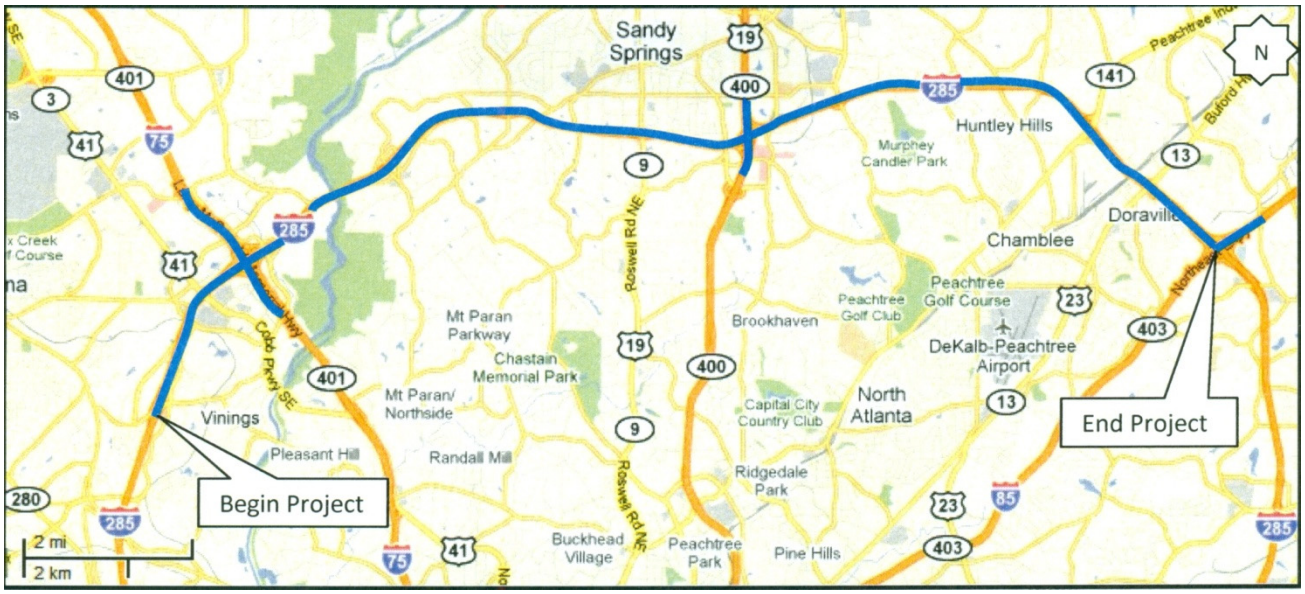
Georgia Department of Transportation

Final Value Engineering Study Report



REVIVE 285 Top End
Cobb, DeKalb and Fulton Counties

NHS00-0001-00(758), PI No. 0001758

revive 285 top end

August 2011

Prepared by

Value Management Strategies, Inc.

VMS

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"Value Leadership"

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Date: August 30, 2011

To: Matthew J. Sanders, AVS
Georgia Department of Transportation
Engineering Services
600 Peachtree Street, NW, 5th Floor
Atlanta, Georgia 30308-3603

Subject: Final Value Engineering Study Report
REVIVE 285 Top End, NHS00-0001-00(758), PI No. 0001758

Dear Mr. Sanders:

Value Management Strategies, Inc. is pleased to transmit this Final VE Study Report for the referenced project. This report summarizes the events of the study conducted August 15 to 18, 2011.

It was a pleasure working with GDOT and the ARCADIS design team on this project, and I look forward to the next collaboration. If you have any questions or comments concerning this final report, please do not hesitate to contact me at 678-488-4287 or email lmvenegas@aol.com.

Sincerely,

VALUE MANAGEMENT STRATEGIES, INC.

Luis M. Venegas, PE, CVS-Life, LEED AP, FSAVE
VE Study Team Leader

Copy: (2 copies/CD PDF) Addressee

TABLE OF CONTENTS

FINAL

EXECUTIVE SUMMARY 1
Project Summary
Project Purpose and Need
VE Study Timing
VE Study Objectives
Key Project Issues
VE Alternatives
VE Study Results
VE Team

VE ALTERNATIVES..... 8
Summary of Value Engineering Alternatives
VE Alternative Documentation

PROJECT INFORMATION 103
Background
Project Description
Information Provided to the VE Team
Project Cost Estimate

PROJECT ANALYSIS 111
Summary of Analysis
Key Project Factors
- Project Issues
- Site Visit Observations

Cost Model
Function Analysis
- Random Function Determination
- FAST Diagram

IDEA EVALUATION 123
Performance Attributes
Evaluation Process
Idea Summary
Idea Summary List

VALUE ENGINEERING PROCESS 131
Pre-Study Preparation
VE Study
Post-Study Procedures
VE Study Agenda
VE Study Meeting Attendees

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

FINAL

A Value Engineering (VE) study, sponsored by Georgia Department of Transportation and facilitated by Value Management Strategies, Inc., was conducted for REVIVE 285 Top End, NHS00-0001-00(758), PI No. 0001758 in Atlanta, Georgia. The study was conducted August 15 – 18, 2011. This *Executive Summary* provides an overview of the project, key findings, and the alternatives developed by the VE team.

PROJECT SUMMARY

This project has been given the name REVIVE 285 Top End and involves improvements on Interstate Highway 285 (I-285) north from the vicinity of I-75 to I-85. REVIVE 285 Top End will encompass numerous near-term projects to provide the most benefit for the overall corridor between I-75 and I-185 along the top end while anticipating the transportation needs of future generations. The improvements under consideration can be classified into three distinct strategies including operational improvements for general purpose lanes, addition of managed lanes and addition of transit.

Operational improvement of general purpose lanes may include addition of collector-distributor (C-D) lanes, additions of auxiliary lanes improvements along existing frontage roads and improvements to system and service type interchanges as well as improvements to intersecting cross roads.

Managed lane improvements may include buffer or barrier separated lanes which will either be tolled or occupancy restricted; managed lane interchanges and slip access between managed and general purpose lanes.

Transit may include addition of express bus system and/or right-of-way preservation for future transit system. Right-of-way preservation may include right-of-way needed for either Bus Rapid Transit or Light Rail Transit systems including transit stations and maintenance yards.

Total project costs per Build Alternative for all elements of the project are:

- Build Alternative 4 – $1,011,917,508
- Build Alternative 6A – $2,984,280,830
- Build Alternative 6B – $2,950,946,457

PROJECT PURPOSE AND NEED

The need of the REVIVE 285 Top End project is to better manage and improve traffic congestion, improve mobility options for the travelling public, maintain and improve system linkages, and provide safer travel conditions along the corridor. The purpose of the project is to increase the capacity and improve the operations of the I-285 corridor through a number of potential improvements including managed lanes, collector-distributor roads and accommodating future transit.

VE STUDY TIMING

The VE study was conducted at the early concept development stage of design. Although a preferred alternative has not yet been selected, the Draft Environmental Impact Statement is slated for October

2012; the Public Information Open House is slated for November 2012, and Record of Decision is planned for May 2013.

VE STUDY OBJECTIVES

In discussions with the GDOT Project Manager, the FHWA point of contact, and other stakeholders and interested parties, it was clearly stated the primary objective of the VE effort should be cost mitigation as none of the build alternatives are within an affordable funding envelope. A secondary VE focus was stated to be "time to construct;" however, due to the nature of the project, early concept development, and uncertainty of the preferred build alternative, this focus did not yield valid or substantive improvements.

KEY PROJECT ISSUES

The items listed below are the key drivers, constraints, or issues being addressed by the project and considered during this VE study to identify possible improvements.

- Currently there is a funding shortfall for all three Build Alternatives
- Build Alternative 6A is phaseable
- Build Alternative 6B is not phaseable
- Build Alternative 4 improves operations but does not provide for future transit right of way
- Capital for transit operations is currently unfunded
- In accordance with GDOT Board policy, REVIVE 285 Top End is the "lynch pin" for the future managed lanes system plan
- REVIVE 285 Top End is being considered for P3 contracting mechanism to design, build, operate and maintain for 50 years
- HOT+3 lanes will exclude heavy trucks
- Design speed is 55 mph
- Ashford-Dunwoody interchange is not finalized due to the current diverging diamond improvements project waiting imminent letting

VE ALTERNATIVES

The VE team developed 21 alternatives for improvement of the project. The following page includes a table in which the alternatives are identified, along with their associated potential initial cost savings and a brief discussion. For reference, the Idea code for each alternative is based on the following abbreviated functions:

Idea Code	Related Function
IM-1	Interconnect Managed (Lane Systems)
L-1	Linkage (system-to-system, Roadway)
SP-1	Store Project (within the Right-of-Way)
RTT-1	Reduce Travel Time

Alternative No. and Description		Initial Cost Savings
IM-2	Reconfigure managed lanes to meet existing grade between Riverside Drive to west of the Chattahoochee River for both eastbound and westbound directions (Applicable to Build Alternative 6A only)	$62,918,000
IM-4	Eliminate future transit Bridge No. EB19 (Applicable to Build Alternatives 6A and 6B)	$18,074,000
IM-7	Reconfigure westbound managed lanes to meet existing grade between just east of the Chattahoochee River to the I-75/I-285 interchange (Applicable to Build Alternative 6B only)	$28,468,000
IM-8	Do not provide managed lanes drop-off at Sandy Springs Circle (Applicable to Build Alternative 6B only)	$12,477,000
IM-9	Use 4-foot inside shoulders and 10-foot outside shoulders for managed lanes only (Applicable to Build Alternatives 6A and 6B)	$99,332,000
L-2	Maintain ramp at GA 400 northbound to I-285 eastbound to eliminate Bridge No. 43 (Applicable to Build Alternative 4 only)	$6,431,000
L-4	Retain existing GA 400 southbound bridge over I-285 and eliminate Bridge Nos. 23A, 23B and 24 (Applicable to Build Alternatives 4, 6A and 6B)	$21,187,000
L-5	Reconfigure eastbound I-285 ramp to northbound GA 400, maintain left-hand merge and eliminate proposed Bridge No. 29 (Applicable to Build Alternative 4 only)	$16,785,000
L-8.1	Do not improve the Windy Hill Road interchange (Applicable to Build Alternatives 4, 6A and 6B)	$77,413,000
L-8.2	Eliminate Bridge Nos. 4 and 6 at the Windy Hill Road interchange (Applicable to Build Alternatives 4, 6A and 6B)	$23,841,000
L-9	Eliminate eastbound I-285 to Chamblee Tucker Road exit ramp and Bridge No. 42 (Applicable to Build Alternatives 4, 6A and 6B)	$3,299,000
L-10	Do not improve the northeast quadrant of the I-285 / I-85 interchange (Applicable to Build Alternatives 4, 6A and 6B)	$8,921,000
L-11	Eliminate Bridge No. 33 at the Chamblee Dunwoody Road intersection (Applicable to Build Alternative 4 only)	$4,523,000
SP-1/ RTT-1	Reduce right-of-way take on Sandy Springs Circle using a Single Point Urban Interchange (Applicable to Build Alternative 4 only)	$8,009,000
SP-5	Eliminate right-of-way take north of Mt. Wilkenson Parkway	$1,708,000

Alternative No. and Description		Initial Cost Savings
	(Applicable to Build Alternatives 4, 6A and 6B)	
SP-7.1	Eliminate right-of-way takes for future transit facility (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$302,219,000
SP-7.1	Eliminate right-of-way takes for future transit facility (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$310,042,000
SP-7.3	Eliminate right-of-way takes requiring displacements (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$115,681,000
SP-7.3	Eliminate right-of-way takes requiring displacements (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$123,504,000
SP-8	Place Bridge Nos. EB46, EB47 and EB48 in center of Motors Industrial Way (Applicable to Build Alternatives 6A and 6B)	$5,124,000
SP-9	Take transit right-of-way underground just east of Bridge No. WB12 to west of North Shallowford Road to reduce right-of-way (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$20,492,000
SP-9	Take transit right-of-way underground just east of Bridge No. WB12 to west of North Shallowford Road to reduce right-of-way (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$21,824,000
SP-10.1	Realign transit right-of-way to abut I-285 east of Ashford Dunwoody Road (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$5,817,000
SP-10.1	Realign transit right-of-way to abut I-285 east of Ashford Dunwoody Road (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$6,179,000
SP-10.2	Take transit underground east of Ashford Dunwoody Road (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$30,847,000
SP-10.2	Take transit underground east of Ashford Dunwoody Road (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$31,816,000

VE STUDY RESULTS

During the kick-off meeting it was clearly stated that all three build alternatives were still considered to be "in the running" as a preferred alternatives/solution has yet to be selected. As such, the VE team reviewed the project as it related to each of the build alternatives.

Operationally, Build Alternative 4 clearly fulfills the intended need and purpose to "*…better manage and improve traffic congestion, improve mobility options for the travelling public, maintain and improve system linkages, and provide safer travel conditions along the corridor*" at the least cost of the three build alternatives. However, in an effort to bring the project into compliance with the Department's recent direction to maximize the use of managed lanes, specifically the use of HOT+3 lanes and consideration for future transit needs, Build Alternative 6A was developed based on the operational improvements noted in Build Alternative 4. Regrettably, the cost of Build Alternative 6A exceeded expectations and led to the development of Build Alternative 6B using Build Alternative 6A as its baseline in an effort to reduce overall costs where applicable. Thus the three build alternatives are intertwined operationally.

Since Build Alternative 4 is at the crux of all three build alternatives, the VE team initially focused on this build alternative to help secure lower costs while maintaining the same level of operational improvements. As such, many of the ideas developed were easily be adapted to Build Alternatives 6A and 6B where applicable. Notwithstanding, numerous ideas were developed specifically for Build Alternatives 6A and 6B as these build alternatives were the only ones incorporating managed lanes and transit right-of-way elements.

The table on the following page is a VE Alternative Summary Sheet vs. Build Alternatives, which demonstrates the applicability of the developed VE alternatives relative to Build Alternatives and their corresponding savings.

VE Alternative Summary Sheet vs. Build Alternatives

		APPLICABLE TO:		
ALT No.	DESCRIPTION	BUILD ALT. 4	BUILD ALT. 6A	BUILD ALT. 6B
IM-2	Reconfigure managed lanes to meet existing grade between Riverside Drive to west of the Chattahoochee River for both eastbound and westbound directions		$62,918,000	
IM-4	Eliminate future transit Bridge No. EB19		$18,074,000	$18,074,000
IM-7	Reconfigure westbound managed lanes to meet existing grade between just east of the Chattahoochee River to the I-75/I-285 interchange			$28,468,000
IM-8	Do not provide managed lanes drop-off at Sandy Springs Circle			$12,477,000
IM-9	Use 4-foot inside shoulders and 10-foot outside shoulders for managed lanes only		$99,332,000	$99,332,000
L-2	Maintain ramp at GA 400 northbound to I-285 eastbound to eliminate Bridge No. 43	$6,831,000		
L-4	Retain existing GA 400 southbound bridge over I-285 and eliminate Bridge Nos. 23A, 23B and 24	$21,187,000	$21,187,000	$21,187,000
L-5	Reconfigure eastbound I-285 ramp to northbound GA 400, maintain left-hand merge and eliminate proposed Bridge No. 29	$16,785,000		
L-8.1	Do not improve the Windy Hill Road interchange	$77,413,000	$77,413,000	$77,413,000
L-8.2	Eliminate Bridge Nos. 4 and 6 at the Windy Hill Road interchange	$23,841,000	$23,841,000	$23,841,000
L-9	Eliminate eastbound I-285 to Chamblee Tucker Road exit ramp and Bridge No. 42	$3,299,000	$3,299,000	$3,299,000
L-10	Do not improve the northeast quadrant of the I-285 / I-85 interchange	$8,921,000	$8,921,000	$8,921,000
L-11	Eliminate Bridge No. 33 at the Chamblee Dunwoody Road intersection	$4,523,000		
SP-1 / RTT-1	Reduce right-of-way take on Sandy Springs Circle using a Single Point Urban Interchange	$8,009,000		
SP-5	Eliminate right-of-way take north of Mt. Wilkenson Parkway	$1,708,000	$1,708,000	$1,708,000
SP-7.1	Eliminate right-of-way takes for future transit facility		$302,219,000	$310,042,000
SP-7.3	Eliminate right-of-way takes requiring displacements		$115,681,000	$123,504,000
SP-8	Place Bridge Nos. EB46, EB47 and EB48 in center of Motors Industrial Way		$5,124,000	$5,124,000
SP-9	Take transit right-of-way underground just east of Bridge No. WB12 to west of North Shallowford Road to reduce right-of-way		$20,492,000	$21,824,000
SP-10.1	Realign transit right-of-way to abut I-285 east of Ashford Dunwoody Road		$5,817,000	$6,179,000
SP-10.2	Take transit underground east of Ashford Dunwoody Road		$30,847,000	$31,816,000

VE TEAM

VE Study Team

Name	Organization	Title
Dominic F. Saulino	HNTB	Associate Vice President, Director of Transportation
Lawrence D. Prescott, PE	HNTB	Director of Structural Engineering
Brian Sapp, PE	HNTB	Project Manager
Steven Gaines, PE	Wolverton & Associates, Inc.	Transportation Engineer
Luis M. Venegas, PE, CVS-Life, LEED AP, FSAVE	Value Management Strategies, Inc.	Vice President/VE Team Leader-Facilitator

Key Project Contacts

Name	Organization	Title
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Lisa L. Myers, AVS	Georgia Department of Transportation	Assistant State Project Review Engineer, Value Engineering Coordinator
Melissa Harper, PE	Georgia Department of Transportation	Assistant State Construction Engineer
Ken Werho	Georgia Department of Transportation	Traffic Operations Design/Concept Review Manager
Marlo Clowers, PE	Georgia Department of Transportation	Integrated Program Delivery, Project Manager
Micahel Murdoch	Georgia Department of Transportation	Environmental Analysis, Office of Environmental Services
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Timothy A. Preece, AICP	ARCADIS	Senior Transportation Planner, Deputy Project Manager
Shamir Poudel, PE	ARCADIS	Roadway Department Manager
Prasoon Sinha	ARCADIS	Traffic Engineer
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Michael D. Moilanen, PE	ARACDIS	Structures Department Manager
Melinda Roberson	Federal Highway Administration	Project Manager
Jennifer Giersch	Federal Highway Administration	Environmentalist

VALUE ENGINEERING ALTERNATIVES

The results of this study are presented as individual alternatives to the baseline concept. Each alternative consists of a summary of the baseline concept, a description of the suggested change, a listing of its advantages and disadvantages, a cost comparison, change in performance and value, discussion of schedule and risk impacts (if applicable), and a brief narrative comparing the baseline design with the alternative. Sketches and calculations are also presented where applicable.

The cost comparisons reflect a comparable level of detail as in the baseline estimate. A life-cycle benefit-cost analysis for major alternatives is included where appropriate.

SUMMARY OF VALUE ENGINEERING ALTERNATIVES

Alternative No. and Description		Initial Cost Savings
IM-2	Reconfigure managed lanes to meet existing grade between Riverside Drive to west of the Chattahoochee River for both eastbound and westbound directions (Applicable to Build Alternative 6A only)	$62,918,000
IM-4	Eliminate future transit Bridge No. EB19 (Applicable to Build Alternatives 6A and 6B)	$18,074,000
IM-7	Reconfigure westbound managed lanes to meet existing grade between just east of the Chattahoochee River to the I-75/I-285 interchange (Applicable to Build Alternative 6B only)	$28,468,000
IM-8	Do not provide managed lanes drop-off at Sandy Springs Circle (Applicable to Build Alternative 6B only)	$12,477,000
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L-5	Reconfigure eastbound I-285 ramp to northbound GA 400, maintain left-hand merge and eliminate proposed Bridge No. 29 (Applicable to Build Alternative 4 only)	$16,785,000
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L-10	Do not improve the northeast quadrant of the I-285 / I-85 interchange (Applicable to Build Alternatives 4, 6A and 6B)	$8,921,000
L-11	Eliminate Bridge No. 33 at the Chamblee Dunwoody Road intersection (Applicable to Build Alternative 4 only)	$4,523,000
SP-1/ RTT-1	Reduce right-of-way take on Sandy Springs Circle using a Single Point Urban Interchange (Applicable to Build Alternative 4 only)	$8,009,000
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Alternative No. and Description		Initial Cost Savings
SP-10.2	Take transit underground east of Ashford Dunwoody Road (Applicable to Build Alternative 6A – due to ROW unit cost differentials)	$30,847,000
SP-10.2	Take transit underground east of Ashford Dunwoody Road (Applicable to Build Alternative 6B – due to ROW unit cost differentials)	$31,816,000

VALUE ALTERNATIVE IM-2 (Applicable to Build Alternative 6B Only)

Reconfigure Managed Lanes to Meet Existing Grade Between Riverside Drive to West of the Chattahoochee River for Both Eastbound and Westbound Directions

Cost Savings:	$62,918,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: Both the eastbound (EB) and westbound (WB) managed lanes are placed outside of the existing I-285 eastbound and westbound lanes from Riverside Drive west to the I-75/I-285 interchange.

Description of Alternative Concept: Referring to Build Alternative 6B and viewing this alternative from Riverside Drive west to the Chattahoochee River, it is proposed to move the managed lanes in this section into the I-285 median and then moving the existing I-285 lanes to the outside of the managed lanes. It is also proposed to extend the WB managed lane that is now inside the median beyond the Chattahoochee River up to the I-75/I-285 interchange. The EB managed lanes go from being inside to outside the median just before the Chattahoochee River heading towards the I-75/I-285 interchange. This alternative also uses the configuration proposed at Riverside Drive for Build Alternative 6B where the proposed EB and WB managed lanes merge inside to the median of I-285, as the proposed I-285 EB and WB lanes shift to the outside of the proposed at grade managed lanes. The EB managed lanes near the wall along Ackers Mill should be placed on the outside of I-285 EB lanes until the managed lanes crosses over the Chattahoochee River, where they merge back inside the I-285 median as shown in Build Alternatives 6A and 6B. The WB managed lanes should continue being placed inside I-285 median but elevated to fly over the existing I-285 WB to I-75 NB ramp as seen in Build Alternative 6B for Bridges number WB31 and WB32.

Advantages:

- Reduces several elevated bridges for both EB and WB managed lanes
- Fewer straddle bents

Disadvantages:

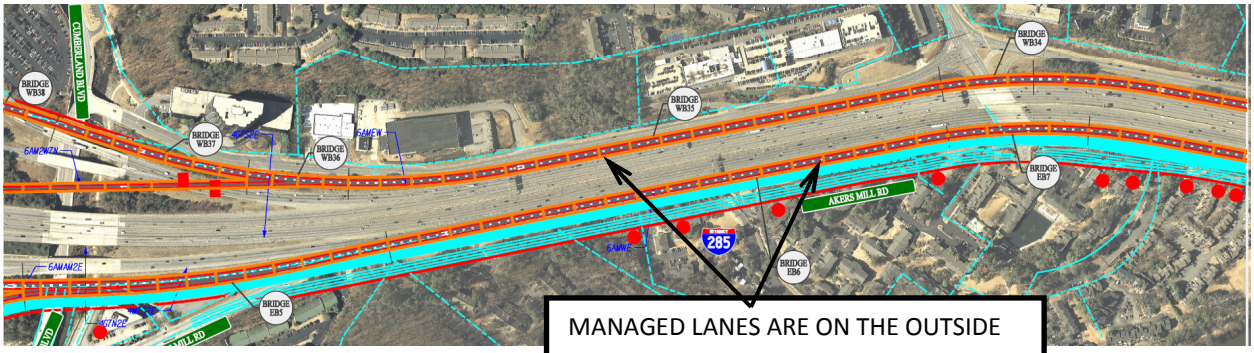
- Some cross street bridges will have to be lengthened or modified
- Existing I-285 will be shifted outside and not kept in place

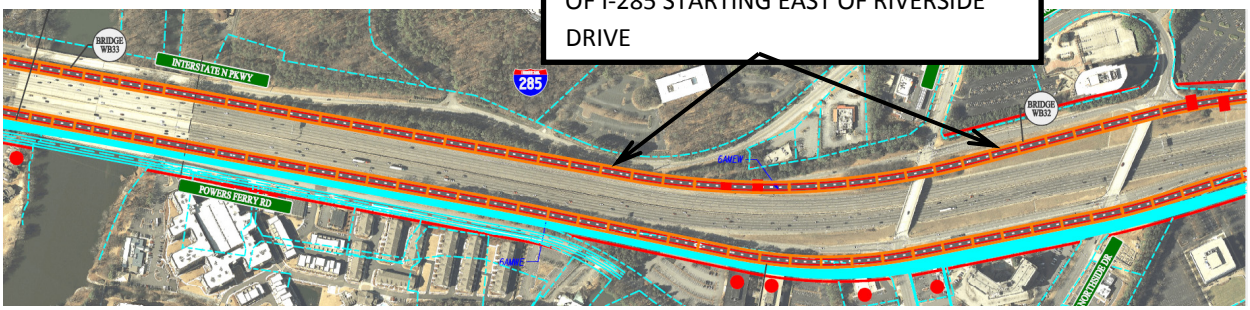
Discussion: This alternative will allow elevated bridges to be lowered to grade for most of the alternative's length, which is from Riverside Drive west to the I-75/I-285 interchange. Some side street bridges will have to be extended or the end abutments will have to be opened vertically instead of allowing a fill slope; these are minimal adjustments related to the complexity of elevated structures. This alternative does help eliminate right of way and some retaining walls. This will reduce the time of construction for this section.

VALUE ALTERNATIVE IM-2 (Applicable to Build Alternative 6B Only)

Reconfigure Managed Lanes to Meet Existing Grade Between Riverside Drive to West of the Chattahoochee River for Both Eastbound and Westbound Directions

Baseline Concept Sketches:

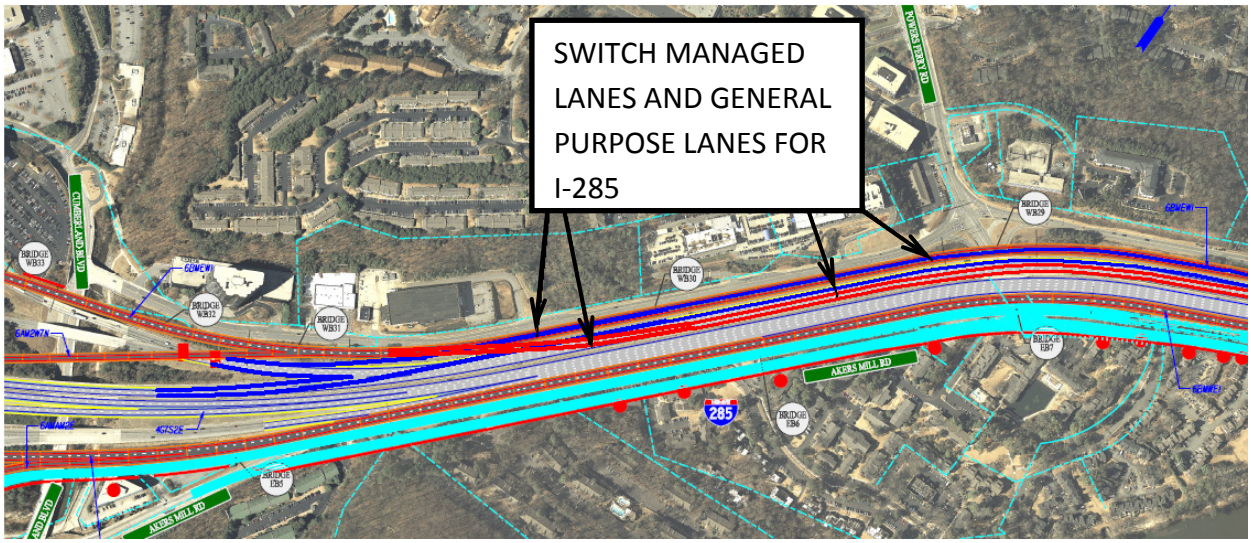


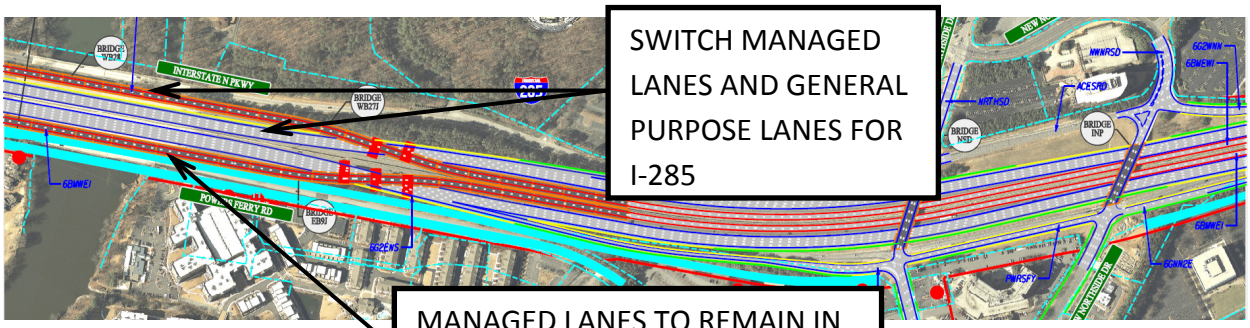


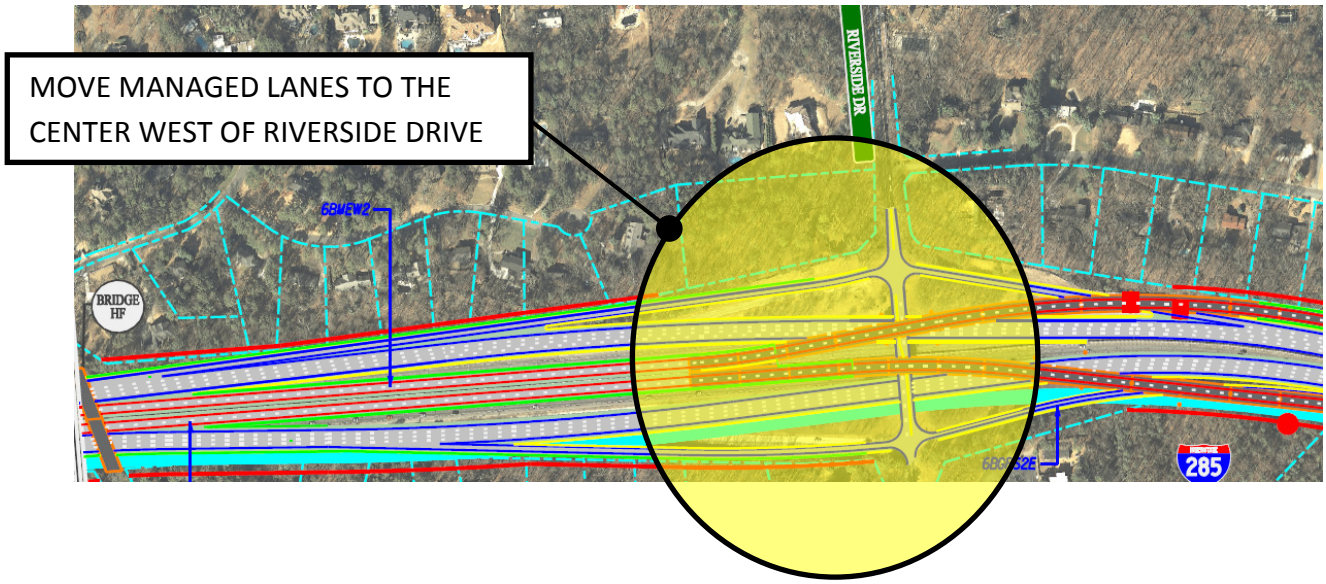
VALUE ALTERNATIVE IM-2 (Applicable to Build Alternative 6B Only)

Reconfigure Managed Lanes to Meet Existing Grade Between Riverside Drive to West of the Chattahoochee River for Both Eastbound and Westbound Directions

Value Alternative Concept Sketches:







VALUE ALTERNATIVE IM-2 (Applicable to Build Alternative 6B Only)

Reconfigure Managed Lanes to Meet Existing Grade Between Riverside Drive to West of the Chattahoochee River for Both Eastbound and Westbound Directions

Assumptions and Calculations: Assumed 15-foot average wall height.

New Full Depth Paving

Measured Lane Mile:

L_1 = 10,400 LF from just east of the Chattahoochee River to Riverside Drive
L_2 = 4,000 LF for Northside Drive / New Northside Drive Interchange
∴ Total = (L_1 x 2 Lanes) + (L_2 x 1 Lane) = (10,400 LF x 2 Lanes) + (4,000 LF x 1 Lane) = **24,800 LF**.
24,800 LF / 5,280 LF per Mile = **4.697 Lane Mile**

Net Overlay Paving

Measured Lane Mile:

L_3 = **6,800 LF** from just east of the Chattahoochee River to the I-75 / I-285 Interchange
∴ 6,800 LF / 5,280 LF per Mile = **1.288 Lane Mile**

ROW

Baseline $Area_1$ = 1,200 LF x 5 LF =6,000 SF

$Area_2$ = 2,000 LF x 10 LF = 20,000 SF

∴ Total ($Area_1$ + $Area_2$) / 43,560 SF per Acres = (6,000 SF + 20,000 SF)/43,560 = **1.515 Acres.**

Alternative $Area_1$ = 400 LF x 4 LF =1,600 SF

$Area_2$ = 2,000 LF x 15 LF = 30,000 SF

∴ (1,600 SF + 30,000 SF) / 43,560 = **0.725 Acres.**

VALUE ALTERNATIVE IM-2 (Applicable to Build Alternative 6B Only)

Reconfigure Managed Lanes to Meet Existing Grade Between Riverside Drive to West of the Chattahoochee River for Both Eastbound and Westbound Directions

Initial Costs:

CONSTRUCTION ELEMENT	Unit	BASELINE CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
New Full Depth Paving	Miles			$0	4.697	$1,375,000	$6,458,333
New Overlay Paving	Miles			$0	1.288	$376,000	$484,242
ROADWAY SUBTOTAL				*$0*			*$6,942,576*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$0*			*$2,478,500*
ROADWAY TOTAL				*$0*			*$9,421,075*
STRUCTURE ITEMS							
Bridge WB32, WB35, WB31, EB10	SF	765,521	$95	$72,724,495			$0
Bridge WB34	SF	19,184	$155	$2,973,520			$0
Bridge WB31 (added length)	SF			$0	16,538	$95	$1,571,063
Bridges at Riverside	SF			$0	14,175	$95	$1,346,625
Bridge EB9J	SF			$0	92,610	$95	$8,797,950
Bridge NSD, INP	SF			$0	34,515	$95	$3,278,925
Walls	SF			$0	150,000	$57	$8,550,000
				$0			$0
STRUCTURE SUBTOTAL				*$75,698,015*			*$23,544,563*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$27,024,191*			*$8,405,409*
STRUCTURE TOTAL				*$102,722,206*			*$31,949,971*
RIGHT-OF-WAY ITEMS							
Land	Acres	1.515	$800,000	$1,212,121	0.725	$800,000	$580,349
Improvements				$0			$0
Relocation - Commercial				$0			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$1,212,121*			*$580,349*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$1,793,939*			*$858,916*
RIGHT-OF-WAY TOTAL				*$3,006,061*			*$1,439,265*
TOTAL				$105,728,267			$42,810,312
TOTAL (Rounded)				$105,728,000			$42,810,000
						SAVINGS	**$62,918,000**

VALUE ALTERNATIVE IM-4 (Applicable to Build Alternatives 6A and 6B)

Eliminate Future Transit Bridge No. EB19

Cost Savings:	$18,074,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept elevates the collector-distributor (C-D) system from eastbound (EB) I-285 to Glenridge Drive and northbound (NB) GA 400 over the proposed future transit line which occupies the same area.

Description of Alternative Concept: This alternative proposes to keep the C-D System from EB I-285 to Glenridge Drive and NB GA 400 at-grade through this section.

Advantages:

- Eliminates a bridge which may not be needed for a significant amount of time
- Simplifies construction

Disadvantages:

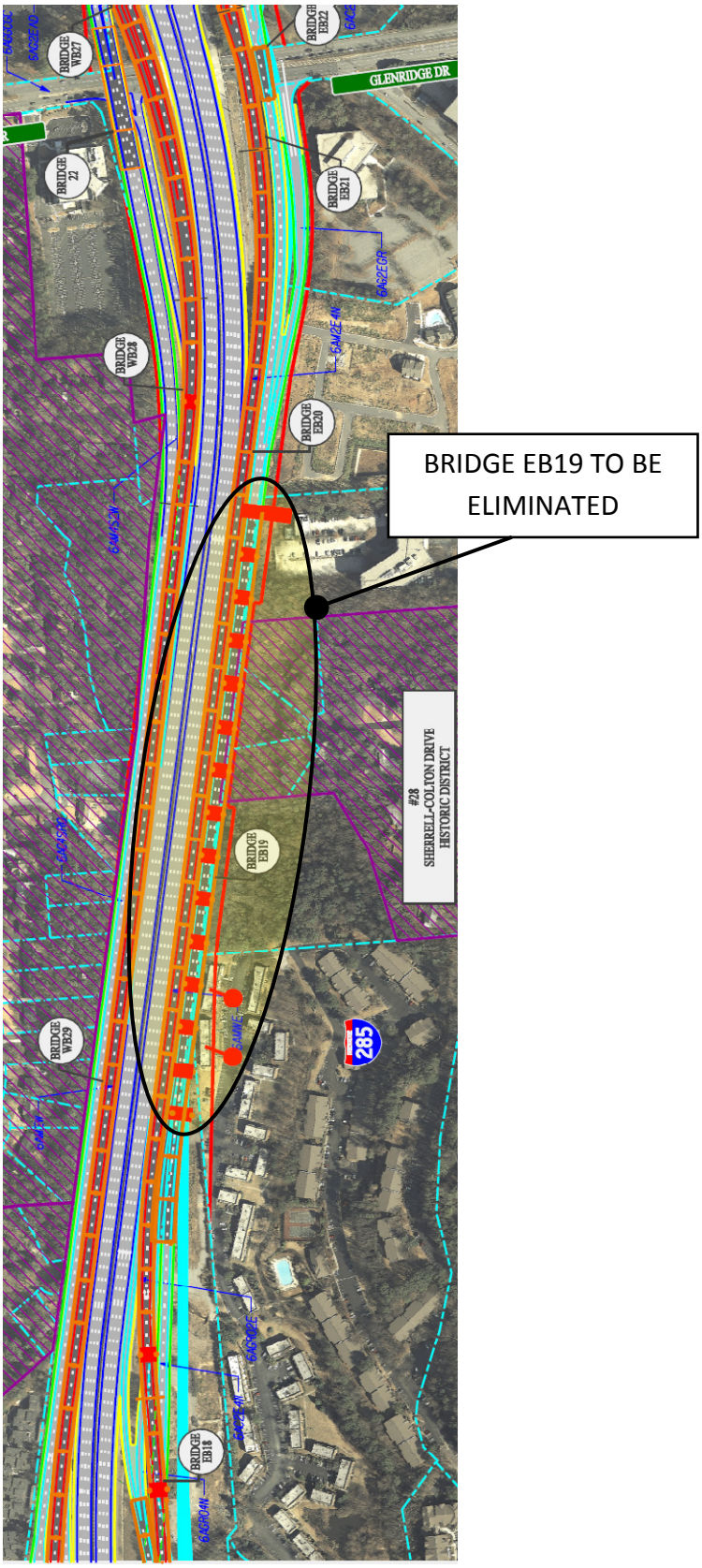
- C-D will need to be moved or elevated at significantly higher cost should transit line be constructed in this location

Discussion: The proposed C-D system from EB I-285 to Glenridge Drive and NB GA 400 is located on structure in order to accommodate the uncertain potential of a transit line in the same location. Since the transit line has not been designed or planned for a definite year, the transit line can be elevated when it is constructed at that time in the future.

VALUE ALTERNATIVE IM-4 (Applicable to Build Alternatives 6A and 6B)

Eliminate Future Transit Bridge No. EB19

Baseline and Value Alternative Concept Sketch:



VALUE ALTERNATIVE IM-4 (Applicable to Build Alternatives 6A and 6B)

Eliminate Future Transit Bridge No. EB19

Assumptions and Calculations:

Eliminate Bridge EB19 – 2,380 LF

Replace with full depth pavement – 2,380 LF x 2 Lanes / 5,280 LF per Mile = **0.90 LM**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Pavement	LM			$0	0.90	$1,375,000	$1,237,500
ROADWAY SUBTOTAL				*$0*			*$1,237,500*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$0*			*$470,250*
ROADWAY TOTAL				*$0*			*$1,707,750*
STRUCTURE ITEMS							
EB19	LS	1	$14,334,800	$14,334,800			$0
STRUCTURE SUBTOTAL				*$14,334,800*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$5,447,224*			*$0*
STRUCTURE TOTAL				*$19,782,024*			*$0*
TOTAL				$19,782,024			$1,707,750
TOTAL (Rounded)				$19,782,000			$1,708,000
						SAVINGS	**$18,074,000**

VALUE ALTERNATIVE IM-7 (Applicable to Build Alternative 6B Only)

Reconfigure Westbound Managed Lane to Meet Existing Grade Between Just East of the Chattahoochee River to the I-75/I-285 Interchange

Cost Savings:	$28,468,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: Both the eastbound (EB) and westbound (WB) managed lanes are placed outside of the existing I-285 EB and WB lanes from just east of the Chattahoochee River west to the I-75/I285 interchange.

Description of Alternative Concept: This alternative extends the WB managed lane that is inside the median beyond the Chattahoochee River up to the I-75 / I-285 interchange and the EB managed lanes go from being inside to outside the median just before the Chattahoochee River heading towards the I-75 / I-285 interchange. The EB and WB managed lanes merge inside to the median of I-285, as the proposed I-285 EB and WB lanes shift to the outside of the proposed at-grade managed lanes. The EB managed lanes near the wall along Ackers Mill should be placed on the outside of I-285 EB lanes until the managed lanes cross over the Chattahoochee River, where they merge back inside the I-285 median as shown in Build Alternatives 6A and 6B. The WB managed lanes should continue being placed inside I-285 median but elevated to fly over the existing I-285 WB to I-75 NB ramp as seen in Alternative 6B for Bridge Numbers WB31 and WB32.

Advantages:

- Reduces elevated bridges for both WB managed lanes
- Fewer straddle bents
- Could reduce time of construction

Disadvantages:

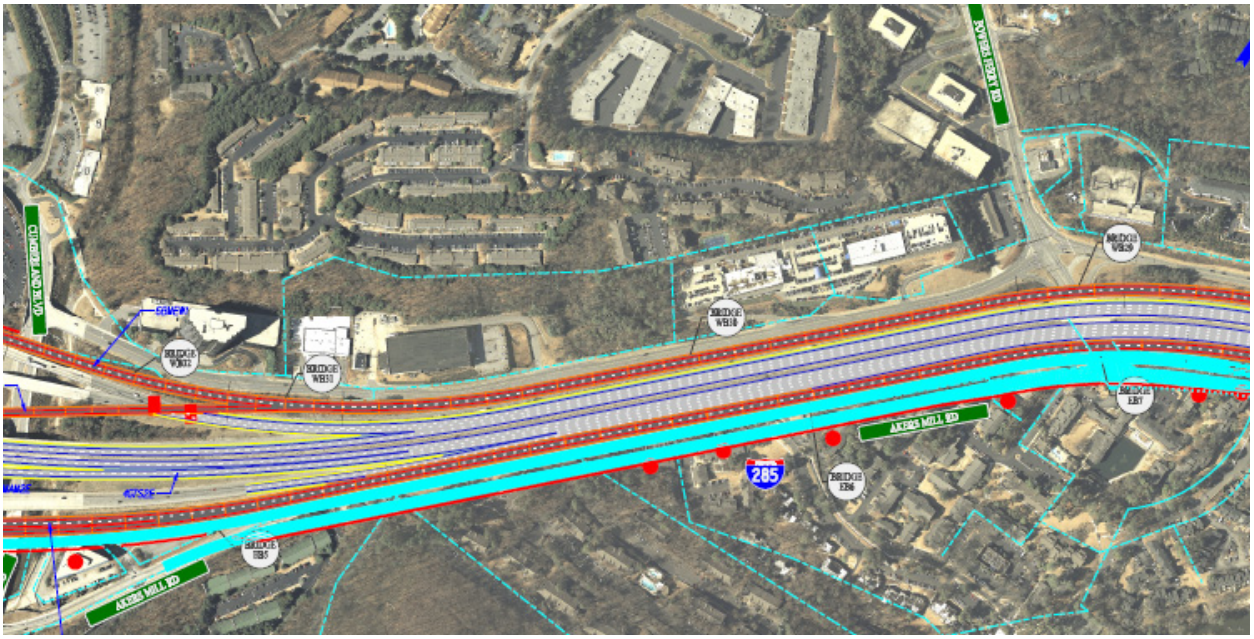
- Existing I-285 will be shifted to the outside

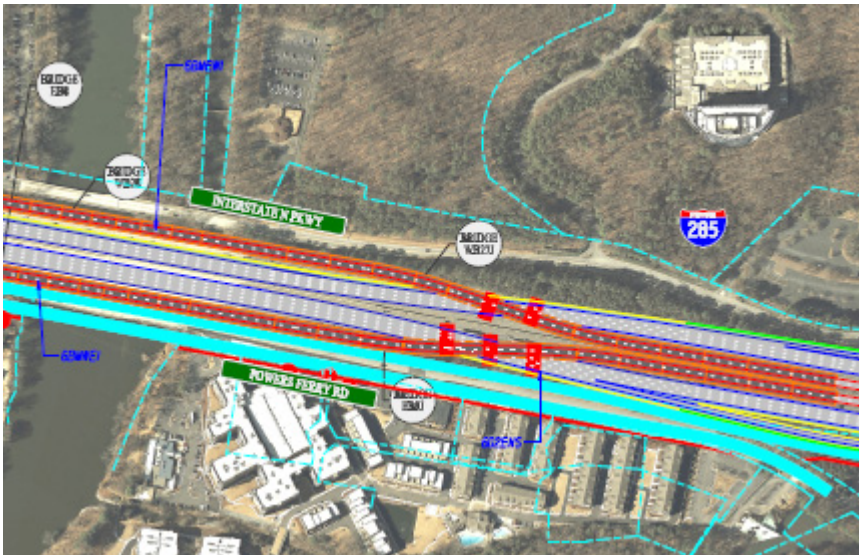
Discussion: This alternative will allow elevated bridges to be lowered to grade for most of the alternative's length, which is from just east of the Chattahoochee River west to the I-75 / I-285 interchange. This scenario will most likely reduce the time of construction for this section of the facility; however, the schedule impact is difficult to calculate as no set schedule has been implemented.

VALUE ALTERNATIVE IM-7 (Applicable to Build Alternative 6B Only)

Reconfigure Westbound Managed Lane to Meet Existing Grade Between Just East of the Chattahoochee River to the I-75/I-285 Interchange

Baseline Concept Sketches:

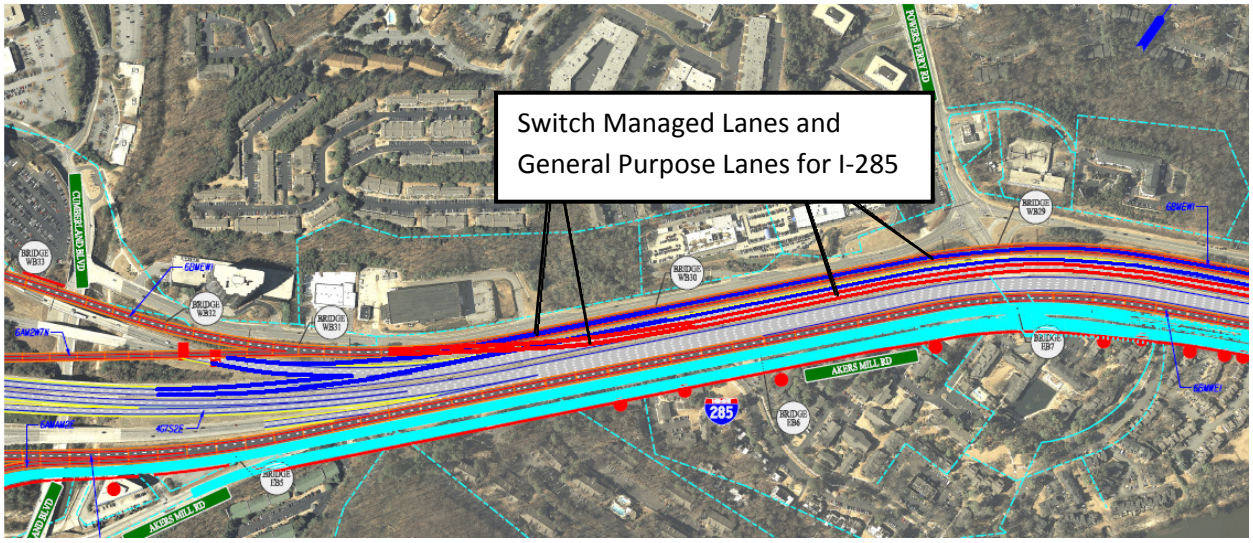


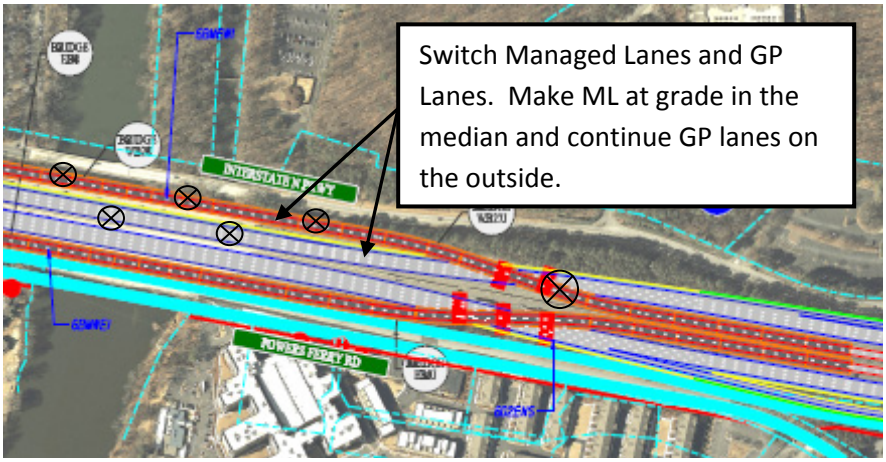


VALUE ALTERNATIVE IM-7 (Applicable to Build Alternative 6B Only)

Reconfigure Westbound Managed Lane to Meet Existing Grade Between Just East of the Chattahoochee River to the I-75/I-285 Interchange

Value Alternative Concept Sketches:





VALUE ALTERNATIVE IM-7 (Applicable to Build Alternative 6B Only)

Reconfigure Westbound Managed Lane to Meet Existing Grade Between Just East of the Chattahoochee River to the I-75/I-285 Interchange

Assumptions and Calculations:

New Full Depth Paving

Measured Lane Mile:

L_1 = 6,000 LF for 1-Lane General Purpose from I-75 / I-285 interchange just east of the Chattahoochee River
∴ Total = (L_1 x 1 Lanes) = (6,000 LF x 1 Lane) = **6,000 LF**.
6,000 LF / 5,280 LF per Mile = **1.136 Lane Mile**

Net Overlay Paving

Measured Lane Mile:

L_3 = **6,000 LF** for 1-Lane Managed Lane from I-75 / I-285 Interchange
∴ 6,000 LF / 5,280 LF per Mile = **1.136 Lane Mile**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
New Full Depth Paving	Miles			$0	1.136	$1,375,000	$1,562,500
New Overlay Paving	Miles	1.136	$376,000	$427,273			$0
ROADWAY SUBTOTAL				*$427,273*			*$1,562,500*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$152,536*			*$557,813*
ROADWAY TOTAL				*$579,809*			*$2,120,313*
STRUCTURE ITEMS							
Bridge WB30, WB27J	SF	218,012	$95	$20,711,093			$0
Bridge WB29	SF	19,184	$155	$2,973,520			$0
Bridge WB31 (added length)	SF			$0	16,538	$95	$1,571,063
STRUCTURE SUBTOTAL				*$23,684,613*			*$1,571,063*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$8,455,407*			*$560,869*
STRUCTURE TOTAL				*$32,140,019*			*$2,131,932*
TOTAL				$32,719,828			$4,252,244
TOTAL (Rounded)				$32,720,000			$4,252,000
						SAVINGS	**$28,468,000**

VALUE ALTERNATIVE IM-8 (Applicable to Build Alternative 6B Only)

Do Not Provide Managed Lanes Drop-Off At Sandy Springs Circle

Cost Savings:	$12,477,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept indicates that managed lanes are elevated at the Sandy Springs Circle / I-285 overpass to provide both eastbound (EB) and westbound (WB) drop lane access ramps to Sandy Springs Circle.

Description of Alternative Concept: This alternative proposes to maintain the structure alignment presented in Alternate 6A and to not undertake the baseline facility additions of EB and WB drop lane access ramps to Sandy Springs Circle. This proposal would eliminate Bridge Numbers EB13J, EB52, WB21J and WB23J.

Advantages:

- No additional disruption during construction
- Removal of four bridges from the project
- ROW is reduced

Disadvantages:

- No managed lane access to this location

Discussion: Alternate 6A at this location provided a single westbound drop lane access ramp to the collector-distributor (C-D) lanes whereas Alternate 6B provides full four direction drop lane access ramps to Sandy Springs Circle. Building upon the intent of Alternate 6B to reduce the cost presented in Alternate 6A, the managed lane access point should be eliminated.

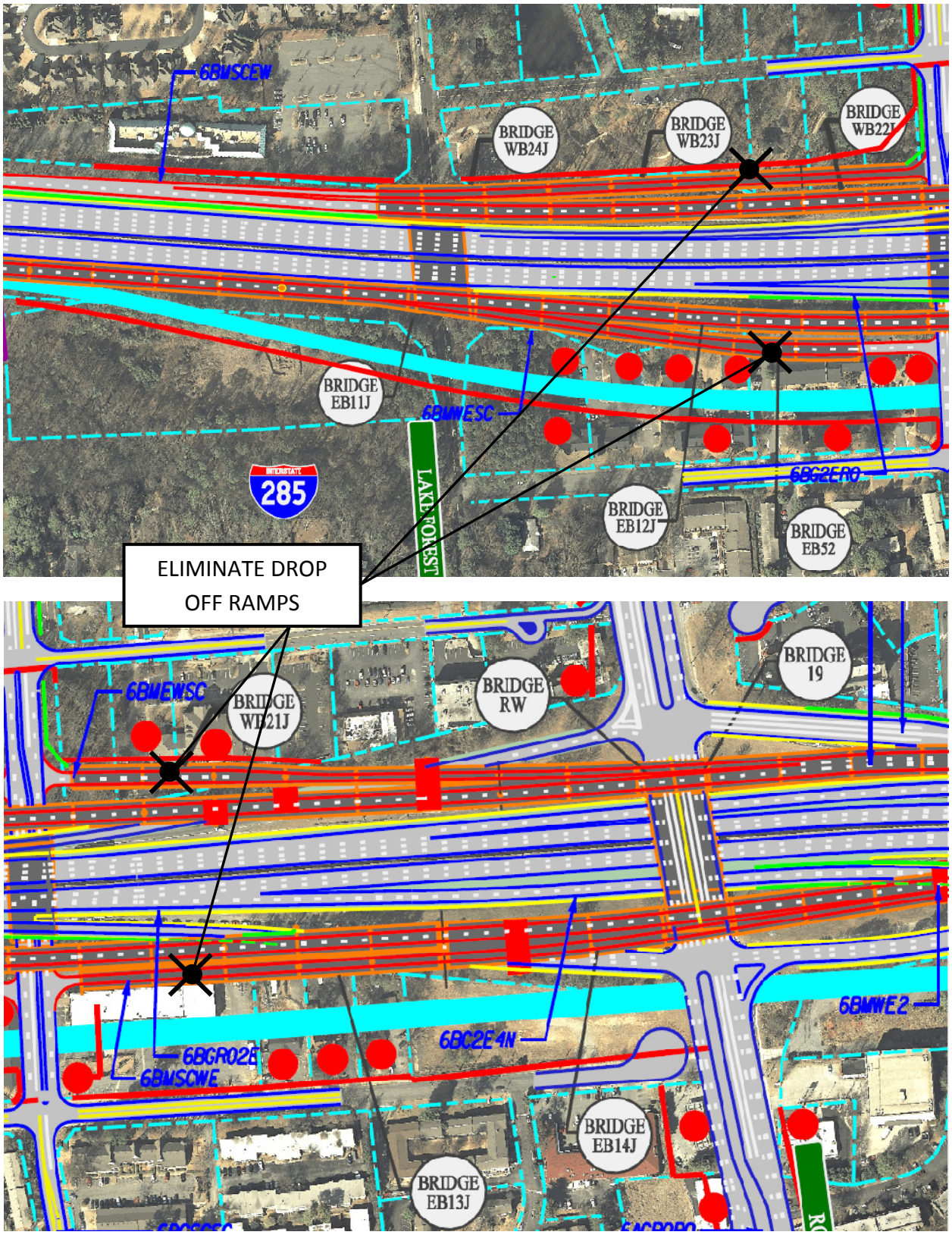
There was no discussion as to whether or not traffic alleviation favored Alternate 6A general purpose access to Sandy Springs Circle and a split diamond interchange or Alternate 6B with managed lane access to Sandy Springs Circle and general purpose access to Roswell Road.

It is assumed this work would have occurred concurrently with other interchange work, therefore, no schedule savings would be realized.

VALUE ALTERNATIVE IM-8 (Applicable to Build Alternative 6B Only)

Do Not Provide Managed Lanes Drop-Off At Sandy Springs Circle

Baseline / Value Alternative Concept Sketches:



VALUE ALTERNATIVE IM-8 (Applicable to Build Alternative 6B Only)

Do Not Provide Managed Lanes Drop-Off At Sandy Springs Circle

Assumptions and Calculations: Bridge tie-ins to adjacent bridges are not quantifiable at this time due to lack of information.

ROW

Location	Residential (AC)	Commercial (AC)
North of I-285, LFT of Roswell Road	0	0.29
"	0	0.12
"	0	0.11
"	0	0.16
"	0	0.06
"	0	0.11
"	0	0.08
	Totals Ramp = 0	**0.93**

Data taken from Build Alternative 6B Cost Estimate sheet 28 of 34, ROW

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
STRUCTURE ITEMS							
Bridge WB-23J	SF	24,675	$95	$2,344,125			$0
Bridge EB-52	SF	26,320	$95	$2,500,400			$0
Bridge WB-21J	SF	31,066	$95	$2,951,270			$0
Bridge EB-13J	SF	24,999	$95	$2,374,905			$0
STRUCTURE SUBTOTAL				*$10,170,700*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*				*$0*			*$0*
STRUCTURE TOTAL				*$10,170,700*			*$0*
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	AC	0.93	$1,000,000	$930,000			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$930,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$1,376,400*			*$0*
RIGHT-OF-WAY TOTAL				*$2,306,400*			*$0*
TOTAL				$12,477,100			$0
TOTAL (Rounded)				$12,477,000			$0
						SAVINGS	**$12,477,000**

VALUE ALTERNATIVE IM-9 (Applicable to Build Alternatives 6A and 6B)

Use 4-Foot Inside Shoulder with 10-foot Outside Shoulder for Managed Lanes only

Cost Savings:	$99,332,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept calls for the managed lanes typical section to have ten foot inside shoulders.

Description of Alternative Concept: This alternative proposes the use of a four foot inside shoulder for the managed lanes typical section.

Advantages:

- Reduced section meets Need and Purpose
- Reduced ROW impacts
- Section approved at other GDOT location

Disadvantages:

- Reduces useable roadway width
- Does not meet American Association of State Highway and Transportation Officials (AASHTO) desired typical section; however, four-foot inside shoulder section has been already been approved by the Federal Highway Administration and GDOT for the Northwest Corridor P3 project

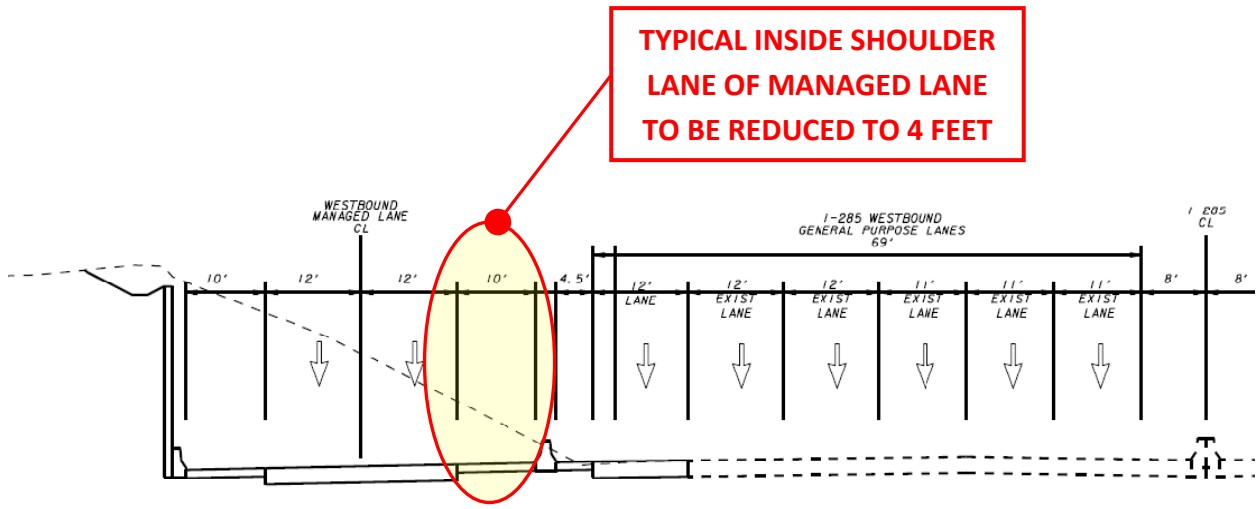
Discussion: Reducing the inside shoulder of the managed lane typical section from ten feet to four feet does not meet the AASHTO desirable typical section but does meet the minimum typical section. This reduction will result in significant savings in pavement and ROW. A four-foot inside shoulder section has been approved by Federal Highway Administration and the GDOT for the Northwest Corridor P3 project.

See excerpts from AASHTO's *Guide for High-Occupancy Vehicles (HOV) Facilities* at the end of the <u>Assumptions and Calculations</u> section of this alternative.

VALUE ALTERNATIVE IM-9 (Applicable to Build Alternatives 6A and 6B)

Use 4-Foot Inside Shoulder with 10-foot Outside Shoulder for Managed Lanes only

Baseline / Value Alternative Concept Sketch:



Symmetrical Section About Centerline of I-285

Assumptions and Calculations: Deletions would include:

<u>Pavement</u> – reduce 6 LF of width along the at-grade section –

(28,950 / 2) / 5,280 LF/LM = 2.74 LM

<u>Bridge</u> – reduce 6 LF of width along 116,450 LF of bridge –

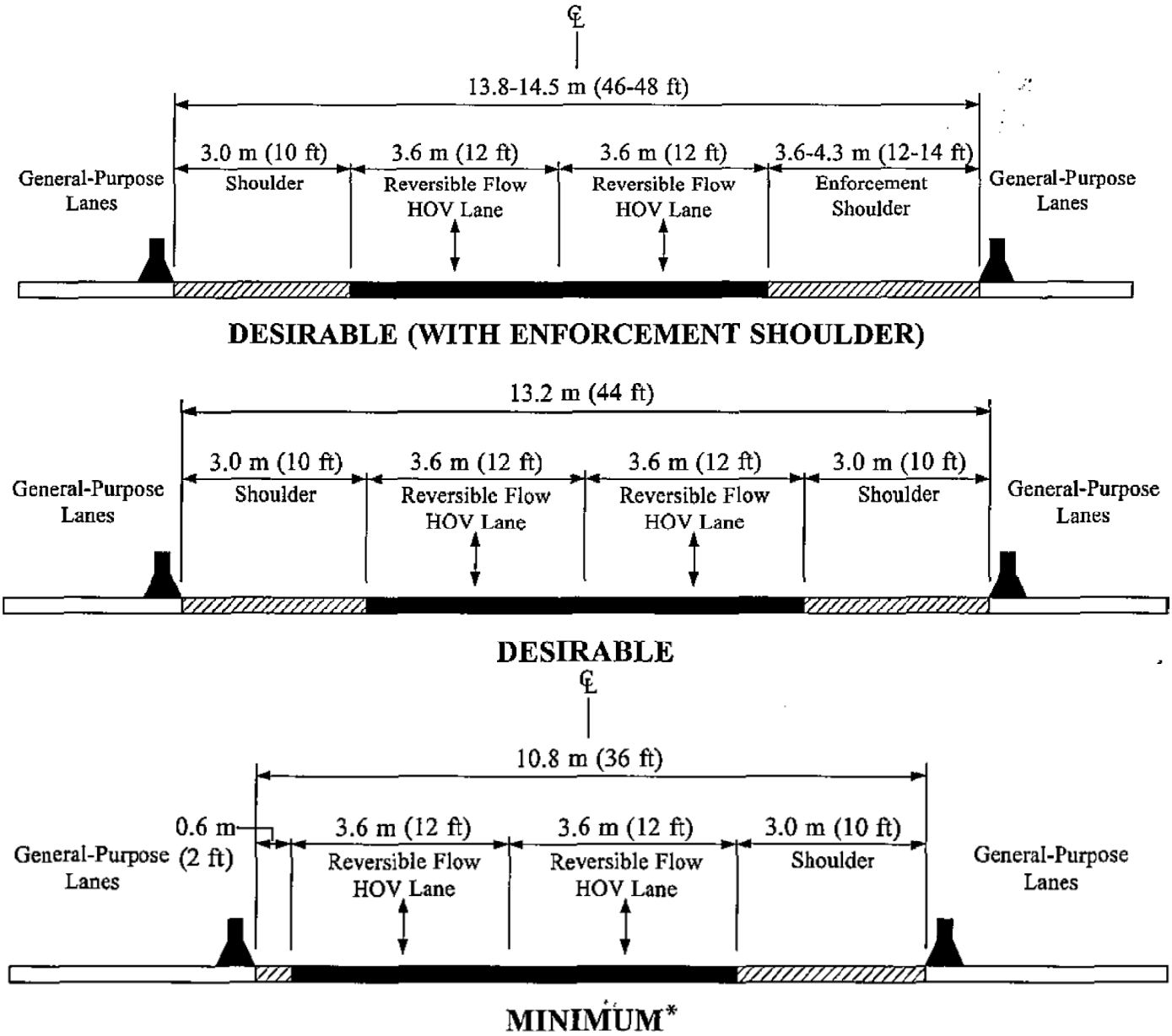
116,450 LF x 6 LF = 698,700 SF

<u>ROW</u> – 8,700 LF x 6 LF = 52,200 SF /43,560 SF / Acre = 1.20 Acres - Commercial Property

4,300 LF x 6 LF = 25,800 SF / 43,560 SF / Acre = 0.59 Acres - Residential Property

VALUE ALTERNATIVE IM-9 (Applicable to Build Alternatives 6A and 6B)

Use 4-Foot Inside Shoulder with 10-foot Outside Shoulder for Managed Lanes only



* Operational treatments should be incorporated if the minimum design cross section is used. The minimum cross section should be used as an interim project or over short distances. Increased enforcement and incident management programs should be implemented to successfully operate the facility.

Figure 3-5. Examples of Cross Sections for Two-Lane, Barrier-Separated, Reversible HOV Lanes (Adapted from References 18, 56).

- Sight distance is particularly critical due to the proximity of barriers to ramp lane alignments. Lateral clearances are often no greater than 0.6 m (2 ft) from the edge of the travel lane to the barrier. Where practical, removal of barrier-mounted glare screens or slight adjustments in striping alignment may be necessary within the ramp envelope to accommodate the proper design speed.
- The location of ingress/egress facilities is influenced by a number of factors. For example, direct access ramps to/from local streets should be made with candidate streets that currently do not have freeway access, so as to better distribute demand and prevent overloading existing intersections. For at-grade access with the adjacent freeway lanes, designated outlets should be strategically positioned so as to provide adequate weaving to reach nearby freeway exits.

Assumptions and Calculations (Continued):

Design of HOV Facilities on Freeways

TABLE 3-4. Example Prioritization of Design Tradeoffs for Barrier-Separated, Reversible Flow HOV Lane Facilities (Adapted from Reference 21)

Ordered Sequence	Cross-Section Design Change
First	Reduce single-lane HOV envelope to no less than 6.0 m (20 ft) (see Figure 3-4) or reduce two-lane envelope to no less than 10.8 m (36 ft) (see Figure 3-5).
Second	Reduce freeway left lateral clearance to no less than 0.6 m (2 ft).
Third	Reduce freeway right lateral clearance (shoulder) from 3.0 m (10 ft) to 2.4 m (8 ft).
Fourth	Reduce HOV lane width to no less than 3.3 m (11 ft) (some agencies may prefer reversing the fourth and fifth tradeoffs when buses or trucks are projected to use the HOV lane).
Fifth	Reduce selected general-purpose lane widths to no less than 3.3 m (11 ft) [leave at least one 3.6 m (12 ft) outside lane for trucks].
Sixth	Reduce freeway right lateral clearance (shoulder) from 2.4 m (8 ft) to 1.2 m (4 ft).
Seventh	Convert barrier shape at columns to a vertical face.

Note: A formal design exception request may need to be processed to document the design change. The ordered sequence presented here is only an example list. Some states may prefer a different sequence.

- Motorists desiring ingress to the HOV facility from a freeway lane should be required to make an overt maneuver to enter the lane. A freeway lane should not end at an HOV lane entrance; the freeway lane should be moved laterally and the HOV lane entrance located out of the normal path of travel. Similarly, HOV off-ramps should not be designed with the mainline so that through traffic is inadvertently exited.
- HOV lane ramps should provide adequate space for possible metering and storage.
- Left- or right-hand exits from a single-lane HOV lane are equally valid and equally safe. The standard "right-hand-only" rule for entrance and exit ramps should not apply for HOV lanes.
- During the early operations of an HOV facility, demand may not warrant direct or elevated ramps. If demand increases subsequent to implementation of the HOV lane, a retrofit design could be difficult and expensive; consequently, if exclusive ramps are not included in an initial project design, provisions should be made so that the ramps can be added later.
- Adequate advance signing should be provided, and pavement markings should emphasize the mainline (possibly through use of skip stripe markings across the diverging exit ramp). Signing and pavement markings for HOV facilities should be in accordance with the MUTCD and other state and local requirements.
- Safety lighting should be applied for all ingress/egress locations using the same warrants applied for urban freeway entrance and exit ramps.
- Where possible, provision for entrance ramp metering and/or enforcement should be considered (these are project-specific considerations based on local issues and input from enforcement agents).

If feasible, the connections from the freeway mainline to an HOV facility in the freeway median should be made with flyover ramps. This allows buses and other vehicles using the HOV facility to enter/exit the freeway mainline on the right without having to merge with the inner high-speed lanes. Also, depending on the interchange spacing, it could eliminate the need for HOVs to perform multilane weaves to access the HOV lane or exit the freeway. Where limited right-of-way and/or high costs prohibit the use of elevated flyover ramps, at-grade ramps can be used. At-grade ramps are also appropriate where the HOV facilities.

VALUE ALTERNATIVE IM-9 (Applicable to Build Alternatives 6A and 6B)

Use 4-Foot Inside Shoulder with 10-foot Outside Shoulder for Managed Lanes only

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Pavement	LM	2.74	$1,375,000	$3,767,500			$0
ROADWAY SUBTOTAL				*$3,767,500*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$1,344,998*			*$0*
ROADWAY TOTAL				*$5,112,498*			*$0*
STRUCTURE ITEMS							
Bridge	SF	698,700	$95	$66,376,500			$0
STRUCTURE SUBTOTAL				*$66,376,500*			*$0*
STRUCTURAL MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*35.70%*			*$23,696,411*			*$0*
STRUCTURE TOTAL				*$90,072,911*			*$0*
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Property - Commercial	AC	1.20	$1,000,000	$1,200,000			$0
Property - Residential	AC	0.59	$800,000	$472,000			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$1,672,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$2,474,560*			*$0*
RIGHT-OF-WAY TOTAL				*$4,146,560*			*$0*
TOTAL				$99,331,968			$0
TOTAL (Rounded)				$99,332,000			$0
						SAVINGS	**$99,332,000**

VALUE ALTERNATIVE L-2 (Applicable to Build Alternative 4 Only)

Maintain Existing Ramp From Northbound GA 400 to Eastbound I-285 to Eliminate Bridge No. 43

Cost Savings:	$6,431,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: Under the baseline concept, the newly proposed northbound (NB) GA 400 ramp to eastbound (EB) I-285 merges with two other ramps including an access ramp from Peachtree Dunwoody Road. The ramp from NB GA 400 to EB I-285 also creates a new Bridge No. 43 and is part of Bridge No. 27.

Description of Alternative Concept: The NB GA 400 ramp to EB I-285 follows its existing alignment moving underneath the neighboring, newly proposed ramps and then merges separately with EB I-285. New, full depth pavement is placed as needed.

Next, the two ramps, southbound (SB) GA 400 to EB I-285 and from the Glenridge Drive collector-distributor (C-D) to EB I-285 continues with the same profile and merges together onto I-285 with a slip ramp as originally proposed as one option for drivers and/or directly to Ashford Dunwoody Road as the other option.

Advantages:

- Merges NB GA 400 to WB I-285 earlier and separately
- Removes Bridge No. 43
- Reduces right-of-way
- Reduces the size of Bridge Nos. 27 and 30

Disadvantages:

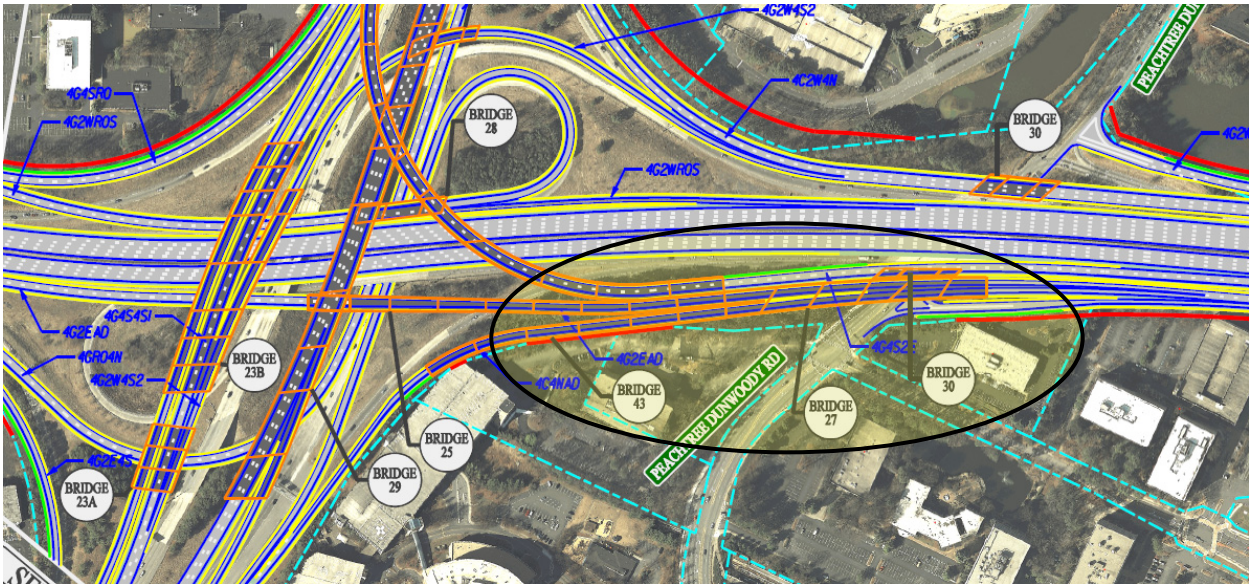
- Additional merge point on the mainline and not on C-D

Discussion: Elimination of one bridge and reducing the size of two other bridges while improving driver options and operational efficiencies warrants a further look at this simplification.

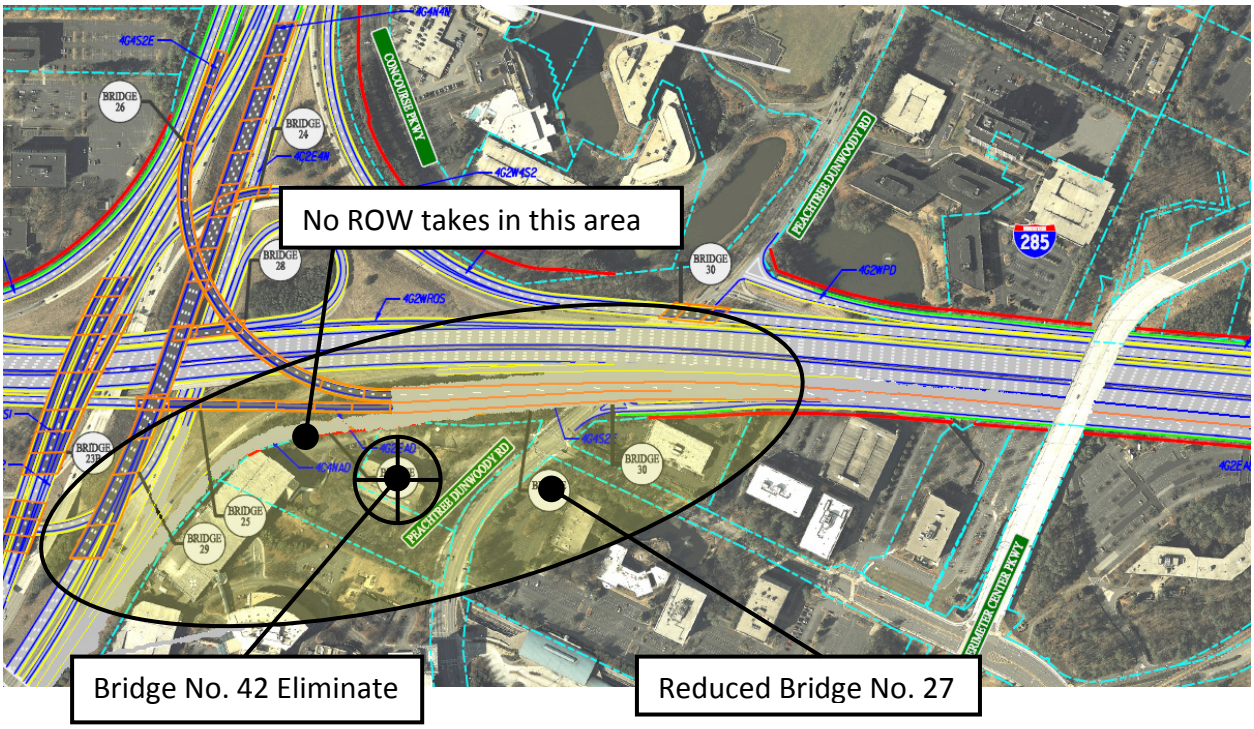
VALUE ALTERNATIVE L-2 (Applicable to Build Alternative 4 Only)

Maintain Existing Ramp From Northbound GA 400 to Eastbound I-285 to Eliminate Bridge No. 43

Baseline Concept Sketch:



Value Alternative Concept Sketch:



VALUE ALTERNATIVE L-2 (Applicable to Build Alternative 4 Only)

Maintain Existing Ramp From Northbound GA 400 to Eastbound I-285 to Eliminate Bridge No. 43

Assumptions and Calculations: Assumed full depth pavement construction is needed for existing ramp reconstruction.

Ramp NB GA 400 to WB I-285:

Length of ramp = 1,200 LF / 5,280 LF / Lane Mile = **0.227 LM**

Bridges:

Bridge No. 43 = total take at **29,138 SF**

Bridge No. 27 = Reduction by approximately 40% of 46,197 SF = 18,479 SF
∴ 46,197 SF – 18,479 SF = **27,718 SF**

ROW:

Length = 45 LF
Average Width = 10 LF
Total Area = 45 LF x 10 LF = 4,500 SF / 43,560 SF / Acre = **0.103 Acre**.

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Full Depth Ramp	LM			$0	0.227	$1,375,000	$312,500
ROADWAY SUBTOTAL				*$0*			*$312,500*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$0*			*$118,750*
ROADWAY TOTAL				*$0*			*$431,250*
STRUCTURE ITEMS							
Bridge 43		29,138	$95	$2,768,110			$0
Bridge 27		46,197	$95	$4,388,715	27,718	$95	$2,633,229
STRUCTURE SUBTOTAL				*$7,156,825*			*$2,633,229*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$2,719,594*			*$1,000,627*
STRUCTURE TOTAL				*$9,876,419*			*$3,633,856*
RIGHT-OF-WAY ITEMS							
Land		0.25	$1,000,000	$250,000	0	$1,000,000	$0
RIGHT-OF-WAY SUBTOTAL				*$250,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$370,000*			*$0*
RIGHT-OF-WAY TOTAL				*$620,000*			*$0*
TOTAL				$10,496,419			$4,065,106
TOTAL (Rounded)				$10,496,000			$4,065,000
						SAVINGS	**$6,431,000**

VALUE ALTERNATIVE L-4 (Applicable to Build Alternatives 4, 6A and 6B)

Retain Existing Southbound GA 400 Bridge Over I-285 and Eliminate Bridge Nos. 23A, 23B and 24

Cost Savings:	$21,187,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The proposed alignment under the baseline concept consists of a new parallel facility approximately 100 feet west of the existing facility and requires new bridges over I-285, an eastbound (EB) I-285 to northbound (NB) GA 400, and a westbound (WB) I-285 ramp to southbound (SB) GA 400 over NB GA 400.

Description of Alternative Concept: This alternative proposes to maintain the existing system and structures in their current alignment and do not undertake the baseline facility changes thereby eliminating Bridge Numbers 23A, 23B and 24.

Advantages:

- No additional disruption during construction
- Eliminates of three new bridges
- Simplifies construction in this area

Disadvantages:

- Existing structures will not be replaced with new structures (no maintenance savings)
- Reduces life of existing facility compared to the baseline changes to the interchange
- No additional traffic capacity

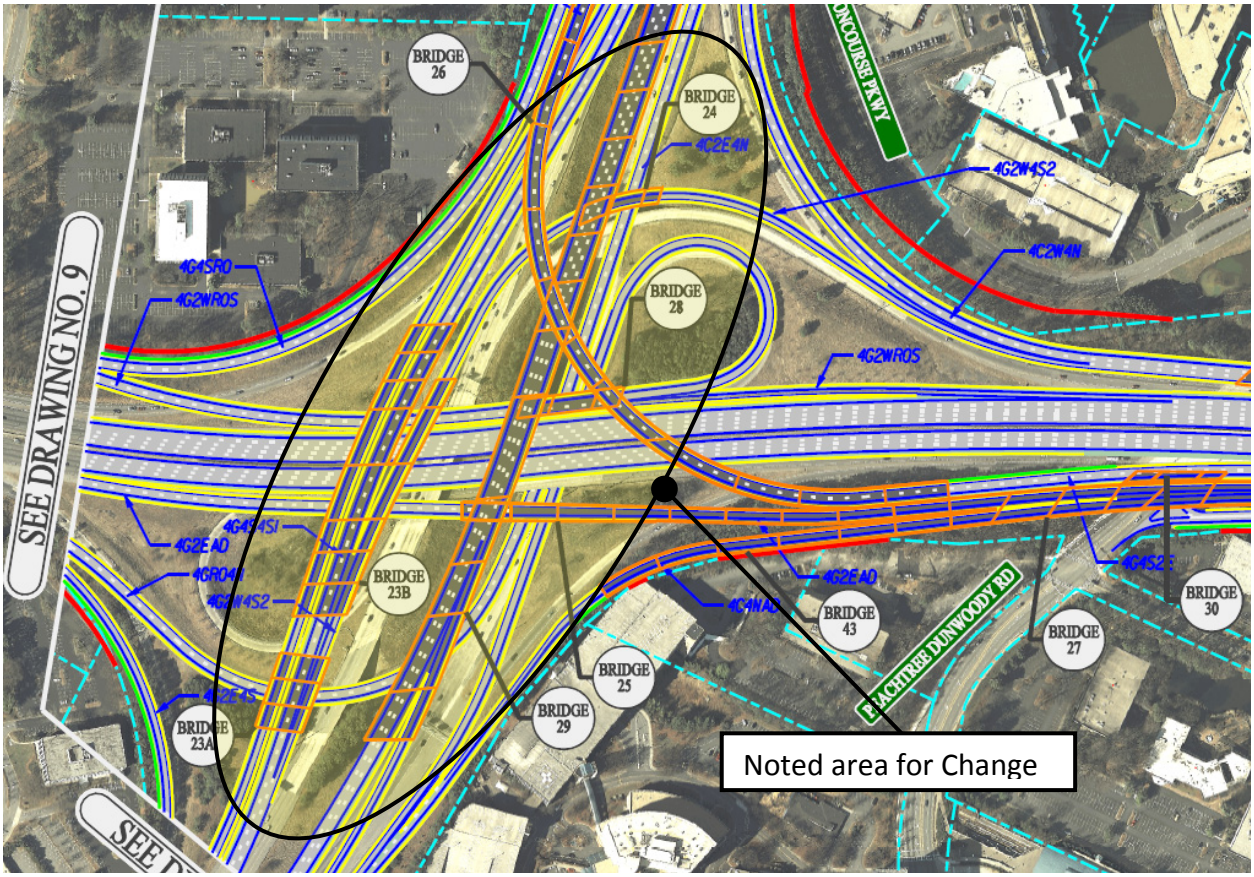
Discussion: It is noted the baseline alignment and Bridge Numbers 23A, 23B and 24 perform the same function as the current alignment. The new bridges provide minimal added value; therefore, maintaining the existing system and structures appears to be prudent and warranted. In either case, the WB I-285 ramp to SB GA 400 is still a left-hand merge therefore there is no added advantage over a new bridge. The existing bridges could be widened for capacity if needed.

It is assumed this work would have occurred concurrently with other interchange work, therefore, no schedule savings would be realized.

VALUE ALTERNATIVE L-4 (Applicable to Build Alternatives 4, 6A and 6B)

Retain Existing Southbound GA 400 Bridge Over I-285 and Eliminate Bridge Nos. 23A, 23B and 24

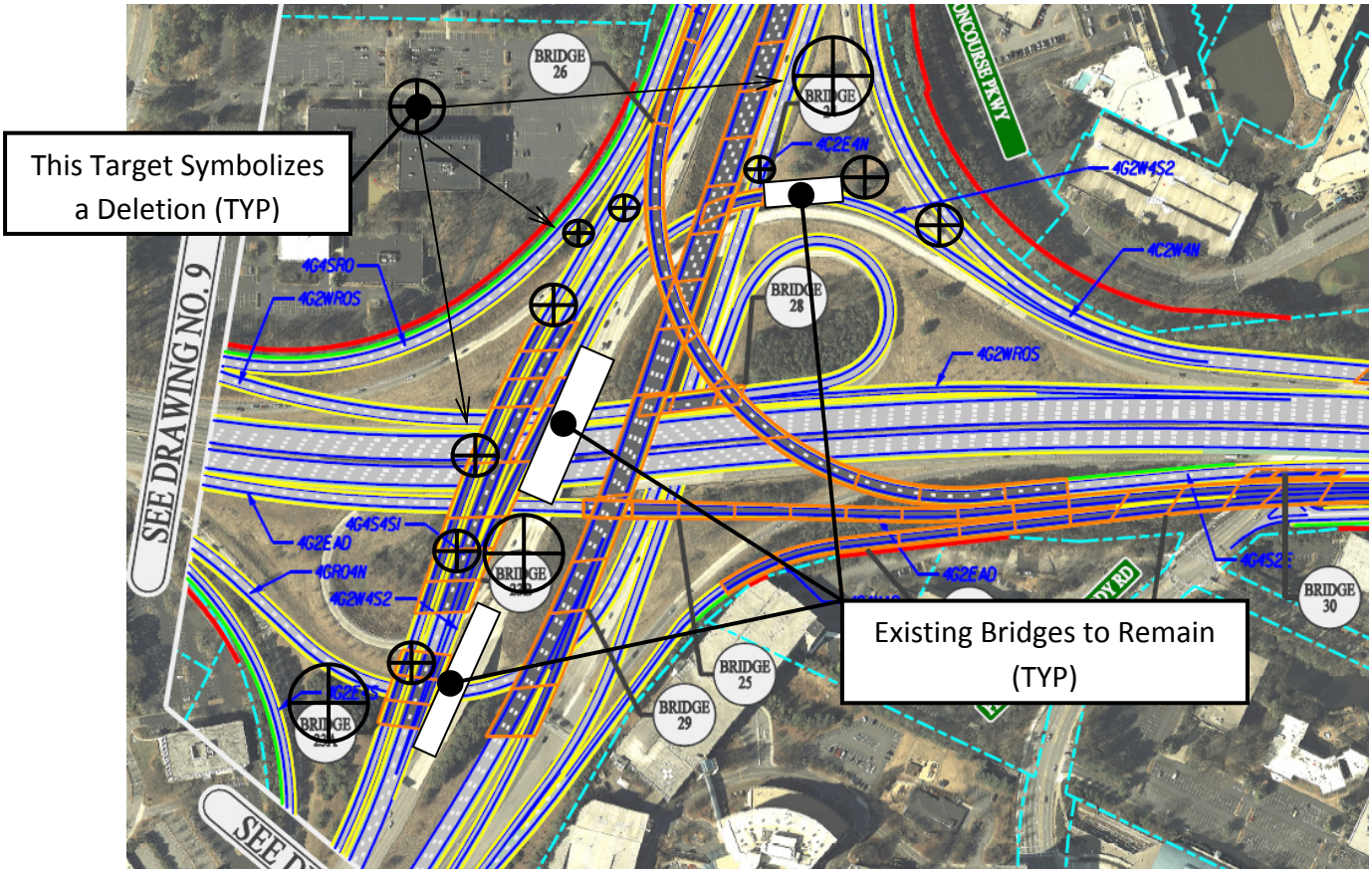
Baseline Concept Sketch:



VALUE ALTERNATIVE L-4 (Applicable to Build Alternatives 4, 6A and 6B)

Retain Existing Southbound GA 400 Bridge Over I-285 and Eliminate Bridge Nos. 23A, 23B and 24

Value Alternative Concept Sketch:



Assumptions and Calculations: New alignment to *not* be built as follows:

<u>Mainline (full depth):</u>

GA 400 SB – Sta. 20+00 to 29+00 = 900 LF

Sta. 30+90 to 31+90 = 1,100 LF

Sta. 39+30 to 63+50 = <u>2,420 LF</u>

Total = 4,420 LF x 2 lanes / (5,280 LF/Lane Mile) = **<u>1.67 LM</u>**

<u>Ramps:</u>

GA 400 SB to Glenridge Drive – Sta. 20+00 to 29+00 = 900 LF

Sta. 30+90 to 31+90 = 1,100 LF

Sta. 39+30 to 53+50 = <u>1,420 LF</u>

Total= 3,420 LF

VALUE ALTERNATIVE L-4 (Applicable to Build Alternatives 4, 6A and 6B)

Retain Existing Southbound GA 400 Bridge Over I-285 and Eliminate Bridge Nos. 23A, 23B and 24

I-285 WB to GA 400 SB – Sta. 100+00 to 111+20 = 1,120 LF

Sta. 113+20 to 118+40 = 520 LF

Sta. 124+50 to 125+60 = 110 LF

Total= 1,750 LF

(3,420 LF + 1,750 LF) x 1 lane / (5,280 LF/lane mile) = **0.98 LM**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Mainline	LM	1.67	$1,375,000	$2,296,250			$0
Ramps	LM	0.98	$1,046,000	$1,025,080			$0
ROADWAY SUBTOTAL				*$3,321,330*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$1,262,105*			*$0*
ROADWAY TOTAL				*$4,583,435*			*$0*
STRUCTURE ITEMS							
Bridge 23A		21,133	$95	$2,007,635			$0
Bridge 23B		93,601	$95	$8,892,095			$0
Bridge 23B Existing Bridge Removal		20,865	$15	$312,975			$0
Bridge 24		8,618	$95	$818,663			$0
				$0			$0
STRUCTURE SUBTOTAL				*$12,031,368*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$4,571,920*			*$0*
STRUCTURE TOTAL				*$16,603,287*			*$0*
TOTAL				$21,186,723			$0
TOTAL (Rounded)				$21,187,000			$0
						SAVINGS	**$21,187,000**

VALUE ALTERNATIVE L-5 (Applicable to Build Alternative 4 Only)

Reconfigure Eastbound I-285 Ramp to Northbound GA 400, Maintain Existing Left-Hand Merge and Eliminate Proposed Bridge No. 29

Cost Savings:	$16,785,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept reconstructs and relocates eastbound (EB) I-285 to northbound (NB) GA 400 entrance ramp and 4,300 feet of NB GA 400 including Bridge No. 29.

Description of Alternative Concept: This value alternative maintains the existing alignment of NB GA 400 and relocates EB I-285 to NB GA 400 to a right-hand entrance by elevating over the existing roadways. The decision entrance for the ramp will remain on the proposed EB collector-distributor (C-D) alignment.

Advantages:

- Maintain NB GA 400 on its existing pavement
- Eliminates one bridge
- Eliminates significant maintenance of traffic requirements

Disadvantages:

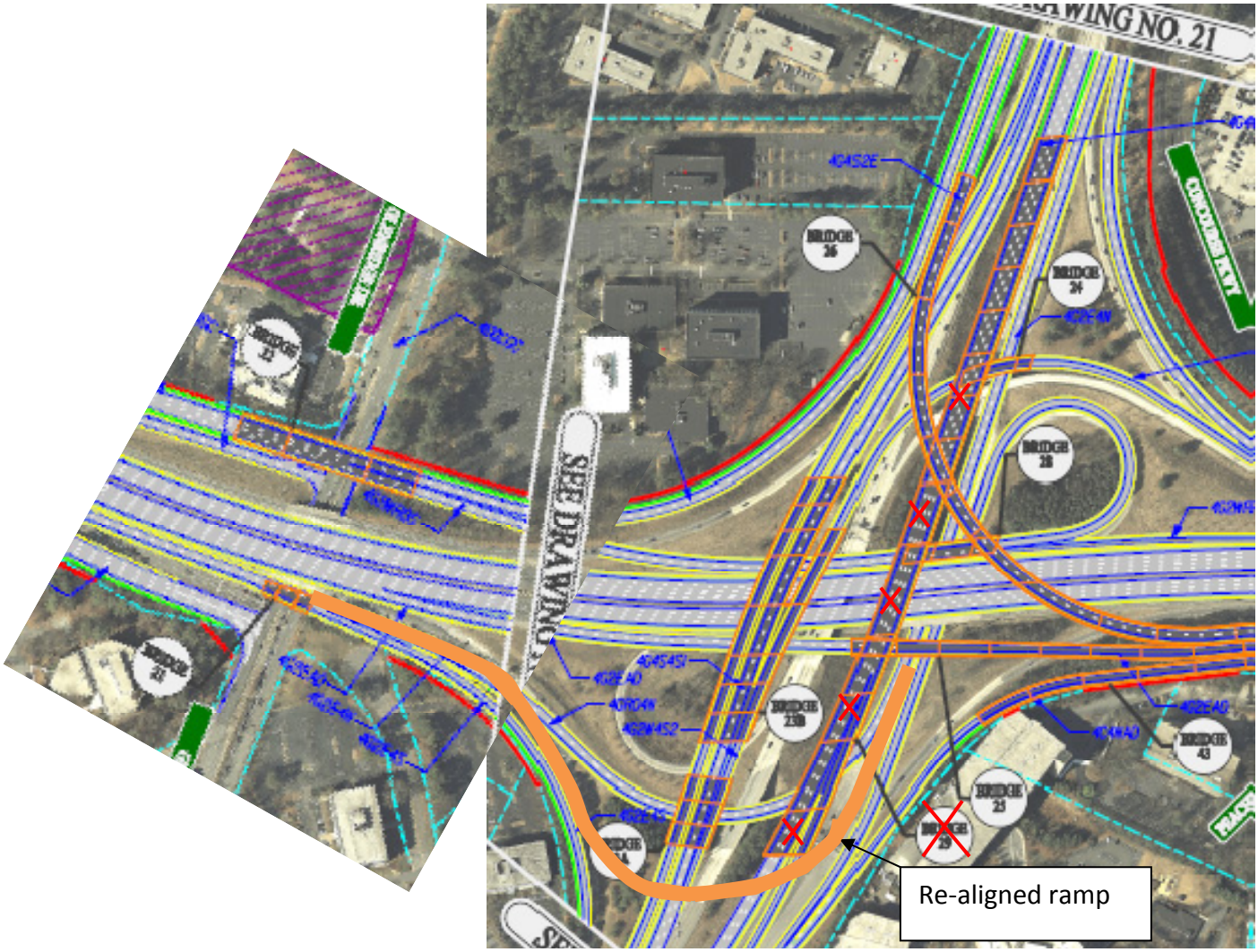
- EB I-285 to NB GA 400 entrance ramp will need to elevated quickly over both NB and SB GA 400

Discussion: The existing alignment for NB GA 400 remains which eliminates the need for a significant bridge over I-285 (Bridge No. 29) and 2,500 feet of new alignment. The entrance from EB I-285 to NB GA 400 will remain as a proposed right hand exit with a flyover both NB and SB GA 400 and I-285. This will save considerable construction cost and effort.

VALUE ALTERNATIVE L-5 (Applicable to Build Alternative 4 Only)

Reconfigure Eastbound I-285 Ramp to Northbound GA 400, Maintain Existing Left-Hand Merge and Eliminate Proposed Bridge No. 29

Baseline / Value Alternative Concept Sketches:



VALUE ALTERNATIVE L-5 (Applicable to Build Alternative 4 Only)

Reconfigure Eastbound I-285 Ramp to Northbound GA 400, Maintain Existing Left-Hand Merge and Eliminate Proposed Bridge No. 29

Assumptions and Calculations:

Reductions

Pavement

NB GA 400 Pavement: 4,500 LF – 2,000 LF (bridge) x 4 lanes / 5,280 LF / Lane Mile = **1.89 LM**

Eliminate Bridge No. 29

EB I-285 to NB GA 400 Entrance Ramp Pavement: 2,500 LF x 2 lanes / 5,280 LF / Lane Mile = **0.95 LM**

Additions

EB I-285 to NB GA 400 Entrance Ramp: 2,500 LF x 43 LF = **107,500 SF**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Pavement - NB GA 400	LM	1.89	$1,375,000	$2,598,750			$0
Pavement - EB I-285 to NB GA 400	LM	0.95	$1,375,000	$1,306,250			$0
ROADWAY SUBTOTAL				*$3,905,000*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$1,483,900*			*$0*
ROADWAY TOTAL				*$5,388,900*			*$0*
STRUCTURE ITEMS							
Bridge No. 29	LS	1	$18,470,080	$18,470,080			$0
EB I-285 to NB GA 400 Bridge over SB and NB GA 400				$0	107,500	$95	$10,212,500
STRUCTURE SUBTOTAL				*$18,470,080*			*$10,212,500*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$7,018,630*			*$3,880,750*
STRUCTURE TOTAL				*$25,488,710*			*$14,093,250*
TOTAL				$30,877,610			$14,093,250
TOTAL (Rounded)				$30,878,000			$14,093,000
						SAVINGS	**$16,785,000**

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Cost Savings:	$77,413,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The proposed baseline concept provides improvements to Windy Hill Road by replacing the bridge over I-75 with a wider structure (Bridge No. 5) and associated roadway approximately 1,500 feet to the west and 2,000 feet to the east. Secondary improvements include access ramp improvements, secondary street tie-ins and raising Windy Hill Road over Leland Drive.

Raising Windy Hill Road requires new bridges over Leland Drive (Bridge No. 3) and Rottenwood Creek, one for Windy Hill Road (Bridge No. 2) and one for the Leland Drive connector (Bridge No. 1). The concept also provides improvements for I-75 weaving movements towards Delk Road by providing two braided bridges (Bridge Nos. 4 and 6).

Description of Alternative Concept: Maintain the existing facilities and structures in their current location and do not undertake the baseline facility improvements to Windy Hill Road or the I-75 weaving lane changes; eliminate Bridge Numbers 1 through 6.

Advantages:

- No additional disruption during construction
- Removal of six bridges
- Removal of ten walls
- Eliminates roadway improvements
- ROW is reduced

Disadvantages:

- No additional traffic capacity
- Existing traffic patterns on Windy Hill Road will remain at their current level

Discussion: Although the Windy Hill Road interchange is considered part of the project, its separation from I-285 warrants a review of traffic impacts on the top end system by not implementing the improvements. The congestion on Windy Hill Road and secondary roads should be a Cobb County concern as this is not a state road nor does it add any functional improvements to the need and purpose of the REVIVE I-285 Top End project.

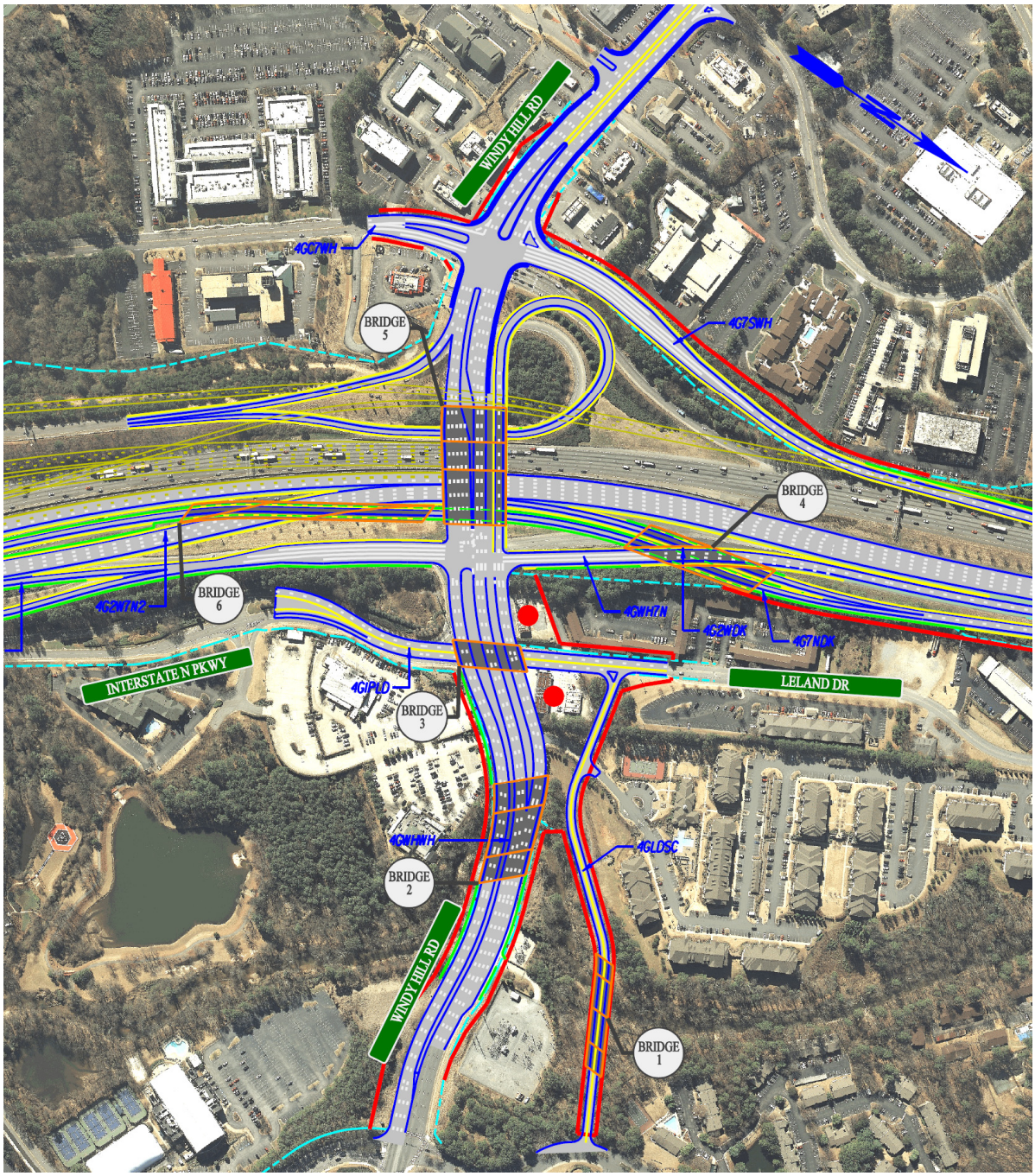
The separation between Windy Hill Road and Delk Road has adequate length for the weaving movements to enter/exit the highway; therefore, the double braided bridges (Nos. 4 and 6) are not warranted. The bridge designations shown on drawing No. 18 do not match the bridge component table information in the cost estimate (page 3 of 21, Bridge), the graphic designations were used. The bridge components of the cost estimate also do not account for demolition of the existing Windy Hill Road bridges over I-75 and Rottenwood Creek (neither were considered in this estimate).

It is assumed this work would have occurred concurrently with other interchange work; therefore, no schedule savings would be realized.

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Baseline / Value Alternative Concept Sketches:

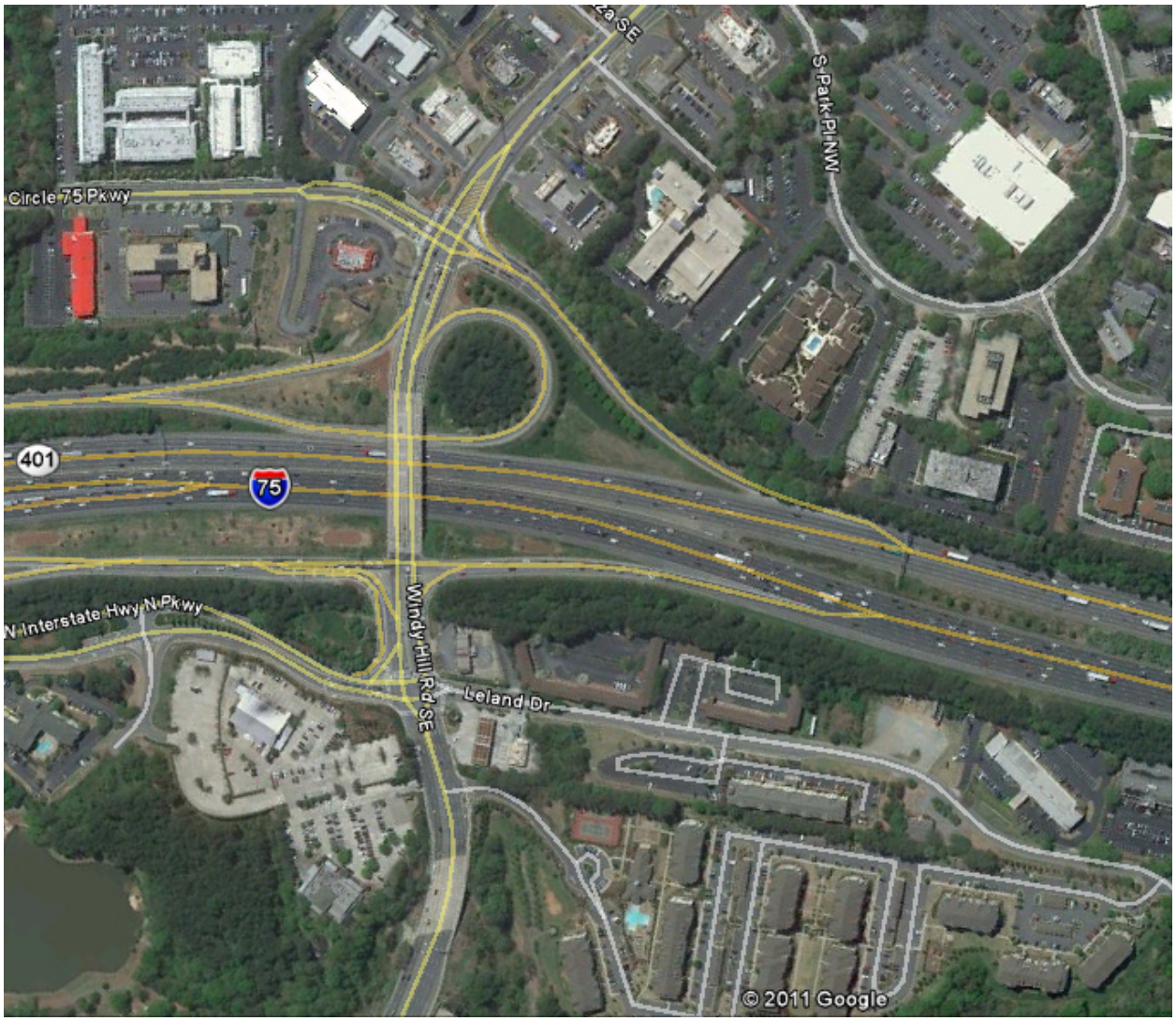


PROPOSED WINDY HILL ROAD / I-75 IMPROVEMENTS

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Value Alternative Concept Sketch:



EXISTING WINDY WILL ROAD / I-75 INTERCHANGE TO REMAIN AS-IS

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Assumptions and Calculations: New alignment to *not* be built as follow:

Roadway

Location	Full Depth (L-M)	Overlay (L-M)
I-75 NB*		
W. Hill Exit Ramp Gore	0.44	0.21
W. Hill Exit Ramp Gore to CD NB Exit Ramp Gore	0.54	0.43
CD NB Exit Ramp Gore	0.13	0.09
CD NB Exit Ramp Gore	0.14	0.10
CD NB Exit Ramp Gore	0.47	0.58
I-285 Entrance Ramp Gore	0.17	0.84
I-285 Entrance Ramp Gore to W. Hill Entrance Ramp Gore	0.30	1.78
W. Hill entrance Ramp Gore	0.42	3.33
W. Hill Entrance Ramp Gore to End I-75	0.42	3.22
I-75 SB*		
I-285 EB Exit Ramp Gore to W. Hill Entrance Ramp	0.88	1.27
I-285 EB to W. Hill Exit Ramp Gore	0.00	0.23
W. Hill Exit Ramp Gore	0.04	0.24
W. Hill Exit Ramp Gore to End I-75 SB	0.00	0.90
Totals Ramp =	**3.21**	**13.22**
C-D =	**0.74**	
Surface Streets**		
Windy Hill Rd	0.31	5.38
Windy Hill Rd	0.48	
Windy Hill Rd	0.71	
Leland Drive	0.91	
Totals =	**2.41**	**5.38**

*Data taken from Cost Estimate sheet 6 of 21, Roadway Segment
**Data taken from Cost Estimate sheet 9 of 21, Roadway Segment

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Walls

Location	0'-30' Ht (SF)	30'+ Ht (SF)
I-75 NB to Windy Hill (1)		5,800
I-75 NB to Windy Hill (2)		22,125
I-75 NB to Delk Road (1)	47,500	
I-75 NB to Delk Road (2)	48,200	
I-285 NB Ramps to Delk Road	9,800	
Windy Hill NB on-ramp to I-75	4,500	
Windy Hill Rd (1)	7,300	
Windy Hill Rd (1)	6,000	
Windy Hill Rd (1)	5,200	
Windy Hill Rd (1)		1,100
Totals Ramp =	**128,500**	**29,025**

Data taken from Cost Estimate sheet 10 of 21, Walls

ROW

Location	Residential (Ac)	Commercial (Ac)
I-75 NB		0.66
I-75 NB		0.79
Windy Hill RT		0.24
Windy Hill RT		0.01
Windy Hill RT		0.16
Windy Hill RT		0.80
Windy Hill LT		0.83
Windy Hill LT		1.65
Windy Hill LT		0.41
Leland to Spectrum		1.90
Circle 75		0.01
Totals Ramp =	**0**	**7.46**

Data taken from Cost Estimate sheets 15 and 16 of 21, ROW

VALUE ALTERNATIVE L-8.1 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Windy Hill Road / I-75 Interchange

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Mainline, C-D and Ramps Overlay	LM	13.22	$376,000	$4,970,720			$0
Surface Streets	LM	2.41	$1,046,000	$2,520,860			$0
Surface Streets Overlay	LM	5.38	$560,000	$3,012,800			$0
C-D Construction	LM	0.74	$1,375,000	$1,017,500			$0
ROADWAY SUBTOTAL				*$11,521,880*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$4,378,314*			*$0*
ROADWAY TOTAL				*$15,900,194*			*$0*
STRUCTURE ITEMS							
Bridge 1	SF	16,023	$95	$1,522,185			$0
Bridge 2	SF	40,473	$95	$3,844,935			$0
Bridge 3	SF	14,925	$95	$1,417,875			$0
Bridge 4	SF	34,243	$95	$3,253,085			$0
Bridge 5	SF	63,455	$140	$8,883,700			$0
Bridge 6	SF	34,656	$95	$3,292,320			$0
Walls 0'-30'	SF	128,500	$55	$7,067,500			
Walls 30'+	SF	29,025	$65	$1,886,625			
STRUCTURE SUBTOTAL				*$31,168,225*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$11,843,926*			*$0*
STRUCTURE TOTAL				*$43,012,151*			*$0*
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	AC	7.46	$1,000,000	$7,460,000			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$7,460,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$11,040,800*			*$0*
RIGHT-OF-WAY TOTAL				*$18,500,800*			*$0*
TOTAL				$77,413,145			$0
TOTAL (Rounded)				$77,413,000			$0
						SAVINGS	**$77,413,000**

VALUE ALTERNATIVE L-8.2 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange

Cost Savings:	$23,841,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The proposed baseline concept provides improvements for I-75 weaving movements towards Delk Road by providing two braided bridges (Bridge Nos. 4 and 6) at the Windy Hill Road interchange.

Description of Alternative Concept: Undertake the baseline facility improvements for I-75 weaving lane changes; however, eliminate Bridge Nos. 4 and 6 and associated ramps.

Advantages:

- No additional disruption during construction
- Removal of two bridges
- Removal of four walls
- Reduces ROW take
- Reduces roadway improvements

Disadvantages:

- Minimal improvements to the Windy Hill Road / I-75 interchange

Discussion: Although the Windy Hill Road / I-75 interchange is considered part of the project, its separation from I-285 warrants a review of traffic impacts on the top end system by not implementing the improvements.

The separation between Windy Hill Road and Delk Road has adequate length for the weaving movements to enter/exit the highway; therefore, the double braided bridges (Nos. 4 and 6) are not warranted.

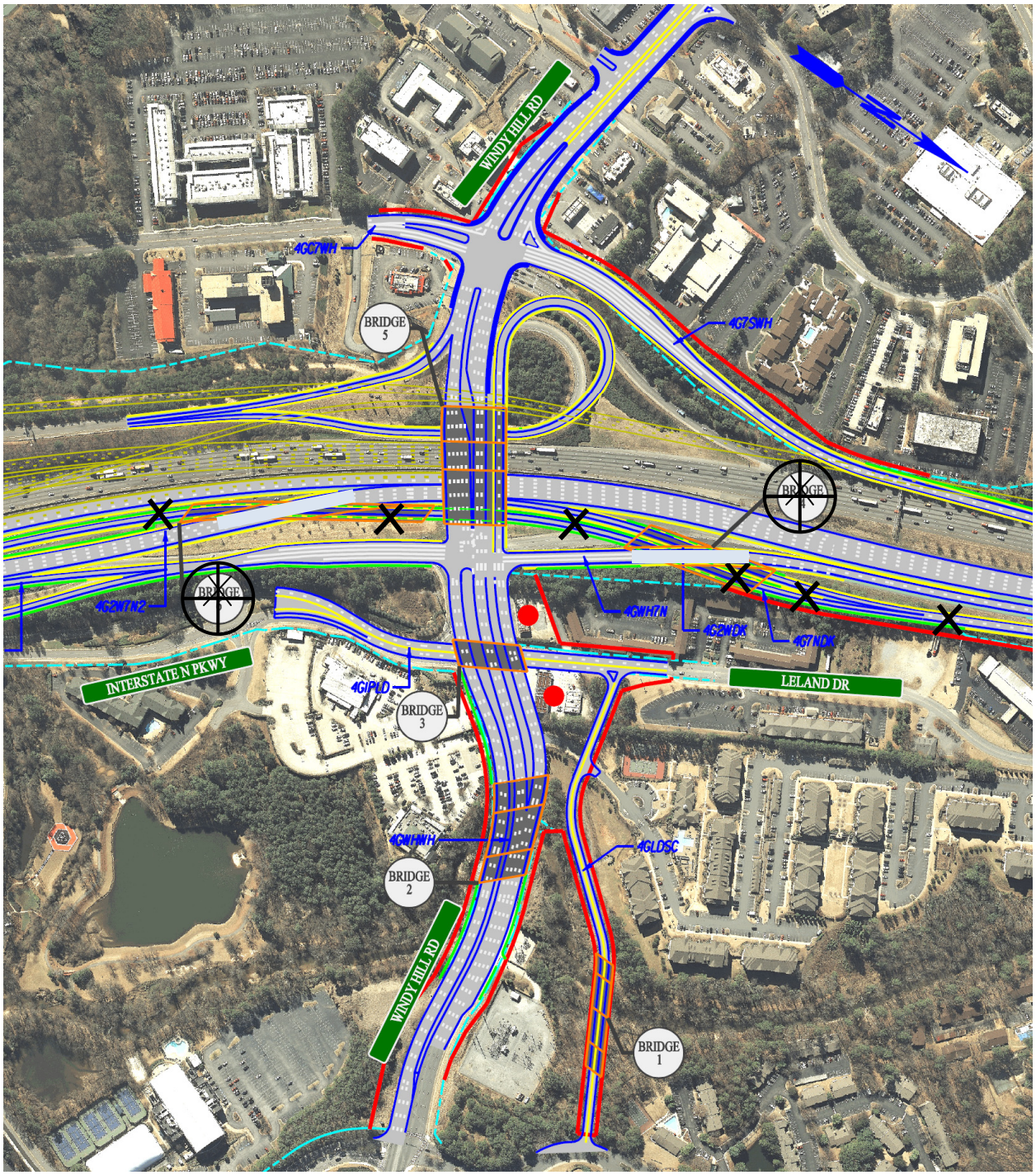
The bridge designations shown on drawing No. 18 do not match the bridge component table information in the cost estimate (page 3 of 21, Bridge), the graphic designations were used. The bridge components of the cost estimate also do not account for demolition of the existing Windy Hill Road bridges over I-75 and Rottenwood Creek (neither were considered in this estimate).

It is assumed this work would have occurred concurrently with other interchange work, therefore, no schedule savings would be realized.

VALUE ALTERNATIVE L-8.2 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange

Baseline / Value Alternative Concept Sketch:



VALUE ALTERNATIVE L-8.2 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange

Assumptions and Calculations: New alignment to *not* be built as follow:

Roadway

Location	Full Depth (L-M)	Overlay (L-M)
I-75 NB *		
CD NB Exit Ramp Gore	**0.47**	0.58
W. Hill Entrance Ramp Gore to End I-75	0.42	3.22
Totals Ramp =	**0.42**	**3.80**
CD =	**0.47**	

*Data taken from Cost Estimate sheet 6 of 21, Roadway Segment

Walls

Location	0'-30' Ht (SF)	30'+ Ht (SF)
I-75 NB to Delk Road (1)	47,500	
I-75 NB to Delk Road (2)	48,200	
I-285 NB Ramps to Delk Road	9,800	
Windy Hill NB on-ramp to I-75	4,500	
Totals Ramp =	**110,000**	**0**

Data taken from Cost Estimate sheet 10 of 21, Walls

ROW

Location	Residential (Ac)	Commercial (Ac)
I-75 NB		0.66
I-75 NB		0.79
Totals Ramp =	**0**	**1.45**

Data taken from Cost Estimate sheet 15 of 21, ROW

VALUE ALTERNATIVE L-8.2 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange

Initial Costs:

Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange						NUMBER L-8.2	PAGE NO. of
CONSTRUCTION ELEMENT	**Unit**	**ORIGINAL CONCEPT**			**ALTERNATIVE CONCEPT**		
Description		**Quantity**	**Cost/Unit**	**Total**	**Quantity**	**Cost/Unit**	**Total**
ROADWAY ITEMS							
Mainline, C-D and Ramps Overlay	LM	3.80	$376,000	$1,428,800			$0
C-D Construction	LM	0.47	$1,375,000	$646,250			$0
ROADWAY SUBTOTAL				*$2,075,050*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$788,519*			*$0*
ROADWAY TOTAL				*$2,863,569*			*$0*
STRUCTURE ITEMS							
Bridge 4	SF	34,243	$95	$3,253,085			$0
Bridge 6	SF	34,656	$95	$3,292,320			$0
Walls 0'-30'	SF	110,000	$55	$6,050,000			
STRUCTURE SUBTOTAL				*$12,595,405*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$4,786,254*			*$0*
STRUCTURE TOTAL				*$17,381,659*			*$0*
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	AC	1.45	$1,000,000	$1,450,000			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$1,450,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$2,146,000*			*$0*
RIGHT-OF-WAY TOTAL				*$3,596,000*			*$0*
ENVIRONMENTAL MITIGATION ITEMS							
				$0			$0
				$0			$0
TOTAL				$23,841,228			$0
TOTAL (Rounded)				$23,841,000			$0
						SAVINGS	**$23,841,000**

VALUE ALTERNATIVE L-9 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Eastbound I-285 to Chamblee Tucker Road Exit Ramp and Bridge No. 42

Cost Savings:	$3,299,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: Proposed baseline concept shows a separate ramp from eastbound (EB) I-285 to Chamblee Tucker Road which includes Bridge No. 42.

Description of Alternative Concept: This alternative would maintain the ramp from EB I-285 to Chamblee Tucker Road at its present location and add an additional lane to the collector-distributor (C-D) to the EB I-285 ramp up until the split to Chamblee Tucker Road.

Advantages:

- Uses existing ramp configurations
- Eliminates one bridge

Disadvantages:

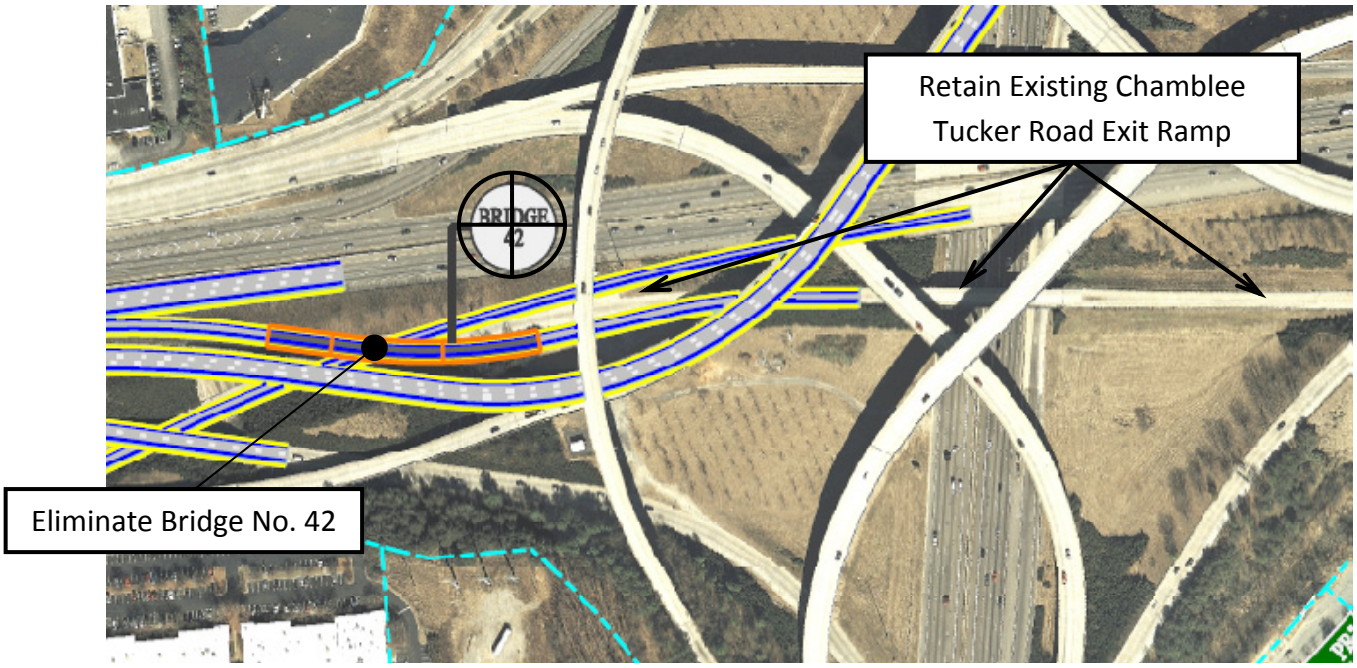
- Exit to Chamblee Tucker Road will be part of the NB I-85 exit ramp and decision must be made near Buford Drive in order to exit

Discussion: The exit ramp from EB I-285 to Chamblee Tucker Road is an existing ramp and can be used rather than constructing 1,800 feet of new ramp including Bridge No. 42. The existing ramp will come off of the ramp from Buford Drive to EB I-285 and that section of the proposed ramp will need to be widened to two lanes in order to accommodate traffic.

VALUE ALTERNATIVE L-9 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Eastbound I-285 to Chamblee Tucker Road Exit Ramp and Bridge No. 42

Baseline / Value Alternative Concept Sketch:



VALUE ALTERNATIVE L-9 (Applicable to Build Alternatives 4, 6A and 6B)

Eliminate Eastbound I-285 to Chamblee Tucker Road Exit Ramp and Bridge No. 42

Assumptions and Calculations:

Additions:

Widen Buford Drive to EB I-285 Ramp to two lanes - 2,700 LF / 5,280 LF / LM = **0.51 LM**

Deletions:

Proposed EB I-285 to Chamblee Tucker Road - 1,600 LF – Bridge 42 length = 1,120 LF / 5,280 LF / LM=**0.21 LM**

Bridge 42

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Pavement	LM	0.21	$1,375,000	$288,750	0.51	$1,375,000	$701,250
ROADWAY SUBTOTAL				*$288,750*			*$701,250*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$109,725*			*$266,475*
ROADWAY TOTAL				*$398,475*			*$967,725*
STRUCTURE ITEMS							
Bridge 42	LS	1	$2,803,640	$2,803,640			$0
STRUCTURE SUBTOTAL				*$2,803,640*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$1,065,383*			*$0*
STRUCTURE TOTAL				*$3,869,023*			*$0*
TOTAL				$4,267,498			$967,725
TOTAL (Rounded)				$4,267,000			$968,000
						SAVINGS	**$3,299,000**

VALUE ALTERNATIVE L-10 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Northeast Quadrant of the I-285 / I-85 Interchange

Cost Savings:	$8,921,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept reconstructs the northbound (NB) I-85 to Northcrest Road ramp and the westbound (WB) I-85 to Northcrest Road ramp.

Description of Alternative Concept: Maintain the existing ramps as they are today and preclude any of the baseline concept changes at Northcrest Road.

Advantages:

- Retaining the existing ramps reduces maintenance of traffic
- Reduces ramp construction
- Reduces ROW takes

Disadvantages:

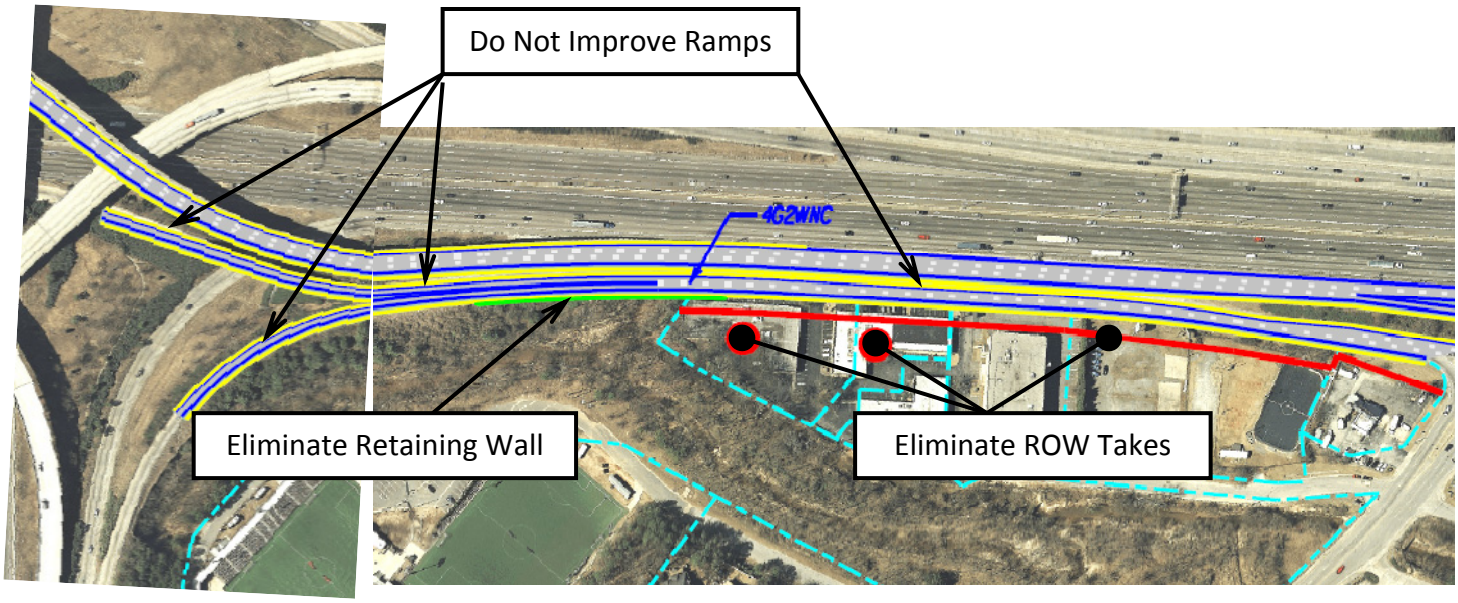
- None apparent

Discussion: The NB I-85 to Northcrest Road ramp and the WB I-85 to Northcrest Road ramp are shown to be reconstructed in their present locations. As such, there does not appear to be any additional benefit to this reconstruction. Right-of-way costs are reduced by maintaining the status quo configuration of these ramps.

VALUE ALTERNATIVE L-10 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Northeast Quadrant of the I-285 / I-85 Interchange

Baseline / Value Alternative Concept Sketch:



VALUE ALTERNATIVE L-10 (Applicable to Build Alternatives 4, 6A and 6B)

Do Not Improve the Northeast Quadrant of the I-285 / I-85 Interchange

Assumptions and Calculations:

Deletions:

Pavement – 2,600 LF x two-lanes = 5,200 LF / 5,280 LF / LM = **0.98 LM**

ROW - 1,200 LF x average width of 50 LF / 43,560 SF / Acre = **1.38 Acres**

Relocations – two commercial properties:

Build Alternative 4 @ $650,000 EA

Build Alternative 6A @ $751,176 EA

Build Alternative 6B @ $800,000 EA

∴ Average relocation = ($650,000 + $751,176 + $800,000) / 3 = **$733,725 / each**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Pavement	LM	0.98	$1,375,000	$1,347,500			$0
				$0			$0
ROADWAY SUBTOTAL				*$1,347,500*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$512,050*			*$0*
ROADWAY TOTAL				*$1,859,550*			*$0*
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Property - Commercial	AC	1.38	$1,000,000	$1,380,000			$0
Relocation - Residential	EA	2	$733,725	$1,467,450			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$2,847,450*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$4,214,226*			*$0*
RIGHT-OF-WAY TOTAL				*$7,061,676*			*$0*
TOTAL				$8,921,226			$0
TOTAL (Rounded)				$8,921,000			$0
						SAVINGS	**$8,921,000**

VALUE ALTERNATIVE L-11 (Applicable to Build Alternative 4 Only)

Eliminate Bridge No. 33 at the Chamblee Dunwoody Road / I-285 Interchange

Cost Savings:	$4,523,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The proposed alignment under the baseline concept consists of a new braided bridge to allow the Chamblee Dunwoody Road westbound (WB) on-ramp to cross over the WB collector distributor (C-D). This ramp then merges left onto WB I-285 and/or onto the WB C-D to the right.

Description of Alternative Concept: This alternative proposes to eliminate Bridge No. 33 and align the Chamblee Dunwoody Road on-ramp for a left hand merge with the WB C-D. Provide a left hand merge onto I-285 off of the WB C-D prior to Ashford Dunwoody Road.

Advantages:

- No additional disruption during construction
- Elimination of one new bridge.
- No right hand merge onto the WB C-D

Disadvantages:

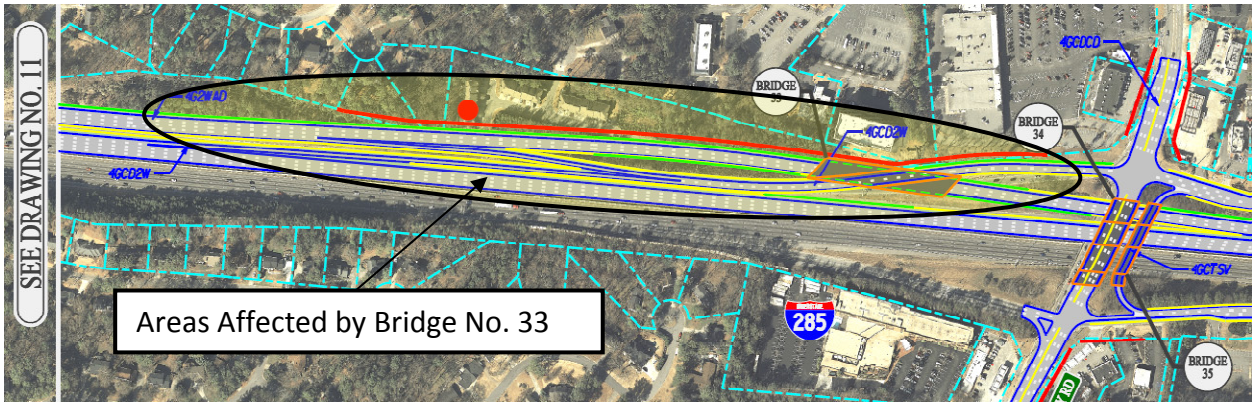
- Traffic weave pattern required to enter I-285

Discussion: The separation between Chamblee Dunwoody Road and Ashford Dunwoody Road appears to provide adequate length for a traffic weave pattern from Ashford Dunwoody to WB I-285.

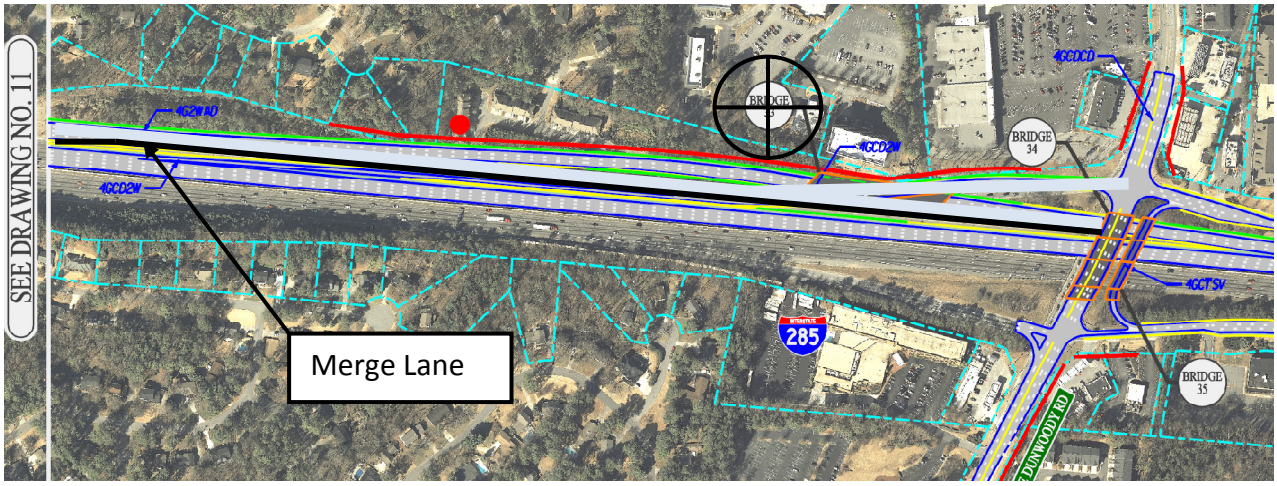
VALUE ALTERNATIVE L-11 (Applicable to Build Alternative 4 Only)

Eliminate Bridge No. 33 at the Chamblee Dunwoody Road / I-285 Interchange

Baseline Concept Sketch:



Value Alternative Concept Sketch:



VALUE ALTERNATIVE L-11 (Applicable to Build Alternative 4 Only)

Eliminate Bridge No. 33 at the Chamblee Dunwoody Road / I-285 Interchange

Assumptions and Calculations: The reconfiguration of the ramp and CD alignments will have negligible affects on roadway and ROW quantity and costs therefore, no further analysis was done.

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
STRUCTURE ITEMS							
Bridge 33	SF	34,500	$95	$3,277,500			$0
STRUCTURE SUBTOTAL				*$3,277,500*			*$0*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$1,245,450*			*$0*
STRUCTURE TOTAL				*$4,522,950*			*$0*
TOTAL				$4,522,950			$0
TOTAL (Rounded)				$4,523,000			$0
						SAVINGS	**$4,523,000**

VALUE ALTERNATIVE SP-1/RTT-1 (Applicable to Build Alternative 4 Only)

Reduce Right-of-Way Take On Sandy Springs Circle Using a Single Point Urban Interchange

Cost Savings:	$8,009,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept aligns the exit ramp from eastbound (EB) I-285 to Sandy Springs Circle and the collector distributor (C-D) lane to Roswell Road for about 200 feet parallel from I-285.

Description of Alternative Concept: Use a Single Point Urban Interchange (SPUI) to move the exit ramp and C-D closer to I-285 which will be separated by walls.

Advantages:

- Reduces required ROW by eight displacements
- Simplifies construction
- Creates less weaving

Disadvantages:

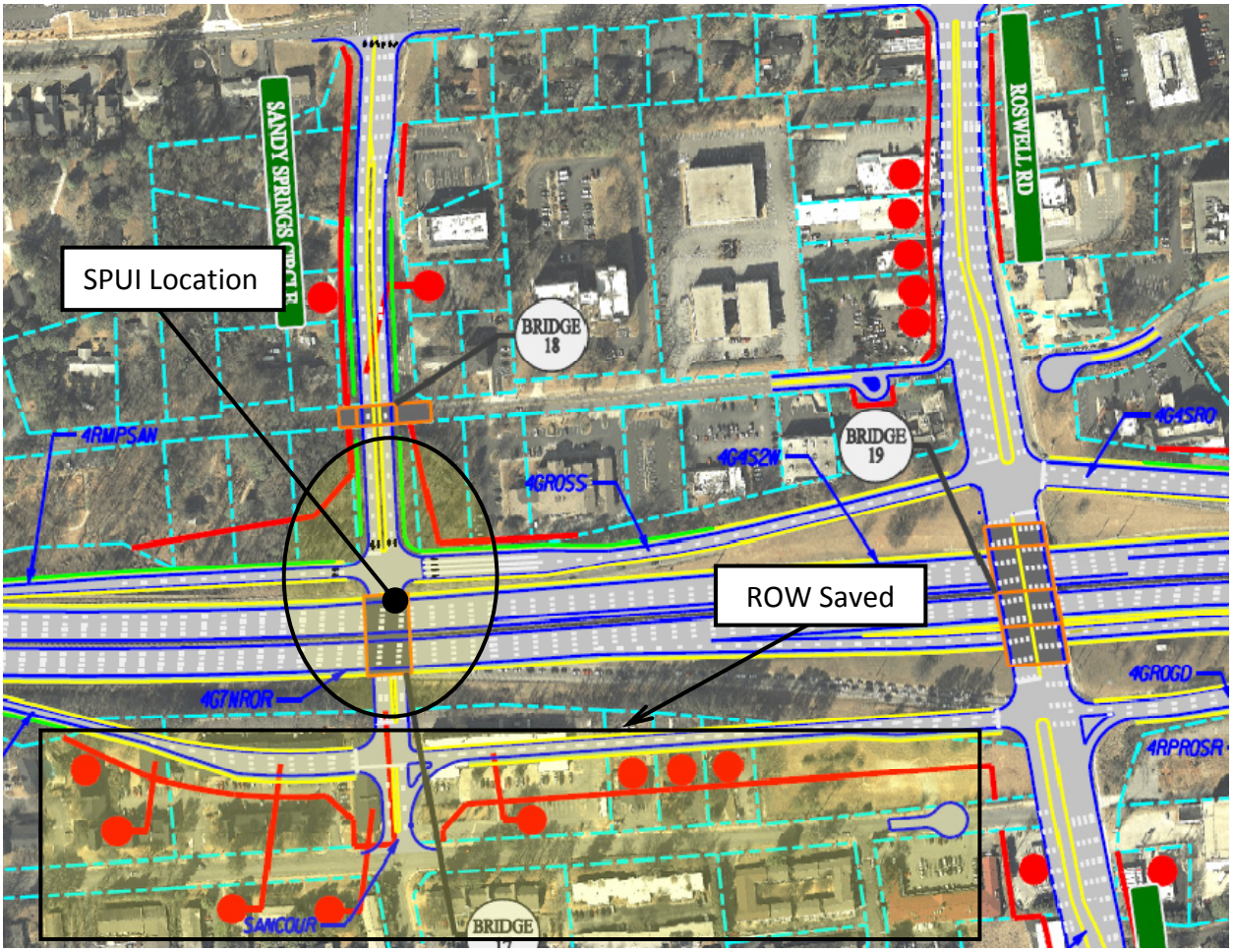
- Increases width of proposed bridge over I-285 to accommodate SPUI

Discussion: Using a SPUI will enable all traffic movements as designed but not require eight displacements in the area. This will save cost in an area with considerably high property values.

VALUE ALTERNATIVE SP-1/RTT-1 (Applicable to Build Alternative 4 Only)

Reduce Right-of-Way Take On Sandy Springs Circle Using a Single Point Urban Interchange

Baseline / Value Alternative Concept Sketch:



VALUE ALTERNATIVE SP-1/RTT-1 (Applicable to Build Alternative 4 Only)

Reduce Right-of-Way Take On Sandy Springs Circle Using a Single Point Urban Interchange

Assumptions and Calculations:

Reductions:

Pavement and signalization costs will remain the same.

Displacements – Residential – **5 EA**

Commercial – **3 EA**

Land - $550 LF x 100 LF / 43,560 SF / Acre = **1.26 AC**

Additions:

Additional bridge width to accommodate SPUI:

50 LF x 150 LF = **7,500 SF**

Additional Retaining Wall:

1,000 LF x 15 LF = **15,000 SF**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
ROADWAY ITEMS							
Bridge	SF			$0	7,500	$95	$712,500
Retaining Wall	SF			$0	15,000	$55	$825,000
				$0			$0
ROADWAY SUBTOTAL				*$0*			*$1,537,500*
ROADWAY MARK-UP *(38.00% for Build Alt 4; 35.70% for Build Alts 6A and 6B)*	*38.00%*			*$0*			*$584,250*
ROADWAY TOTAL				*$0*			*$2,121,750*
RIGHT-OF-WAY ITEMS							
Land	AC	1.26	$1,000,000	$1,260,000			$0
Improvements				$0			$0
Relocation - Commercial	EA	3	$650,000	$1,950,000			$0
Relocation - Residential	EA	5	$175,000	$875,000			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$4,085,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$6,045,800*			*$0*
RIGHT-OF-WAY TOTAL				*$10,130,800*			*$0*
TOTAL				$10,130,800			$2,121,750
TOTAL (Rounded)				$10,131,000			$2,122,000
						SAVINGS	**$8,009,000**

VALUE ALTERNATIVE SP-5 (Applicable to Build Alternatives 4, 6A and 6B)

Reduce Right-of-Way Take North of Mt. Wilkenson Parkway

Cost Savings:	$1,708,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to acquire significant right-of-way (ROW) on the west side of I-285 just north of Mt. Wilkenson Parkway apparently for the proposed retaining wall in this area.

Description of Alternative Concept: The alternative concept reduces the amount of ROW in this area to accommodate a 20-foot construction zone for the proposed retaining wall.

Advantages:

- Reduces Impacts to adjacent properties
- Consistent with typical ROW requirements for retaining walls
- Reduces ROW costs

Disadvantages:

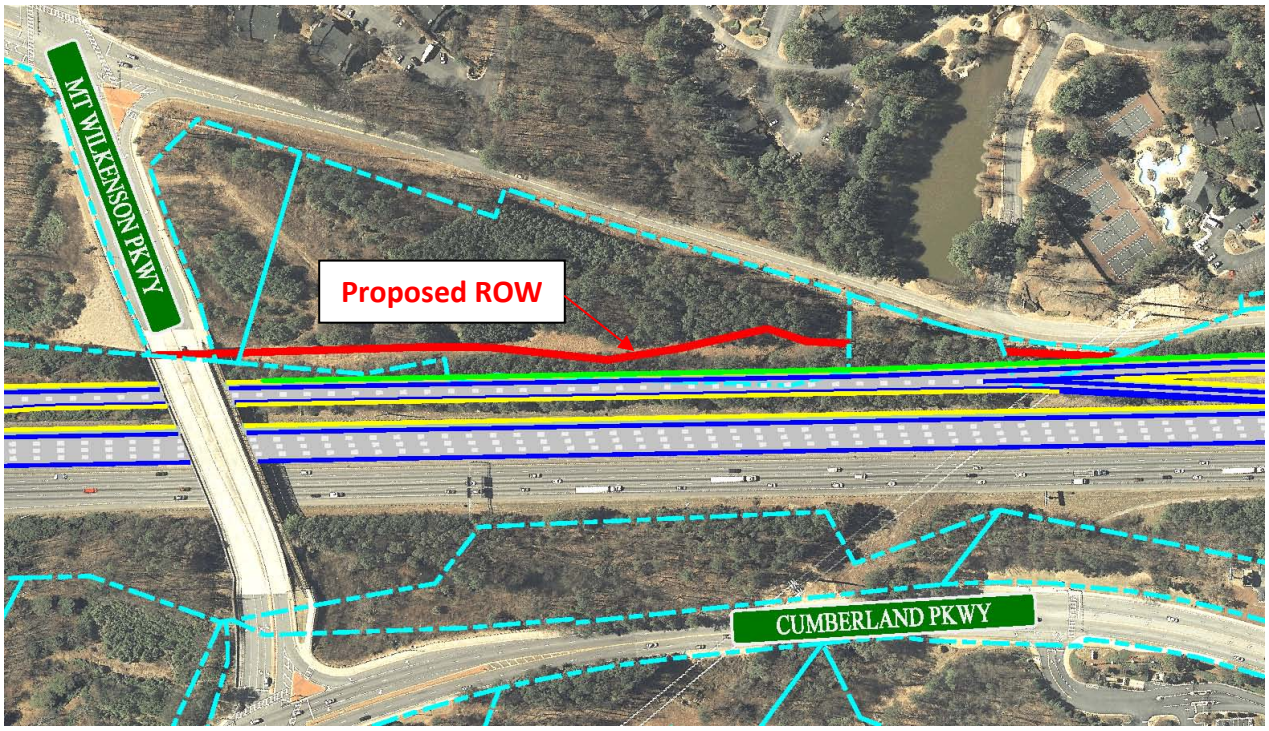
- Reduces staging area for construction of retaining wall

Discussion: The baseline concept's proposed retaining wall on the west side of I-285 in the area just north of Mt. Wilkenson Parkway is to reduce impacts to adjacent properties along the corridor and to reduce ROW costs. The proposed retaining wall can be installed with a significantly less ROW take than shown in the baseline concept.

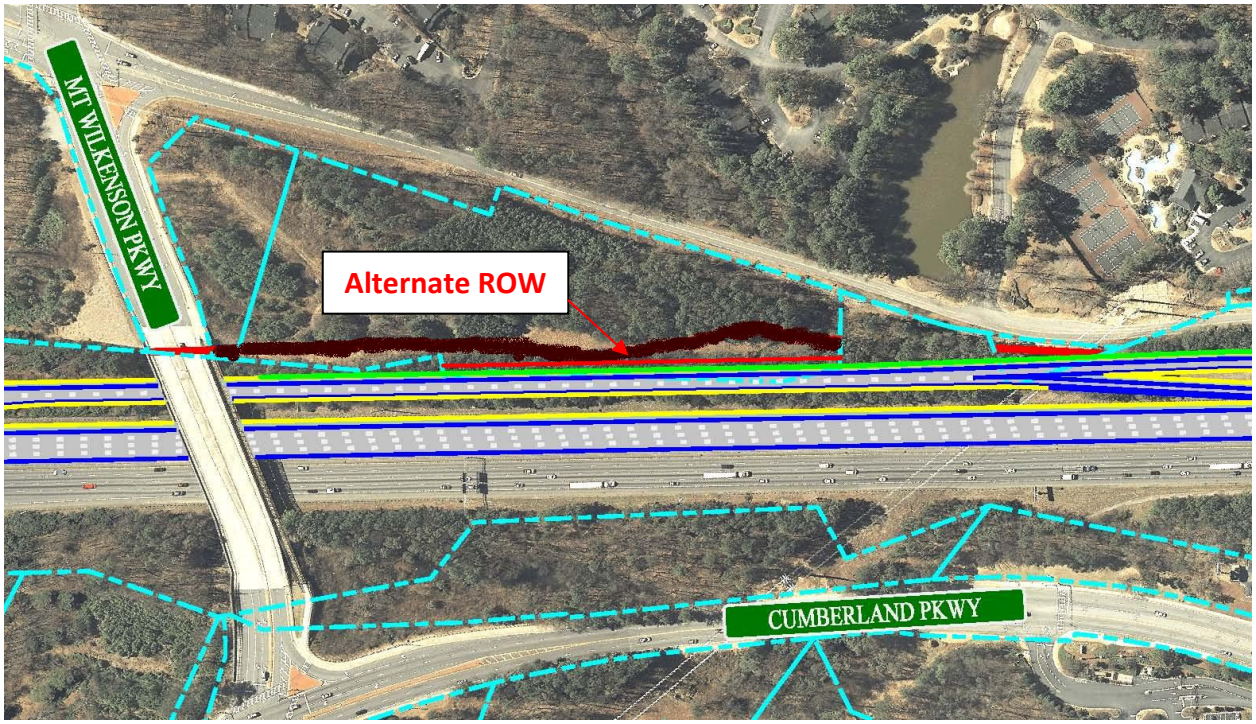
VALUE ALTERNATIVE SP-5 (Applicable to Build Alternatives 4, 6A and 6B)

Reduce Right-of-Way Take North of Mt. Wilkenson Parkway

Baseline Concept Sketch:



Value Alternative Concept Sketch:



VALUE ALTERNATIVE SP-5 (Applicable to Build Alternatives 4, 6A and 6B)

Reduce Right-of-Way Take North of Mt. Wilkenson Parkway

Assumptions and Calculations:

Assumptions

1. The average width of ROW shown beyond the back of the wall in the baseline concept.
2. The construction of the proposed retaining wall will require a 20-foot of ROW beyond the back of the wall in the alternative concept.
3. The length of ROW is approximately 1,000 feet for both the baseline and alternative concept.

Calculations

Baseline Concept:
Area (ROW) = (50 LF)(1,000 LF) = **50,000 SF**

Alternative Concept:
Area (ROW) = (20 LF)(1,000LF) = **20,000 SF**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	50,000	$22.96	$1,148,000	20,000	$22.96	$459,200
Improvements				$0			$0
Relocation - Commercial				$0			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$1,148,000*			*$459,200*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$1,699,040*			*$679,616*
RIGHT-OF-WAY TOTAL				*$2,847,040*			*$1,138,816*
TOTAL				$2,847,040			$1,138,816
TOTAL (Rounded)				$2,847,000			$1,139,000
						SAVINGS	**$1,708,000**

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6A Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Cost Savings:	$302,219,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor.

Description of Alternative Concept: The alternative concept proposes to eliminate all ROW included for a future transit facility along the project corridor.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential displacements
- Reduces commercial displacements
- Reduces ROW costs

Disadvantages:

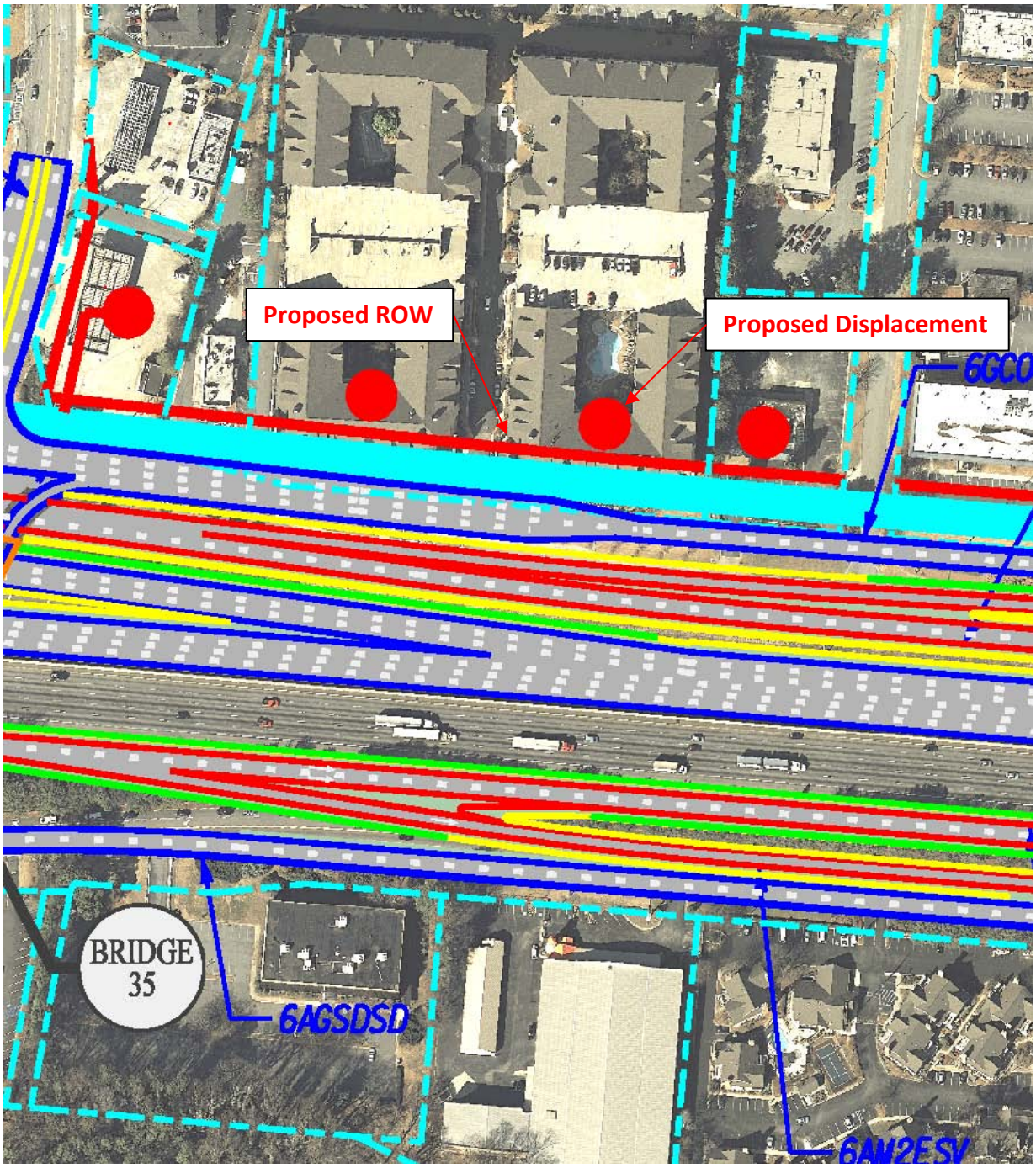
- Does not provide a ROW corridor for a future transit facility

Discussion: The major components of the project's need and purpose are reducing traffic congestion, increasing mobility options, improving system linkages and providing safer travel on the corridor. All of these components can be addressed at some level through the proposed operational improvements and managed lanes. The proposed ROW corridor for a future transit facility accommodates the possibility of additional mobility options, but does not guarantee their implementation since a funding source has not been identified. The acquisition of ROW for this corridor will cause significant property impacts and ROW costs.

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6A Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Baseline Concept Sketch:



SAMPLE (TYPICAL) OF ROW TAKES

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6A Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Value Alternative Concept Sketch:

SAMPLE (TYPICAL) OF ROW SAVED

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6A Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is approximately 70 feet for the baseline concept.
2. There are approximately 69 displacements caused by the transit ROW corridor (60 Commercial and 9 Residential).

Calculations

Baseline Concept

Area (ROW) = (46,800 LF) (70 LF) = **3,276,000 SF**

Number of Residential Displacements = **9**

Number of Commercial Displacements = **60**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	3,276,000	$22.96	$75,216,960			$0
Improvements				$0			$0
Relocation - Commercial	EA	60	$751,176	$45,070,560			$0
Relocation - Residential	EA	9	$175,000	$1,575,000			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$121,862,520*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$180,356,530*			*$0*
RIGHT-OF-WAY TOTAL				*$302,219,050*			*$0*
TOTAL				$302,219,050			$0
TOTAL (Rounded)				$302,219,000			$0
						SAVINGS	**$302,219,000**

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6B Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Cost Savings:	$310,042,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor.

Description of Alternative Concept: The alternative concept proposes to eliminate all ROW included for a future transit facility along the project corridor.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential displacements
- Reduces commercial displacements
- Reduces ROW costs

Disadvantages:

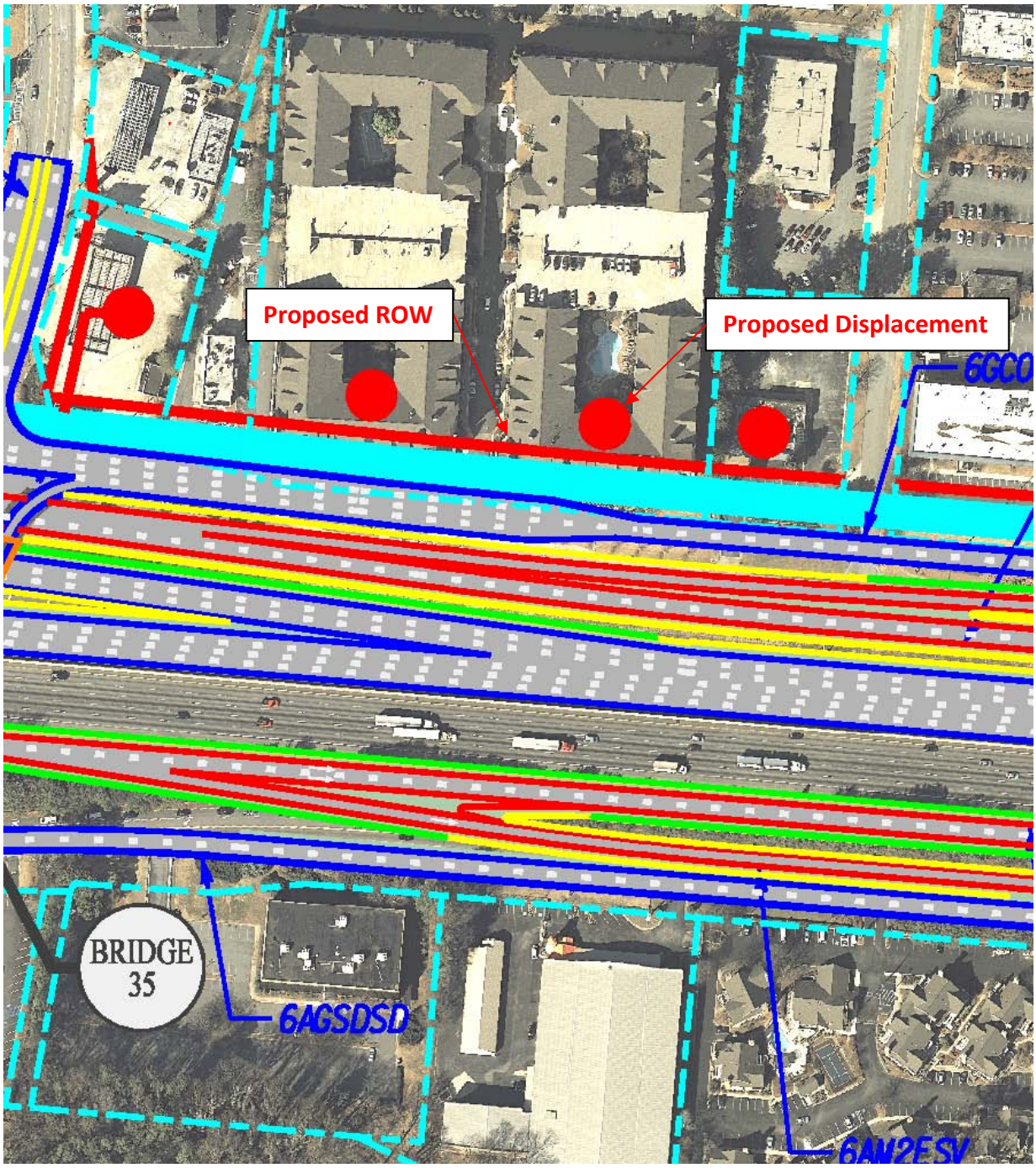
- Does not provide a ROW corridor for a future transit facility

Discussion: The major components of the project's need and purpose are reducing traffic congestion, increasing mobility options, improving system linkages and providing safer travel on the corridor. All of these components can be addressed at some level through the proposed operational improvements and managed lanes. The proposed ROW corridor for a future transit facility accommodates the possibility of additional mobility options, but does not guarantee their implementation since a funding source has not been identified. The acquisition of ROW for this corridor will cause significant property impacts and ROW costs.

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6B Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Baseline Concept Sketch:



TYPICAL ROW TAKES ALONG CORRIDOR

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6B Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Value Alternative Concept Sketch:

TYPICAL ROW SAVED ALONG CORRIDOR

VALUE ALTERNATIVE SP-7.1 (Applicable to Build Alternative 6B Only)

Eliminate Right-of-Way Takes for Future Transit Facility

Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is approximately 70 feet for the baseline concept.
2. There are approximately 69 displacements caused by the transit ROW corridor (60 Commercial and 9 Residential).

Calculations

Baseline Concept

Area (ROW) = (46,800 LF) (70 LF) = 3,276,000 SF

Number of Residential Displacements = 9

Number of Commercial Displacements = 60

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	3,276,000	$22.96	$75,216,960			$0
Improvements				$0			$0
Relocation - Commercial	EA	60	$800,000	$48,000,000			$0
Relocation - Residential	EA	9	$200,000	$1,800,000			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$125,016,960*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$185,025,101*			*$0*
RIGHT-OF-WAY TOTAL				*$310,042,061*			*$0*
TOTAL				$310,042,061			$0
TOTAL (Rounded)				$310,042,000			$0
						SAVINGS	**$310,042,000**

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6A Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Cost Savings:	$115,681,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor.

Description of Alternative Concept: The alternative concept proposes to eliminate ROW included for a future transit facility in areas requiring commercial or residential displacements only.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential and commercial displacements
- Allows for partial accommodation of a future transit facility
- Reduces ROW costs

Disadvantages:

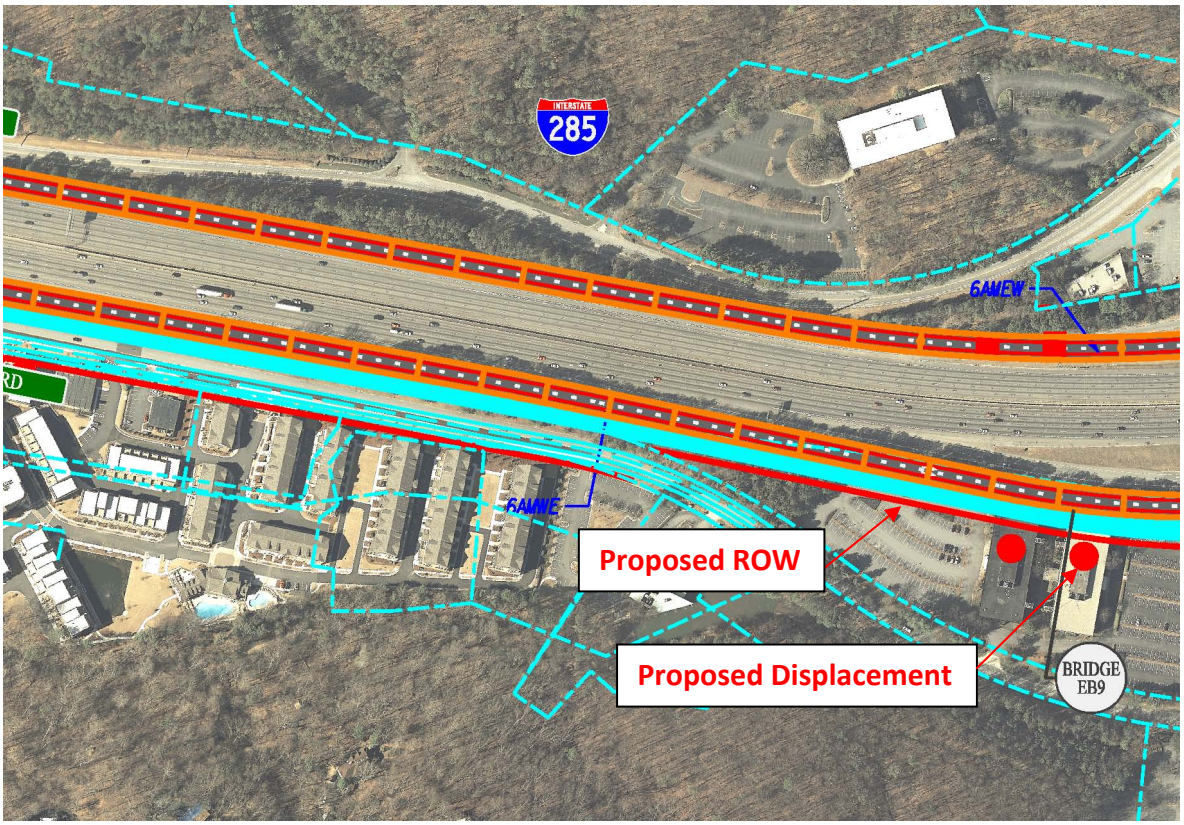
- Does not provide a ROW corridor for a future transit facility in the areas where displacements would be required

Discussion: The major components of the need and purpose of the project are to reduce traffic congestion, increase mobility options, improve system linkages and provide safer travel on the corridor. All of these components can be addressed at some level through the proposed operational improvements and managed lanes. The proposed ROW corridor for a future transit facility accommodates the possibility of additional mobility options, but does not guarantee their implementation since a funding source has not been identified. The acquisition of ROW for this corridor will cause significant property impacts and ROW costs. The elimination of ROW takes in areas that require displacements will eliminate the most significant impacts and allow for partial accommodation for a future transit facility.

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6A Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Baseline Concept Sketch:

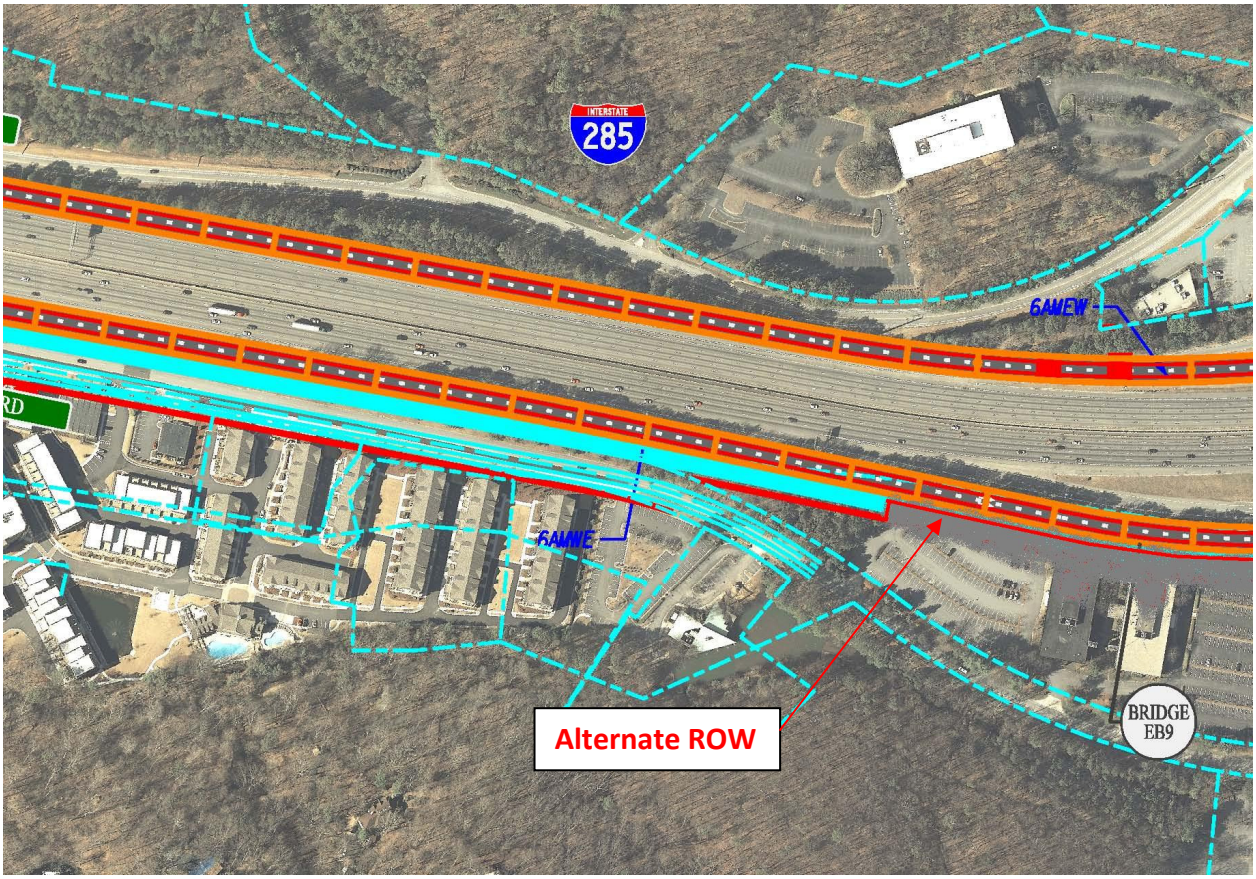


TYPICAL ROW DISPLACEMENTS ALONG THE CORRIDOR

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6A Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Value Alternative Concept Sketch:



TYPICAL ROW DISPLACEMENTS SAVED ALONG THE CORRIDOR

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6A Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Assumptions and Calculations:

Assumptions

1. Calculations only consider cost savings of residential and commercial displacements and do not include any cost savings from land associated with displacement.
2. The approximate number of displacements caused by the baseline transit ROW corridor is 69 (60 commercial and 9 residential).

Calculations

Baseline Concept

Number of Residential Displacements = 60

Number of Commercial Displacements = 9

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	EA	60	$751,176	$45,070,560	0	$751,176	$0
Relocation - Residential	EA	9	$175,000	$1,575,000	0	$175,000	$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$46,645,560*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$69,035,429*			*$0*
RIGHT-OF-WAY TOTAL				*$115,680,989*			*$0*
TOTAL				$115,680,989			$0
TOTAL (Rounded)				$115,681,000			$0
						SAVINGS	**$115,681,000**

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6B Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Cost Savings:	$123,504,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor.

Description of Alternative Concept: The alternative concept proposes to eliminate ROW included for a future transit facility in areas requiring commercial or residential displacements.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential and commercial displacements
- Allows for partial accommodation of a future transit facility
- Reduces ROW costs

Disadvantages:

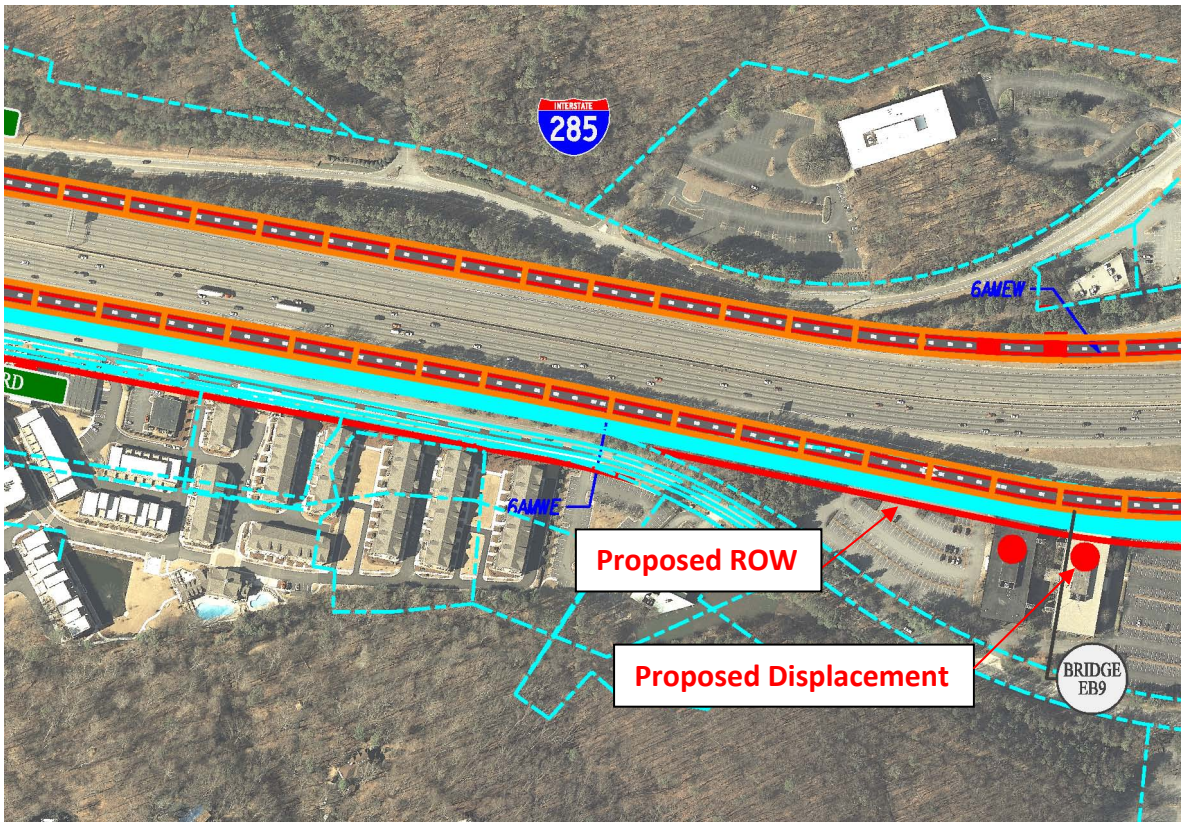
- Does not provide a ROW corridor for a future transit facility in the areas where displacements would be required

Discussion: The major components of the need and purpose of the project are to reduce traffic congestion, increase mobility options, improve system linkages and provide safer travel on the corridor. All of these components can be addressed at some level through the proposed operational improvements and managed lanes. The proposed ROW corridor for a future transit facility accommodates the possibility of additional mobility options, but does not guarantee their implementation since a funding source has not been identified. The acquisition of ROW for this corridor will cause significant property impacts and ROW costs. The elimination of ROW takes in areas that require displacements will eliminate the most significant impacts and allow for partial accommodation for a future transit facility.

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6B Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Baseline Concept Sketch:

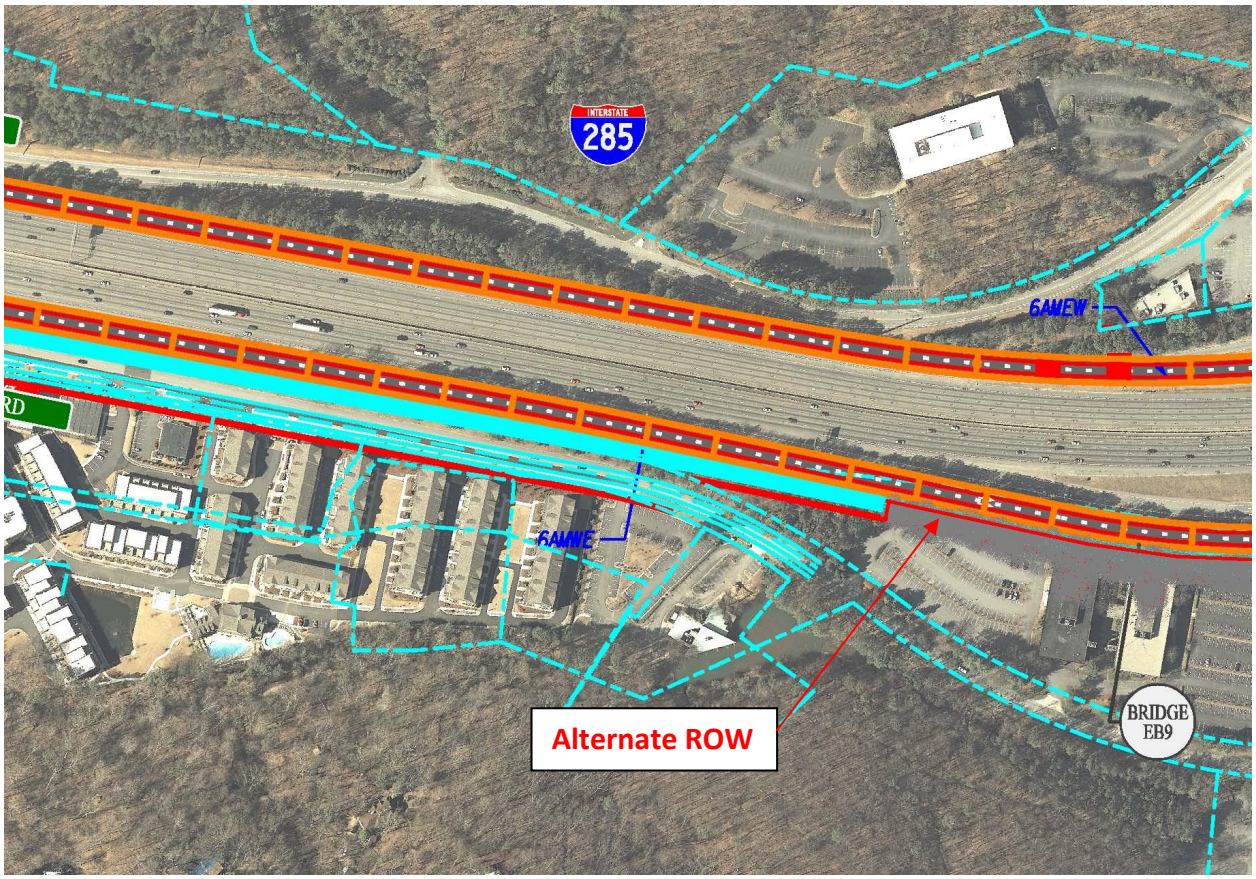


TYPICAL ROW DISPLACEMENTS ALONG THE CORRIDOR

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6B Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Value Alternative Concept Sketch:



TYPICAL ROW DISPLACEMENTS SAVED ALONG THE CORRIDOR

VALUE ALTERNATIVE SP-7.3 (Applicable to Build Alternative 6B Only)

Eliminate Transit Right-of-Way Takes Requiring Displacements

Assumptions and Calculations:

Assumptions

1. Calculations only consider cost savings of residential and commercial displacements and do not include any cost savings from land associated with displacement.
2. The approximate number of displacements caused by the baseline transit ROW corridor is 69 (60 commercial and 9 residential).

Calculations

Baseline Concept

Number of Residential Displacements = 60

Number of Commercial Displacements = 9

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	EA	60	$800,000	$48,000,000	0	$751,176	$0
Relocation - Residential	EA	9	$200,000	$1,800,000	0	$175,000	$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$49,800,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$73,704,000*			*$0*
RIGHT-OF-WAY TOTAL				*$123,504,000*			*$0*
TOTAL				$123,504,000			$0
TOTAL (Rounded)				$123,504,000			$0
						SAVINGS	**$123,504,000**

VALUE ALTERNATIVE SP-8 (Applicable to Build Alternatives 6A and 6B Only)

Place Bridges EB46, EB47 and EB48 in Center of Motors Industrial Way

Cost Savings:	$5,124,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The managed lanes of the baseline concept are proposed to be elevated just south of Motors Industrial Way through the existing right of way (ROW) for the General Motors factory. Motors Industrial Way has a grassed median for this area.

Description of Alternative Concept: The alternative is to move the proposed managed lanes that shift from Peachtree Industrial Boulevard into the median of Motors Industrial Way. This will pull the proposed managed lanes out of the ROW for the General Motors property. The managed lanes will connect back to the proposed manage lanes just after railroad crossing.

Advantages:

- Eliminates the need for ROW from the General Motors 4f property
- Eliminates additional work and potential delay associated with the 4f property

Disadvantages:

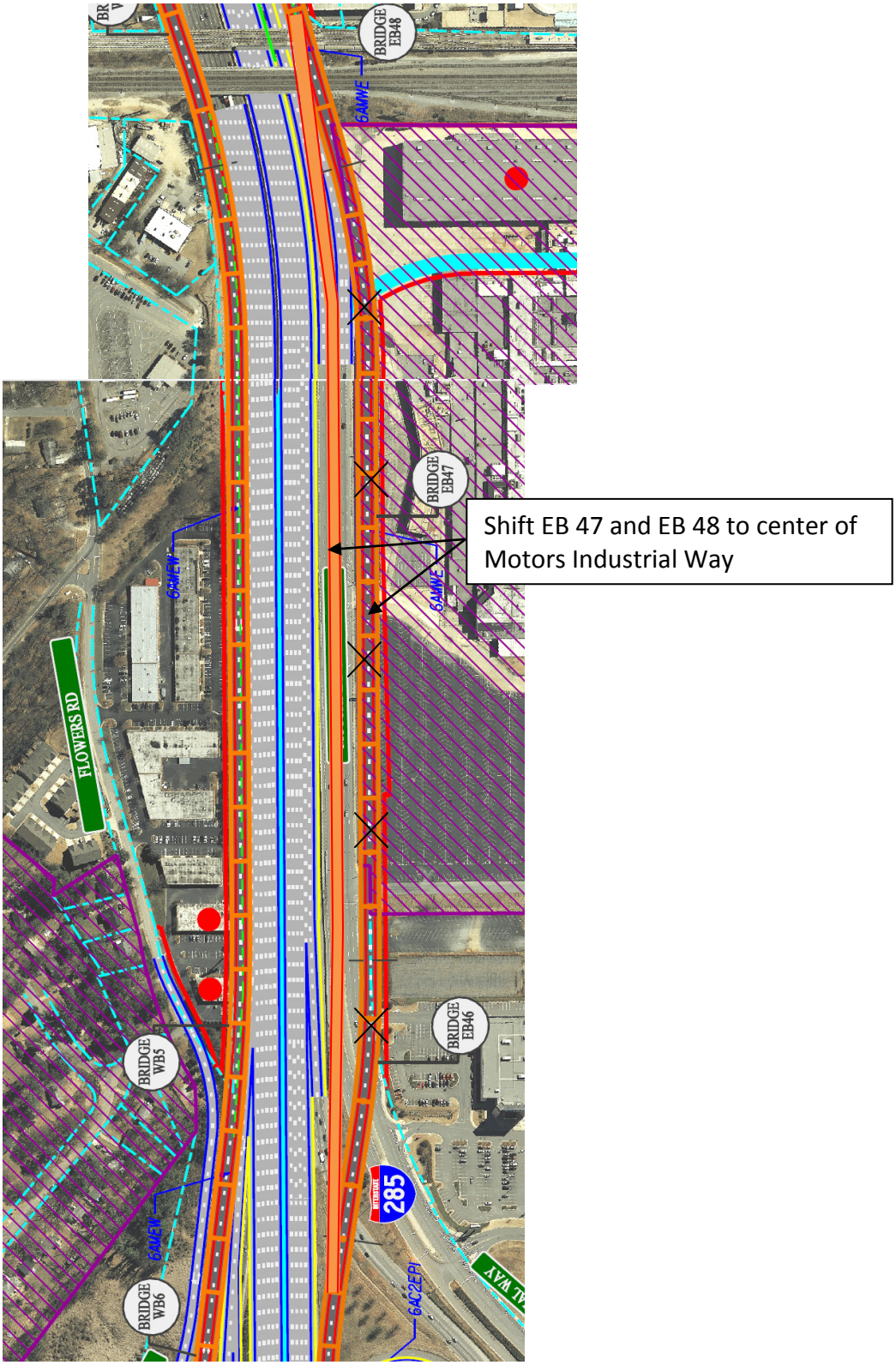
- May have to widen the existing Motors Industrial Way lanes to accommodate left turns bays

Discussion: Moving the managed lanes inside the median of Motors Industrial Way removes the need to take ROW from the General Motors property. The alternative assumes that no ROW is needed for any roadway widening. There are existing left turn bays for Motors Industrial Way that may cause the roadway to be widened in their locations. The General Motors property is listed as a 4f property. This may cause a delay in acquiring the right of way.

VALUE ALTERNATIVE SP-8 (Applicable to Build Alternatives 6A and 6B Only)

Place Bridges EB46, EB47 and EB48 in Center of Motors Industrial Way

Baseline / Value Alternative Concept Sketch:



VALUE ALTERNATIVE SP-8 (Applicable to Build Alternatives 6A and 6B Only)

Place Bridges EB46, EB47 and EB48 in Center of Motors Industrial Way

Assumptions and Calculations: Assumed no other right of way is need for any roadway items for constructing the managed lanes inside the median of Motors Industrial Way.

ROW:

Length = 1,800 LF

Width on average = 50 LF

Area = 1,800 LF x 50 LF = 90,000 SF / 43,560 SF/ Acre = **2.066 Acres**

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	Acres	2.066	$1,000,000	$2,066,116			$0
Improvements				$0			$0
Relocation - Commercial				$0			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$2,066,116*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$3,057,851*			*$0*
RIGHT-OF-WAY TOTAL				*$5,123,967*			*$0*
TOTAL				$5,123,967			$0
TOTAL (Rounded)				$5,124,000			$0
						SAVINGS	**$5,124,000**

VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6A Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Cost Savings:	$20,492,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The current baseline concept has the transit line daylighting just west of Bridge WB-12 and going underground again west of North Shallowford Road.

Description of Alternative Concept: This alternative proposes to retain the transit line underground to reduce significant displacements and right-of-way takes.

Advantages:

- Reduces required ROW until transit line has been designed and included in the cost of the work

Disadvantages:

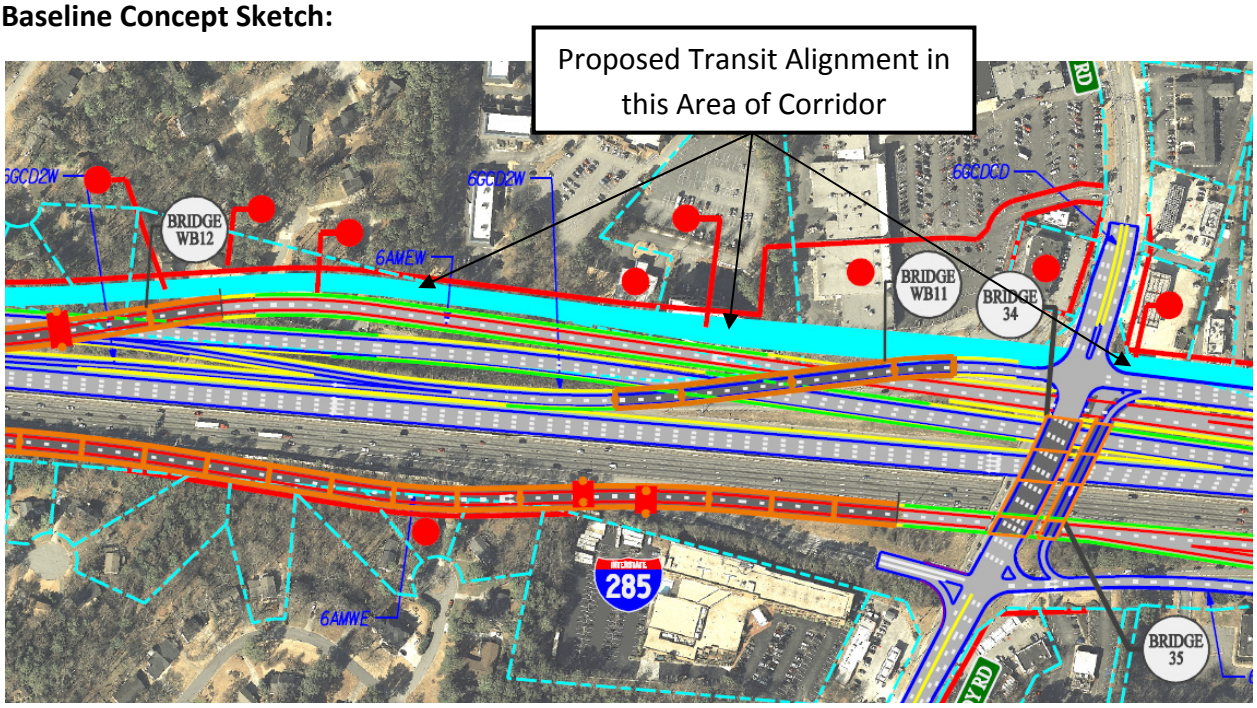
- ROW costs may be higher when the transit line is designed

Discussion: This section of the corridor has considerable displacements and ROW takes due to the future transit line. It is suggested to delay ROW acquisition needed for the transit line until funds are available and design can better determine ROW requirements.

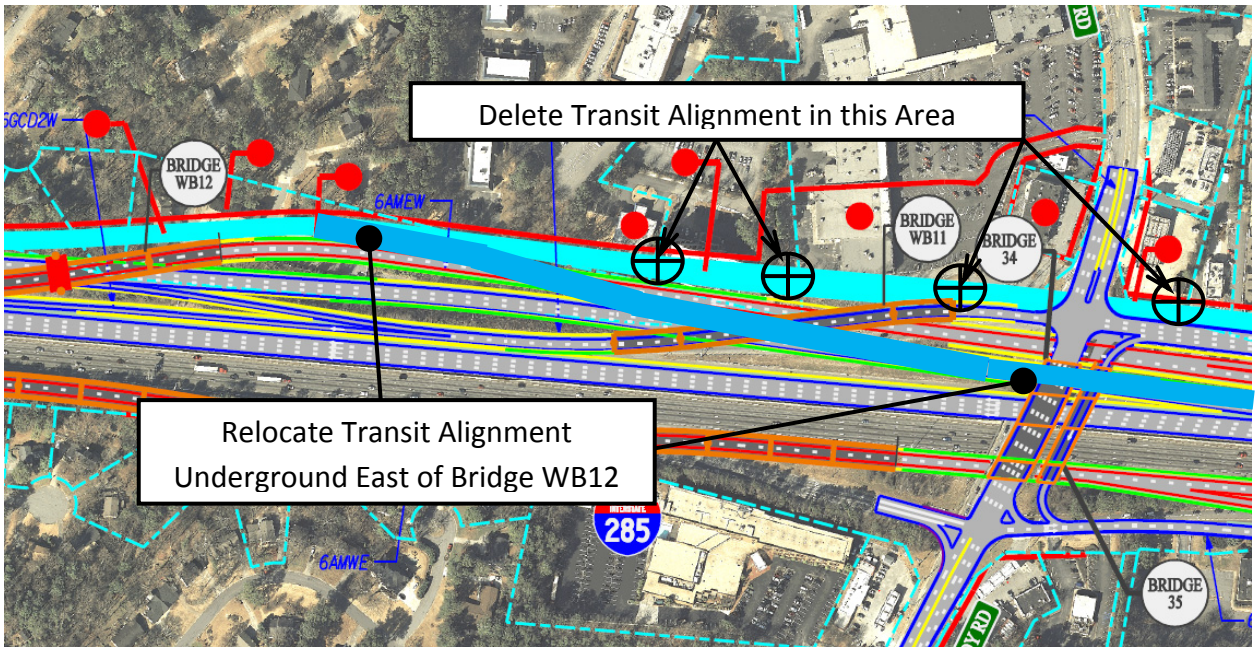
VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6A Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Baseline Concept Sketch:



Value Alternative Concept Sketch:



VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6A Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Assumptions and Calculations: ROW no longer needed.

Eleven Commercial Buildings are no longer required to be purchased at this time. Land acquisition is included in the displacement costs.

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	EA	11	$751,176	$8,262,936			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$8,262,936*			$0
RIGHT-OF-WAY MARK-UP	*148.00%*			*$12,229,145*			$0
RIGHT-OF-WAY TOTAL				*$20,492,081*			$0
TOTAL				$20,492,081			$0
TOTAL (Rounded)				$20,492,000			$0
						SAVINGS	**$20,492,000**

VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6B Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Cost Savings:	$21,824,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: Current baseline concept has the transit line daylighting just west of Bridge WB12 and going underground again west of North Shallowford Road.

Description of Alternative Concept: Retain the transit line underground to reduce significant displacements and right-of-way takes.

Advantages:

- Reduces required ROW until transit line has been designed and included in the cost of the work

Disadvantages:

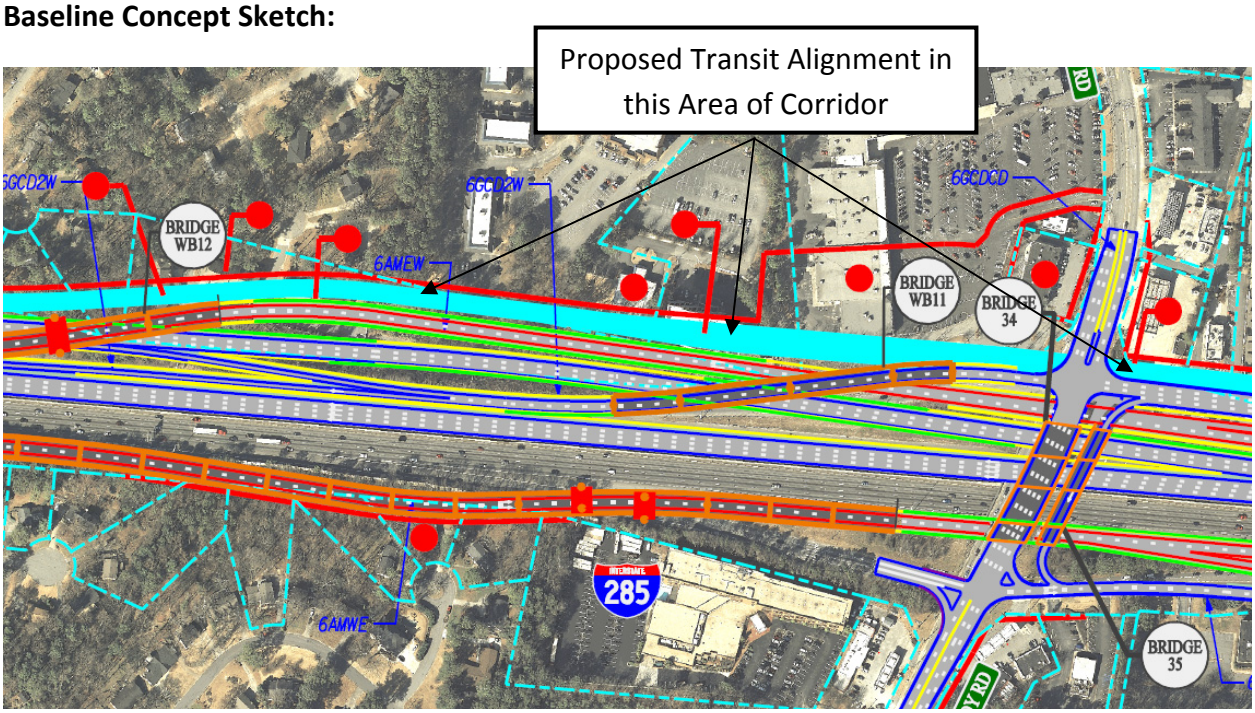
- ROW costs may be higher when the transit line is designed.

Discussion: This section of the corridor has considerable displacements and ROW takes due to the future transit line. It is recommended to delay ROW acquisition needed for the transit line until funds are available and design can better determine ROW requirements.

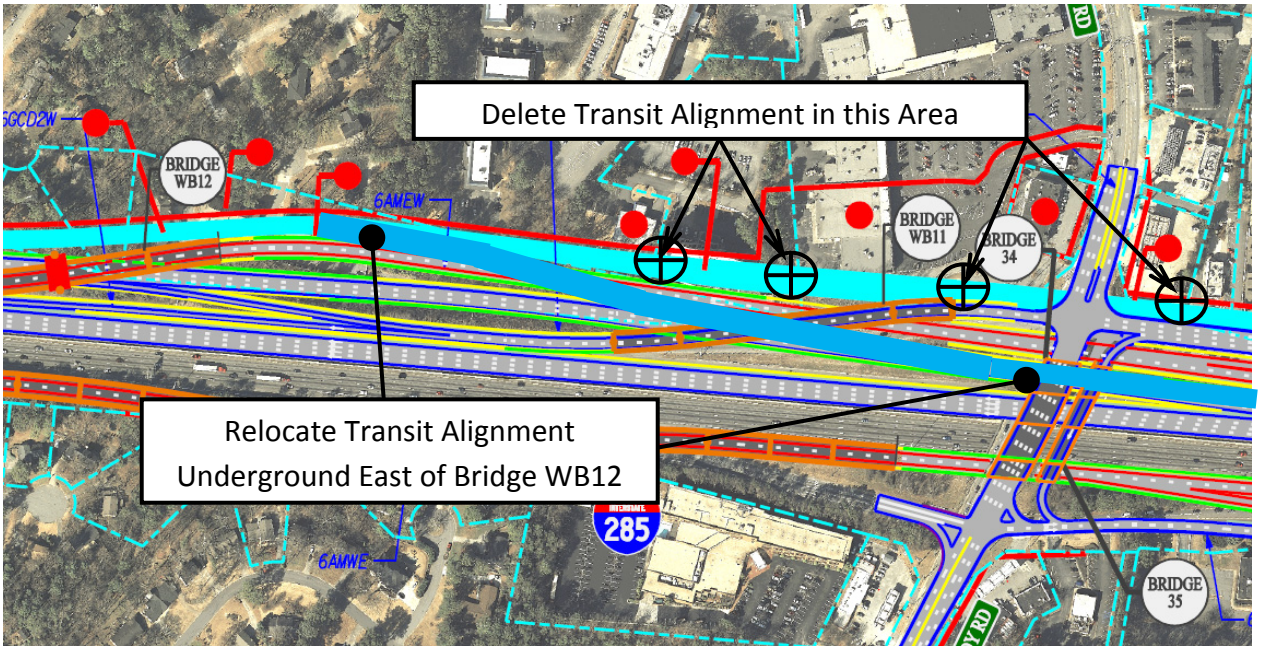
VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6B Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Baseline Concept Sketch:



Value Alternative Concept Sketch:



VALUE ALTERNATIVE SP-9 (Applicable to Build Alternative 6B Only)

Take Transit Underground Just East of Bridge WB12 to West of North Shallowford Road to Reduce Right-of-Way Only

Assumptions and Calculations: ROW no longer needed.

Eleven Commercial Buildings are now longer required to be purchased at this time. Land acquisition is included in the displacement costs.

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land				$0			$0
Improvements				$0			$0
Relocation - Commercial	EA	11	$800,000	$8,800,000			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$8,800,000*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$13,024,000*			*$0*
RIGHT-OF-WAY TOTAL				*$21,824,000*			*$0*
TOTAL				$21,824,000			$0
TOTAL (Rounded)				$21,824,000			$0
						SAVINGS	**$21,824,000**

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6A Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Cost Savings:	$5,817,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor in the area east of Ashford-Dunwoody offset from I-285.

Description of Alternative Concept: The alternative concept proposes to purchase ROW for the future transit facility along the project corridor in the area east of Ashford- Dunwoody abutting I-285 only.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential and commercial displacements
- Reduces length of ROW corridor
- Reduces ROW costs

Disadvantages:

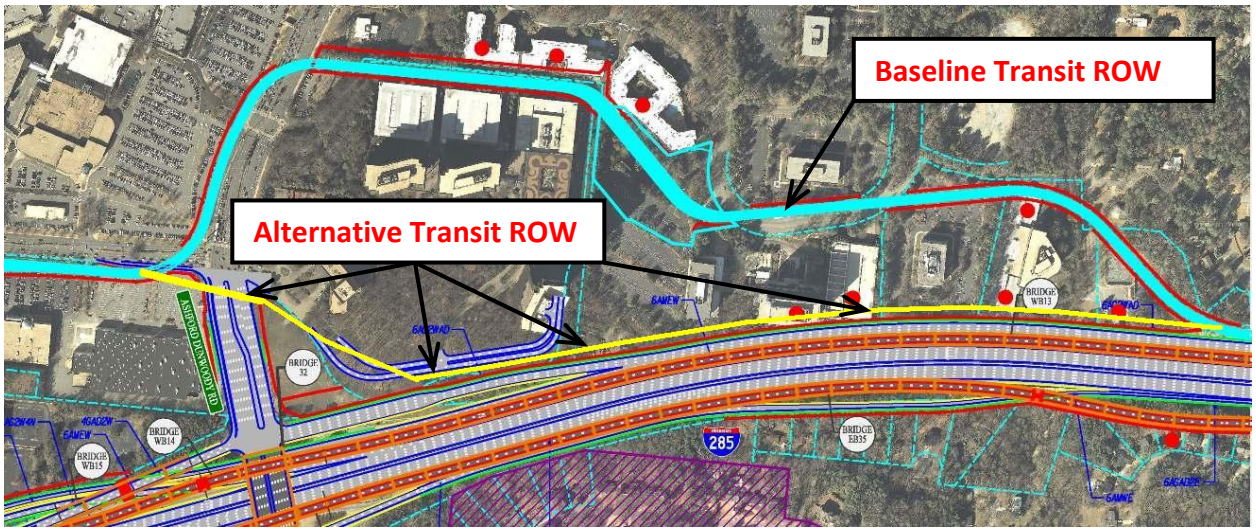
- Moves transit ROW crossing near intersection of Ashford-Dunwoody Road and Hammond Drive

Discussion: The function of the transit ROW is to accommodate development of a future transit facility. The transit ROW alignment is offset from I-285 in the area east of Ashford-Dunwoody Road in the baseline concept. This alignment in this area follows a tortuous path and increases the length of the corridor. The alternative concept proposes an alignment that abuts I-285 and then turns to tie in to the baseline alignment on Hammond Drive. This alignment reduces total length and commercial displacements.

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6A Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Baseline / Value Alternative Concept Sketch:



Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is 50 LF for the baseline concept and 60 LF for the alternative concept. The baseline concept utilizes more existing ROW than the alternative concept.
2. The approximate length of the proposed transit ROW is 5,600 LF for the baseline concept and 4,600 LF for the alternative concept.
3. The number of commercial displacements in the realignment area is 8 for the baseline concept and 5 for the alternative concept.

Calculations

Baseline Concept

Area (ROW) = (5,600 LF)(50 LF) = 280,000 SF

Number of displacements = 8

Alternative Concept

Area (ROW) = (4,600 LF)(60 LF) = 276,000 SF

Number of displacements = 5

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6A Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	280,000	$22.96	$6,428,800	276,000	$22.96	$6,336,960
Improvements				$0			$0
Relocation - Commercial	EA	8	$751,176	$6,009,408	5	$751,176	$3,755,880
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$12,438,208*			*$10,092,840*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$18,408,548*			*$14,937,403*
RIGHT-OF-WAY TOTAL				*$30,846,756*			*$25,030,243*
TOTAL				$30,846,756			$25,030,243
TOTAL (Rounded)				$30,847,000			$25,030,000
						SAVINGS	**$5,817,000**

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6B Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Cost Savings:	$6,179,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future transit facility along the project corridor in the area east of Ashford-Dunwoody offset from I-285.

Description of Alternative Concept: The alternative concept proposes to purchase ROW for the future transit facility along the project corridor in the area east of Ashford- Dunwoody abutting I-285 only.

Advantages:

- Reduces impacts to adjacent properties
- Reduces residential and commercial displacements
- Reduces length of ROW corridor
- Reduces ROW costs

Disadvantages:

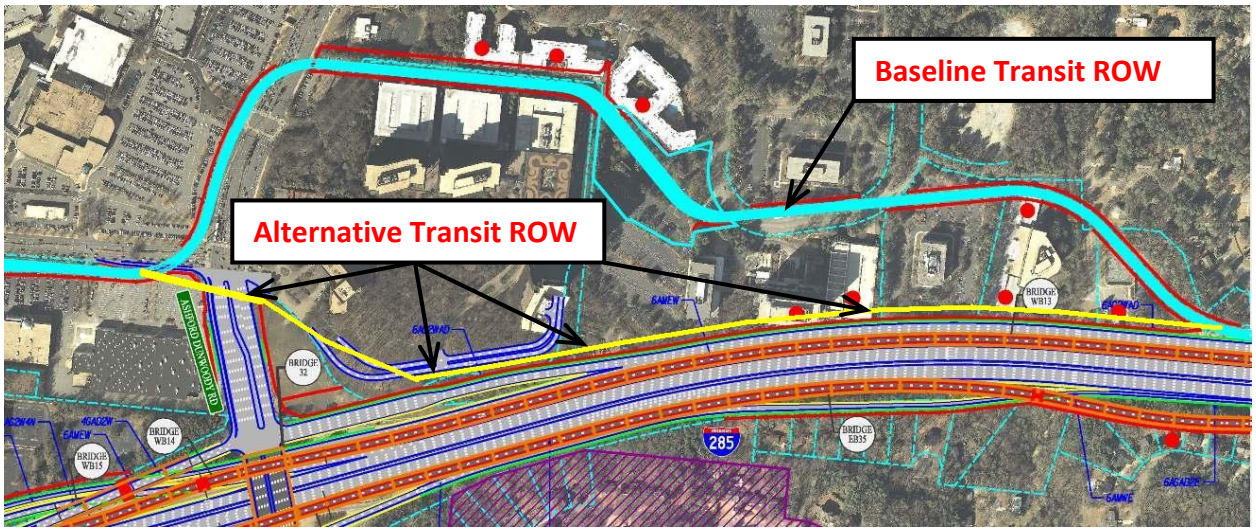
- Moves transit ROW crossing near intersection of Ashford-Dunwoody Road and Hammond Drive

Discussion: The function of the transit ROW is to accommodate development of a future transit facility. The transit ROW alignment is offset from I-285 in the area east of Ashford-Dunwoody Road in the baseline concept. The alignment in this area follows a tortuous path and increases the length of the corridor. The alternative concept proposes an alignment that abuts I-285 and then turns to tie in to the baseline alignment on Hammond Drive. This alignment reduces total length and commercial displacements.

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6B Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Baseline / Value Alternative Concept Sketch:



Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is 50 LF for the baseline concept and 60 LF for the alternative concept. The baseline concept utilizes more existing ROW than the alternative concept.
2. The approximate length of the proposed transit ROW is 5,600 LF for the baseline concept and 4,600 LF for the alternative concept.
3. The number of commercial displacements in the realignment area is 8 for the baseline concept and 5 for the alternative concept.

Calculations

Baseline Concept

Area (ROW) = (5,600 LF)(50 LF) = 280,000 SF

Number of displacements = 8

Alternative Concept

Area (ROW) = (4,600 LF)(60 LF) = 276,000 SF

Number of displacements = 5

VALUE ALTERNATIVE SP-10.1 (Applicable to Build Alternative 6B Only)

Realign Transit Right-of-Way to Abut I-285 East of Ashford-Dunwoody Road

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	280,000	$22.96	$6,428,800	276,000	$22.96	$6,336,960
Improvements				$0			$0
Relocation - Commercial	EA	8	$800,000	$6,400,000	5	$800,000	$4,000,000
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$12,828,800*			*$10,336,960*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$18,986,624*			*$15,298,701*
RIGHT-OF-WAY TOTAL				*$31,815,424*			*$25,635,661*
TOTAL				$31,815,424			$25,635,661
TOTAL (Rounded)				$31,815,000			$25,636,000
						SAVINGS	**$6,179,000**

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6A Only)

Take Transit Underground East of Ashford-Dunwoody Road

Cost Savings:	$30,847,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way (ROW) for a future above ground transit facility along the project corridor in the area east of Ashford- Dunwoody offset from I-285.

Description of Alternative Concept: The alternative concept proposes to purchase ROW for the future underground transit facility along the project corridor in the area east of Ashford-Dunwoody abutting I-285.

Advantages:

- Reduces impacts to adjacent properties
- Reduces commercial displacements
- Reduces length of ROW corridor
- Reduces ROW costs

Disadvantages:

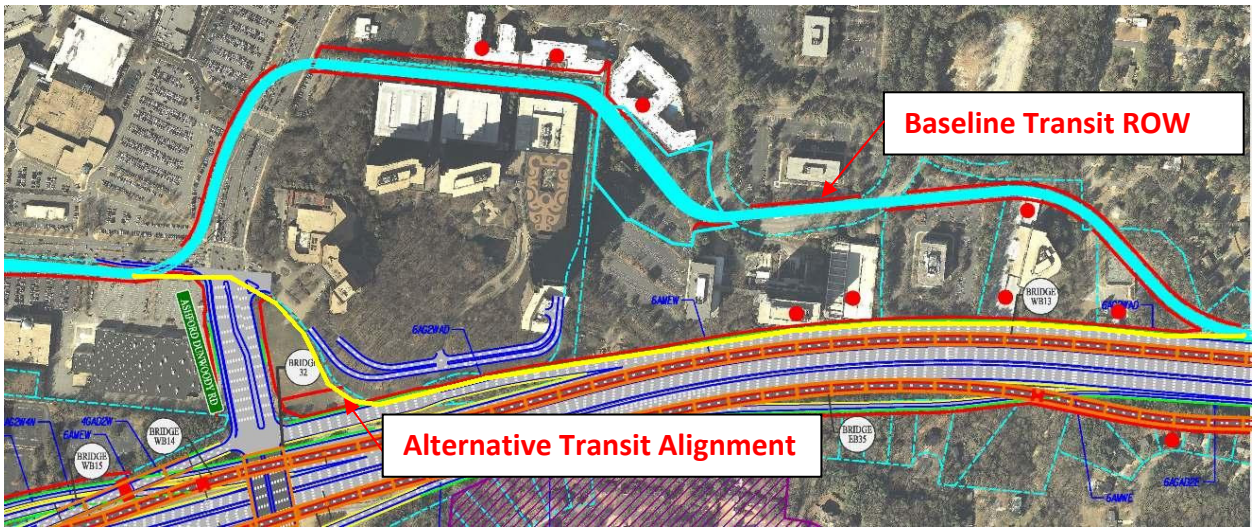
- Increases construction cost for the future transit project since underground installation is more expensive

Discussion: The function of the transit ROW is to accommodate development of a future transit facility. The baseline transit ROW alignment is offset from I-285 in the area east of Ashford-Dunwoody Road in the baseline concept and assumes above ground installation. The alignment in this area follows a tortuous path, which increases the length of the corridor. The alternative concept proposes an alignment for an underground facility that abuts I-285 and then turns to tie in to the baseline alignment on Hammond Drive. This alignment reduces total length, commercial displacements and right-of-way costs.

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6A Only)

Take Transit Underground East of Ashford-Dunwoody Road

Baseline / Value Alternative Concept Sketch:



Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is 50 LF for the baseline concept and zero for the alternative concept. The alternative concept proposes to shift the transit alignment within the proposed I-285/side street ROW.
2. The approximate length of the proposed transit ROW is 5,600 LF for the baseline concept.
3. The number of commercial displacements in the realignment area is 8 for the baseline concept and zero for the alternative concept.

Calculations

Baseline Concept

Area (ROW) = (5,600 LF)(50 LF) = 280,000 SF

Number of displacements = 8

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6A Only)

Take Transit Underground East of Ashford-Dunwoody Road

Initial Costs:

CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	280,000	$22.96	$6,428,800	0	$22.96	$0
Improvements				$0			$0
Relocation - Commercial	EA	8	$751,176	$6,009,408	0	$751,176	$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$12,438,208*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$18,408,548*			*$0*
RIGHT-OF-WAY TOTAL				*$30,846,756*			*$0*
TOTAL				$30,846,756			$0
TOTAL (Rounded)				$30,847,000			$0
						SAVINGS	**$30,847,000**

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6B Only)

Take Transit Underground East of Ashford-Dunwoody Road

Cost Savings:	$31,816,000
LCC Savings:	$0
Time Savings:	0 months

Description of Baseline Concept: The baseline concept proposes to purchase right-of-way for a future above ground transit facility along the project corridor in the area east of Ashford-Dunwoody offset from I-285.

Description of Alternative Concept: The alternative concept proposes to purchase ROW for a future underground transit facility along the project corridor in the area east of Ashford-Dunwoody abutting I-285.

Advantages:

- Reduces impacts to adjacent properties
- Reduces commercial displacements
- Reduces length of ROW corridor
- Reduces ROW costs

Disadvantages:

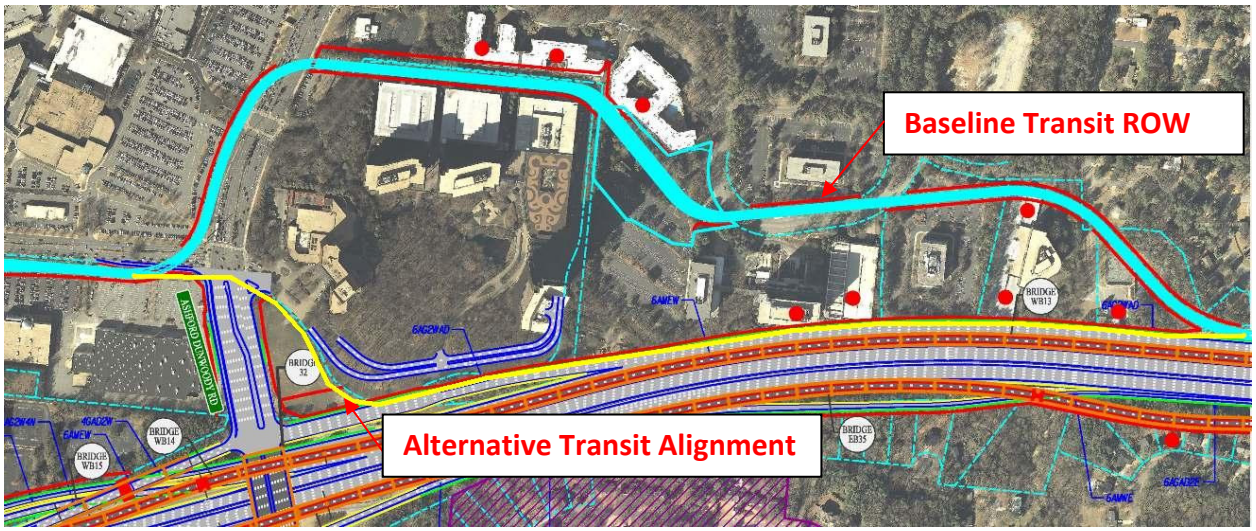
- Increases construction cost for the future transit project since underground installation is more expensive

Discussion: The function of the transit ROW is to accommodate development of a future transit facility. The baseline transit ROW alignment is offset from I-285 in the area east of Ashford-Dunwoody Road in the baseline concept and assumes above ground installation. The alignment in this area follows a tortuous path, which increases the length of the corridor. The alternative concept proposes an alignment for an underground facility that abuts I-285 and then turns to tie in to the baseline alignment on Hammond Drive. This alignment reduces total length, commercial displacements and right-of-way costs.

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6B Only)

Take Transit Underground East of Ashford-Dunwoody Road

Baseline / Value Alternative Concept Sketch:



Assumptions and Calculations:

Assumptions

1. The average width of ROW required for a future transit facility is 50 LF for the baseline concept and zero for the alternative concept. The alternative concept proposes to shift the transit alignment within the proposed I-285/side street ROW.
2. The approximate length of the proposed transit ROW is 5,600 LF for the baseline concept.
3. The number of commercial displacements in the realignment area is 8 for the baseline concept and zero for the alternative concept.

Calculations

Baseline Concept

Area (ROW) = (5,600 LF)(50 LF) = 280,000 SF

Number of displacements = 8

VALUE ALTERNATIVE SP-10.2 (Applicable to Build Alternative 6B Only)

Take Transit Underground East of Ashford-Dunwoody Road

Initial Costs:

Take Transit Underground East of Ashford-Dunwoody Road						NUMBER SP-10.2(6B)	PAGE NO. of
CONSTRUCTION ELEMENT	Unit	ORIGINAL CONCEPT			ALTERNATIVE CONCEPT		
Description		Quantity	Cost/Unit	Total	Quantity	Cost/Unit	Total
RIGHT-OF-WAY ITEMS							
Land	SF	280,000	$22.96	$6,428,800			$0
Improvements				$0			$0
Relocation - Commercial	EA	8	$800,000	$6,400,000			$0
Relocation - Residential				$0			$0
Damage - Proximity				$0			$0
Damage - Consequential				$0			$0
Damage - Cost to Cure				$0			$0
RIGHT-OF-WAY SUBTOTAL				*$12,828,800*			*$0*
RIGHT-OF-WAY MARK-UP	*148.00%*			*$18,986,624*			*$0*
RIGHT-OF-WAY TOTAL				*$31,815,424*			*$0*
TOTAL				$31,816,224			$0
TOTAL (Rounded)				$31,816,000			$0
						SAVINGS	**$31,816,000**

PROJECT INFORMATION

PROJECT INFORMATION

BACKGROUND

This project has been given the name REVIVE 285 and involves improvements on Interstate Highway 285 (I-285) North from the vicinity of I-75 to I-85. REVIVE 285 will serve as an umbrella for a number of isolated but critical near-term fixes in the project corridor, guiding these efforts in a way that provides the most benefit for the corridor and anticipates the transportation needs of future generations. The improvements under consideration can be classified into three distinct strategies including operational improvements for general purpose lanes, addition of managed lanes and addition of transit.

Operational improvement of general purpose lanes may include addition of collector-distributor (C-D) lanes, additions of auxiliary lanes improvements along existing frontage roads and improvements to system and service type interchanges as well as improvements to intersecting cross roads.

Managed lane improvements may include buffer or barrier separated lanes which will either be tolled or occupancy restricted; managed lane interchanges and slip access between managed and general purpose lanes.

Transit may include addition of express bus system and/or right-of-way preservation for future transit system. Right-of-way preservation may include right-of-way needed for either Bus Rapid Transit (BRT) or Light Rail Transit (LRT) systems including transit stations and maintenance yards.

PROJECT DESCRIPTION

Proposed improvements have been grouped into three build alternatives. These alternatives will include a combination of improvement strategies described above and are described in-depth below. All the alternatives are currently being examined to choose a preferred alternate route for this project.

Build Alternative 4 – Operational Improvement Alternative. This alternative begins approximately at the I-285 and Paces Ferry Road interchange on the west end of the project corridor and terminates approximately at the I-285 and I-85 interchange on the east end of the corridor, a distance of approximately 15 miles. Build Alternative 4 includes some improvements along the I-75, Georgia 400, and I-85 corridors. Improvements to I-75 will begin just south of the I-75 and Cumberland Boulevard interchange and terminate just north of the I-75 and Windy Hill Road interchange, about 3 miles. Improvements to Georgia 400 will occur in the vicinity of the Georgia 400 and I-285 interchange. These improvements will tie into a future Georgia 400 C-D project. Improvements along the I-85 corridor will begin at the I-285 and I-85 interchange and terminate just north of the I-85 and Pleasantdale Road interchange after approximately 1 mile.

Build Alternative 6A – Managed Lane Improvements. This alternative consists of the construction of managed lane facilities along I-285 from I-75 to I-85 as well as operational improvements of general purpose lanes along the project corridor. This alternative also includes right-of-way preservation for future transit facilities to be constructed by others.

Build Alternative 6B – Managed Lane Improvements. This alternative consists of the construction of managed lane facilities along I-285 from I-75 to I-85 as well as operational improvements of general purpose lanes along the project corridor. This build alternate also includes the reduction of one existing general purpose lane along each direction of I-285 and using this space to construct managed lanes. In addition, Build Alternate 6B includes right-of-way preservation for future transit facilities to be constructed by others.

INFORMATION PROVIDED TO THE VALUE ENGINEERING TEAM

The following project documents were provided to the VE team for their use during the study:

- DRAFT Project Development Report, undated
- Cost Estimate for Build Alternative 4, July 2011
- Cost Estimate for Build Alternative 6A, July 2011
- Cost Estimate for Build Alternative 6B, July 2011
- Crash Analysis
- Traffic Diagrams for Year 2005 and Year 2040
- Level of Service Diagrams
- Travel Time Summary, AM and PM Peak Hour
- Bridge Inventory Data Listing
- Need and Purpose Statement, March 18, 2008
- Design Criteria Table
- REVIVE 285 Top End Project Overview, August 2011
- Strategy Screening and Alternatives Development Process and Initial Screening Results, March 11, 2008
- Definition of Alternatives, April 15, 2009
- Major Decisions and Directions, REVIVE 285 Top End Table, undated
- E-mail with REVIVE 285 Top End Preliminary R/W Unit Cost Estimates Update (September 2009), September 18, 2009

PROJECT COST ESTIMATE

The project cost estimate that was used as the baseline for the VE study is included at the end of this section.

revive285 top end
Project Cost Estimate
Alternative 4

Estimate by: Brian Webb
Checked by:SP
Date: July 2011

Summary of Project Cost [1]	
1. Construction Cost	$ 730,332,863
2. Right of Way Cost	$ 186,641,373
3. Utilities (@ 5% of Construction Cost)	$ 36,516,643
4. Preliminary Engineering (@ 8% of Construction Cost)	$ 58,426,629
Total Project Cost	$ 1,011,917,508

1. Construction Items

Roadway Construction [1]	**Quantity**	**Unit Cost**	**Unit**	**Total Cost**	**Notes**
Mainline (Full Depth)	37.3	$ 1,375,000	lane-mile	$ 51,308,615	See Attached List for Details
CD Construction	16.3	$ 1,375,000	lane-mile	$ 22,440,994	See Attached List for Details
Ramps	82.8	$ 1,523,000	lane-mile	$ 126,161,032	See Attached List for Details
Surface Streets	17.4	$ 1,046,000	lane-mile	$ 18,225,015	See Attached List for Details
Mainline, CD and Ramps Overlay [2]	110.8	$ 376,000	lane-mile	$ 41,659,916	See Attached List for Details
Surface Streets Overlay	11.0	$ 560,000	lane-mile	$ 6,175,600	See Attached List for Details
	275.7				
Bridges	**Quantity**	**Average Cost**	**Unit**	**Total Cost**	**Notes**
New Bridge	1171901	$ 113.57	sf	$ 133,092,753	See Attached List for Details
Bridge Removal	0	$ 20	sf	$ 113,385	See Attached List for Details
Walls:	**Quantity**	**Average Cost**	**Unit**	**Total Cost**	**Notes**
Retaining Walls	1212540	$ 58	sf	$ 70,357,725	See Attached List for Details
Noise Walls	1197875	$ 25	sf	$ 29,946,875	See Attached List for Details
Signals, ITS & Tolling:	**Quantity**	**Unit Cost**	**Unit**	**Total Cost**	**Notes**
Traffic Signals	27	$ 187,000	ea	$ 5,049,000	See Attached List for Details
Tolling					
ITS	1	LUMP	LS	$ 15,149,703	See Attached List for Details
Interstate Signs	50,000	$ 22	sf	$ 1,100,000	See Attached List for Details
Interstate Sign Supports	89	$ 94,900	ea	$ 8,446,100	See Attached List for Details

Subtotal 1.1	$ 529,226,712
Traffic Control (@ 10% of Subtotal 1.1)	$ 52,922,671
Detour (@ 5% of Subtotal 1.1)	$ 26,461,336
Subtotal 1.2	$ 608,610,719
Contingency (@ 10% of Subtotal 1.2)	$ 60,861,072
Asphalt and Fuel Adustment (@ 10% of Subtotal 1.2)	$ 60,861,072
Estimated Construction Cost in 2011	**$ 730,332,863**

1. Roadway construction costs per mile include base & paving, drainage, earthwork, guardrails, minor signing & pavement markings, erosion control

2. Roadway Overlay includes milling and placement of 165 lb/Sy SMA and 90 lb/SY PEM, minor signing and pavement markings

2. Right of Way Items

Land:	Quantity		Avg Value	Unit		Total Cost	Notes
Commerical Land	49.13	$	1,000,000	ac	$	49,134,803	See Attached List for Details
Residential Land	12.31	$	800,000	ac	$	9,848,815	See Attached List for Details

Relocations

	Structures		Avg. Value	Unit		Total Value	Notes
Commercial	21.00	$	650,000	ea	$	13,650,000	
Residential	15.00	$	175,000	ea	$	2,625,000	

Cost to Cure

Net Right of Way Cost (Subtotal 2.1)	**$**	**75,258,618**
Scheduling Contingency (@ 55% of Subtotal 2.1)	$	41,392,240
Subtotal 2.2	**$**	**116,650,858**
Adm/Court Cost (@ 60% of Subtotal 2.2)	$	69,990,515
Total Right of Way Cost	**$**	**186,641,373**

revive285 top end
Project Cost Estimate
Alternative 6A

Estimate by: Brian Webb
Checked by: Sp
Revised: July 2011

Summary of Project Cost [1]	
1. Construction Cost	$ 2,063,075,781
2. Right of Way Cost	$ 673,635,955
3. Utilities (@ 5% of Construction Cost)	$ 103,153,789
4. Preliminary Engineering (@ 7% of Construction Cost)	$ 144,415,305
Total Project Cost	$ 2,984,280,830

1. Construction Items

Roadway Construction [2]	Quantity		Unit Cost	Unit		Total Cost	Notes
Mainline Managed Lanes (Full Depth)	81.8	$	1,375,000	lane-mile	$	112,481,543	See Attached List for Details
CD Construction	36.9	$	1,375,000	lane-mile	$	50,728,581	See Attached List for Details
Ramps	121.4	$	1,558,000	lane-mile	$	189,214,920	See Attached List for Details
Surface Streets	17.8	$	1,046,000	lane-mile	$	18,622,019	See Attached List for Details
Mainline, CD and Ramps Overlay [3]	131.9	$	376,000	lane-mile	$	49,610,933	See Attached List for Details
Surface Streets Overlay [3]	10.4	$	560,000	lane-mile	$	5,825,388	See Attached List for Details

Bridges	Quantity		Unit Cost	Unit		Total Cost	Notes
New Bridge	8257303	$	113	sf	$	933,075,239	See Attached List for Details

Walls:	Quantity		Unit Cost	Unit		Total Cost	Notes
Retaining Walls	1768355	$	57	sf	$	101,391,450	See Attached List for Details

Signals, ITS & Tolling:	Quantity		Unit Cost	Unit		Total Cost	Notes
Traffic Signal	33	$	175,000	ea	$	5,775,000	See Attached List for Details
Tolling	10	$	785,000	ea	$	7,850,000	See Attached List for Details
ITS							
Changeable Message Signs (CMS)	24	$	214,733	ea	$	5,153,600	See Attached List for Details
CCTV Cameras	85	$	24,107	ea	$	2,049,100	See Attached List for Details
Radar Vehicle Detector (RVD)	484	$	13,491	ea	$	6,529,752	See Attached List for Details
Ramp Meters	14	$	58,657	ea	$	821,198	See Attached List for Details
Variable Speed Limit (VSL)	24	$	40,950	ea	$	982,800	See Attached List for Details
Traffic Signal Retiming	36	$	-	ea	$	-	See Attached List for Details
Highway Emergency Response Operator (HERO) Units	6	$	85,000	ea	$	510,000	See Attached List for Details
Fiber Communication Infrastructure	315,500	$	43	lf	$	13,456,553	See Attached List for Details
ITS Hub	6	$	112,510	ea	$	675,060	See Attached List for Details
Interstate Signs	79,000	$	22	sf	$	1,738,000	See Attached List for Details
Interstate Sign Supports	150	$	92,200	ea	$	13,830,000	See Attached List for Details
Subtotal 1.1					$	1,520,321,136	
Traffic Control (@ 10% of Subtotal 1.1)					$	152,032,114	
Detour (@ 5% of Subtotal 1.1)					$	76,016,057	
Subtotal 1.2					$	1,748,369,306	
Contingency (@ 10% of Subtotal 1.2)					$	174,836,931	
Asphalt and Fuel Adustment (@ 8% of Subtotal 1.2)					$	139,869,544	
Estimated Construction Cost in 2009					**$**	**2,063,075,781**	

Notes & Comments:
Notes & Comments:
1. Roadway construction costs per mile include base & paving, drainage, earthwork, guardrails, minor signing & pavement markings, erosion control

2. Roadway Overlay includes milling and placement of 165 lb/Sy SMA and 90 lb/SY PEM, minor signing and pavement markings

2. Right of Way Items

Land:	Quantity		Avg Value	Unit		Total Cost	Notes
Commerical Land	167.84	$	1,000,000	ac	$	167,844,467	See Attached List for Details
Residential Land	38.76	$	800,000	ac	$	31,007,934	See Attached List for Details

Relocations

	Structures		Avg. Value	Unit		Total Value	Notes
Commercial	85.00	$	751,176	ea	$	63,850,000	
Residential	51.00	$	175,000	ea	$	8,925,000	

Net Right of Way Cost (Subtotal 2.1)	**$**	**271,627,401**
Scheduling Contingency (@ 55% of Subtotal 2.1)	$	149,395,071
Subtotal 2.2	**$**	**421,022,472**
Adm/Court Cost (@ 60% of Subtotal 2.2)	$	252,613,483
Total Right of Way Cost	**$**	**673,635,955**

revive285 top end
Project Cost Estimate
Alternative 6b

Estimate by: Brian Webb
Checked by: Sp
Revised: July 2011

Summary of Project Cost [1]	
1. Construction Cost	$ 2,037,978,920
2. Right of Way Cost	$ 668,410,067
3. Utilities (@ 5% of Construction Cost)	$ 101,898,946
4. Preliminary Engineering (@ 7% of Construction Cost)	$ 142,658,524
Total Project Cost	$ 2,950,946,457

1. Construction Items

Roadway Construction [2]	**Quantity**		**Unit Cost**	**Unit**		**Total Cost**	**Notes**
Full Depth Asphalt (Freeway General Purpose and Managed Lanes)	114.2	$	1,375,000	lane-mile	$	157,046,072	See Attached List for Details
CD Construction	58.7	$	1,375,000	lane-mile	$	80,651,042	See Attached List for Details
Ramps	79.0	$	1,558,000	lane-mile	$	123,080,771	See Attached List for Details
Surface Streets	15.3	$	1,046,000	lane-mile	$	16,030,544	See Attached List for Details
Mainline, CD and Ramps Overlay [3]	122.5	$	376,000	lane-mile	$	46,043,182	See Attached List for Details
Surface Streets Overlay [3]	12.2	$	560,000	lane-mile	$	6,839,371	See Attached List for Details
Bridges	**Quantity**		**Unit Cost**	**Unit**		**Total Cost**	**Notes**
New Bridge	8111278	$	112	sf	$	908,463,129	See Attached List for Details
Walls:	**Quantity**		**Unit Cost**	**Unit**		**Total Cost**	**Notes**
Retaining Walls	1812645	$	57	sf	$	103,929,800	See Attached List for Details
Signals, ITS & Tolling:	**Quantity**		**Unit Cost**	**Unit**		**Total Cost**	**Notes**
Traffic Signal	33	$	186,266	ea	$	6,146,791	See Attached List for Details
Tolling	10	$	785,000	ea	$	7,850,000	See Attached List for Details
ITS							
Changeable Message Signs (CMS)	24	$	214,733	ea	$	5,153,600	See Attached List for Details
CCTV Cameras	85	$	24,107	ea	$	2,049,100	See Attached List for Details
Radar Vehicle Detector (RVD)	484	$	13,491	ea	$	6,529,752	See Attached List for Details
Ramp Meters	14	$	58,657	ea	$	821,198	See Attached List for Details
Variable Speed Limit (VSL)	24	$	40,950	ea	$	982,800	See Attached List for Details
Traffic Signal Retiming	36	$	-	ea	$	-	See Attached List for Details
Highway Emergency Response Operator (HERO) Units	6	$	85,000	ea	$	510,000	See Attached List for Details
Fiber Communication Infrastructure	315,500	$	43	lf	$	13,456,553	See Attached List for Details
ITS Hub	6	$	112,510	ea	$	675,060	See Attached List for Details
Interstate Signs	79,000	$	22	sf	$	1,738,000	See Attached List for Details
Interstate Sign Supports	150	$	92,200	ea	$	13,830,000	See Attached List for Details
Subtotal 1.1					$	1,501,826,765	
Traffic Control (@ 10% of Subtotal 1.1)					$	150,182,676	
Detour (@ 5% of Subtotal 1.1)					$	75,091,338	
Subtotal 1.2					$	1,727,100,779	
Contingency (@ 10% of Subtotal 1.2)					$	172,710,078	
Asphalt and Fuel Adustment (@ 8% of Subtotal 1.2)					$	138,168,062	
Estimated Construction Cost in 2009					**$**	**2,037,978,920**	

Notes & Comments:
1. Roadway construction costs per mile include base & paving, drainage, earthwork, guardrails, minor signing & pavement markings, erosion control

2. Roadway Overlay includes milling and placement of 165 lb/Sy SMA and 90 lb/SY PEM, minor signing and pavement markings

B. Right of Way Items

Land:	Quantity		Avg Value	Unit		Total Cost	Notes
Commerical Land	163.23	$	1,000,000	ac	$	163,229,040	See Attached List for Details
Residential Land	37.11	$	800,000	ac	$	29,691,148	See Attached List for Details

Relocations	Structures		Avg. Value	Unit		Total Value	Notes
Commercial	84.00	$	800,000	ea	$	67,200,000	
Residential	47.00	$	200,000	ea	$	9,400,000	

Net Right of Way Cost (Subtotal 2.1)	**$**	**269,520,188**
Scheduling Contingency (@ 55% of Subtotal 2.1)	$	148,236,104
Subtotal 2.2	**$**	**417,756,292**
Adm/Court Cost (@ 60% of Subtotal 2.2)	$	250,653,775
Total Right of Way Cost	**$**	**668,410,067**

PROJECT ANALYSIS

PROJECT ANALYSIS

SUMMARY OF ANALYSIS

The following analysis tools were used to study the project:

- Key Project Factors
- Cost Model
- Function Analysis

KEY PROJECT FACTORS

The first day of the VE study included meetings with the project stakeholders. The following summarizes key project issues and observations identified during these sessions.

Project Issues

The following are some of the issues and concerns associated with the project.

Build Alternatives:

- A preferred alternative has not been selected pending the Draft Environmental Impact Statement (DEIS) slated for October 2012
- Public Information Open House (PIOH) is currently slated for November 2012
- Record of Decision is slated for May 2013
- Currently there is a funding shortfall for all three Build Alternatives
- Build Alternative 6A is phaseable
- Build Alternative 6B is not phaseable
- Build Alternative 4 improves operations but does not provide for future transit right of way or managed lanes system
- Capital for transit operations is currently unfunded
- In accordance with GDOT Board policy, REVIVE 285 Top End is the "lynch pin" for the future managed lanes system plan
- REVIVE 285 Top End is being considered for P3 contracting mechanism to; i.e., design, build, operate and maintain for 50 years
- HOT+3 lanes will exclude heavy trucks
- Design speed is 55 mph
- Ashford-Dunwoody interchange is not finalized pending that interchange's diverging diamond improvements letting

COST MODEL

The VE team leader prepared several cost models from the cost estimate presented in the *Project Information* section of this report. The models are organized to identify major construction elements or trade categories, the original estimated costs, and the percent of total project cost for the significant cost items of each Build Alternative.

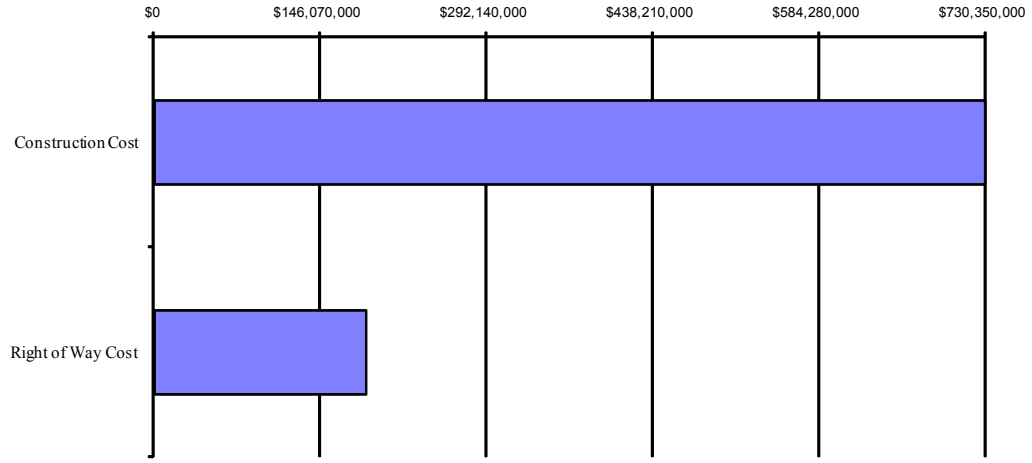
The cost models clearly showed the cost drivers for the project and were used to guide the VE team during the VE study.

Cost Models – Design Alternative 4

COST HISTOGRAM VMS

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 4 - PROJECT COST July 2011		COST	PERCENT	CUM. PERCENT
Construction Cost		730,332,863	79.65%	79.65%
Right of Way Cost		186,641,373	20.35%	100.00%
Base Construction/ROW Costs		**916,974,236**	100.00%	
Utilities (% of Const Cost)	5.00%	36,516,643	Composite	
Preliminary Engineering Cost (% of Const Cost)	8.00%	58,426,629	Construction	
Estimated Construction Cost in 2011		**1,011,917,508**	Markup	10.35%

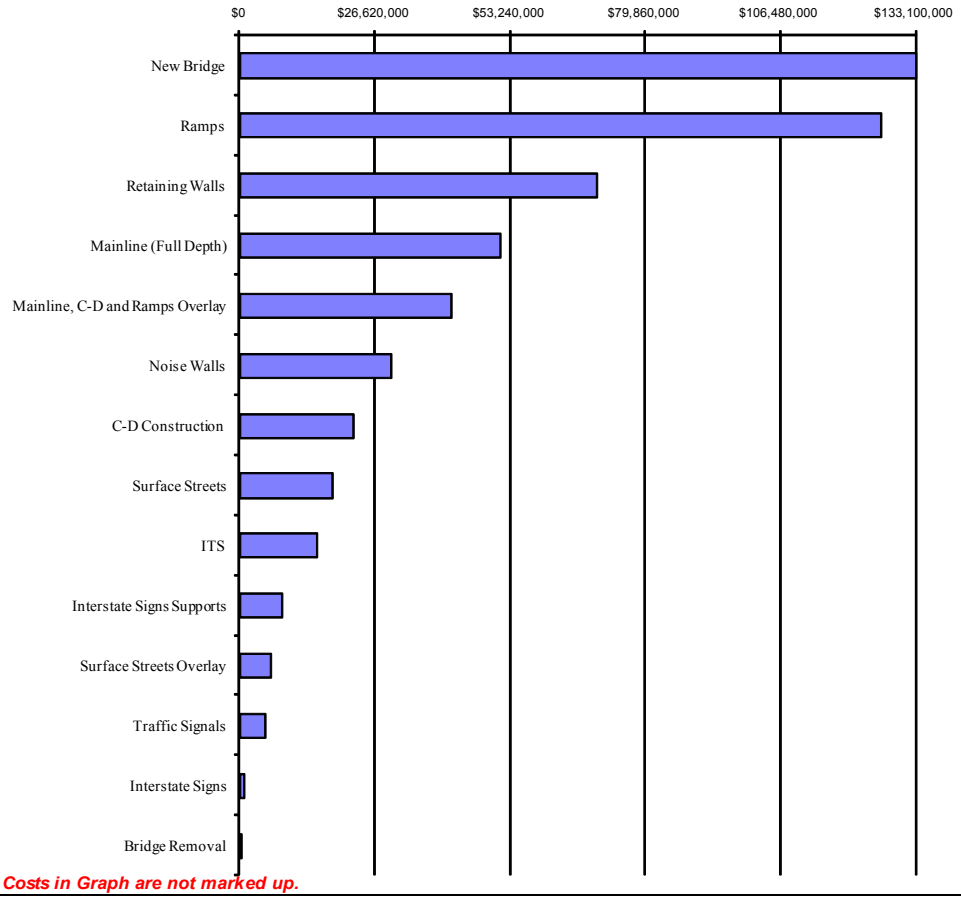


Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 4 - CONSTRUCTION COST July 2011	COST	PERCENT	CUM. PERCENT
New Bridge	133,092,753	25.15%	25.15%
Ramps	126,161,032	23.84%	48.99%
Retaining Walls	70,357,725	13.29%	62.28%
Mainline (Full Depth)	51,308,615	9.70%	71.98%
Mainline, C-D and Ramps Overlay	41,659,916	7.87%	79.85%
Noise Walls	29,946,875	5.66%	85.51%
C-D Construction	22,440,994	4.24%	89.75%
Surface Streets	18,225,015	3.44%	93.19%
ITS	15,149,703	2.86%	96.05%
Interstate Signs Supports	8,446,100	1.60%	97.65%
Surface Streets Overlay	6,175,600	1.17%	98.82%
Traffic Signals	5,049,000	0.95%	99.77%
Interstate Signs	1,100,000	0.21%	99.98%
Bridge Removal	113,385	0.02%	100.00%
Base Construction Cost - Subtotal 1.1	**529,226,713**	100.00%	
Traffic Control at 10.00%	52,922,671		
Detour at 5.00%	26,461,336		
Subtotal 1.2	**608,610,720**		
Contingency at 10.00%	60,861,072	Composite	
Asphalt and Fuel Adjustment at 10.00%	60,861,072	Construction	
Estimated Construction Cost in 2011	**730,332,864**	Markup	38.00%



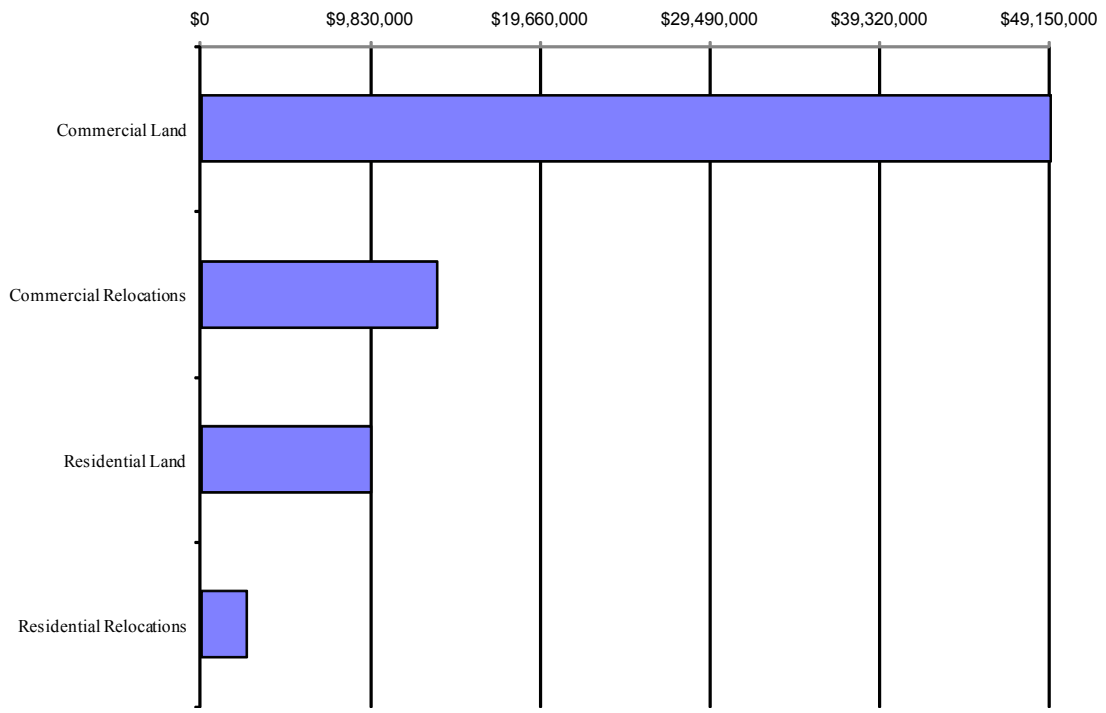
Costs in Graph are not marked up.

Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 4 - RIGHT OF WAY COST July 2011		COST	PERCENT	CUM. PERCENT
Commercial Land		49,134,803	65.29%	65.29%
Commercial Relocations		13,650,000	18.14%	83.43%
Residential Land		9,848,815	13.09%	96.51%
Residential Relocations		2,625,000	3.49%	100.00%
Net Right of Way Costs - 2.1		**75,258,618**	100.00%	
Scheduling Contingency	55.00%	41,392,240		
Subtotal - 2.2		116,650,858	ROW	
Administration/Court Cost	60.00%	69,990,515	Composite	
Total Right of Way Costs		186,641,373	Markup	148.00%



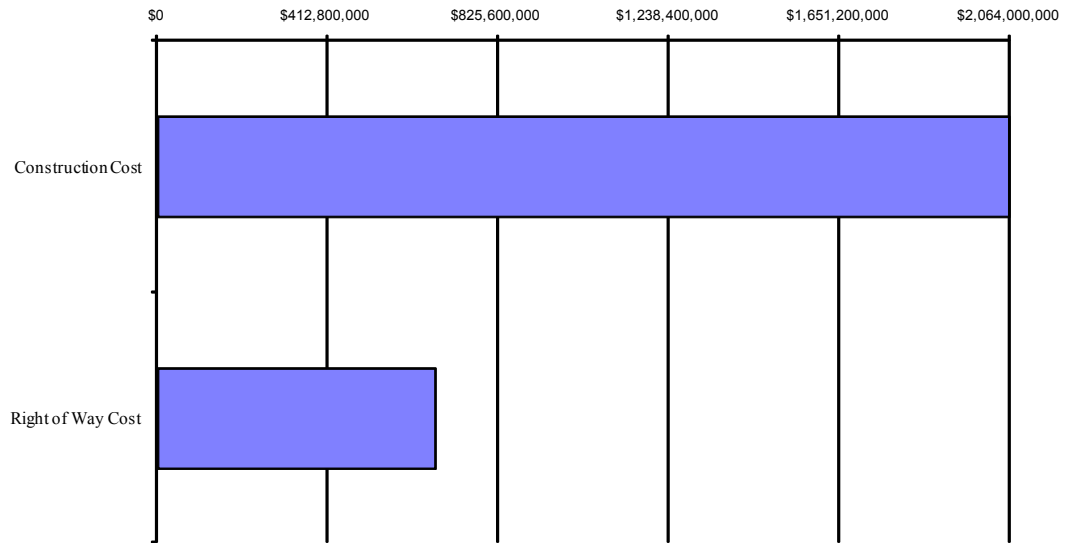
The Market Appreciation (40%) is not included in the updated Preliminary ROW Cost Estimate Costs in Graph are not marked up.

Cost Models – Design Alternative 6A

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6A - PROJECT COST July 2011		COST	PERCENT	CUM. PERCENT
Construction Cost		2,063,075,782	75.39%	75.39%
Right of Way Cost		673,635,954	24.61%	100.00%
Base Construction/ROW Costs		**2,736,711,736**	100.00%	
Utilities (% of Const Cost)	5.00%	103,153,789	Composite	
Preliminary Engineering Cost (% of Const Cost)	7.00%	144,415,305	Construction	
Estimated Construction Cost in 2011		**2,984,280,830**	Markup	9.05%

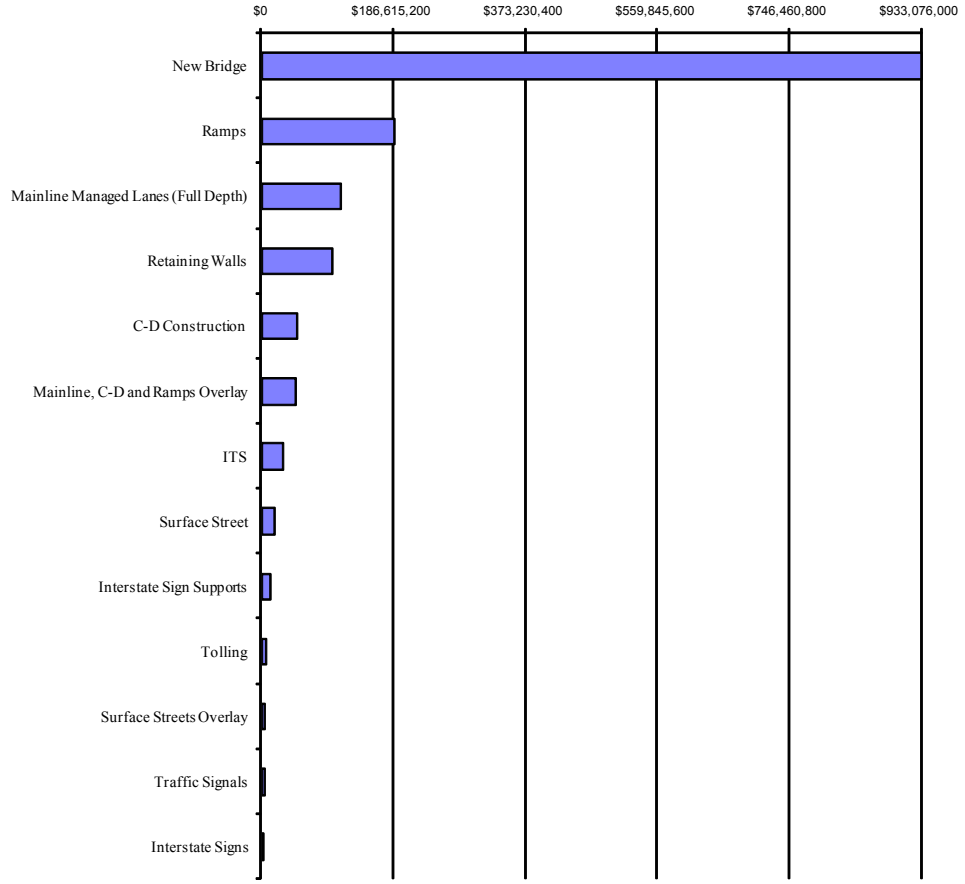


Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6A - CONSTRUCTION COST July 2011		COST	PERCENT	CUM. PERCENT
New Bridge		933,075,239	61.37%	61.37%
Ramps		189,214,920	12.45%	73.82%
Mainline Managed Lanes (Full Depth)		112,481,543	7.40%	81.22%
Retaining Walls		101,391,450	6.67%	87.89%
C-D Construction		50,728,581	3.34%	91.22%
Mainline, C-D and Ramps Overlay		49,610,933	3.26%	94.49%
ITS		30,178,063	1.98%	96.47%
Surface Street		18,622,019	1.22%	97.70%
Interstate Sign Supports		13,830,000	0.91%	98.61%
Tolling		7,850,000	0.52%	99.12%
Surface Streets Overlay		5,825,388	0.38%	99.51%
Traffic Signals		5,775,000	0.38%	99.89%
Interstate Signs		1,738,000	0.11%	100.00%
Base Construction Cost - Subtotal 1.1		**1,520,321,136**	100.00%	
Traffic Control at	10.00%	152,032,114		
Detour at	5.00%	76,016,057		
Subtotal 1.2		**1,748,369,306**		
Contingency at	10.00%	174,836,931	Composite	
Asphalt and Fuel Adjustment at	8.00%	139,869,545	Construction	
Estimated Construction Cost in 2011		**2,063,075,782**	Markup	35.70%

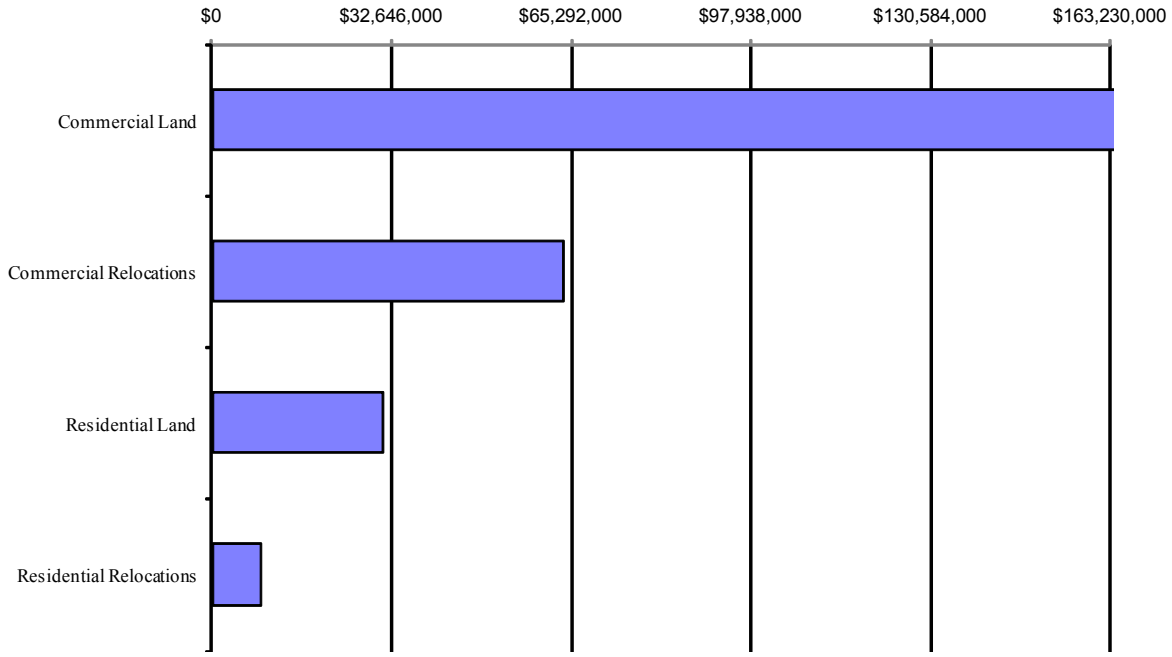


Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6A - RIGHT OF WAY COST July 2011	COST	PERCENT	CUM. PERCENT
Commercial Land	167,844,467	61.79%	61.79%
Commercial Relocations	63,850,000	23.51%	85.30%
Residential Land	31,007,934	11.42%	96.71%
Residential Relocations	8,925,000	3.29%	100.00%
Net Right of Way Costs - 2.1	**271,627,401**	100.00%	
Scheduling Contingency 55.00%	149,395,071		
Subtotal - 2.2	**421,022,472**	ROW	
Administration/Court Cost 60.00%	252,613,483	Composite	
Total Right of Way Costs	**673,635,954**	Markup	148.00%



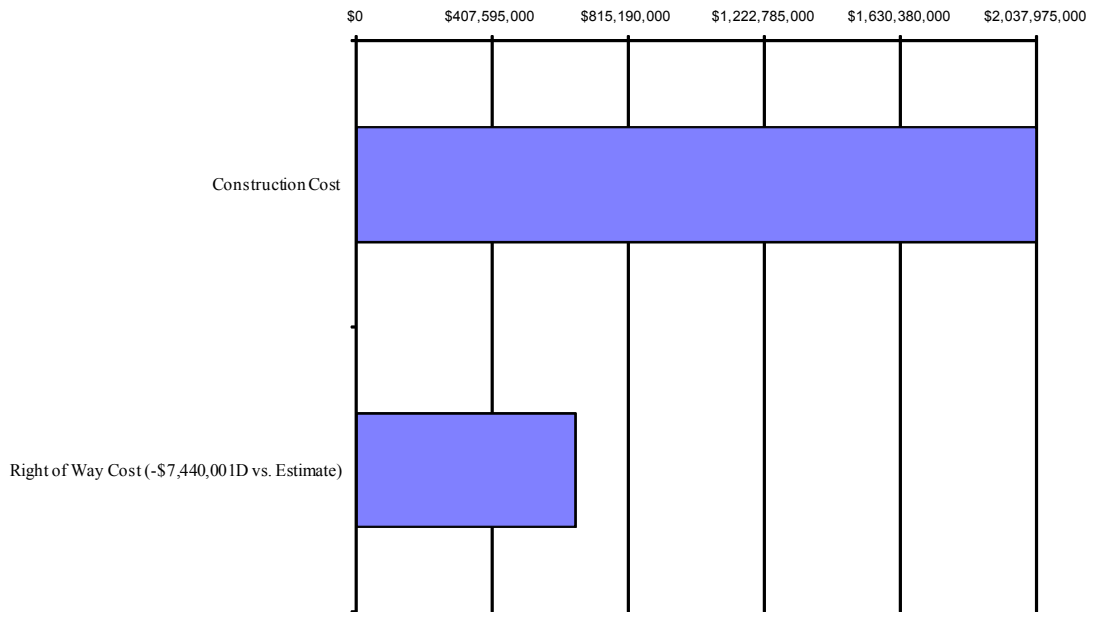
The Market Appreciation (40%) is not included in the updated Preliminary ROW Cost Estimate
Costs in Graph are not marked up.

Cost Models – Design Alternative 6B

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6B - PROJECT COST July 2011		COST	PERCENT	CUM. PERCENT
Construction Cost		2,037,978,920	75.51%	75.51%
Right of Way Cost (-$7,440,001Δ vs. Estimate)		660,970,066	24.49%	100.00%
Base Construction/ROW Costs		**2,698,948,986**	100.00%	
Utilities (% of Const Cost)	5.00%	101,898,946	Composite	
Preliminary Engineering Cost (% of Const Cost)	7.00%	142,658,524	Construction	
Estimated Construction Cost in 2011		**2,943,506,457**	Markup	9.06%

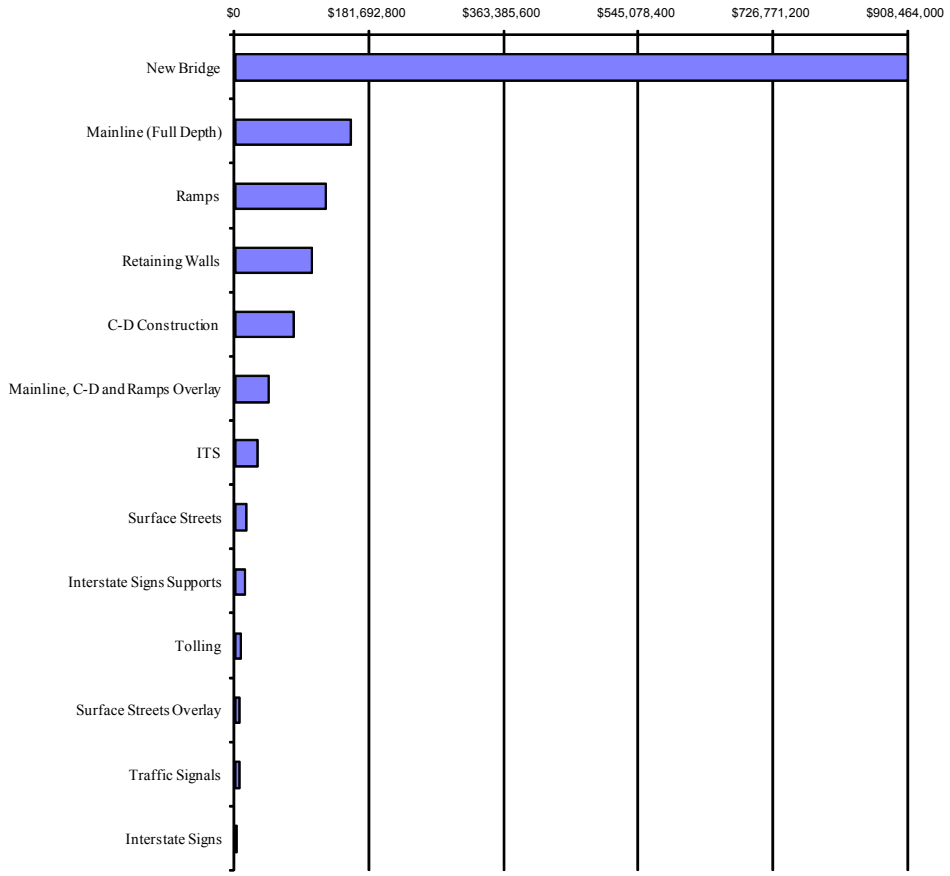


Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6B - CONSTRUCTION COST July 2011		COST	PERCENT	CUM. PERCENT
New Bridge		908,463,129	60.49%	60.49%
Mainline (Full Depth)		157,046,072	10.46%	70.95%
Ramps		123,080,771	8.20%	79.14%
Retaining Walls		103,929,800	6.92%	86.06%
C-D Construction		80,651,042	5.37%	91.43%
Mainline, C-D and Ramps Overlay		46,043,182	3.07%	94.50%
ITS		30,178,063	2.01%	96.51%
Surface Streets		16,030,544	1.07%	97.58%
Interstate Signs Supports		13,830,000	0.92%	98.50%
Tolling		7,850,000	0.52%	99.02%
Surface Streets Overlay		6,839,371	0.46%	99.47%
Traffic Signals		6,146,791	0.41%	99.88%
Interstate Signs		1,738,000	0.12%	100.00%
Base Construction Cost - Subtotal 1.1		**1,501,826,765**	100.00%	
Traffic Control at	10.00%	150,182,677		
Detour at	5.00%	75,091,338		
Subtotal 1.2		**1,727,100,780**		
Contingency at	10.00%	172,710,078	Composite	
Asphalt and Fuel Adjustment at	8.00%	138,168,062	Construction	
Estimated Construction Cost in 2011		**2,037,978,920**	Markup	35.70%

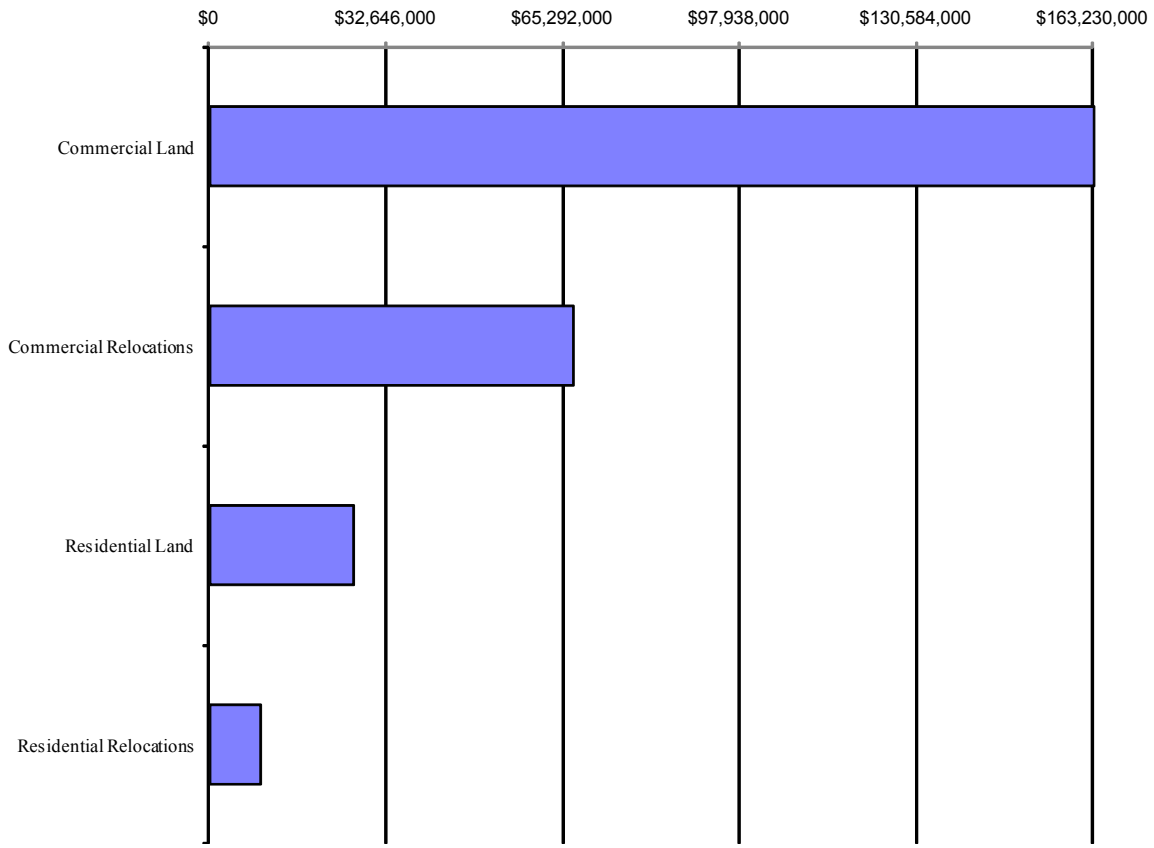


Costs in Graph are not marked up.

COST HISTOGRAM

PROJECT: **REVIVE 285 TOP END**
NHS00-0001-00(758), PI #0001758, I-285 FM 1-75/Cobb County through Fulton to I-85/DeKalb for HOV, Georgia
Value Engineering Study

BUILD ALTERNATIVE 6B - RIGHT OF WAY COST July 2011	COST	PERCENT	CUM. PERCENT
Commercial Land	163,229,040	61.24%	61.24%
Commercial Relocations	67,200,000	25.21%	86.46%
Residential Land	26,691,148	10.01%	96.47%
Residential Relocations	9,400,000	3.53%	100.00%
Net Right of Way Costs - 2.1 (-$3,000,000Δ vs. Estimate)	**266,520,188**	100.00%	
Scheduling Contingency 55.00%	146,586,103		
Subtotal - 2.2	**413,106,291**	ROW	
Administration/Court Cost 60.00%	247,863,775	Composite	
Total Right of Way Costs (-$7,440,001Δ vs. Estimate)	**660,970,066**	Markup	148.00%



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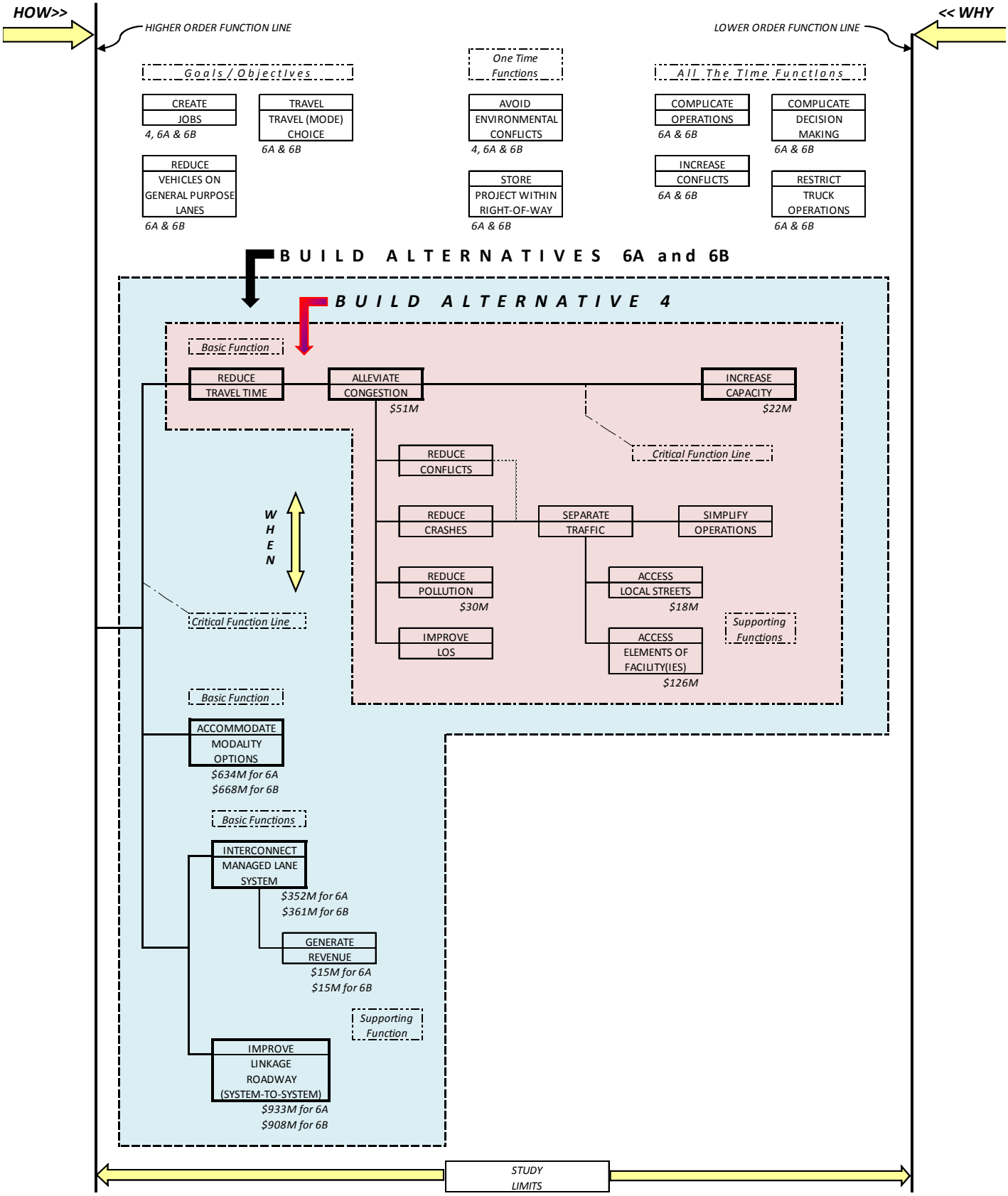
FUNCTION ANALYSIS

Function analysis was performed and a Function Analysis System Technique (FAST) Diagram was produced, which revealed the key functional relationships for the project. This analysis provided a greater understanding of the total project and how the project's performance, cost, time, and risk characteristics are related to the various functions identified.

The FAST diagram arranges the functions in logical order so that when read from left to right; the functions answer the question, "How?" If the diagram is read from right to left, the functions answer the question, "Why?" Functions connected with a vertical line are those that happen at the same time as, or are caused by, the function at the top of the column (a "When?" relationship).

FAST Diagram



IDEA EVALUATION

IDEA EVALUATION

The ideas generated by the VE team were carefully evaluated, and project-specific attributes were applied to each idea to assure an objective evaluation.

EVALUATION PROCESS

The VE team generated and evaluated ideas on how to perform the various project functions using other approaches. The idea list was grouped by function or major project element. Each idea was evaluated with respect to the functional requirements of the project. Cost, time, and risk may also have been considered during this evaluation.

In this specific case, the VE team opted to use a simpler system due to time constraints and the number of ideas. This simplified system consisted of the following notations: **DEV** = Idea to be Developed; **DIS** = Idea to be Dismissed and **ABD** = Already Being Done.

IDEA SUMMARY

All of the ideas that were generated during the Speculation Phase using brainstorming techniques were recorded on the following pages. Ideas received an idea code based on the function statement under which it was brainstormed. The following table indicates the functions related to each idea code.

Idea Code	Related Function
IM-1	Interconnect Managed (Lane Systems)
L-1	(Improve) Linkage (system-to-system, Roadway)
SP-1	Store Project (within the Right-of-Way)
RTT-1	Reduce Travel Time

A detailed idea evaluation summary is also included. This summary includes additional information related to how each idea improves or degrades the elements of cost, time (schedule), and risk. Only those elements where the idea rating differs from the baseline concept are included in this summary.

IDEA SUMMARY LIST

Idea Code and Description	Rating
L-1.0: Trim back project limits at I-75, GA 400 and I-85	DIS
L-2.0: Maintain ramp at northbound GA 400 to eastbound I-285 and eliminate Bridge No. 43	DEV
L-3.0: Reduce/trim back improvements to Roswell Road (north and south of I-285)	DIS

Idea Code and Description	Rating
L-4.0: Retain existing GA 400 southbound bridge over I-285 and eliminate Bridge Nos. 23A, 23B and 24	DEV
L-5.0: Reconfigure eastbound I-285 ramp to northbound GA 400 and eliminate proposed Bridge No. 29	DEV
L-6.0: Do not improve Savoy and Cotillion Drives	DIS
L-7.0: Shorten Bridge No. 38	DEV
L-8.1: Do not improve Windy Hill Road / I-285 interchange	DEV
L-8.2: Eliminate Bridge Nos. 4 and 6 at Windy Hill Road	DEV
L-9.0: Eliminate eastbound I-285 to Chamblee Tucker Road exit ramp and Bridge No. 42	DEV
L-10.0: Do not improve the northeast quadrant of the I-285 / I-85 interchange	DEV
L-11.0: Eliminate Bridge No. 33	DEV
SP-1.0: Reduce ROW take in Roswell Road area (combine with RTT-1.0)	DEV
SP-2.0: Reduce unit cost of ROW	DIS
SP-3.0: Use retaining walls where feasible to reduce ROW costs	DIS
SP-4.0: Lower bridge profiles where feasible	DIS
SP-5.0: Eliminate ROW take north of Mt. Wilkenson Parkway	DEV
SP-6.0: Move eastbound and westbound managed lanes to one side of the facility	DEV
SP-7.1: Do not purchase transit ROW	DEV
SP-7.2: Purchase transit ROW without displacing previous owners	DIS
SP-7.3: Purchase transit ROW for non-displacement parcels only	DEV
SP-8.0: Place Bridge Nos. EB46, EB47 and EB48 in center of Motors Industrial Way	DEV
SP-9.0: Take transit ROW underground just east of Bridge No. WB12 (ROW only)	DEV
SP-10.1: Realign transit ROW to abut I-285 east of Ashford-Dunwoody Road (ROW only)	DEV
SP-10.2: Take transit underground just east of Ashford-Dunwoody Road (ROW only)	DEV
RTT-1.0: Reconfigure eastbound I-285 to Sandy Springs Circle - use a SPUI (combine with SP-1)	DEV
RTT-2.0: Use a roundabout at the I-285/Sandy Springs Circle interchange	DIS
RTT-3.0: Increase the design speed to 65 mph	DIS
RTT-4.0: Reduce/trim back improvements to Sandy Springs Circle on the north side of I-285 (see combined SP-1 / RTT-1 using a SPUI)	ABD
RTT-5.0: Create a "teleworking" zone tied to the I-285 top end to remove cars from the roadway system(s)	DIS
RTT-6.0: Revise work hours to reduce current peak AM / PM times	DIS

Idea Code and Description	Rating
IM-1.0: Lower westbound I-285 to southbound I-75 Bridge No. WS1	DIS
IM-2.0: Reconfigure managed lanes at-grade from Riverside Drive to west of the Chattahoochee River (eastbound and westbound)	DEV
IM-3.1: Reduce the size of the straddle bents	DIS
IM-3.2: Reconfigure the straddle bents	DIS
IM-4.0: Eliminate the future transit Bridge No. EB19	DEV
IM-5.0: Tunnel the entire transit way	DIS
IM-6.0: Re-designate HOT3+ lanes to HOV lanes	DIS
IM-7.0: Retain managed lanes at-grade from east of the Chattahoochee River to the Cumberland Boulevard / I-285 / I-75 interchange	DEV
IM-8.2 Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange:	DEV
IM-9.0: Use a 4-foot inside shoulder and a 10-foot outside shoulder for managed lanes only	DEV
IM-10.0: Convert all managed lanes to a toll road facility	DIS

Rating Legend: DEV: Develop [as a VE Alternative], ABD: Already Being Done, DIS: Dismissed

DETAILED IDEA EVALUATION SUMMARY

L-1.0: **Trim back project limits at I-75, GA 400 and I-85** Overall Rating: **DIS**

General comments: Although with further in-depth evaluation, these interchanges could possibly be scaled back; however, their current configuration appear to be justified as logically termini in each instance. Tweaking aspects within the interchanges is more feasible; see other related ideas.

L-2.0: Maintain ramp at northbound GA 400 to eastbound I-285 and eliminate Bridge No. 43 Overall Rating: **DEV**

General comments: The NB GA 400 ramp to EB I-285 follows its existing alignment underneath the proposed ramps and merges separately with EB I-285. The two ramps, southbound (SB) GA 400 to EB I-285 and from the Glenridge Drive C-D to EB I-285 continue with the same profile and merge together onto I-285 with a slip ramp as originally proposed.

L-3.0: Reduce/trim back improvements to Roswell Road (north and south of I-285) Overall Rating: **DIS**

General comments: The logical terminus at this location appears to be appropriate for the intended improvements associated with Roswell Road, Sandy Springs Circle and I-285.

L-4.0: Retain existing GA 400 southbound bridge over I-285 and eliminate Bridge Nos. 23A, 23B and 24 Overall Rating: **DEV**

General comments: Maintains the existing system and structures in their current alignment and eliminates Bridge Nos. 23A, 23B and 24.

L-5.0: Reconfigure eastbound I-285 ramp to northbound GA 400 and eliminate proposed Bridge No. 29

Overall Rating: **DEV**

General comments: Maintains the existing alignment of NB GA 400, relocates EB I-285 to NB GA 400 to a right-hand entrance by elevating over the existing roadways. The decision entrance for the ramp will remain on the proposed EB C-D alignment.

L-6.0: Do not improve Savoy and Cotillion Drives

Overall Rating: **DIS**

General comments: Although these frontage roads are being converted into one-way pairs with two travels lanes in each direction, the traffic counts in the year 2040 appear to justify this conversion - especially as the improvements to I-285 will affect both roads.

L-7.0: Shorten Bridge No. 38

Overall Rating: ~~**DEV**~~

General comments: After carefully reviewing the potential of curving this bridge to parallel the south side of I-285, it became apparent that any savings associated with shortening the bridge would be off-set by the possibility having to raise the bridge to clear the North Peachtree Road overpass and the improvements to Savoy Drive.

L-8.1: Do not improve Windy Hill Road / I-285 interchange

Overall Rating: **DEV**

General comments: The actual work on the Windy Hill Drive / I-285 interchange does not appears to be the result of or influences the need and purpose of the I-285 corridor effort. This work should probably be a Cobb County undertaking.

L-8.2: Eliminate Bridge Nos. 4 and 6 at Windy Hill Road

Overall Rating: **DEV**

General comments: Maintains the existing facilities in their current location and do not undertake improvements for the I-75 weaving lane changes and eliminate Bridge Nos. 4 and 6 and associated ramps.

L-9.0: Eliminate eastbound I-285 to Chamblee Tucker Road exit ramp and Bridge No. 42

Overall Rating: **DEV**

General comments: Maintains ramp from EB I-285 to Chamblee Tucker Road in its present location and adds an additional lane to the C-D to the EB I-285 ramp to the split to Chamblee Tucker Road.

L-10.0: Do not improve the northeast quadrant of the I-285 / I-85 interchange

Overall Rating: **DEV**

General comments: The "minimal" effort being taken in this quadrant of the interchange does not enhance the current configuration and is not warranted.

L-11.0: Eliminate Bridge No. 33

Overall Rating: **DEV**

General comments: Eliminate Bridge No. 33 and align the Chamblee Dunwoody Road on-ramp for a left hand merge with the WB C-D. Provide a left hand merge onto I-285 off of the WB C-D prior to Ashford Dunwoody Road.

SP-1.0: Reduce ROW take in Roswell Road area (combine with RTT-1.0)

Overall Rating: **DEV**

General comments: Use a Single Point Urban Interchange to move the exit ramps and C-Ds closer to I-285 which will be separated by walls.

SP-2.0: Reduce unit cost of ROW

Overall Rating: **DIS**

General comments: Realizing this project is an "early" design stage, the complexities associated with ROWs is at best difficult to assess. The order of magnitude presented in the cost estimates, although considered to be high, is understandable; furthermore, insufficient data is currently available to better assess the required takes.

SP-3.0: Use retaining walls where feasible to reduce ROW costs

Overall Rating: **DIS**

General comments: Acknowledging that one of the functions of a retaining wall is to minimize ROW takes, there is currently insufficient data to better determine where the use of retain walls would offset the cost/need for ROW takes. The final alignment and preferred alternative will ameliorate some of the areas currently slated of ROW takes vs. retaining wall.

SP-4.0: Lower bridge profiles where feasible

Overall Rating: **DIS**

General comments: If bridge profiles could be lowered certainly cost savings, constructability issues, scheduling and construction management could be reduced. However, insufficient information was available to assess any potential improvements.

SP-5.0: Eliminate ROW take north of Mt. Wilkenson Parkway

Overall Rating: **DEV**

General comments: Reduces the amount of ROW in this area to accommodate a 20-foot construction zone for the proposed retaining wall.

SP-6.0: Move eastbound and westbound managed lanes to one side of the facility

Overall Rating: ~~**DEV**~~

General comments: Although the possibility exists for realigning the managed lanes to one side of the facilities, insufficient time existed during the VE study to adequately evaluate this alternative. During a quick and superficial evaluation, however, it appears additional right-of-way takes would be necessary for this alternative to work properly possibly negating any potential savings associated with the managed lanes themselves. However, it may be warranted for the design team to further investigate this possible realignment.

SP-7.1: Do not purchase transit ROW

Overall Rating: **DEV**

General comments: Eliminate all ROW for a future transit facility along the project corridor.

SP-7.2: Purchase transit ROW without displacing previous owners

Overall Rating: **DIS**

General comments: The intent of this idea was to purchase the ROW and not displace the current owners of their facilities until such time as necessary in the future. This would assure the land availability when necessary while current owners would become tenants and rent back their facilities.

SP-7.3: Purchase transit ROW for non-displacement parcels only

Overall Rating: **DEV**

General comments: Eliminate ROW for a future transit facility in areas requiring commercial or residential displacements only.

SP-8.0: Place Bridge Nos. EB46, EB47 and EB48 in center of Motors Industrial Way

Overall Rating: **DEV**

General comments: Relocate the proposed managed lanes that shift from Peachtree Industrial Boulevard into the median of Motors Industrial Way and thereby pulling managed lanes out of the ROW for the General Motors property.

SP-9.0: Take transit ROW underground just east of Bridge No. WB12 (ROW only)

Overall Rating: **DEV**

General comments: Retain transit line underground to reduce significant displacements and right-of-way takes.

SP-10.1: Realign transit ROW to abut I-285 east of Ashford-Dunwoody Road (ROW only)

Overall Rating: **DEV**

General comments: Purchase ROW for a future transit facility along the project corridor in the area east of Ashford- Dunwoody abutting I-285 only.

SP-10.2: Take transit underground just east of Ashford-Dunwoody Road (ROW only)

Overall Rating: **DEV**

General comments: Purchase ROW for a future underground transit facility along the project corridor in the area east of Ashford- Dunwoody abutting I-285.

RTT-1.0: Reconfigure eastbound I-285 to Sandy Springs Circle - use a SPUI (combine with SP-1)

Overall Rating: **DEV**

General comments: See SP-1

RTT-2.0: Use a roundabout at the I-285/Sandy Springs Circle interchange

Overall Rating: **DIS**

General comments: Although an interesting solution, design speeds, exiting traffic velocities and general reconfiguration of this interchange would result in additional significant ROW takes and could possibly impinge on the efforts at the Roswell Road / I-285 interchange.

RTT-3.0: Increase the design speed to 65 mph

Overall Rating: **DIS**

General comments: Increasing the design speed would aggravate ROW takes as larger radii curves would be necessary. Furthermore, there would be no guarantee that posted speed limits would be raised.

RTT-4.0: Reduce/trim back improvements to Sandy Springs Circle on the north side of I-285 (see combined SP-1 / RTT-1 using a SPUI)

Overall Rating: **ABD**

General comments: Alternative Nos. SP-1 and RTT-1 are basically the same as this idea.

RTT-5.0: Create a "teleworking" zone tied to the I-285 top end to remove cars from the roadway system(s)

Overall Rating: **DIS**

General comments: Although a noble idea, past experiences with public adherence to "telework" zones have failed. Some vehicular volume reduction would occur but the entire corridor would have to within the zone to be effective.

RTT-6.0: Revise work hours to reduce current peak AM / PM times

Overall Rating: **DIS**

General comments: In order effect a change in the AM and PM peak traffic hours, the entire work zone with the I-75 to I-85 corridor would have to be engaged; the likelihood of this occurring is extremely low with an uncertain outcome.

IM-1.0: Lower westbound I-285 to southbound I-75 Bridge No. WS1

Overall Rating: **DIS**

General comments: Without more profile and geometric information, this idea cannot be further developed although a possibility exists to lower this bridge.

IM-2.0: Reconfigure managed lanes at-grade from Riverside Drive to west of the Chattahoochee River (eastbound and westbound)

Overall Rating: **DEV**

General comments: Lowers elevated bridges to grade from Riverside Drive west to the I-75 / I-285 interchange and helps eliminate right of way and retaining walls.

IM-3.1: Reduce the size of the straddle bents

Overall Rating: **DIS**

General comments: Acknowledging the need for straddle bents, there is insufficient information at this early stage of concept design to warrant the development of bents sizes, shapes, locations, etc.

IM-3.2: Reconfigure the straddle bents

Overall Rating: **DIS**

General comments: Acknowledging the need for straddle bents, there is insufficient information at this early stage of concept design to warrant the development of bents sizes, shapes, locations, etc.

IM-4.0: Eliminate the future transit Bridge No. EB19

Overall Rating: **DEV**

General comments: Since this project is to purchase the transit ROW, then consequently no structure should be undertaken by the project as final location of the transit corridor is not yet determined.

IM-5.0: Tunnel the entire transit way

Overall Rating: **DIS**

General comments: Although significantly minimizing ROW needs/takes, the cost associated with tunneling could be prohibitive especially knowing the significant amount of subsurface granite within the Atlanta geographic region.

IM-6.0: Re-designate HOT3+ lanes to HOV lanes

Overall Rating:
DIS

General comments: The loss of revenue to the Department and the State would negate this idea. Additionally, the currently Department policy for managed lanes is the use of toll lanes.

IM-7.0: Retain managed lanes at-grade from east of the Chattahoochee River to the Cumberland Boulevard / I-285 / I-75 interchange

Overall Rating:
DEV

General comments: Lowers elevated bridges to grade from just east of the Chattahoochee River west to the I-75 / I-285 interchange.

IM-8.1: Do not Improve the Windy Hill Road Interchange

Overall Rating
DEV

General comments: Maintain the existing facilities and structures in their current location and do not undertake the baseline facility improvements to Windy Hill Road, the I-75 weaving lane changes and eliminate Bridge Nos. 1 through 6.

IM-8.2 Eliminate Bridge Nos. 4 and 6 at Windy Hill Road / I-75 Interchange

Overall Rating
DEV

General comments: Undertake the baseline facility improvements for I-75 weaving lane changes; however, eliminate Bridge Nos. 4 and 6 and associated ramps.

IM-9.0: Use a 4-foot inside shoulder and a 10-foot outside shoulder for managed lanes only

Overall Rating:
DEV

General comments: Use four foot inside shoulders for the managed lanes.

IM-10.0: Convert all managed lanes to a toll road facility

Overall Rating:
DIS

General comments: Although potentially increasing revenue, the resistance by the general public to take toll roads could reduce the number of vehicles intended to be removed from the general purpose travel lanes along the corridor thereby defeating the purpose of the managed lane system.

VALUE ENGINEERING PROCESS

VALUE ENGINEERING PROCESS

A systematic approach is used in a Value Engineering (VE) study. The key procedures followed were organized into three distinct parts: (1) Pre-Study Preparation, (2) VE Study, and (3) Post-Study Procedures.

PRE-STUDY PREPARATION

In preparation for the VE study, the team leader reviews critical aspects of the project and areas for improvement. In the week prior to the start of the VE study, the VE team reviews the documents provided by the designer to become better prepared for the study. In addition, performance attributes and requirements are initially identified that are relevant to the project.

VE STUDY

The Value Methodology (VM) Job Plan is followed to guide the teams in the consideration of project functionality and performance, potential schedule issues, high cost areas, and risk factors in the design. These considerations are taken into account in developing alternative solutions for the optimization of project value. The Job Plan phases are:

- Information Phase
- Function Phase
- Speculation Phase
- Evaluation Phase
- Development Phase
- Presentation Phase

Information Phase

At the beginning of the VE study, the design team presents a more detailed review of the design and the various systems. This includes an overview of the project and its various requirements, which further enhances the VE team's knowledge and understanding of the project. The project team also responds to questions posed by the VE team.

The project's performance requirements and attributes are discussed, and the performance of the baseline concept is evaluated if Value Metrics are employed.

Function Phase

Key to the VM process is the function analysis techniques used during the Function Phase. Analyzing the functional requirements of a project is essential to assuring an owner that the project has been designed to meet the stated criteria and its need and purpose. The analysis of these functions in terms cost, performance, time and risk is a primary element in a VE study, and is used to develop

alternatives. This procedure is beneficial to the VE team, as it forces the participants to think in terms of functions and their relative value in meeting the project's need and purpose. This facilitates a deeper understanding of the project.

Speculation Phase

The Speculation Phase involves identifying and listing creative ideas. During this phase, the VE team participates in a brainstorming session to identify as many means as possible to provide the necessary project functions. Judgment of the ideas is not permitted in order to generate a broad range of ideas.

The idea list includes all of the ideas suggested during the study. These ideas should be reviewed further by the project team, since they may contain ideas that are worthy of further evaluation and may be used as the design develops. These ideas could also help stimulate additional ideas by others.

Evaluation Phase

The purpose of the Evaluation Phase is to systematically assess the potential impacts of ideas generated during the Speculation Phase relative to their potential for value improvement. Each idea is evaluated in terms of its potential impact to performance, cost, time and risk.

Due to time constraints and the number of ideas, the VE team opted to use a simpler system consisting of the following notations: **DEV** = Idea to be Developed, **DIS** = Idea to be Dismissed and **ABD** = Already Being Done in the baseline concept.

Development Phase

During the Development Phase, the highly rated ideas are expanded and developed into VE alternatives. The development process considers the impact to performance, cost, time, and risk of the alternative concepts relative to the baseline concept. This analysis is prepared as appropriate for each alternative, and the information may include a performance assessment, initial cost, and life-cycle cost comparisons, schedule analysis, and an assessment of risk. Each alternative describes the baseline concept and proposed changes and includes a technical discussion. Sketches and calculations are also prepared for each alternative as appropriate.

Presentation Phase

The VE study concludes with a preliminary presentation of the VE team's assessment of the project and VE alternatives. The presentation provides an opportunity for the owner, project team, and stakeholders to preview the alternatives and develop an understanding of the rationale behind them.

POST-STUDY PROCEDURES

A *Final VE Study Report* is prepared after the completion of the workshop. This report summarizes the activities and results of the VE study.

VALUE ENGINEERING WORKSHOP AGENDA, Rev 1

Project: HNS00-0001-00(758), PI No. 0001758, Revive 285 Top End; I-285 from I-75/Cobb through Fulton to I-85/DeKalb for HOV; a distance of approximately 15.0 miles

Dates: 15 – 18 August 2011

Location: Georgia Department of Transportation (GDOT)
One Georgia Center
600 West Peachtree Street, NW
Engineering Services Conference Room (404-631-1755), 5th Floor
Atlanta, Georgia 30308

GDOT Mr. Matt Sanders, AVS, 404-631-1752 (msanders@dot.ga.gov)

Facilitator: Mr. Luis M. Venegas, PE, CVS-Life, LEED® AP, F.SAVE; 678-488-4287 (lmvenegas@aol.com), Value Management Strategies, Inc (VMS)

Value Management Strategies, Inc. (VMS) will conduct a 32-hour Value Engineering (VE) study on the design of three Build Alternatives (4, 6A, and 6B) to improve the operation of Interstate Highway 285 North (I-285N) from the vicinity of I-75 to I-85 in Cobb, Fulton and DeKalb Counties, Georgia. It is expected the GDOT design team will provide a formal presentation concerning the project on the first day of the workshop and be available to answer questions during the VE effort. The VE Study will follow the outline described below.

VE Study Agenda

Monday, 15 August

8:00AM – 0845AM **Assembly of the GDOT Stakeholders, Interested Parties and VE Team (4th Floor Conference Room No. 407)**

8:45 AM – 9:00 AM **Video Conferencing Set-up (if applicable)**

9:00 AM – 12:00 AM **General Introductions of All Parties, Review of the VE Process Owner's / Designer's Presentation and Information Phase**

The GDOT design team and stakeholders are expected to present information concerning the project including, but not necessarily limited to: rationale for design, criteria for specific areas of study, project constraints, and the reasons for design decisions.

12:00 Noon – 1:00 PM **Lunch**

Monday, 08 August (Continued)

1:00 PM – 3:00 PM **Commence Function Analysis Phase (5th Floor, Engineering Services Conference Room 5CR1L2)**

The VE team will continue their familiarization with the cost models and project data for each area of study. The cost model(s) will be refined, as necessary; define the function of each project element or system in the cost model, select the primary or basic functions, and determine the worth, or least cost, to provide the function. In addition, the VE team will continue defining the function of each element/system to gain a thorough understanding of the project's needs and requirements and refine the Function Analysis System Technique (FAST) diagram(s).

3:00 PM – 5:00 PM **Conclude the Function Analysis Phase and Commence the Creative Phase**

The VE team will conduct a brainstorming session and list as many ideas as possible for consideration. The aim is to obtain a large quantity of ideas through free association by eliminating roadblocks to creativity and deferring judgment.

Tuesday, 16 August **(5th Floor, Engineering Services Conference Room 5CR1L2)**

8:00 AM – 10:00 AM **Conclude Creative Phase and Complete Evaluation/Analytical Phase**

The VE team will finalize the brainstorming session and analyze the ideas listed in the creative phase and select the best ideas for further development.

10:00 AM – 12:00 Noon **Development Phase**

The VE team will develop creative ideas into alternate design solutions. Initial and life cycle cost estimates comparing original and proposed alternatives will be prepared. Selected alternatives for change will be developed and supported with sketches, calculations, and written substantiation.

12:00 Noon – 1:00 PM **Lunch**

1:00 PM – 5:00 PM **Continue Development Phase**

Wednesday, 17 August **(5th Floor, Engineering Services Conference Room 5CR1L2)**

8:00 AM – 12:00 Noon **Continue Development Phase**

12:00 Noon – 1:00 PM **Lunch**

1:00 PM – 5:00 PM **Continue Development Phase**

Thursday, 18 August

8:00 AM – 9:00 AM **Conclude Development Phase and Prepare Summary Worksheets for Informal Oral Presentation Continue Development Phase (5th Floor, Engineering Services Conference Room 5CR1L2)**

The VE team prepares a summary of the value engineering alternatives with descriptions and initial and life cycle costs for an informal oral presentation to representatives of the owner and design team. Draft copies of the *Summary of Potential Cost Saving* worksheets are prepared for distribution to VE presentation attendees.

9:00 AM – 11:00 AM **Conduct Informal Presentation (4th Floor Conference Room No. 407)**

The VE team presents its alternatives to the owner and design team representatives and is available to clarify any points.

11:00 AM **Adjourn**

MEETING ATTENDEES

8/15	8/16	8/17	8/18	Name	Position/Role	Organization	Telephone	E-mail
X	X	X	X	Matthew J. Sanders, AVS	Value Engineering Specialist	Georgia Department of Transportation	404-631-1752	msanders@dot.ga.gov
X	X	X	X	Dominic F. Saulino	Associate Vice President, Director of Transportation	HNTB	404-946-5700	dsaullino@hntb.com
X	X	X	X	Lawrence D. Prescott, PE	Director of Structural Engineering	HNTB	404-946-5700	lprescott@hntb.com
X	X	X	X	Brian Sapp, PE	Project Manager	HNTB	404-946-5700	bsapp@hntb.com
X	X	X	X	Steven Gaines, PE	Transportation Engineer	Wolverton & Associates, Inc.	770-447-8999	steve,gaines@wolverton-assoc.com
X	X	X	X	Luis M. Venegas, PE, CVS-Life, LEED AP, FSAVE	Vice President/VE Team Leader-Facilitator	Value Management Strategies, Inc.	678-488-4287	lmvenegas@aol.com
X	X	X	X	Lisa L. Myers, AVS	Assistant State Project Review Engineer, Value Engineering Coordinator	Georgia Department of Transportation	404-631-1770	lmyers@dot.ga.gov
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8/15	8/16	8/17	8/18	Name	Position/Role	Organization	Telephone	E-mail
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			X	Ryan Graves	Project Engineer	ARCADIS	770-431-8666	ryan.gaves@arcadis-us.com