VALUE ENGINEERING REPORT

I-985 / SR 11 Interchange Reconstruction
NH-985-1(340), PI No 110465
Hall County

February 4, 2008

OWNER AND DESIGN TEAM:

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I-985 / SR 11 Interchange Reconstruction
P.I. No. 110465
Hall County

VALUE ENGINEERING STUDY

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EXECUTIVE SUMMARY

Executive Summary

VALUE ENGINEERING STUDY

I-985 / SR 11 Interchange Reconstruction
Hall County

Introduction

This report summarizes the results of a value engineering (VE) study conducted on the I-985 / SR 11 Interchange Reconstruction project in Hall County. The project consists of widening SR 11 from four to six lanes throughout the Interchange and adding a new SB I-985 to SR 11 Off-Ramp, a new SR 11 to NB I-985 On-Ramp, a new WB SR 11 to SB I-985 Loop Ramp, and a new NB I-985 to EB SR 11 Loop Ramp. The proposed project will also add two-lane Collector Distributor (CD) roadways on both sides of I-985 throughout the Interchange and remove the existing Loop Ramps on the south side of the Interchange. The estimated construction cost including Right of Way (ROW) is $25.86 million. The design is in the concept stage. The VE study was conducted January 14-17, 2008, at the GDOT Headquarters Office in Atlanta using a four person VE team.

This report presents the Team's recommendations and all back-up information, for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. Lastly, the **Appendix** includes a complete record of the Team's activities and findings. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

This Interchange serves as a major Interstate access point for the City of Gainesville and for commuter traffic between Gainesville and Atlanta. Significant residential and commercial growth in the project area has resulted in a failing level of service at the Interchange. The CD roadways are included in the current design based on a request for a future connection (US 129) to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a new full Interchange, but would potentially allow connectivity to I-985 via a CD system. This future connection would be made using parallel CD roadways along I-985 between SR 11 and the next Interchange at Old Cornella Highway (Business 365). Major contract work items of this project include roadway grading, pavement, retaining walls, bridge widening, drainage, curb and gutter, signalization, and sidewalks.

Considerations

The project being evaluated under this VE study has an estimated construction cost (including E&C) of $25.86 million. The ultimate build-out (dual two-lane CD roadway) of this Interchange is dependent on a request for a new roadway connection to I-985 via CD roads approximately one-mile north of SR 11. The new connection to I-985 does not appear in any short or long

range plans. No firm letting dates have been established for the I-985 / SR 11 Interchange reconstruction project.

Results Obtained

The VE team focused their efforts on the high cost items of the project. The study generated 64 ideas with 34 being identified for additional evaluation as possible recommendations or design suggestions. The VE team developed eight independent recommendations and three alternative recommendations. The implementation of all eight independent recommendations (A-1, A-5, A-7, I-4, K-1, L-2, N-2 and P-2) has the potential to reduce the project cost by approximately $8.13 million. A detailed write-up and analysis of each recommendation is contained in the "Recommendations" section of this report. A summary of the recommendations follows.

Recommendation Highlights

Idea A-1: To eliminate the two lane CD roadway system and use normal exit and entrance ramp connections off the I-985 mainline roadway.

The current design for the I-985 / SR 11 Interchange includes CD roadways. The CD roadway typical section includes two 12-foot lanes, a 6-foot inside shoulder, and a 10-foot outside shoulder. The current design includes CD roadways based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a future full Interchange, but would potentially allow connectivity to I-985 via a CD system.

It is recommended that the I-985 / SR 11 Interchange be reconstructed without using CD roadways. Ramp connections should be connected directly to the I-985 mainline roadway using a standard entrance / exit ramp design with applicable acceleration / deceleration lanes. Since the new Interstate connection (north of SR 11) requiring the CD roadways may not be constructed in the foreseeable future, there is no need to construct the CD roadways at this time. The I-985 / SR 11 Interchange would function equally well using standard exit and entrance ramps that connect directly to the mainline roadway. The elimination of the CD roadways would result in a significant cost savings and simplify construction.

The total potential savings if accepted is $5,441,000.

Idea A-3: Alternative to A-1 To construct a single 12-foot CD roadway in-lieu-of the proposed dual lane CD roadway system.

The current design for the I-985 / SR 11 Interchange includes CD roadways. The CD roadway typical section includes two 12-foot lanes, a 6-foot inside shoulder, and a 10-foot outside shoulder. The current design includes CD roadways based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a future full Interchange, but would potentially allow connectivity to I-985 via a CD system.

It is recommended that a single 12-foot CD roadway, with required acceleration /deceleration lanes, be constructed in-lieu-of the proposed dual lane CD roadway system. The single lane CR roadway would maintain the same shoulders as the originally proposed dual lane system. Since the new Interstate connection (north of SR 11) requiring dual CD roadways may not be constructed in the foreseeable future, there is no need to construct the dual CD roadways at this time. The I-985 / SR 11 Interchange would function equally well using a single lane CD roadway. The elimination of one CD lane would result in significant cost savings to the project.

The total potential savings if accepted is $837,000.

Idea A-5: To increase the distance between Ridge Road and the SB Off-Ramp Intersection, reduce the WB to SB Loop Ramp, & protect the sidewalk / ramp crossing.

The current design proposes an intersection separation of approximately 600 feet between Ridge Road and the SB I-985 Off-Ramp connection to SR 11. This separation results in an extremely short weave distance for SB Ridge Road traffic (dual left) entering the SB I-985 On-Ramp and traffic from the NB Ridge Road free right turn lane to eastbound SR 11 or the SB I-985 On-Ramp. This minimal separation is caused by the use of a large oval loop ramp for the EB SR 11 to SB I-985 connection. This design also includes an unprotected sidewalk crossing of the free-flowing SB I-985 On-Ramp approximately 350 feet west of the signalized SR 11 / SB I-985 Off-Ramp intersection.

It is recommended that the SB I-985 Off-Ramp connection to SR 11 be moved approximately 350 feet east to align with the SB I-985 On-Ramp. This recommendation requires the large oval loop ramp for EB SR 11 to SB I-985 traffic to be reduced to a circular ramp with a 750 to 800-foot diameter. Separating these intersections to approximately 950 feet would increase the SR 11 westbound weave distance by 35 percent and give more storage space for the SR 11 eastbound turn lanes at Ridge Road. This concept shifts the signalized intersection to the SB I-985 On-Ramp gore area where pedestrian signals can be installed at the south sidewalk / free flow I-985 On-Ramp crossing. Signalizing the sidewalk / ramp crossing would improve pedestrian safety and reduce the crossing liability. The circular ramp would reduce / eliminate the effects to use the small wetland area on the east end of the Meadow Trace property. This concept may reduce the weave distance between the two new loop ramps. This weave distance will have to be evaluated to provide an acceptable level of service.

The total potential savings if accepted is $60,000.

Idea A-7 & I-1: To reduce the width of travel lanes on SR 11, Ridge Road, and Monroe Drive from 12 Feet to 11 Feet.

The current design for SR 11, Ridge Road, and Monroe Drive includes 12-foot lane widths throughout the entire project. The current concept widens both existing SR 11 structures to the inside and outside, and would close the median area by constructing a 16'-0" raised concrete median. The total bridge width required in the current design is 136'-10." The existing structures are 2-span (120'-141') structural steel continuous unit bridges.

It is recommended that the width of the travel lanes on SR 11, Ridge Road, and Monroe Drive be reduced from 12 feet to 11 feet. It is further recommended that all turn and merge lane widths be kept at the proposed 12-foot width. This concept would keep two separate bridges with an open median (Eastbound - three traffic lanes plus a sidewalk [45'-10"] and Westbound - four traffic lanes with no sidewalk [51'-3"]). Reducing the width of the travel lanes from 12 feet to 11 feet would result in a significant cost savings to the project. Changing to 11-foot lanes on SR 11 would reduce the amount of bridge widening and eliminating the closed raised concrete median between the dual bridges would save additional cost and time. The closed median serves no function and the 11-foot lanes would accommodate the project traffic and provide adequate safety for this urban roadway with a posted speed of 45 MPH.

The total potential savings if accepted is $1,573,000.

Idea I-3: 12-Foot Lane Alternative to A-7, I-3 To eliminate the raised median between the SR 11 Bridges and keep separate structures for eastbound and westbound traffic.

The current design would widen the existing SR 11 bridges and tie them together by constructing a 16'-0" raised concrete median between the structures. This would result in a single bridge width of 136'-10". The existing bridges are 2-span (120' – 141') structural steel continuous unit bridges.

It is recommended that the proposed 16-foot raised concrete median tying the two SR 11 structures together be eliminated, thereby leaving two separate structures in place. The eastbound bridge should be widened (48' -10") enough to accommodate three traffic lanes and a sidewalk. The westbound bridge should be widened (55' -3") enough to accommodate four traffic lanes with no sidewalks. There are no turn lanes on these bridges so there is no need to construct the 16-foot raised median between the structures. Eliminating the median does not impact the basic function of the bridges. The elimination of 16-foot median will result in a significant cost savings. This concept would also reduce construction time and simplify construction.

The total potential savings if accepted is $1,111,000.

Idea I-4: To revise the cost estimate to include the cost of SR 11 Bridge widening and the concrete abutment widening.

The current cost estimate does not include the cost of widening the SR 11 Bridges over I-985 or the cost of the new retaining wall abutments needed for the SR 11 and Athens Street Bridge adjustments due to the addition of the CD roadways.

It is recommended that the cost estimate be revised to include the cost of widening the SR 11 Bridges and the concrete retaining wall abutments needed to construct CD lanes through the Interchange.

The total potential increase if accepted is $2,646,000.

Idea K-1: To eliminate the concrete barrier separating the C-D roadway system from the mainline roadway.

The current design uses concrete barrier wall to separate the CD roadway from the through traffic lanes on I-985.

It is recommended that the concrete barrier wall separating the CD roadway from the through traffic lanes be eliminated. The CD roadway and the mainline pavement will be physically separated by the mainline shoulder and the CD roadway shoulder. Since traffic on the CD and the mainline roadways will be traveling in the same direction, it is not necessary to install a concrete barrier wall between the roadway shoulders. The edge striping, rumble strips, and shoulder taper should provide a safe roadway section. Eliminating the concrete barrier wall

would remove the wall (a potential hazard) from the edge of the high speed mainline pavement shoulder and reduce the cost of the project.

The total potential savings if accepted is $780,000.

Idea K-2: Alternative to K-1 To use dual faced guard rail in lieu of a concrete barrier separating the CD roadway system.

The current design uses concrete barrier wall to separate the CD roadway from the through traffic lanes on I-985.

It is recommended to use dual-faced guard rail in-lieu-of concrete barrier wall to separate the CD roadway from the through traffic lanes. Using dual-faced guard rail is an acceptable method for separating same direction traffic. This will provide a similar function while significantly reducing construction costs. An alternative recommendation could be to use cable railing for separation which could provide even additional cost savings.

The total potential savings if accepted is $480,000.

Idea L-2: To tie the NB Off-Ramp into the signalized intersection for the NB On-Ramp on the east side of the Interchange.

The current design for the NB I-985 Off-Ramp to EB SR 11 provides for free-flow at the tie-in point to SR 11. This point is approximately 300 feet east of the signalized intersection for the WB SR 11 to NB I-985 On-Ramp.

It is recommended that consideration be given to tying this NB Off-Ramp directly into the signalized intersection for the NB On-Ramp. Tying the NB OFF-Ramp into the signalized intersection would improve safety. The current free-flow condition creates a safety and weaving problem for exiting vehicles wanting to travel north on Monroe Drive. They will have to cross three lanes of SR 11 traffic to enter the left turn lane at the SR 11 / Monroe Drive intersection. The weave distance for this move is only about 350-400 feet. The short weave distance and likely high speed (free flow) of exiting traffic presents a less than desirable condition. Tying the NB Off-Ramp into the signalized NB On-Ramp intersection would better control the exiting eastbound traffic entering SR 11 since the eastbound SR 11 traffic would be stopped for the signal thereby eliminating any weaving. If some free flow traffic from the exit ramp were allowed, shifting the NB Off-Ramp would increase the weave length approximately 300 feet.

This recommendation would not impact cost, but would improve safety.

Idea N-2: To use a grass median with 2 foot paved shoulders in lieu of 20 foot concrete median.

The current design uses a standard 20-foot, concrete median on SR 11.

It is recommended that the SR 11 median be constructed using 2 foot paved shoulders and a grassed median for the remainder of the area. Using a rural median section with 2 foot paved shoulders and a grassed median in lieu of a raised concrete median will be less costly while providing a similar function. A standard median would generally be drained towards the center with a longitudinal, median drainage system incorporated, however, the runoff from a grass median would be less than the concrete median as shown draining towards the traveled way. There could be some long range additional maintenance costs with grass instead of concrete although a reduced maintenance surfacing could be considered.

The total potential savings if accepted is $140,000.

Idea P-2, 3, & 4: To Eliminate Sidewalk at Various Locations Along SR 11.

The current design includes continuous sidewalk along the entire south side of SR 11 and on the north side between Ridge Road and the SB Off Ramp intersection and the north side between the NB ramp intersection and Monroe Drive.

It is recommended that the sidewalk on the north side of SR 11 between Ridge Road and the SB Off Ramp intersection and on the south side of SR 11 between the NB On Ramp and Monroe Drive be eliminated. In addition, the sidewalk on both sides of Monroe Drive south of SR 11 should be eliminated. Eliminating the two SR 11 sections would result in a safer single identified east-west walkway through the proposed project. Eliminating the south SR 11 section between the NB On Ramp and Monroe Drive would eliminate the un-signalized sidewalk crossing of the NB Off Ramp (continuous flow). The sidewalk on Monroe Drive south of SR 11 does not connect to any existing sidewalk and could be eliminated.

The total potential savings if accepted is $137,000.

I-985 / SR 11 Interchange Reconstruction

SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL LIFE CYCLE SAVINGS	SAVINGS POTENTIAL* (%)
A-1	To eliminate the CD lanes through the Interchange and tie the ramps directly into the mainline I-985 roadway using standard acceleration / deceleration lanes	$5,441,000	$0	$5,441,000	N/A	$5,441,000	100%
A-3	**Alternative to A-1** To construct a single lane CD roadway through the Interchange	$837,000	$0	$837,000	N/A	$837,000	100%
A-5	To increase the distance between Ridge Road and the SB Ramp Intersection, reduce the size of the WB to SB loop ramp, & protect the sidewalk / ramp crossing	$77,000	$17,000	$60,000	N/A	$60,000	100%
A-7 I-1	To reduce the width of the through travel lanes on SR 11, the SR 11 Bridges, and the cross streets from 12 feet to 11 feet (Assumes Open Dual Structures)	$3,137,000	$1,564,000	$1,573,000	N/A	$1,573,000	100%
I-3	**12-Foot Lane Alternative to A-7, I-1** To eliminate the raised concrete median on the SR 11 Bridge by maintaining the dual structure concept (12-foot lanes)	$2,878,000	$1,767,000	$1,111,000	N/A	$1,111,000	100%
I-4	To revise the cost estimate to reflect current bridge widening costs (both bridge and concrete retaining wall abutment widening)	$949,000	$3,595,000	($2,646,000)	N/A	($2,646,000)	100%
K-1	To eliminate the concrete barrier between the CD lanes and the mainline roadway	$780,000	$0	$780,000	N/A	$780,000	100%

I-985 / SR 11 Interchange Reconstruction

SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL LIFE CYCLE SAVINGS	SAVINGS POTENTIAL* (%)
K-2	**Alternative to K-1** To use dual face guardrail in-lieu-of concrete median barrier between the CD lanes and the mainline roadway	$780,000	$300,000	$480,000	N/A	$480,000	100%
L-2	To consider realigning the NB I-985 Off Ramp closer to the signalized on-ramp intersection to provide additional weaving space for the ramp traffic	No Change	No Change	No Change	N/A	No Change	100%
N-2	To use a grass median in-lieu-of raised concrete median along SR 11	$310,000	$170,000	$140,000	N/A	$140,000	100%
P-2, 3, & 4	To eliminate the sidewalk on the north side of SR 11 between Ridge Road & the SB Off Ramp, on the south side of SR 11 between the NB On Ramp & Monroe Drive, and on south Monroe Drive	$137,000	$0	$137,000	N/A	$137,000	100%

*** Note: Savings Potential represents how much of an individual item, exclusive of any overlapping dependent item, can be implemented.**

STUDY IDENTIFICATION

Study Identification

Project: I-985 / SR 11 Interchange Reconstruction	**Date:** January 14-17, 2008
Location: GDOT Headquarters, Atlanta, Georgia	

VE Team Members

Name:	Title:	Organization:	Telephone:
Keith Borkenhagen	VE Team Facilitator	MACTEC	623-556-1875
Dan Cogan	Construction	Kennedy Engineering & Associates Group LLC	678-904-8591
Aruna Sastry	Bridge	Sastry and Associates, Inc.	678-366-9375
George Obaranec	Design	MACTEC	770-421-3346

Project Description

The proposed project consists of the reconstruction of the I-985 / SR 11 Interchange in Hall County. The project would widen SR 11 from four lanes to six lanes through the Interchange and add a new SB I-985 to SR 11 Off-Ramp, a new SR 11 to NB I-985 On-Ramp, a new WB SR 11 to SB I-985 Loop Ramp, and a new NB I-985 to EB SR 11 Loop Ramp. The project will also add two-lane CD roadways on both sides of I-985 throughout the Interchange and remove the existing loop ramps on the south side of the current Interchange. This project has an estimated cost of $25.86 million.

This Interchange serves as a major access point for Gainesville and for commuter traffic between Gainesville and Atlanta. Significant residential and commercial growth in the project area has resulted in a failing level of service at the Interchange. The CD roadways are included in the current design based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a new future full Interchange, but would potentially allow connectivity to I-985 via a CD system. This future connection would be made using parallel CD roadways along I-985 between SR 11 and the next Interchange at Old Cornella Highway (Business 365). Major contract work items include roadway grading, pavement, retaining walls, bridge widening, drainage, curb and gutter, signalization, and sidewalks.

Project Constraints

The VE team was given the following constraints for this project:

- There are numerous small streams that run through the Interchange area on the north side of SR 11 where the new Interchange ramps will be constructed. Piping of these streams, to construct the various ramps, should be held to a minimum.
- Noise walls are required along the west side of I-985 at the northern end of the project due to the CD roadway and the SB exit ramp.
- To the maximum extent possible, free traffic flow should be encouraged on the Interchange ramps.

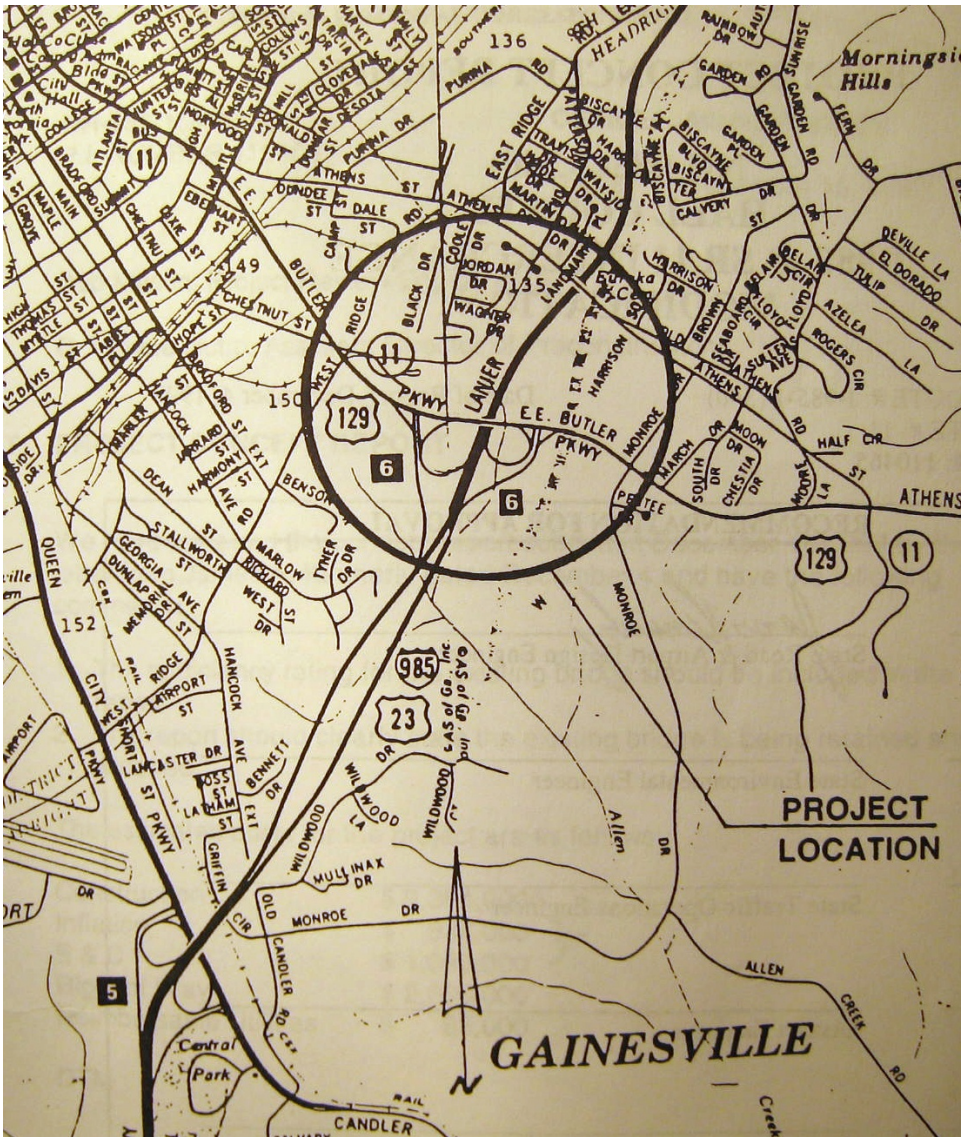
Project Briefing

Prior to beginning work, the VE team was briefed on the design status of the project. The following items were discussed:

- This project was developed to reduce traffic congestion in the interchange and provide more direct traffic movements through the ramps.
- This project was originally designed to be constructed as a full cloverleaf Interchange (adding the north two loop ramps and outside directional ramps to the existing half cloverleaf already in place).
- The full cloverleaf design was not accepted by the FHWA due to weaving problems and poor pedestrian access through the Interchange. This resulted in the Interchange being redesigned to a half cloverleaf design (loop ramps on the north side with the south side loop ramps being removed) with a sidewalk on the south side of SR 11 running through the Interchange.
- The design also includes two-lane CD roadways on both sides of I-985. The CD roadways are included in the current design based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a new future full Interchange, but would potentially allow connectivity to I-985 via a CD system.
- This future connection would be made using parallel CD roadways along I-985 between SR 11 and the next interchange at Old Cornella Highway (Business 365).
- This project is being built to eliminate / minimize left turn movements at the ramp termini and maximize free flow on the Interchange ramps.
- The large oval loop ramp in the northwest quadrant was designed to minimize the ramp's impact on the small stream that runs through the area.
- Constructing this large oval loop ramp will, however, impact a small wetland on the west end of the Meadow Trace property.
- There are several retaining walls to be constructed throughout the project. These walls will eliminate / reduce the amount of ROW needed for this project.
- The State has already acquired the large Meadow Trace parcel in the northwest quadrant of the Interchange.
- The condition of the existing SR 11 bridges crossing I-985 is excellent and they will be widened and not replaced.
- Both the SR 11 Bridges and the Athens Street Bridge will need to have their current standard abutments with slope wall paving modified to new concrete retaining wall abutments to provide space for the CD roadways.

- There are some concerns about the short weaving distance between the Ridge Road intersection and the new SB I-985 Off-Ramp connection to SR 11.
- No letting date has been set for this project. The project has not received final environmental clearance to date.
- Additional environmental documentation will have to be done and additional public hearings held before the project can be let to contract.

Project Sketch Map



RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.: **A-1**	**Sheet No.:** 1 of 4	**CREATIVE IDEA**: To eliminate the two lane CD roadway system and use standard exit and entrance ramp connections off the I-985 mainline roadway.

Comp By: D.P.C. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept: The current design for the reconstruction of the I-985 / SR 11 Interchange includes collector distributor (CD) roadways. The typical section for the CD roadways includes two 12-foot lanes, a 6-foot inside shoulder, and a 10-foot outside shoulder. The CD roadways were included in the current design based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a new future full Interchange, but would possibly allow connectivity to I-985 via a CD system. This connection would be made using parallel CD roadways along I-985 between SR 11 and the next Interchange at Old Cornella Highway (Business 365).

Proposed Change: It is recommended that the I-985 / SR 11 Interchange be reconstructed without using CD roadways. The interchange ramps should be connected directly to the I-985 mainline roadway using a standard entrance / exit ramp design with applicable acceleration / deceleration lanes.

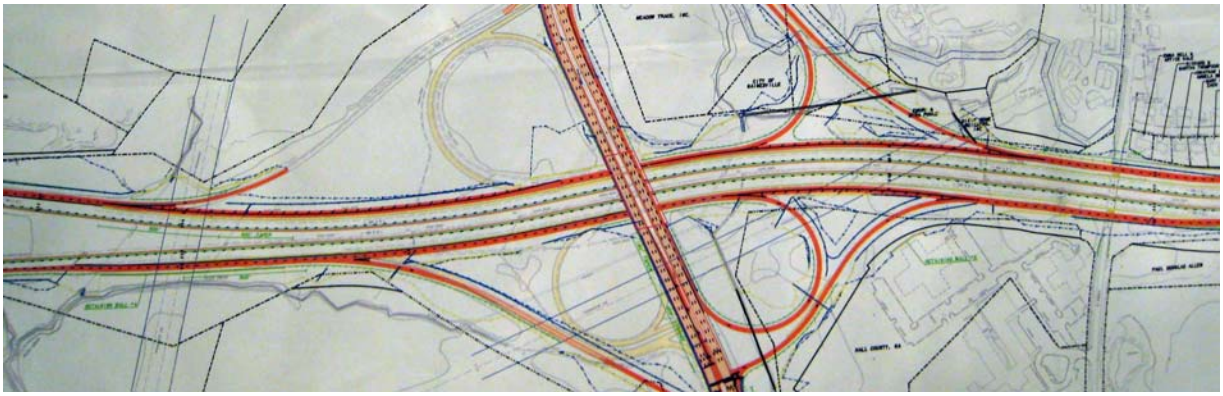
Justification: Due to the likely possibility that the new Interstate connection (north of SR 11) requiring the CD roadways may not be constructed in the foreseeable future, there is no need to construct the CD roadways at this time. The proposed reconstruction of the I-985 / SR 11 Interchange to a half cloverleaf design would function equally well using standard exit and entrance ramps that connect directly to the mainline roadway.

The elimination of the CD roadway system reduces costs associated with full depth roadway pavement, storm drainage, borrow / unclassified excavation, barrier walls, bridge widening, erosion control, clearing & grubbing, retaining walls, sound barriers and signing & marking costs through the entire limits of the project. This concept would result in a significant cost savings and simplify construction. The sound walls can also potentially be eliminated however their savings were not included in the calculation.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$5,441,000		
- Proposed	$0		
- Savings	$5,441,000		$5,441,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$5,441,000**

SKETCH	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-1 CLIENT: GDOT Sheet 2 of 4

Dual CD Road System through I-985 / SR 11 Interchange
(South Side Loop Ramps to be Removed)



COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: A-1 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Full depth pavement section including 12" GAB, 8" base, 4" intermediate level, and 1.5" top-coarse – 23,700 LF	SF	284,400	$6.00	$1,706,400			$0
Drainage:							
NB CD storm drain reduction							
11 drain. line x 40' of 18" pipe	LF	440	$55.00	$24,200			$0
SB CD storm drain lane reduction							
16 drain. line x 40' of 18" pipe	LF	640	$55.00	$35,200			$0
Borrow Excavation:	CY	40,290	$6.23	$251,007			$0
(23,700 LF)(1.7 CY per LF)							
Pavement Markings:							
Thermoplastic Traffic Striping	SY	4,267	$2.70	$11,521			$0
Barrier Wall Type S-1	LF	9,100	$61.60	$560,560			$0
Bridge Reconstruction	LS	1	$551,214	$551,214			$0
Retaining Wall # 1	LS	1	$63,000	$63,000			$0
Retaining Wall # 2	LS	1	$208,000	$208,000			$0
Retaining Wall # 3	LS	1	$66,000	$66,000			$0
Retaining Wall # 4	LS	1	$708,000	$708,000			$0
SUBTOTAL				$4,185,102			$0
(10% E & C and 20% Inflation)							
MARK-UP (30%)				$1,255,531			$0
TOTAL				$5,440,633			$0
TOTAL ROUNDED				$5,441,000			$0

CALCULATIONS

Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-1 CLIENT: GDOT Sheet 4 of 4

Embankment Estimates for full CD system elimination:
Extending CD section of 2' barrier / 6' inside shoulder / 12' lane / 12' lane / 10' outside shoulder = 42 LF of new roadway template. Assuming existing average back slope grade of 1" per foot equates to an average 5.5' elevation difference at 42'. Take cross-slope of 1.0' and 2.2' of pavement section into account then use a fill height of 5.5' – 1.0' – 2.2' = 2.3 feet. Volume then becomes (.5')(42')(2.3') = 48 SF x 1 FT section = 48 CF or 1.7 CY per one foot of roadway length.

Pavement Elimination Estimate:
NB CD single and double 12' lane elimination calculations:

No stationing provided – reduction length of all 12-foot lane sections = 2,500 LF.
No stationing provided – reduction length of all 24-foot lane sections = 12,100 LF.
NB CD total length of all lane eliminations = 14,600 LF

SB CD single and double 12' lane elimination calculations:

No stationing provided – reduction length of all 12-foot lane sections = 2,900 LF.
No stationing provided – reduction length of all 24-foot lane sections = 6,200 LF.
SB CD total length of all lane eliminations = 9,100 LF

Grand total of both NB and SB CD 12' wide lane elimination = 23,700 LF

Thermoplastic Traffic Striping, White:
NB CD eliminates 2,400 LF of a 12' wide lane completely striped with white thermoplastic hatch pattern.

SB CD eliminates 800 LF of a 12' wide lane completely striped with white thermoplastic hatch pattern.

Total length eliminated = 3,200 LF x 12 LF = 38,400 SF / 9 SY = 4,267 SY

Barrier Wall Type S-1:
NB CD/Mainline separation scaled length = 4,000 LF
SB CD/Mainline separation scaled length = 5,100 LF
Total scaled length = 9,100 LF

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	Sheet No.:	CREATIVE IDEA: Alternative to A-1 To construct a single 12-foot CD roadway in-lieu-of the proposed dual lane CD roadway system.
A-3	1 of 3	

Comp By: D.P.C. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design for the reconstruction of the I-985 / SR 11 Interchange includes collector distributor (CD) roadways. The typical section for the CD roadways includes two 12-foot lanes, a 6-foot inside shoulder, and a 10-foot outside shoulder. The CD roadways were included in the current design based on a request for a future connection to the Interstate approximately one mile north of this project. The FHWA has rejected the request for a new full Interchange, but would possibly allow connectivity to I-985 via a CD system. This connection would be made using parallel CD roadways along I-985 between SR 11 and the next Interchange at Old Cornella Highway (Business 365).

Proposed Change:

It is recommended that a single 12-foot CD roadway, with required acceleration /deceleration lanes, be constructed in-lieu-of the proposed dual lane CD roadway system. The single lane CR roadway would maintain the same shoulders as the originally proposed dual lane system.

Justification:

Due to the likely possibility that the new Interstate connection (north of SR 11) requiring dual CD roadways may not be constructed in the foreseeable future, there is no need to construct the dual CD roadways at this time. The proposed reconstruction of the I-985 / SR 11 Interchange to a half cloverleaf design would function equally well using a single lane CD roadway. The reduction of one travel lane would reduce the amount of pavement, drainage, borrow / unclassified excavation, clearing & grading, erosion control items, and pavement marking. This concept results in significant cost savings to the project.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	TOTAL COST
INITIAL COST - Original	$837,000		
- Proposed	$0		
- Savings	$837,000		$837,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$837,000**

COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: A-3 CLIENT: GADOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Full depth pavement section including 12" GAB, 8" base, 4" intermediate level, and 1.5" top-coarse – 8,200 LF	SF	98,400	$6.00	$590,400	$0	$0	$0
Drainage system:							
NB CD lane reduction							
8 drain. line x 12' of 18" pipe	LF	96	$55.00	$5,280			$0
SB CD lane reduction							
16 drain. line x 12' of 18" pipe	LF	192	$55.00	$10,560			$0
Borrow Excavation:	CY	4,100	$6.23	$25,543			$0
(8,200 LF)(0.5 CY per LF)							
Pavement Markings:							
Thermoplastic Traffic Striping	SY	4,267	$2.70	$11,521			$0
SUBTOTAL				$643,304			$0
(10% E & C and 20% Inflation)							
MARK-UP (30 %)				$192,991			$0
TOTAL				$836,295			$0
TOTAL ROUNDED				$837,000			$0

CALCULATIONS

Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-3 CLIENT: GADOT Sheet 3 of 3

Embankment Estimates for full CD system elimination:

Extending CD section of 2' barrier / 6' inside shoulder / 12' lane / 12' lane / 10' outside shoulder = 42 LF of new roadway template. Assuming existing average back slope grade of 1" per foot equates to an average 5.5' elevation difference at 42'. Take cross-slope of 1.0' and 2.2' of pavement section into account then use a fill height of 5.5' – 1.0' – 2.2' = 2.3 feet. Volume then becomes (.5')(42')(2.3') = 48 SF x 1 FT section = 48 CF or 1.7 CY per one foot of roadway length.

Since this item only reduces the CD system by (1) 12' lane we will use the following volume: (.5')(30')(2.3') = 34 SF -48 SF = 14 SF x 1 FT section = 14 CF or 0.5 CY per one foot of roadway length.

Pavement Elimination Estimate:

NB CD single lane elimination calculations:
No stationing provided – reducing one 12-foot lane by 2,900 LF.
SB CD single lane elimination calculations:
No stationing provided – reducing one 12-foot lane by 5,300 LF
Total LF lane elimination = 8,200 LF

Thermoplastic Traffic Striping, White:

NB CD eliminates 2,400 LF of a 12' wide lane completely striped with white thermoplastic hatch pattern.
SB CD eliminates 800 LF of a 12' wide lane completely striped with white thermoplastic hatch pattern.
Total length eliminated = 3,200 LF x 12 LF = 38,400 SF / 9 SY = 4,267 SY

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To increase the distance between Ridge Road and the SB Off Ramp Intersection, reduce the WB to SB loop ramp, & protect the sidewalk / ramp crossing.
A-5	1 of 5	

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design proposes an intersection separation of approximately 600 feet between Ridge Road and the SB I-985 Off-Ramp connection to SR 11. This condition results in an extremely short weave distance for SB Ridge Road traffic (dual left) wanting to enter the SB I-985 On-Ramp and traffic from the free NB Ridge Road right turn lane to eastbound SR 11 or the SB I-985 On-Ramp. This minimal separation is caused by the use of a large (800 ft x 1,100 ft) oval loop ramp for the EB SR 11 to SB I-985 connection. The large oval loop ramp was developed to shift the ramp away from a small stream the runs through the quadrant, however, it results in the taking of a small wetland area on the west side of the Meadow Trace property (already acquired). This design also includes an unprotected sidewalk crossing of the free-flowing SB I-985 On-Ramp approximately 350 feet west of the signalized SR 11 / SB I-985 Off-Ramp intersection.

Proposed Change:

It is recommended that the SB I-985 Off-Ramp connection to SR 11 be moved approximately 350 feet east to align up with the SB I-985 On-Ramp. This recommendation also requires the large oval loop ramp for EB SR 11 to SB I-985 traffic to be reduced to a circular ramp with a 750 to 800-foot diameter. Spreading out this intersection to approximately 950 feet would increase the SR 11 westbound weave distance by 35 percent and give more storage space for the eastbound SR 11 turn lanes at Ridge Road.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$77,000		
- Proposed	$17,000		
- Savings	$60,000		$60,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$60,000**

CONTINUATION

Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-5 CLIENT: GDOT Sheet 2 of 5

Justification:

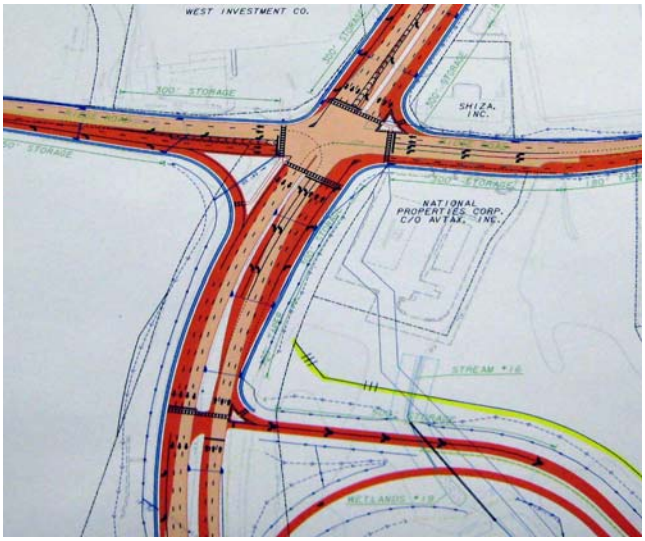
Increasing the distance between Ridge Road and the SB I-985 Off-Ramp intersection by approximately 350 feet will have the following impacts:

- The additional intersection separation will significantly improve the weave condition for the SB Ridge Road (double left) traffic entering the SB I-985 On-Ramp and the overall operation of the two closely spaced signalized intersections. (Current spacing is about 600 feet.)
- The recommended concept would align the SB I-985 Off-Ramp and the SB I-985 On-Ramp across from each other at the same signalized intersection.
- This concept shifts the signalized intersection to the SB I-985 On-Ramp gore area where pedestrian signals can be installed at the south sidewalk / free flow I-985 On-Ramp crossing. Signalizing the sidewalk / ramp crossing would improve pedestrian safety and reduce the crossing liability.
- The use of a large circular loop ramp in-lieu-of the large oval loop ramp would provide similar environmental protections for the small stream, such as; places much of the ramp north of the stream, allows the stream to remain open in the center of the ramp, and uses about the same amount of enclosed storm pipe. The smaller footprint of the recommended concept would reduce the area of overall impacts.
- The circular ramp would reduce / eliminate the need to use the small wetland area on the east end of the Meadow Trace property.
- The recommended concept would reduce the amount of ramp pavement, shoulders, and embankment needed to construct the two ramps.
- This concept may require some additional piping of the stream.
- This concept may reduce the weave distance between the two new loop ramps. This weave distance will have to be evaluated to provide for an acceptable level of service.
- Since a large tract of ROW has already been acquired for the oval loop ramp, any excess ROW not needed for the circular loop ramp could be sold as surplus land.

SKETCH

Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-5 CLIENT: GDOT Sheet 3 of 5

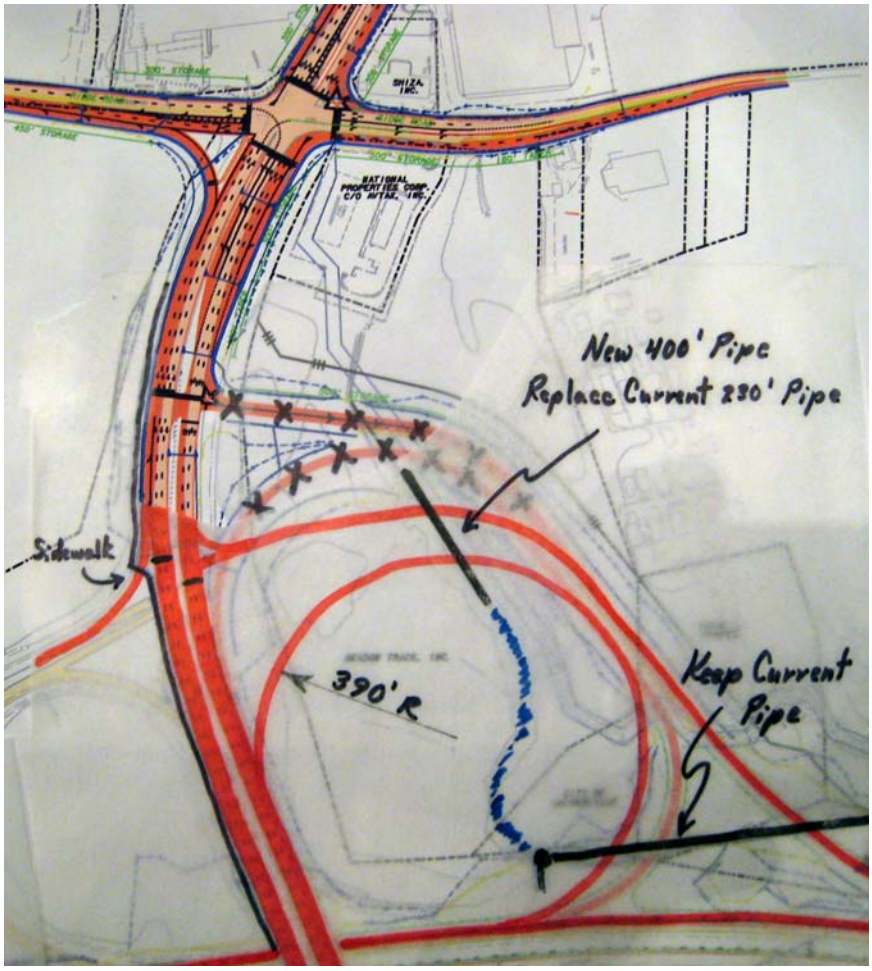
Current Design (Approximately 600 Feet of Separation)



Recommended Design (Approximately 950 Feet of Separation)

SKETCH	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-5 CLIENT: GDOT Sheet 4 of 5

Recommended Concept – Increased Intersection Spacing
Additional Merge Distance, Protected Sidewalk / Ramp Crossing
Eliminate Need for Wetland (Shift Ramps to the East)



COST WORKSHEET

Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: A-5 CLIENT: GDOT Sheet 5 of 5		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Ramp Pavement:							
300 ft x 16 ft = 4,800 SF	SF	4,800	$6.00	$28,800			
Ramp Shoulders:							
300 ft x 6 ft x 2 = 3,600 SF	SF	3,600	$3.00	$10,800			
Earthwork:	LS	1	$20,000	$20,000			
Additional Stream Pipe:							
150 ft of 36” Pipe	LF				150	$86.15	$12,923
SUBTOTAL				$59,600			$12,923
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$17,880			$3,877
TOTAL				$77,480			$16,800
TOTAL ROUNDED				**$77,000**			**$17,000**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To Reduce the width of the travel lanes on SR 11, Ridge Road, and Monroe Drive from 12 feet to 11 feet.
A-7 & I-1	1 of 4	

Comp By: G.A.O. & Aruna Sastry Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current roadway design for SR 11, Ridge Road, and Monroe Drive includes 12-foot lane widths throughout the entire project. The current design concept widens both existing structures to the inside and outside, and would close the median area by constructing a 16'-0" raised concrete median. The total bridge width required in the current design is 136'-10." The existing structures are 2-span (120'-141') structural steel continuous unit bridges.

Proposed Change:

It is recommended that the width of the travel lanes on SR 11, Ridge Road, and Monroe Drive be reduced from 12 feet to 11 feet. It is further recommended that all turn and merge lane widths be kept at the proposed 12-foot width. This concept would keep two separate bridges with an open median (Eastbound - three traffic lanes plus a sidewalk [45'-10"] and Westbound - four traffic lanes with no sidewalk [51'-3"]).

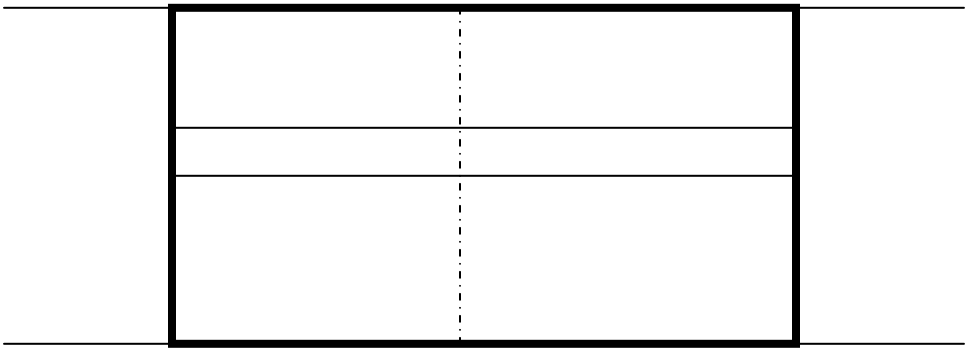
Justification:

Reducing the width of the travel lanes from 12 feet to 11 feet would result in a significant cost savings to the project. Changing to 11-foot lane widths on SR 11 would reduce the amount of bridge widening needed on the two existing long bridges crossing I-985. In addition, reducing the width of the median side bridge widening increases the distance between the two bridges, further suggesting that the median area between the bridges remain open (current design would construct a raised concrete median between the dual structures). Leaving the dual bridges with an open median results in additional cost and time savings to the project. The 11-foot through lanes would accommodate the project traffic and provide adequate safety for this urban roadway with a posted speed of 45 MPH.

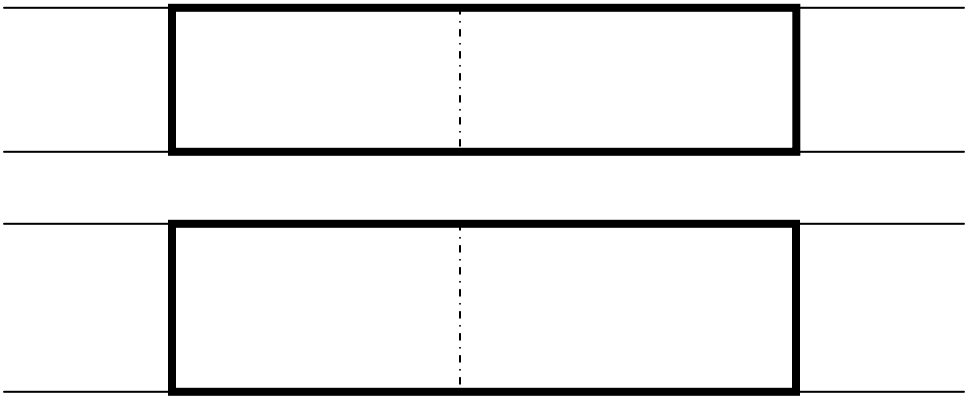
LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$3,137,000		
- Proposed	$1,564,000		
- Savings	$1,573,000		$1,573,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$1,573,000**

SKETCH	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-7 & I-1 CLIENT: GDOT Sheet 2 of 4

Current Bridge Design Concept (12-foot lanes):
Widen existing two structures and close median
Singled 136'-10" x 261' Bridge



VE Recommended Design (11-foot lanes):
Widen existing structures and leave median open
1 @ 45'-10" x 261' and 1 @ 51'-3" x 261'



COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: A-7 & I-1 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
SR 11 Lane Reduction:							
West of Ridge Road							
4 lanes x 1,000 ft = 4,000	SF	4,000	$6.00	$24,000	0	$0	$0
Between Ridge Road & Monroe							
6 lanes x 3,500 ft = 21,000	SF	21,000	$6.00	$126,000	0	$0	$0
East of Monroe Drive							
6 lanes x 500 ft = 3,000	SF	3,000	$6.00	$18,000	0	$0	$0
Ridge Road Lane Reduction:							
2 lanes x 900 ft = 1,800	SF	1,800	$6.00	$10,800	0	$0	$0
4 lanes x 600 ft = 2,400	SF	2,400	$6.00	$14,400	0	$0	$0
Monroe Drive Lane Reduction:							
2 lanes x 500 ft = 1,000 SF	SF	1,000	$6.00	$6,000	0	$0	$0
Bridge Widening:							
Current Design - 84.83 ft	SF	22,141	$100.00	$2,214,100			
VE Proposal:							
Eastbound - 19.83 ft	SF				5,176	$100.00	$517,600
Westbound - 26.25 ft	SF				6,852	$100.00	$685,200
SUBTOTAL				$2,413,300			$1,202,800
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$723,990			$360,840
TOTAL				$3,137,290			$1,563,640
TOTAL ROUNDED				**$3,137,000**			**$1,564,000**

CALCULATIONS	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-7 & I-1 CLIENT: GDOT Sheet 4 of 4

Roadway Lengths:
SR 11 West of Ridge Road
4 lanes at 1,000 ft
SR 11 Between Ridge road and Monroe Drive
6 lanes at 3,750 ft
SR 11 East of Monroe Drive
6 lanes at 600 ft
Ridge Road
North 2 lanes at 900 ft
South 4 lanes at 600 ft
Monroe Drive
2 lanes at 500 ft

Bridge Reductions:

Current design for widening and closing the median. The amount of existing bridge width to remain is 52 ft (2 @ 26 ft). The new bridge width is 136'-10."

Proposed widening:
New bridge – Existing bridges = 136.83 ft – 52 ft = 84.83 ft
120 ft + 141 ft = 261 ft x 84.83 ft = 22,141 SF x $100 / SF = $2,214,100

VE Recommendation proposed widening (11-foot lanes):

East Bound Bridge:
Three Lanes + Sidewalk = 45'-10"
45.83 ft – 26 ft = 19.83 ft x 261 ft = 5,175.63 SF x $100 / SF = $517,563

West Bound Bridge:
Four lanes with no sidewalk = 51'-3"
51.25 ft – 26 ft = 26.25 ft x 261 ft = 6,851.25 SF x $100 / SF = $ 685,125

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** **12-Foot Lane Alternative to A-7, I-1**
I-3	1 of 4	To eliminate the median between the SR 11 Bridges and keep separate structures for eastbound and westbound traffic.

Comp By: Aruna Sastry Date: 1-16-2008 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design concept is to widen the existing SR 11 bridges and to tie them together by constructing a 16'-0" raised concrete median between the structures. This would result in a single bridge width of 136'-10". The existing bridges are 2-span (120' – 141') structural steel continuous unit bridges.

Proposed Change:

It is recommended that the proposed 16-foot raised median tying the two SR 11 structures together be eliminated, thereby leaving two separate structures in place. The eastbound bridge should be widened (48' -10") enough to accommodate three traffic lanes and a sidewalk. The westbound bridge should be widened (55' -3") enough to accommodate four traffic lanes with no sidewalks.

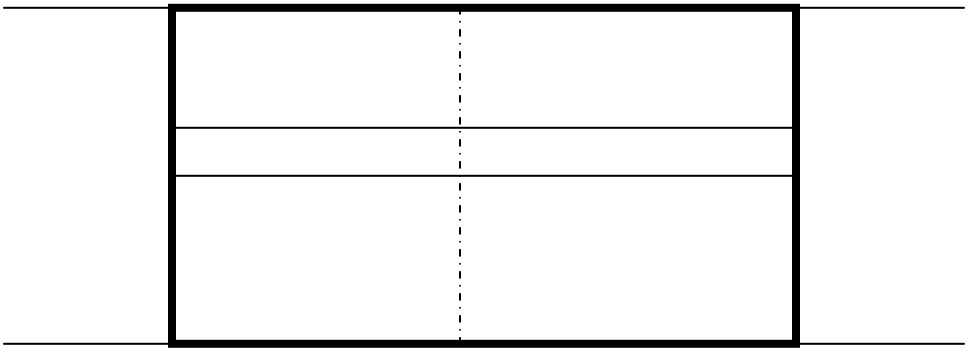
Justification:

There are no turn lanes on these bridges so there is no need to construct the 16-foot raised median between the structures. Eliminating the median does not impact the basic function of the bridges. The elimination of 16-foot median will result in a significant cost savings. This concept would also reduce construction time and simplify construction.

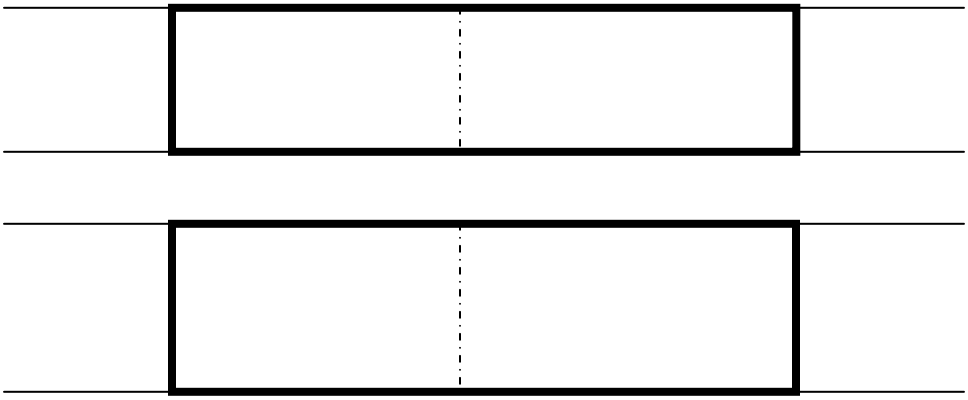
LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$2,878,000		
- Proposed	$1,767,000		
- Savings	$1,111,000		$1,111,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$1,111,000**

SKETCH	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : A-7 & I-1 CLIENT: GDOT Sheet 2 of 4

Current Bridge Design Concept (12-foot lanes):
Widen existing two structures and close median
Singled 136'-10" x 261' Bridge



VE Recommended Design (12-foot lanes):
Widen existing structures and leave median open
1 @ 48'-10" x 261' and 1 @ 55'-3" x 261'



COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: I-3 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Bridge Widening:							
Current Design – 84.83 ft	SF	22,141	$100.00	$2,214,000			
VE Proposal: (Open Median)							
Eastbound – 22.83 ft	SF				5,959	$100.00	$595,900
Westbound – 29.25 ft	SF				7,635	$100.00	$763,500
SUBTOTAL				$2,214,100			$1,359,400
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$664,230			$407,820
TOTAL				$2,878,330			$1,767,220
TOTAL ROUNDED				**$2,878,000**			**$1,767,000**

CALCULATIONS	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : I-3 CLIENT: GDOT Sheet 4 of 4

Current design for widening and closing the median. The amount of existing bridge width to remain is 52 ft (2 @ 26 ft). The new bridge width is 136'-10."

Proposed widening:
New bridge – Existing bridges = 136.83 ft – 52 ft = 84.83 ft
120 ft + 141 ft = 261 ft x 84.83 ft = 22,141 SF x $100 / SF = $2,214,100

VE Recommendation proposed widening (12-foot lanes) with open median:

East Bound Bridge:
Three Lanes + Sidewalk = 48'-10"
48.83 ft – 26 ft = 22.83 ft x 261 ft = 5,958,63 SF x $100 / SF = $595,863

West Bound Bridge:
Four lanes with no sidewalk = 55'-3"
55.25 ft – 26 ft = 29.25 ft x 261 ft = 7,634.25 SF x $100 / SF = $763,425

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To Revise the Cost Estimate to Include the Cost of SR 11 Bridge Widening and the Concrete Abutment Widening.
I-4	1 of 3	

Comp By: Aruna Sastry Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current cost estimate does not include the cost of widening the SR 11 Bridges over I-985 or the cost of the new retaining wall abutments needed for the SR 11 and Athens Street Bridge adjustments due to the addition of the CD roadways. The cost estimate only includes $340,000 for bridge widening at Athens Street and $390,000 for widening at SR 11.

Proposed Change:

To modify the cost estimate to include the cost of widening the SR 11 Bridges and the cost for the concrete retaining wall abutments needed due to add CD lanes through the Interchange.

Justification:

To bring the cost estimate up-to-date.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$949,000		
- Proposed	$3,595,000		
- Savings	($2,646,000)		($2,646,000)
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**($2,646,000)**

COST WORKSHEET

Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: I-4 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Bridge Widening:							
Current Design – 84.83 ft	SF				22,141	$100.00	$2,214,000
Retaining Wall Abutments:							
Design of retaining walls for ends of the abutment due to addition of CD system on both east bound and west bound lanes.	CY				603	$914.02	$551,154
Current Estimate:							
Athens Street Bridge	LS	1	$340,000				
SR 11 Bridges	LS	1	$390,000				
SUBTOTAL			$730,000				$2,765,154
(10% E & C and 20% Inflation) **MARK-UP (30 %)**			$219,000				$829,546
TOTAL			949,000				$3,594,700
TOTAL ROUNDED			**$949,000**				**$3,595,000**

CALCULATIONS	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : I-4 CLIENT: GDOT Sheet 3 of 3

Current design for widening and closing the median. The amount of existing bridge width to remain is 52 ft (2 @ 26 ft). The new bridge width is 136'-10."

Proposed widening:
New bridge – Existing bridges = 136.83 ft – 52 ft = 84.83 ft
120 ft + 141 ft = 261 ft x 84.83 ft = 22,141 SF x $100 / SF = $2,214,100

Design of retaining walls for ends of the abutment due to addition of CD system on both east bound and west bound lanes.

2 x [(1.5 ft x 136.83 ft x 21 ft x 1/27)+(14 ft x 2 ft x 136.83 ft x 1/27)]
2 x (159.635 + 141.898) = 2 x 301.5 = 603 CY
603 CY x $914.02 / CY = $551,154

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To eliminate the concrete barrier separating the C-D roadway system from the mainline roadway.
K-1	1 of 2	

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design uses concrete barrier to separate the CD roadway from the through traffic lanes on I-985.

Proposed Change:

It is recommended that the concrete barrier separating the CD roadway from the through traffic lanes be eliminated.

Justification:

The CD Roadway and the mainline pavement will be physically separated by the mainline outside shoulder and the CD roadway shoulder. Since the traffic on the CD roadway and the mainline roadway will be traveling in the same direction, it does not appear necessary to install a concrete barrier wall between the roadway shoulders.

The standard edge striping, rumble strips, and shoulder taper should provide a safe roadway section. Eliminating the concrete barrier wall would remove the wall from the edge of the shoulder along the high speed mainline pavement and reduce the cost of the project.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$780,000		
- Proposed	$0		
- Savings	$780,000		$780,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$780,000**

COST WORKSHEET

Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: K-1 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Concrete Barrier Along CD Rd:							
Concrete barrier length – 9,100 ft	LF	9,100	$61.60	$560,560			$0
Impact attenuator	each	2	$20,000	$40,000			$0
SUBTOTAL				$600,560			$0
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$180,168			$0
TOTAL				$780,728			$0
TOTAL ROUNDED				**$780,000**			**$0**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** **Alternative to K-1** To use dual faced guard rail in lieu of a concrete barrier separating the CD roadway system.
K-2	1 of 2	

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design uses concrete barrier wall to separate the CD roadway from the through traffic lanes on I-985.

Proposed Change:

It is recommended to use dual-faced guard rail in-lieu-of concrete barrier wall to separate the CD roadway from the through traffic lanes.

Justification:

Using dual-faced guard rail is an acceptable method for separating same direction traffic. This will provide a similar function while significantly reducing construction costs. An alternative recommendation could be to use cable railing for separation which could provide even additional cost savings.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$780,000		
- Proposed	$300,000		
- Savings	$480,000		$480,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$480,000**

COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: K-2 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Concrete Barrier Along CD Rd:							
Concrete barrier	LF	9,100	$61.60	$560,560			$0
Impact attenuator	each	2	$20,000	$40,000			$0
Dual faced guard rail	LF			$0	9,100	$25.00	$227,500
SUBTOTAL				$600,560			$227,500
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$180,168			$68,250
TOTAL				$780,728			$295,750
TOTAL ROUNDED				**$780,000**			**$300,000**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To tie the NB Off-Ramp into the signalized intersection for the NB On-Ramp on the east side of the Interchange.
L-2	1 of 1	

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design for the NB I-985 Off-Ramp to EB SR 11 provides for free-flow at the tie-in point to SR 11. This point is approximately 300 feet east of the signalized intersection for the WB SR 11 to NB I-985 On-Ramp.

Proposed Change:

It is suggested that consideration be given to tying this NB Off-Ramp directly into the signalized intersection for the NB On-Ramp.

Justification:

Tying the NB OFF-Ramp into the signalized intersection would improve safety. The current free-flow condition creates a safety and weaving problem for exiting vehicles wanting to travel north on Monroe Drive. They will have to cross three lanes of SR 11 traffic to enter the left turn lane at the SR 11 / Monroe Drive intersection. The weave distance for this move is only about 350-400 feet. The short weave distance and likely high speed (free flow) of exiting traffic presents an undesirable condition.

Tying the NB Off-Ramp into the signalized NB On-Ramp intersection would better control the exiting eastbound traffic entering SR 11 since the eastbound SR 11 traffic would be stopped for the signal thereby eliminating any weaving. If some free flow traffic from the exit ramp were allowed, shifting the NB Off-Ramp would increase the weave length approximately 300 feet.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST – Original	No Change		
- Proposed	No Change		
- Savings	No Change		No Change
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**No Change**

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:** To use a grass median with 2 foot paved shoulders in lieu of 20 foot concrete median.
N-2	1 of 4	

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design uses a standard 20-foot concrete median on SR 11.

Proposed Change:

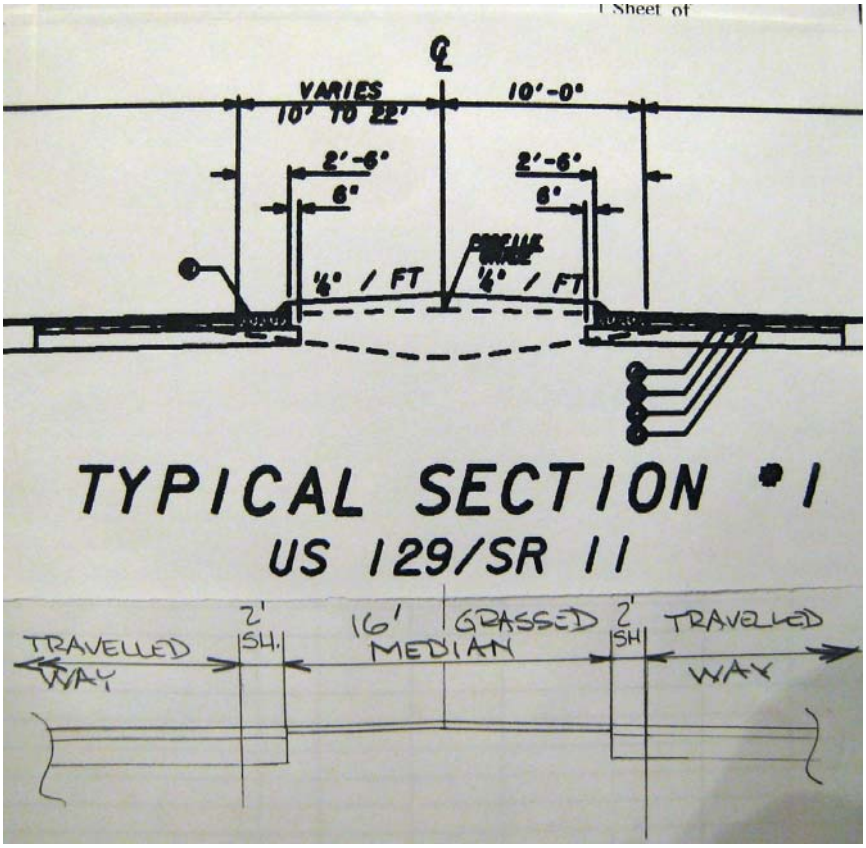
It is recommended that the SR 11 median be constructed using 2 foot paved shoulders and a grassed median for the remainder of the area.

Justification:

Using a rural median section with 2 foot paved shoulders and a grassed median in lieu of a raised concrete median will be less costly while providing a similar function. A standard median would generally be drained towards the center with a longitudinal, median drainage system incorporated, however, the runoff from a grass median would be less than the concrete median as shown draining towards the traveled way. There could be some long range additional maintenance costs with grass instead of concrete although a reduced maintenance surfacing could be considered.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$310,000		
- Proposed	$170,000		
- Savings	$140,000		$140,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$140,000**

SKETCH	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : N-2 CLIENT: GDOT Sheet 2 of 4



COST WORKSHEET

Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: N-2 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
Curb and gutter	LF	5,400	$18.13	$97,902			$0
Concrete median	SY	4,500	$31.41	$14,1345			$0
Full depth pavement	SF			$0	10,800	$6.00	$64,800
Topsoil, grassing	SF			$0	43,200	$1.50	$64,800
SUBTOTAL				$239,247			$129,600
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$71,774			$38,880
TOTAL				$311,021			$168,480
TOTAL ROUNDED				**$310,000**			**$170,000**

CALCULATIONS	
Project: I-985 / SR 11 Interchange Reconstruction	ITEM N^{o} : N-2 CLIENT: GDOT Sheet 4 of 4

Total length of wide, concrete median to be substituted with grassed median; area between the intersections, not including the bridge, 2,700 feet.

Length of curb and gutter,
2 x 2,700 = 5,400 LF

Area of concrete median
(2,700 x 15) / 9 = 4,500 SY

New full depth pavement
2,700 x 4 = 10,800 SF

Grassed area
2,700 x 16 = 43,200 SF

DEVELOPMENT AND RECOMMENDATION PHASE

Project: I-985 / SR 11 Interchange Reconstruction

IDEA No.:	**Sheet No.:**	**CREATIVE IDEA:**
P-2, P-3, P-3	1 of 2	To Eliminate Sidewalk at Various Locations Along SR 11

Comp By: G.A.O. Date: 1-16-08 Checked By: K.B. Date: 1/21/08

Original Concept:

The current design includes continuous sidewalk along the entire south side of SR 11 and on the north side between Ridge Road and the SB Off Ramp intersection and the north side between the NB ramp intersection and Monroe Drive.

Proposed Change:

It is recommended to eliminate the sidewalk on the north side of SR 11 between Ridge Road and the SB Off Ramp intersection and on the south side of SR 11 between the NB On Ramp and Monroe Drive. In addition, the sidewalk on both sides of Monroe Drive south of SR 11 should be eliminated.

Justification:

Eliminating the two sections of sidewalk along SR 11 would result in a better and safer single identified east-west walkway through the proposed project. Eliminating the north section between Ridge Road and the Off Ramp intersection would shift all pedestrian SR 11 crossings to a single crossing at the signalized Ridge Road intersection. (Eliminates need for crossing the Off Ramp and SR 11 at the SB Off Ramp intersection). Eliminating the south section between the NB On Ramp and Monroe Drive would eliminate the un-signalized sidewalk crossing of the NB Off Ramp (continuous flow). Pedestrians would cross SR-11 at the signalized On Ramp intersection approximately 180 feet west of the currently proposed NB Off Ramp crossing. The sidewalk on Monroe Drive south of SR 11 does not connect to any existing sidewalk and could be eliminated.

LIFE CYCLE COST SUMMARY	**CAPITAL COST**	**FUTURE COST**	**TOTAL COST**
INITIAL COST - Original	$137,000		
- Proposed	$0		
- Savings	$137,000		$137,000
FUTURE COST – Savings			
TOTAL PRESENT WORTH SAVINGS			**$137,000**

COST WORKSHEET							
Project: I-985 / SR 11 Interchange Reconstruction					IDEA No.: P-2, 3, & 4 CLIENT: GDOT Sheet 2 of 2		
CONSTRUCTION ELEMENT		**ORIGINAL ESTIMATE**			**NEW ESTIMATE**		
Item	**Unit**	**No. Units**	**Cost/Unit**	**Total Cost**	**No. Units**	**Cost/Unit**	**Total Cost**
SR 11 North Side Sidewalk	LF	520	$37.42	$17,784			$0
SR 11 South Side Sidewalk	LF	850	$37.42	$31,807			$0
Monroe Drive South Sidewalk	LF	1,500	$37.42	$56,130			$0
SUBTOTAL				$105,721			$0
(10% E & C and 20% Inflation) **MARK-UP (30%)**				$31,716			$0
TOTAL				$137,437			$0
TOTAL ROUNDED				**$137,000**			**$0**

APPENDIX

Sources

Approving/Authorizing Persons

Name:	Position:	Telephone:
Brian Summers	GDOT – Engineering Services, Project Review Engineer	404-656-6846
Ron Wishon	GDOT – Engineering Services, Assistant Project Review Engineer	404-651-7470

Personal Contacts

Name:	Telephone:	Notes:
Judy Meisner	404-656-5190	Get "as built' Bridge Plans, Discuss Bridge Widening

Documents/Abstracts

Reference:	Reference:
Project Cost Estimate	
Project Traffic Projections	
100 Scale Plan Layout	
State Standards	
State Specifications	
AASHTO Green Book	
State Unit Bid Prices	

I-985 / SR 11 Interchange Reconstruction

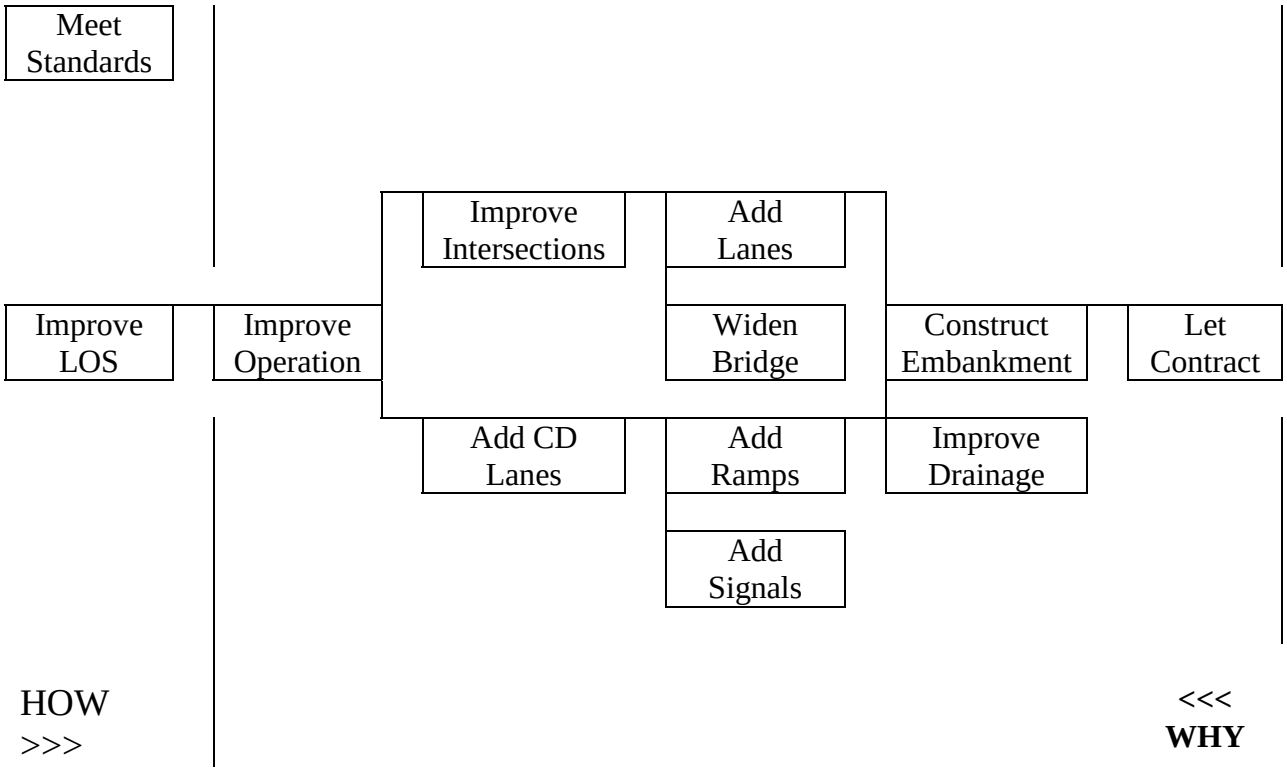
Cost Model / Distribution

Item	Description	$ Amount	% of Total Project
A	Recycled Asphalt Pavement	$3,181,000	17.1%
B	Unclassified Excavation	$2,535,000	13.6%
C	Retaining Walls	$1,882,000	10.1%
D	Miscellaneous	$1,830,000	9.8%
E	Storm Drain Pipes	$1,730,000	9.3%
F	Aggregate Base Course	$1,311,000	7.1%
G	Erosion Control	$1,118,000	6.0%
H	Borrow Excavation	$1,022,000	5.5%
I	Bridge Widening	$730,000	3.9%
J	ROW	$700,000	3.8%
K	Concrete Barrier	$561,000	3.0%
L	Signing, Marking, Signals	$481,000	2.6%
M	Clearing & Grubbing	$450,000	2.4%
N	Concrete Median	$361,000	2.0%
O	Concrete Curb & Gutter	$346,000	1.9%
P	Concrete Sidewalk	$344,000	1.9%
	Subtotal	**$18,582,000**	**100%**
	E& C @ 10% (Excluding ROW)	$1,788,000	
	Inflation Rate 5% @ 5 Years	$5,435,000	
	Utilities	$50,000	
	Project Total	**$25,855,000**	
	Note: The 10% E&C and 5% Inflation Rate are used as Mark-up on the Recommendation Cost Sheets. (Items Represent 30% of the Total Cost)		

FAST DIAGRAM

Study **Project Name**: **I-985 / SR 11 Interchange Reconstruction**

Basic Function **Improve Operation**



INFORMATION PHASE – FUNCTION ANALYSIS

Project: **I-985 / SR 11 Interchange Reconstruction**
Function: **Improve Operation**

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
A	Recycle Asphalt Superpave	Provide	Surface	$3,181,000	17.1%	Yes
		Add	Lanes			
		Construct	CD Lanes			
		Improve	Intersections			
		Construct	Ramps			
B	Unclassified Excavation	Remove	Ramps	$2,535,000	13.6%	Yes
		Construct	Ramps			
		Construct	CD Roads			
		Construct	Drainage			
		Widen	SR 11			
C	Retaining Walls	Hold	Embankment	$1,882,000	10.1%	Yes
		Save	ROW			
		Protect	Building			
		Protect	Streams			
D	Miscellaneous	Construct	Project	$1,830,000	9.8%	No

INFORMATION PHASE – FUNCTION ANALYSIS

Project: **I-985 / SR 11 Interchange Reconstruction**
Function: **Improve Operation**

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
E	Storm Drain Pipe	Convey	Water	$1,730,000	9.3%	Yes
		Drain	Pavement			
		Carry	Stream			
		Meet	Env. Concerns			
F	Aggregate Base Course	Support	Pavement	$1,311,000	7.1%	Yes
		Drain	Pavement			
G	Erosion Control	Meet	Requirements	$1,118,000	6.0%	No
		Control	Erosion			
		Allow	Construction			
H	Borrow Excavation	Construct	Ramps	$1,022,000	5.5%	Yes
		Construct	Roadways			
		Achieve	Grade			
		Impact	Streams			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: **I-985 / SR 11 Interchange Reconstruction**
Function: **Improve Operation**

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
I	Bridge Widening	Accommodate	Lanes	$730,000	3.9%	Yes
		Add	Loop Ramps			
		Accommodate	CD Lanes			
		Add	Raised Median			
J	ROW	Store	Project	$700,000	3.6%	No
		Allow	Construction			
		Hold	Ramps			
K	Concrete Barrier	Separate	Traffic	$561,000	3.0%	Yes
		Protect	Public			
		Prevent	Crossovers			
L	Signing, Signals	Control	Traffic	$481,000	2.6%	Yes
		Accommodate	Pedestrians			
		Protect	Pedestrians			

INFORMATION PHASE – FUNCTION ANALYSIS

Project: **I-985 / SR 11 Interchange Reconstruction**
Function: **Improve Operation**

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	% of Total	Worth/Save
M	Clear & Grubbing	Allow	Construction	$450,000	2.4%	No
N	Concrete Median	Separate	Traffic	$361,000	2.0%	Yes
		Maintain	Typical Sect.			
		Construct	Turn Lanes			
O	Curb & Gutters	Provide	Drainage	$346,000	1.9%	Yes
		Delineate	Roadway			
		Protect	Pedestrians			
P	Sidewalk	Provide	Access	$344,000	1.9%	Yes

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
A	**Recycled Asphalt Superpavement**		
A-1	Eliminate CD Roads – Use std accel. / decel. lanes	Reduce Cost, Speed Construction	✓
A-2	Eliminate CD Roads South of Athens Bridge	See A-1	X
A-3	Construct Single-Lane CD Road	Reduce Cost, Speed Construction	✓
A-4	Eliminate Pavement on CD Roads in Crosshatched Areas	See A-3	X
A-5	Reduce the Size of the Northwest Loop Ramp	Improve Pedestrian Safety, Align Ramps	✓
A-6	Review the number of Lanes at the SR 11 Intersections	Reduce Cost, Reduce Impact	✓
A-7	Reduce the Lane Widths on SR 11	Reduce Cost	✓
A-8	Review / Reduce the Lane Widths on the Ramps	Reduce Cost	✓
A-8A	Revise CR Lane Width	Reduce Cost	✓
A-9	Make EB to SB On Ramp have a Double Right	Improve Access, Improve Safety	✓
A-10	Shift SB On-Ramp West to Meet at SB Off-Ramp	Align Ramps, Address Sidewalk Crossing	✓
A-11	Lengthen Distance Between Ridge Rd and Ramps	See A-5	X
A-12	Narrow Distance Between Ramps – Use Common Rd	Reduce Cost	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
B	**Unclassified Excavation**		
B-1	Eliminate CD Roads	See A-1	✓
B-2	Construct Single Lane CD Road	See A-3	X
B-3	Eliminate CD Roads South of Athens Bridge	See A-1	X
B-4	Reduce the Size of the Northwest Loop Ramp	See A-5	X
B-5	Steepen side Slopes	Not Enough Information Available	X
B-6	Use a combination of Retaining Wall and Slope	Not Enough Information Available	X
C	**Retaining Walls**		
C-1	Use MSE Walls in-lieu-of Reinforced Concrete Walls	Reduce Cost, Simplify Construction	✓
C-2	Reduce the Size / Height / Length of the Walls	Not Enough Information Available	X
C-3	Put Retaining Wall @ Hospital on State ROW	Construction Must be on State ROW	✓
E	**Storm Drain Pipe**		
E-1	Check / Reduce Pipe Lengths in Creeks	Reference A-5	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
E-2	Reduce SP Skews at Road Crossings	Requires Revisions to Stream Bed	X
E-3	Reduce Length of SP If CD Lanes are Reduced	See A-1	X
E-4	Reduce Lanes if 11-Foot Lanes are used on SR 11	See A-7	X
E-5	Eliminate Curb & Gutter on North Side of SR-11	Requires a wider Bridge	X
F	**Aggregate Base Course**		
F-1	Reduce Lane Width of SR 11	See A-7	X
F-2	Reduce Lane Width on Ramps	See A-8	X
F-3	Reduce / Eliminate CD Lanes	See A-8A	X
F-4	Add Base Course if Rural Shoulders are Used	Higher Bridge Costs	X
H	**Borrow Excavation**		
H-1	Reduce if West Loop Ramp is made Smaller	See A-5	X
H-2	Reduce if CD Lanes are Changed / Eliminated	See A-1, A-3	X
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
I	**Bridge Widening**		
I-1	Reduce Width by Using 11-Foot Lanes on SR 11	Reduce Cost	✓
I-2	Reduce Median Width	Not Practicable	X
I-3	Eliminate Raised Median on Bridge (Dual Bridges)	Reduce Cost	✓
I-4	Bridge Cost Estimate (Widening, Ret Walls, Etc.)	Correct Project Cost Estimate	✓
I-5	Analyze Other Ways for Sidewalk Crossing I-985	Not Practical	X
I-6	Eliminate CD Lanes – Lengthening of Structures	Need for Single Lane CD or Accel / Decel. Lanes	X
K	**Concrete Barrier**		
K-1	Eliminate CD Lanes and Concrete Barrier	See A-1	X
K-2	Use Other Barrier Types in-lieu-of Concrete Barrier	Reduce Cost	✓
L	**Signals**		
L-1	Assure Signals Protect Sidewalk Ramp Crossings	Improve Safety	✓
L-2	Shift NB to EB Off-Ramp to Increase Weave Area	Improve Safety	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
N	**Concrete Median**		
N-1	Reduce Median Width	See A-1	X
N-2	Leave Wide (20-Foot) Median as Grass	Reduce Cost, Maintenance Cost?	✓
O	**Curb & Gutter**		
O-1	Eliminate on North Side of Interchange (no sidewalk)	Additional Bridge Widening, Higher Cost	X
O-2	Eliminate in Narrow Median (Turn Lane) Areas and Use 2" Raised Concrete Median With 1-Foot Off Sets	Reduce Cost, Accelerate Cost	✓
P	**Concrete Sidewalk**		
P-1	Address Sidewalks at Ramp Crossings (Signals)	Improve Safety	✓
P-2	Eliminate on South Side of SR 11 East of Off Ramp	Reduce Cost, Improve Safety	✓
P-3	Eliminate Between Off Ramp & Ridge Rd (North)	Reduce Cost, Improve Safety	✓
P-4	Eliminate West Side @ East Intersection	Not Needed, Reduce Cost	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	**CREATIVE IDEA**	**COMMENTS**	**IDEA RATING**
Q	**Noise Wall**		
Q-1	Does it Meet Noise Criteria for Home Area	Are Walls Warranted	✓
Q-2	Is it Needed By Medical Facility (New Ramps & CD Lanes)	What are Noise Wall Requirements at this Facility	✓
Q-3	Cost Effectiveness of Noise Walls on Ret. Walls	Cost Comparison	✓
R	**Weaving Distances**		
R-1	Increase Weaving Distance on SR 11 for NB Off Ramp	Tie NB Ramp Into Signalized Ramp Intersection	✓
✓ = Will be considered further; X = will be dropped; DS = Design suggestion –written for consideration by design team			