wide /9 = 1,600 SY)					
SUBTOTAL – COST TO PRIME					$79,936
MARKUP					Incl.
TOTAL CONTRACT COST					**$79,936**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12” GAB	1	SY	800	12.85	$10,280
7-1/2” Asph Base Course	1	SY	800	22.54	$18,032
3” Asph Binder Course	1	SY	800	9.59	$7,672
1-1/2” Asph Surface Course	1	SY	800	4.98	$3,984
6” GAB	3	SY	800	10.75	$8,600
SUBTOTAL – COST TO PRIME					$48,568
MARKUP					Incl.
TOTAL CONTRACT COST					**$48,568**

Difference [Original-Proposed] **$31,368**

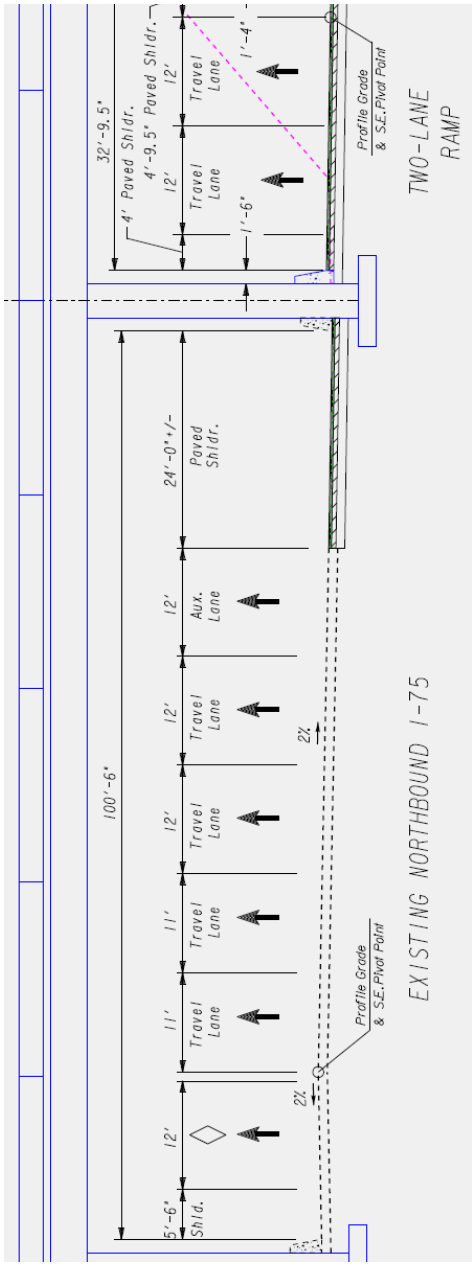
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

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

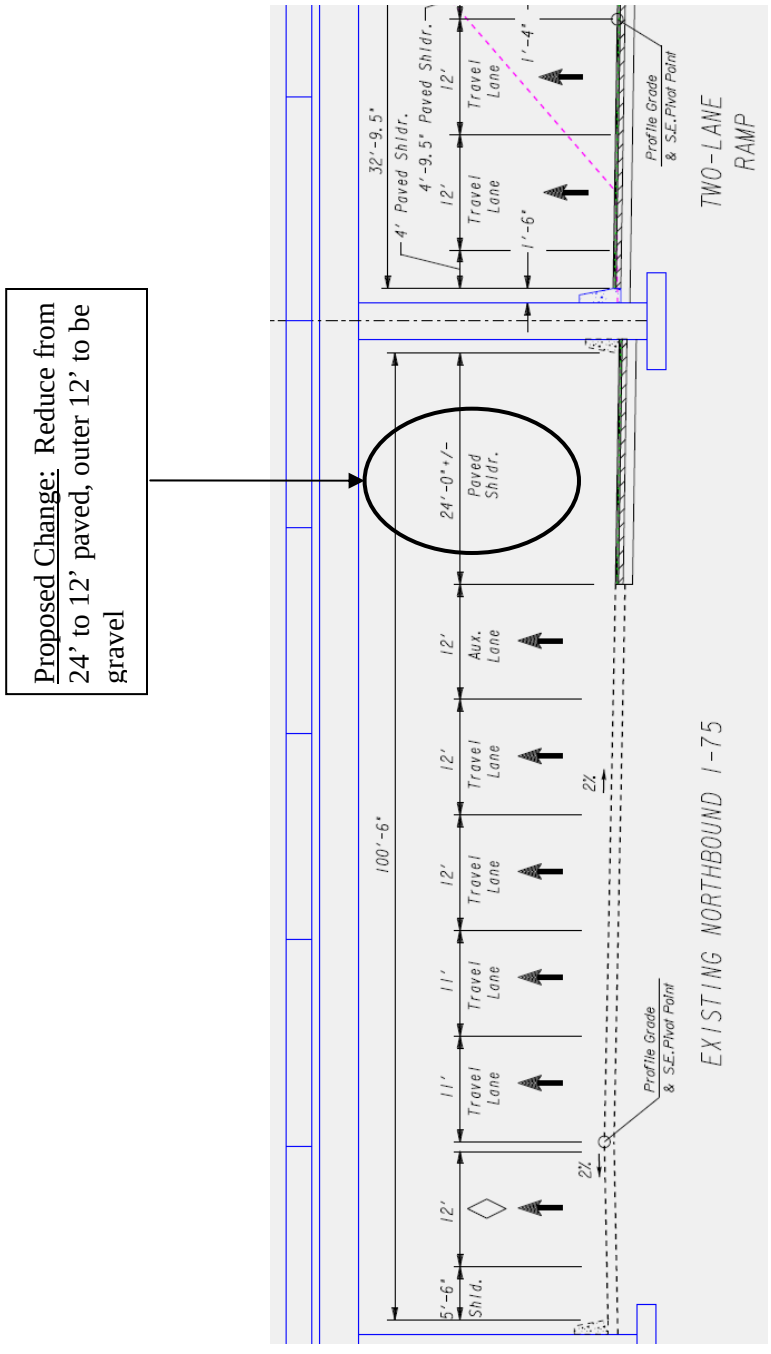
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

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

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	1 of 2

PROJECT #/PI #:	**IM000-0285-01(346), PI No. 713210**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: ELIMINATE SOUND BARRIER WALLS PER NEPA ENVIRONMENTAL ASSESSMENT.

ORIGINAL DESIGN: The original design does not show where sound barriers are proposed. However, the cost estimate includes $1,650,000 for sound barriers.

PROPOSED CHANGE: It is proposed to eliminate the sound barriers in this project per the NEPA Environmental Assessment.

JUSTIFICATION: The NEPA document for the I-75 Managed Lane Project (NHS-0001-00(759), PI No. 0001759), which this project's footprint is within, included a Noise Impact Assessment. This Noise Assessment concluded there would be 137 residential impacts, 61 commercial/industrial impacts, and 8 hotel/motel impacts on the basis of approaching or exceeding the noise abatement criterion. This study also concluded that although many of these impacts would occur to commercial and industrial receptors that were located along the Frontage Road within this project's footprint, construction of noise barriers in this area would be infeasible due to the lack of space between I-75 and the Frontage Road and placing the barriers along the Frontage Road would not be feasible due to the existing points of access. Those barriers found to be feasible in this Noise Assessment study are not within the limits of this project's footprint. Therefore the cost for sound barriers within this project's footprint should be removed.

ADVANTAGES:

- Cost savings
- Does not install sound barriers that could restrict access

DISADVANTAGES:

- No noise abatement, however EA identifies sound barriers as infeasible

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,650,000		$ 1,650,000
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 1,650,000		$ 1,650,000

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	2 of 2

PROJECT #/PI #:	IM000-0285-01(346), PI No. 713210

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Sound Barriers	1	LS	1	1,650,000	$1,650,000
SUBTOTAL – COST TO PRIME					$1,650,000
MARKUP					Incl.
TOTAL CONTRACT COST					**$1,650,000**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$1,650,000**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-15.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	INCREASE PROFILE GRADE OF RAMP 'B' AFTER THE BRIDGE TO TIE TO I-75 SOONER AND TO REDUCE THE WALL HEIGHT BETWEEN RAMP 'A' AND RAMP 'B' AND REDUCE WALL HEIGHT BETWEEN RAMP 'B' AND I-75.

ORIGINAL DESIGN: In the current design, Ramp 'B' is designed on a 2.75% grade from the PVI at STA 234+00 and enters I-75 with the ramp nose at STA 244+50.

PROPOSED CHANGE: It is proposed to increase the profile grade of Ramp 'B' from the PVI at STA 234+00 to 5% and move the ramp nose to approximately STA 241+00 and reduce the height of the associated walls. (PVI STA 234+00, Elev. = 910.04, LVC = 350'; PVI STA 238+00, Elev. 887.54, LVC = 550'; PVI STA 246+05.32, Elev. 900.60, LVC = 300')

JUSTIFICATION: A 5% downgrade for a ramp is within the allowable range as defined in AASHTO. These revisions reduce the amount of paved impervious area in the project, reduce the required retaining wall structures and earthwork, and result in a construction cost savings to the project.

ADVANTAGES:

- Construction cost savings
- Reduction in impervious areas
- Reduction in retaining walls and earthwork

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 9,719,649		$ 9,719,649
PROPOSED CHANGE:	$ 8,985,263		$ 8,985,263
SAVINGS:	$ 734,386		$ 734,386

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-15.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall	1	SF	161,480	45.00	$7,266,600
627-1120 Coping	1	LF	10,896	214.16	$2,333,487
Ramp PCC Pavement	1/7	SY	1,322	90.44	$119,562
SUBTOTAL – COST TO PRIME					$9,719,649
MARKUP					Incl.
TOTAL CONTRACT COST					$9,719,649

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall	1	SF	161480-(3,500x2)=154,480	45.00	$6,951,600
627-1120 Coping	1	LF	10896-(700x2)=9,496	214.16	$2,033,663
Ramp PCC Pavement	1/7	SY	0	90.44	0
SUBTOTAL – COST TO PRIME					$8,985,263
MARKUP					Incl.
TOTAL CONTRACT COST					$8,985,263

Difference [Original-Proposed] **$734,386**

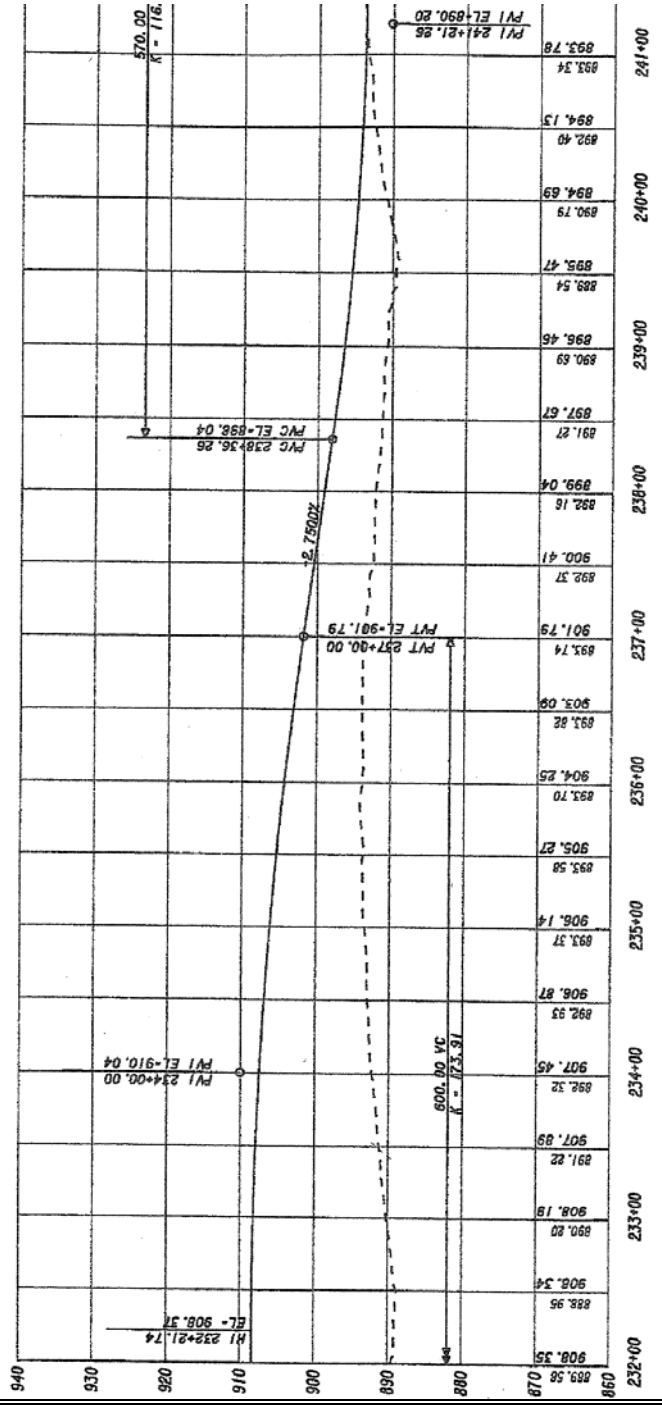
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-15.0	PAGE NUMBER:	3 of 5

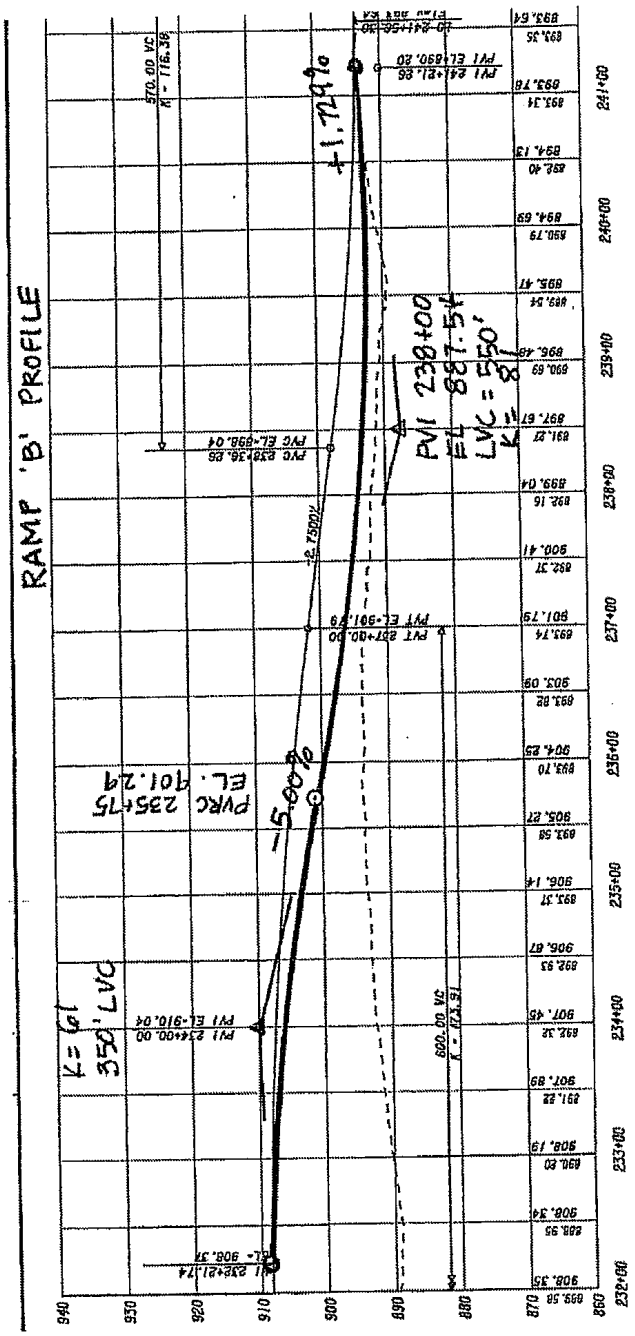
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-15.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



CALCULATIONS

PROPOSAL NUMBER:	R-15.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp 'B' nose moves from 244+50 to 241+00 = 350LF ramp reduction
Ramp 'B' profile lowered between 234+00 to 241+00 (700 LF) from 0' to 10' = 5' average reduction

MSE walls on both sides of Ramp 'B' reduced an average of 5' for 700 LF
(5)(700) = 3500 SF each

Ramp Pavement Calculations:
12" GAB = $12.85/SY
3" Asph 19MM = (330#/2000)($58.15/T) = 9.59/SY
12" PCC = $68.00/SY
Total = $90.44/SY for ramp pavement

350LF ramp reduction of 34' wide (Typical section sheet 5-02)
(350LF)(34')=11900SF / 9 = 1322SY ramp reduction

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-16.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: REVISE THE FRONTAGE ROAD PROFILE FROM STA 17+00 TO STA 27+00 TO FOLLOW EXISTING GRADE AND ELIMINATE WALL BETWEEN FRONTAGE ROAD AND THE FARMERS MARKET.

ORIGINAL DESIGN: The Frontage Road profile is as much as 32' below the existing ground line from STA 17+00 to STA 27+00 and a 900 LF wall is required adjacent to the right of way.

PROPOSED CHANGE: It is proposed to revise the Frontage Road profile from STA 17+00 to STA 27+00 to more closely follow the existing grade. (-4.5% grade to PVI STA 16+50, Elev 911.14, LVC = 450'; +3.75% grade to PVI STA 20+50 Elev 926.14, LVC = 350'; -6.0% grade to PVI STA 29+50, Elev 872.14, LVC = 800')

JUSTIFICATION: The 35 mph speed design can be maintained on the Frontage Road with the alignment that follows the existing ground line and does not require a wall along the right of way.

ADVANTAGES:

- Reduces construction costs
- Will allow driveway access between the Frontage Road and the Farmers Market

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,205,244		$ 1,205,244
PROPOSED CHANGE:	$ 157,866		$ 157,866
SAVINGS:	$ 1,047,378		$ 1,047,378

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-16.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall	1	SF	22,500	45.00	$1,012,500
205-0001 Unclass Excav	1	CY	0	2.96	$0
627-1120 Coping B	1	LF	900	214.16	$192,744
SUBTOTAL – COST TO PRIME					$1,205,244
MARKUP					Incl.
TOTAL CONTRACT COST					$1,205,244

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
627-1010 MSE Wall			0		$0
205-0001 Unclass Excav	1	CY	53,333	2.96	$157,866
627-1120 Coping B			0		$0
SUBTOTAL – COST TO PRIME					$157,866
MARKUP					Incl.
TOTAL CONTRACT COST					**$157,866**

Difference [Original-Proposed] **$1,047,378**

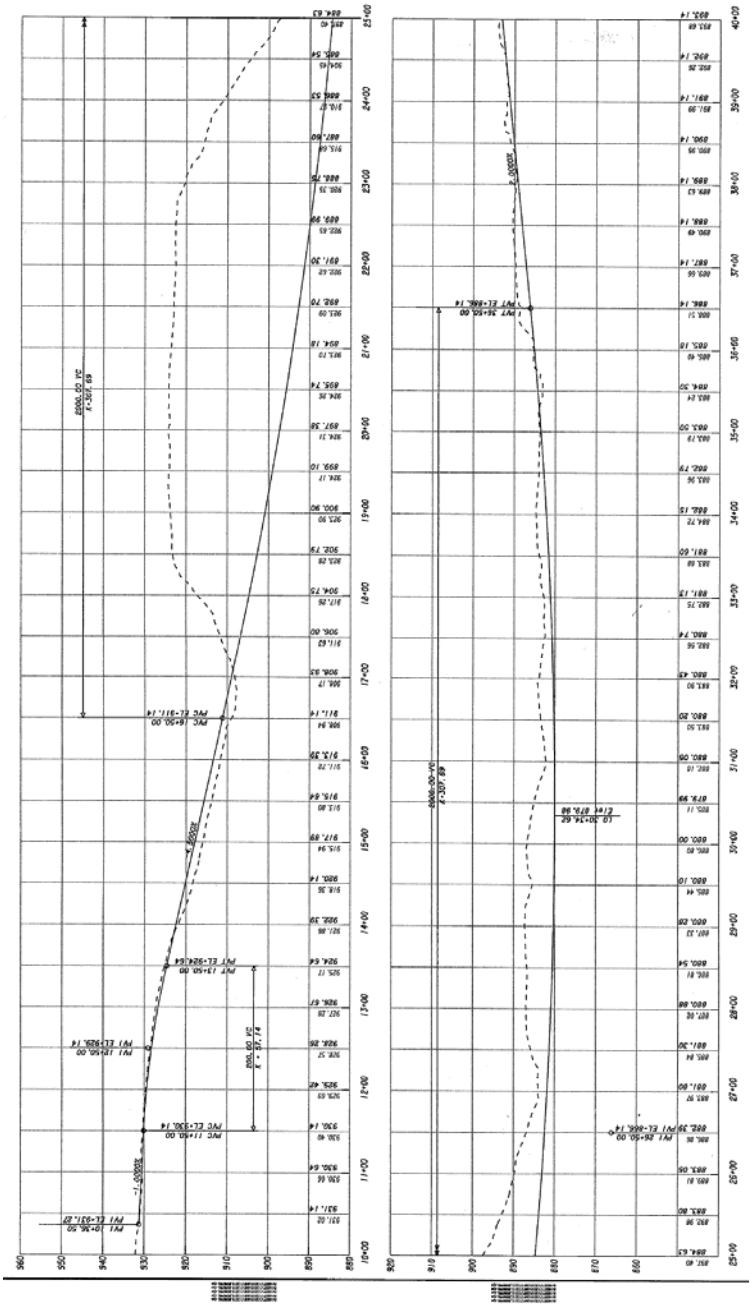
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-16.0	PAGE NUMBER:	3 of 5

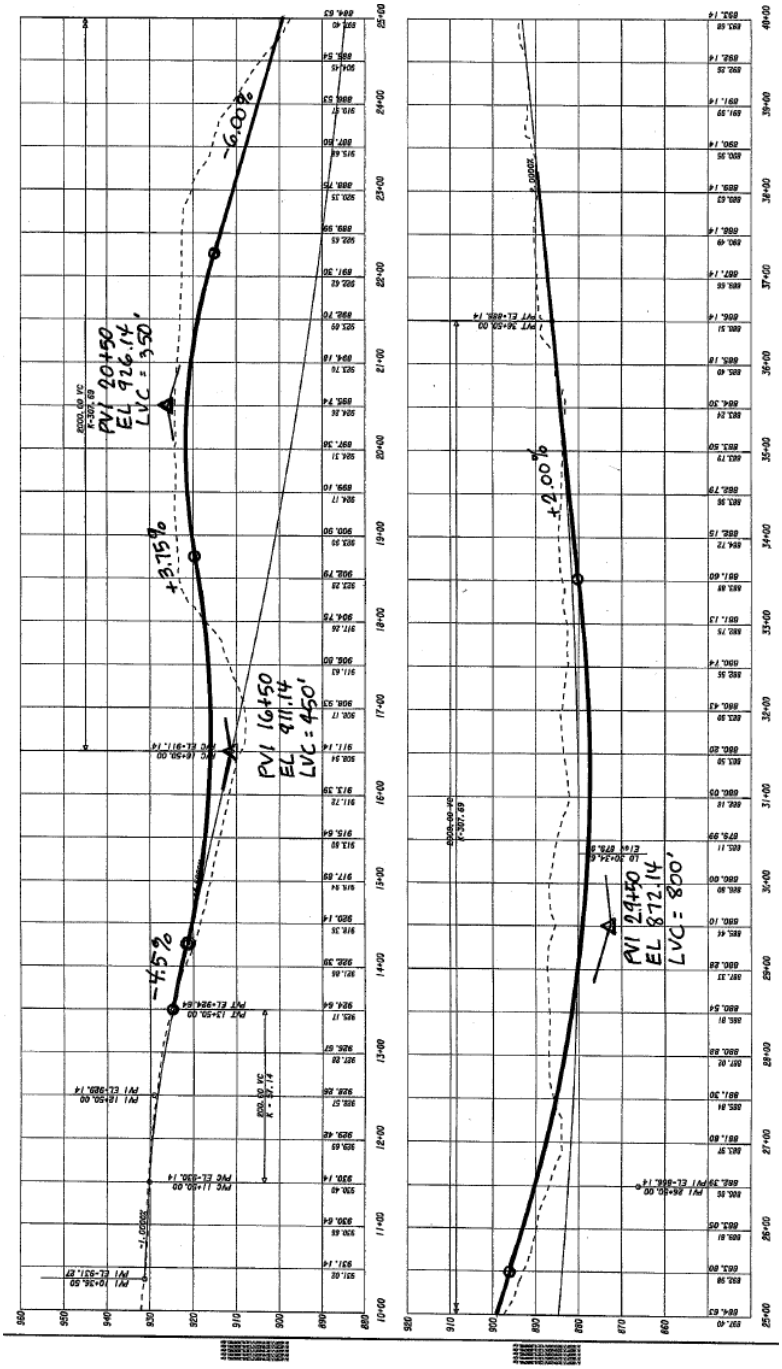
PROJECT #/PI #:	IM000-0285-01(346) / 713210-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-16.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



CALCULATIONS

PROPOSAL NUMBER:	R-16.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Retaining wall between Frontage Road and Farmers Market
900 LF with average height of 25' = (900)(25) = 22,500 SF wall face and 900 LF coping

Earthwork = approximately 1600 sf per station for 900'
(1600SF)(900LF) = 1,440,000 CF / 27 = 53,333 CY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION:	REALIGN RAMP 'E' (I-75N TO I-285E) TO TIE TO THE EXISTING RAMP SOONER AND ELIMINATE A WALL AND REDUCE REWORK ON RAMP.

ORIGINAL DESIGN: The current design includes reconstruction of Ramp 'E', which is from I-75N to I-285E, for the entire length of the ramp from 505+00 to 520+00 (1500 LF).

PROPOSED CHANGE: It is proposed to shift nose of Ramp 'E' from 249+50 to approximately 251+00 and tie new ramp to existing ramp at approximately STA 509+00. Eliminate rework of ramp from 509+00 to 511+50 and eliminate need for additional right of way at STA 512+00.

JUSTIFICATION: This alternative reduces reconstruction of the ramp and should simplify phasing during construction, while also providing a savings in construction costs.

ADVANTAGES:

- Reduces construction cost
- Less interference with traffic
- Reduces right of way acquisition

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 390,334		$ 390,334
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 390,334		$ 390,334

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Ramp PCC Pavement	1/7	SY	2,533	90.44	$229,084
Right of way	1	SF	5,000	32.25	$161,250
SUBTOTAL – COST TO PRIME					$390,334
MARKUP					Incl.
TOTAL CONTRACT COST					$390,334

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Reduced Ramp pavement					$0
Reduced Right of way					$0
SUBTOTAL – COST TO PRIME					0.00
MARKUP					--
TOTAL CONTRACT COST					**0.00**

Difference [Original-Proposed] **$390,334**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached calculation sheet

ORIGINAL DESIGN SKETCH/DETAIL

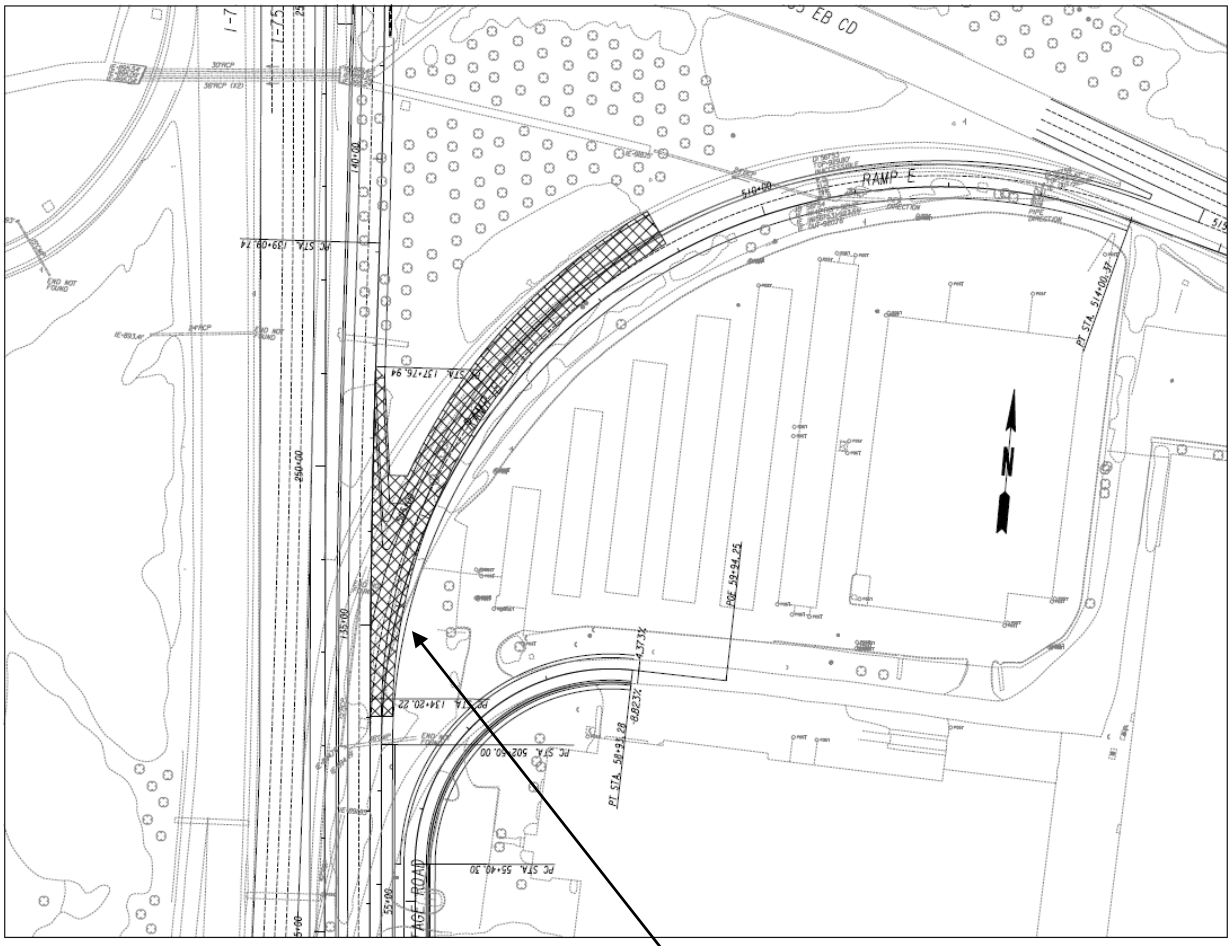
PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-



<u>Proposed Changed:</u> Shift nose of Ramp 'E' from 249+50 to 251+00 and tie new ramp to existing at STA 509+00

CALCULATIONS

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Ramp Pavement Calculations:
12" GAB = $12.85/SY
3" Asph 19MM = (330#/2000)($58.15/T) = 9.59/SY
12" PCC = $68.00/SY
Total = $90.44/SY for ramp pavement

2-lane Ramp 'E' sta 509+00 to 515+00 = 600LF
(600LF) (24' travel lanes + 10' & 4' shoulders) = (600x38) = 22800SF / 9 = **2533SY**

Right of way:
$15 SF Commercial
55% Contingency = $8.25
60% Admin = $9.00
Total = $32.25/SF for right of way

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-20.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: USE ASPHALT SHOULDERS IN LIEU OF FULL DEPTH PCC FOR RAMPS AND COLLECTOR-DISTRIBUTOR.

ORIGINAL DESIGN: The current design includes full-depth Portland cement concrete (PCC) pavement shoulders for the ramps and collector-distributor sections that match the concrete pavement sections (12" GAB, 3" asphalt, 12" PCC).

PROPOSED CHANGE: It is proposed to construct asphalt shoulders for the ramps and collector-distributor in lieu of the full-depth PCC shoulders. The proposed section is a heavy-duty asphalt, similar to that used on the frontage road, of 12" GAB, 7-1/2" asphalt base, 3" asphalt binder course and 1-1/2" surface course.

JUSTIFICATION: This revision provides a shoulder pavement section that would function adequately as a shoulder section and result in a cost savings to the project.

ADVANTAGES:

- Reduction in construction cost
- Acceptable design for paved shoulders

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 2,907,193		$ 2,907,193
PROPOSED CHANGE:	$ 1,605,963		$ 1,605,963
SAVINGS:	$ 1,301,230		$ 1,301,230

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-20.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12” GAB	1	SY	32,145	12.85	$413,063
3” asphalt	1	SY	32,145	9.59	$308,270
12” PCC	1	SY	32,145	68.00	$2,185,860
SUBTOTAL – COST TO PRIME					$2,907,193
MARKUP					Incl.
TOTAL CONTRACT COST					$2,907,193

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
12” GAB	1	SY	32,145	12.85	$413,063
7-1/2” Asph Base Course	1	SY	32,145	22.54	$724,548
3” Asph Binder Course	1	SY	32,145	9.59	$308,270
1-1/2” Asph Surface Course	1	SY	32,145	4.98	$160,082
SUBTOTAL – COST TO PRIME					$1,605,963
MARKUP					Incl.
TOTAL CONTRACT COST					$1,605,963

Difference [Original-Proposed] **$1,301,230**

SOURCES

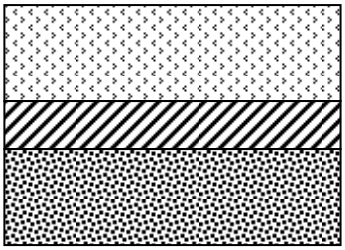
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-20.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Current Design of Shoulders for Ramps and C-D

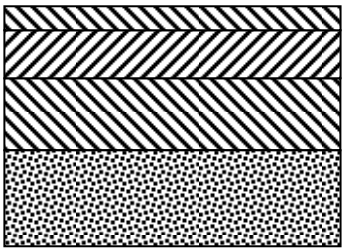


12” PCC

3” Asphalt

12” GAB

Proposed Change for Shoulders for Ramps and C-D



1-1/2” Asphalt Surface

3” Asphalt Binder

7-1/2” Asphalt Base

12” GAB

CALCULATIONS

PROPOSAL NUMBER:	R-20.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

Ramp B (One Lane Ramp Typical)
Shoulders – 18 feet x 1300 feet = 23,400 sf/9 sf/sy = 2600 sy

Ramp B between Ramp C/Ramp B split and Ramp B/Ramp D split (Two Lane Ramp Typical)
Shoulders – 18 feet x 600 feet = 10,800 sf/9 sf/sy = 1200 sy

Ramp B north of Ramp B/Ramp D split (One Lane Ramp Typical)
Shoulders – 18 feet x 3800 feet = 68,400 sf/9 sf/sy = 7600 sy

Ramp C on Ramp to I-75 NB (One Lane Ramp Typical)
Shoulders- 18 feet x 1000 feet = 18,000 sf/9 sf/sy = 2000 sy

Ramp D between Ramp B/Ramp D split and Ramp A/Ramp D split (One Lane Ramp Typical)
Shoulders- 18 feet x 1500 feet = 27,000 sf/9 sf/sy = 3000 sy

Ramp D between Ramp A/Ramp D split and Ramp A/Ramp E split (Three Lane Ramp Typical)
Shoulders- 22 feet x 1300 feet = 28,600 sf/9 sf/sy = 3178 sy

Ramp E (Two Lane Ramp Typical)
Shoulders- 18 feet x 1100 feet = 19,800 sf/9 sf/sy = 2200 sy

Ramp E (One Lane Taper onto I-285 EB)
Shoulders – 12 feet x 600 feet = 7200 sf/9 sf/sy = 800 sy

Ramp A from I-75 NB (One Lane Ramp Typical)
Shoulders- 12 feet x 500 feet = 6000 sf/9 sf/sy = 667 sy

Ramp A south of Ramp A/Ramp D split (Two Lane Ramp Typical)
Shoulders- 18 feet x 1600 feet = 28,800 sf/9 sf/sy = 3200 sy

Ramp A north of Ramp E/Ramp A split (Two Lane Ramp Typical)
Shoulders- 18 feet x 2850 feet = 51,300 sf/9 sf/sy = 5700 sy

Total, all ramp and C-D shoulders: 32,145 SY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**IM000-0285-01(346) / 713210-**
PROJECT TITLE:	**I-75 NB C-D System, Forest Pkwy to I-285, Clayton Cty**

PROPOSAL DESCRIPTION: USE REDUCED DEPTH ASPHALT SHOULDERS IN LIEU OF FULL DEPTH FOR FRONTAGE ROAD.

ORIGINAL DESIGN: The frontage road on the east side of I-75 is designed with a paved shoulder on the west side. The design includes a 4' wide paved portion (although other typical sections show 6' and 10' paved portions) and it is a full-depth pavement section to match the adjacent road section (12"GAB, 7-1/2" asphalt base, 3" asphalt binder course and 1-1/2" surface course).

PROPOSED CHANGE: It is proposed to reduce the depth of the paved shoulder on the west side of the frontage road to a section of 8" GAB, 4" asphalt base, and 1-1/2" surface course.

JUSTIFICATION: This revision provides a reduced pavement section that would function adequately as a shoulder section and result in a cost savings to the project.

ADVANTAGES:

- Reduction in construction cost
- Acceptable design for paved shoulders

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 107,914		$ 107,914
PROPOSED CHANGE:	$ 61,020		$ 61,020
SAVINGS:	$ 46,894		$ 46,894

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
4’ wide Full-depth asphalt shoulder	1/7	SY	2,160	49.96	$107,914
SUBTOTAL – COST TO PRIME					$107,914
MARKUP					Incl.
TOTAL CONTRACT COST					$107,914

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
8”GAB	3	SY	2,160	11.25	$24,300
4” asphalt base	1/7	SY	2,160	12.02	$25,963
1-1/2” asphalt surface course	1	SY	2,160	4.98	$10,757
SUBTOTAL – COST TO PRIME					$61,020
MARKUP					Incl.
TOTAL CONTRACT COST					$61,020

Difference [Original-Proposed] **$46,894**

SOURCES

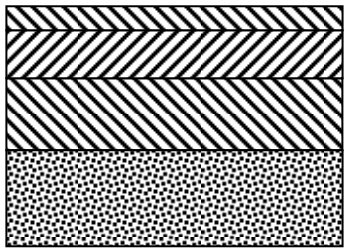
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

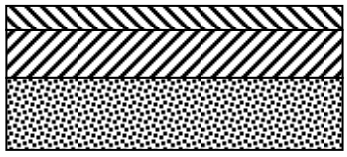
Current Design of Shoulder Section for Frontage Road



1-1/2” Asphalt Surface
3” Asphalt Binder
7-1/2” Asphalt Base

12” GAB

Proposed Change for Shoulder Section for Frontage Road



1-1/2” Asphalt Surface
4” Asphalt Base

8” GAB

CALCULATIONS

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	IM000-0285-01(346) / 713210-

Current Design Frontage Road Pavement Cost Calculations

12" GAB = $12.85/SY
7.5" Asph 25MM = (7.5")(110#sy-in/2000#)($54.65/T) = $22.54/SY
3" Asph 19MM = (3")(110#sy-in/2000#)($58.15/T) = $9.59/SY
1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($60.36/T) = $4.98/SY

Total pavement cost = $49.96/SY

Frontage Road length = 0.920 miles = 4858 LF

4858 LF x 4' = 19432 SF / 9 = 2160 SY

Proposed Change Frontage Road Pavement Cost Calculations

8" GAB = $11.25/SY (from GDOT Item Mean Summary, Dec 2010)
4" Asph Base 25MM = (4.0")(110#sy-in/2000#)($54.65/T) = $12.02/SY
1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($60.36/T) = $4.98/SY

VE STUDY SIGN-IN SHEET

Project No.: IM000-0285-01(346) County: Clayton PI No.: 713210- Date: August 22-25, 2011

Days FIRST	Days LAST	NAME	EMPLOYEE ID NO.	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
✓	✓	Lisa L. Myers		Engineering Services	404-631-1770	lmyers@dot.ga.gov
✓	✓	Matt Sanders		Engineering Services	404-631-1752	msanders@dot.ga.gov
✓	O	Melissa Harper		Construction	404-631-1971	mharper@dot.ga.gov
✓	O	Ken Werho		Traffic Operations	404-635-8144	kwerho@dot.ga.gov
✓	O	Ron Wishon		Engineering Services	404-631-1753	rwishon@dot.ga.gov
✓	✓	Bill DuVall		Bridge Design	404-631-1883	bduvall@dot.ga.gov
✓	✓	LORI Kennedy	—	KEA GROUP	678.904.8591 x22	lkennedy@keagroup.com
✓	✓	JERRY BROOKS	—	KIMLEY-HORN	678-502-1864	jerry.brooks@kimley-horn.com
✓	✓	AL BOWMAN	—	LPA GROUP	678 642 0455	ABOWMAN @ LPAGROUP.COM
✓	✓	TOM ORR	—	U.S. COST	770 481-1638	torr@uscost.com
✓	✓	RON MORRIS	—	ATKINS	770 933-0280	RON.MORRIS@ATKINSGLOBAL.COM
✓	✓	SCOTT M DUBORD	—	ATKINS	" " "	SCOTT.DUBORD@ATKINSGLOBAL.COM
✓	O	Jonathan Cox		GDOT	4)631-1197	jcox@dot.ga.gov
✓	O	Albert Shelby		GDOT - OPD	4)631-1758	ashelby@dot.ga.gov
✓	O	LEE Upkins		GDOT - CONST	7)986-1414	lupkins@dot.ga.gov

✓ Check all that attend O Did Not Attend 15 Attended Project Overview(Day 1) 9 Attended Project Presentation (Day 4)

FUNCTION ANALYSIS

The following functions for the I-75 Northbound Collector-Distributor from Forest Parkway to I-285 project were identified during discussions with the VE participants 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 the project, and assist the V.E. team in becoming familiar with the needs and long-term goals for the project. The Basic Function of the project is to "Improve Operations". The following are considered by the V.E. team to be Secondary and Supporting Functions.

Verb	Noun		Verb	Noun
Eliminate	Weave		Retain	Earth
Increase	Capacity		Re-establish	Vegetation
Reduce	Crash Frequency		Separate	Grades
Control	Traffic		Support	Vehicles
Reduce	Delays		Award	Contract
Improve	Mobility		Direct	Traffic
Span	Ramp/C-D		Separate	Lanes
Maintain	Forest Pkwy to I-75N		Control	Erosion
Maintain	F Pkwy to I-285E/W		Drain	Site
Maintain	Frontage Road Access		Convey	Drainage
Maintain	I-75N to I-285E/W		Install	Signals
Purchase	ROW		Install	Signage

COST MODEL/DISTRIBUTION

I-75 NB C-D from Forest Parkway to I-285
Clayton County, Georgia

ITEM	COST $	% OF TOTAL
RETAINING WALL (MSE)	10,560,096	28.11%
REINFORCED CONCRETE PAVING	5,491,816	14.62%
RIGHT-OF-WAY	4,686,192	12.47%
BRIDGES/STRUCTURES	3,935,250	10.48%
CLEARING AND GRUBBING	2,310,000	6.15%
TRAFFIC CONTROL	2,310,000	6.15%
ASPHALT CONCRETE PAVING	1,830,406	4.87%
SOUND BARRIER	1,650,000	4.39%
AGGREGATE BASE COURSE	1,317,609	3.51%
DRAINAGE SYSTEM	1,155,000	3.07%
SIGNAGE/MARKING	770,000	2.05%
EROSION CONTROL	770,000	2.05%
EARTHWORK	539,275	1.44%
CONCRETE BARRIER	170,506	0.45%
CURB & GUTTER	69,121	0.18%
TOTAL - PROJECT	**37,565,269**	**100.00%**

BRAINSTORMING OR SPECULATION IDEAS

PROJECT TITLE: **I-75 NB C-D FROM FOREST PARKWAY TO I-285**

PROJECT LOCATION: **CLAYTON COUNTY, GEORGIA**

NO.	IDEA	RANK
	ROADWAY (R)	
1.0	Eliminate Ramp "C" onto I-75N and widen Forest Parkway Loop to I-75N; Eliminate Collector-Distributor	4
1.1	Eliminate Loop at Forest Parkway, Create Northbound Turn from Eastbound Forest Parkway (onto Ramp "C") and Eliminate Remainder of Project	4
2.0	Build out Northbound C-D Portion of Managed Lane Project (#NHS-0001-00(759); PI 0001759) to Include New Forest Parkway Bridges over I-75	4
3.0	Eliminate new Frontage Road from Forest Parkway to Falcon Drive	3
4.0	Construct Ramp "C" on South side of Forest Parkway.	2
5.0	Eliminate sidewalk at Frontage Road	4
6.0	Reduce width of Frontage Road travel lanes from 12' to 11'	5
7.0	Take Collector-Distributor Road over Ramp "B"	2
8.0	Move Frontage Road adjacent to Ramp "C"	4
9.0	Reduce design speed on Ramp "A" to 35 MPH and avoid reconstruction of Ramp "F"	4
10.0	Reduce paved ramp shoulders to AASHTO minimum of 4' wide inside and 10' wide outside	4
11.0	Reduce paved shoulder width at Frontage Road to 2'	4
12.0	Reduce paved shoulder width under I-285 bridge (along edge of I-75 main line) to 12'	5
13.0	Eliminate sound barrier walls per environmental assessment	4
14.0	Reduce paved shoulders at Collector-Distributor to 6' wide inside and 8' wide outside	With R-10.0
15.0	Increase grade for Ramp "B" after bridge to reduce wall height	4

BRAINSTORMING OR SPECULATION IDEAS

PROJECT TITLE: **I-75 NB C-D FROM FOREST PARKWAY TO I-285**

PROJECT LOCATION: **CLAYTON COUNTY, GEORGIA**

NO.	IDEA	RANK
	ROADWAY (R)	
16.0	Raise Frontage Road from Stations 17+00 to 27+00 to reduce height of retaining wall	4
17.0	Re-align Ramp "E" to tie to existing sooner and reduce new work	4
18.0	Merge Ramp "B" onto I-75 sooner	With R-15.0
19.0	Eliminate curb and gutter at Frontage Road	2
20.0	Use asphalt shoulders in lieu of full depth PCC for ramps and C-D	4
21.0	Use reduced depth asphalt shoulders in lieu of full depth for Frontage Road	5
	BRIDGE (B)	
1.0	Use alternate beam type/spacing	4
2.0	Use soil nail walls in lieu of tie-back	3
3.0	Use shotcrete face walls in lieu of smooth finish	3
4.0	Only pour bridge deck for vehicle travelway	5
5.0	Select wall type as appropriate for location	Review Comment
6.0	Reduce length of wall between Frontage Road and Farmer's Market	4
6.1	Eliminate wall in areas of rock between Frontage Road and Farmer's Market	4

VALUE ENGINEERING WORKSHOP AGENDA

For

GEORGIA DEPARTMENT OF TRANSPORTATION

Project #: IM000-0285-01(346) - PI#: 713210-
I-75 NB C-D System, Forest Pkwy to I-285, Clayton County

28 HOUR - V.E. STUDY
22-25 August 2011

The value engineering workshop for the subject project will be conducted for 3-1/2 days from 22-25 August 2011, **in the Engineering Services Conference Room (5CR1L2) on the 5th floor of the GDOT General Office Facility located at 600 W. Peachtree Street NW, Atlanta GA 30308; POC – Matt Sanders @ (404)631-1752 voice**

Pre-workshop Activities

The V.E. Team Leader coordinates logistics with GDOT, and confirms project objectives and any unique requests, and develops a cost model for the project. The V.E. Team receives and reviews all project documents.

MONDAY

0800 - 0900 **V.E. Team Introduction Phase** — Tom Orr, 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.

The team members will discuss their initial impression and understanding of the project with other team members based on their pre-study review of the project plans, cost estimates, and available calculations. The V.E. Team Leader will provide cost models, and cost bar graphs to help the team identify the high-cost features of the project.

0900 - 1100 **Project Design Briefing** — V.E. Team; A/E, GDOT

The A/E project design manager will discuss the project constraints/requirements and the proposed design solution(s) in detail. The V.E. team members will ask questions as appropriate to completely understand the project requirements and the proposed design solution (both alternatives considered and those recommended by the design team).

MONDAY (CONTINUED)

1100 - 1200 **Function Analysis Phase** V.E. Team

The V.E. team will discuss the required functions of the project. The project cost model will be analyzed to identify functions provided by all project features.

1200 - 1300 **Lunch**

1300 - 1600 **Creative Phase** V.E. Team

The V.E. team will creatively review, Brainstorm, and tabulate possible design alternatives for the project. While the designer's solution will serve as the "baseline", the team will identify alternatives not in the recommended solution, but deserving of further investigation. Each project feature will be carefully analyzed with the basic questions in mind:

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

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

1600 - 1700 **Analysis Phase** V.E. Team

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

TUESDAY

0800 - 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 designer, GDOT representatives, outside contractors and suppliers, and other specialists to fully define the alternative. The team members will prepare sketches, perform calculations and develop other data to support each proposal. In addition, each team

member will prepare estimates of costs for each alternative as originally designed, and as proposed by the V.E. team.

WEDNESDAY		
0800 - 1200	**Development Phase**	V.E. Team
1200 - 1300	Lunch	
1300 - 1700	**Development Phase & Quality Review**	V.E. Team
THURSDAY		
8:00 – 9:00	**Prepare for Presentation**	V.E. Team
9:00 – 10:00	**V.E. Presentation**	V.E. Team Members, Design Team & GDOT Reps

The Value Engineering Team will present the proposals developed in the course of the study to the design team representatives and any participating stakeholders. The intent of the presentation is to give a clear understanding of the basis of the proposals rather than to reach a conclusion as to their acceptability. A summary table of results will be distributed at the presentation. The formal V.E. Reports will be issued within 8 business days of the workshop conclusion.

10:00 – 12:00	**V.E. Team Wrap-up & Final QC/QA**	V.E. Team Members only

The Value Engineering Team will have a wrap-up session consisting of a final review of proposals to ensure consistency and clarity of content.