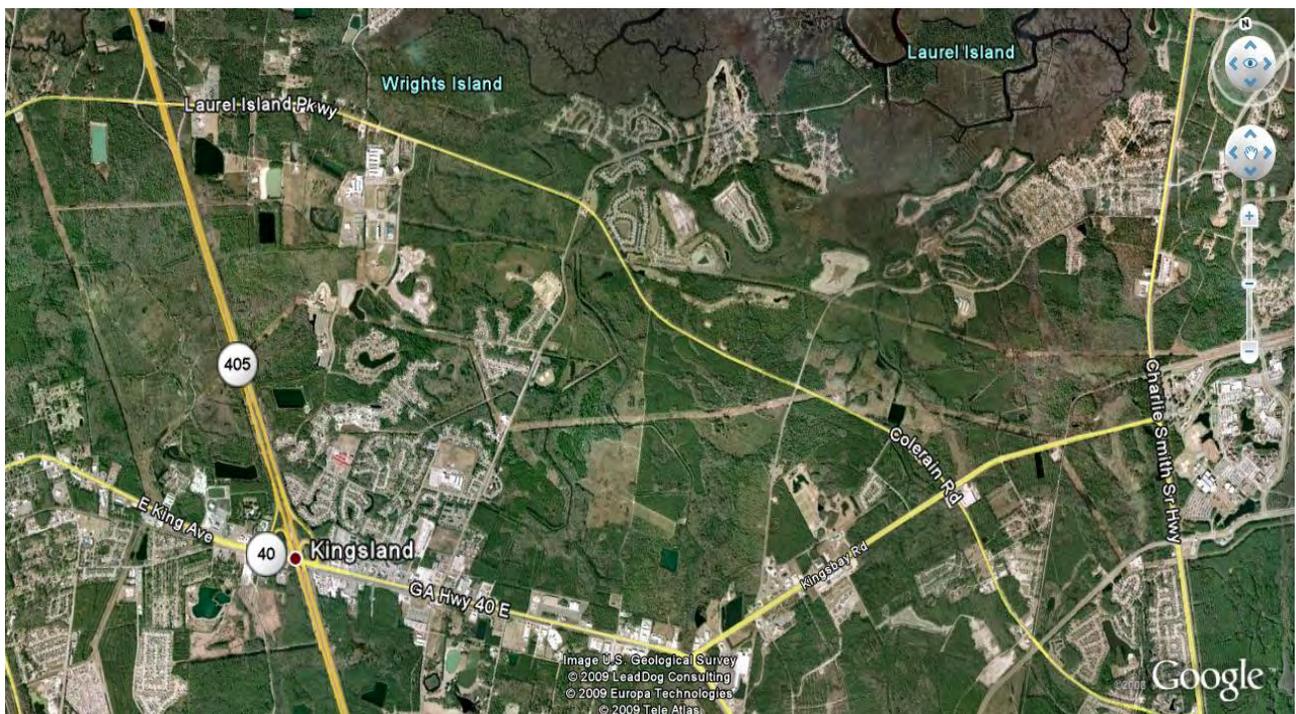


Value Engineering Study Report

Georgia Department of Transportation
CSSTP-0007-00(414) - P.I. No. 0007414

**CR90/ Colerain Road from I-95 to Kings Bay Road
Camden County**



Value Engineering Team



June 18, 2009

Design Team





June 18, 2009

Ms. Lisa Myers
Design Review Engineer Manager/VE Coordinator
Georgia Department of Transportation-Engineering Services
One Georgia Center
600 W. Peachtree Street NW
Atlanta, GA 30308

RE: Submittal of the final Value Engineering Report
Colerain Road from I-95 to Kings Bay Road
Project Nos.: CSSTP-0007-00(414) – P.I. No. 0007414

Dear Ms. Myers:

Please find enclosed two (2) hard copies and one (1) CD of our final Value Engineering Report for the Colerain Road widening in Camden County.

This Value Engineering Study, which was performed during the period June 8 through June 11, 2009, identified **26 Alternative Ideas** of which **12 Alternative Ideas are recommended for implementation**. In addition, the team is recommending **2 Design Suggestions** for your consideration. We believe that the **Alternative Ideas** recommended may have a significant positive affect on the project.

We trust that you will find this report to be in proper order. It should be noted that the results of this workshop are volatile in that they can be overcome by the events that accompany the expeditious continuance of the design process. Accordingly, we encourage an equally expeditious implementation meeting to design the disposition of the contents of this report.

On behalf of our VE Team, we thank you very much for this opportunity to work with you and the hard working staff of the Georgia Department of Transportation.

Yours truly,

PBS&J

A handwritten signature in black ink that reads 'Les M. Thomas'.

Les M. Thomas, P.E., CVS-Life
VE Team Leader

A handwritten signature in black ink that reads 'Randy S. Thomas'.

Randy S. Thomas, CVS
Assistant Team Leader

Value Engineering Study Report

Project No. CSSTP-0007-00(414)
P.I. No. 0007414

Widening of CR 90/Colerain Road from I-95 to Kings Bay Road
Camden County

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- Introduction and Job Plan
- Agenda
- Pareto Charts
- FAST Diagrams
- Attendance Sheet for Designers and VE Team Presentations
- Creative Idea Listing and Evaluation Worksheet

EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the analysis and conclusions by the PBS&J Value Engineering workshop team as they performed a Value Engineering study during the period of June 8-11, 2009 in Atlanta, at the office of the Georgia Department of Transportation. The subject of the Value Engineering study was the Widening of CR90/Colerain Road from I-95 to Kings Bay Road, Project: CSSTP-0007-00(414) – P.I. No. 0007414, in Camden County. The design for the project has been prepared by Moreland Altobelli Associates, Inc. At the time of the workshop, the plans had advanced to the preliminary design level.

PROJECT DESCRIPTION

The proposed project would widen Colerain Road from a two-lane to a four-lane divided road with a twenty foot raised median and twelve foot right turn lanes at all major intersections and major commercial drives.. The purpose is to relieve traffic congestion on SR 40. It would also provide increased capacity for westbound coastal evacuation. In addition, the improvement should facilitate future economic growth. This route is on the Camden County bike route system and therefore bike lanes are planned.

The 2006 average daily traffic on Colerain road was at 10,600 vehicles. This number is projected to be 18,100 vpd by the build year 2010 and reach 30,200 vpd by the design year 2030. The existing intersections are currently operating at levels of service “B” or “C” during peak hours. If a no build option were chosen Level of service would decline to “F” by 2030.

Other proposed design features include improving the I-95 ramps and increasing the shoulders to a six foot inside shoulder and a ten foot outside shoulder. The Colerain Bridge over I-95 will be replaced.

The proposed design speed on Colerain Road is 45 mph, 35 mph on side streets, and 45 mph on the I-95 ramps. The length of the project is 4.9 miles

.Estimated construction cost for the project is \$28,246,899. In addition, Right-of-Way costs are anticipated to be \$5,260,000 and reimbursable utilities cost of \$700,000. The projected total cost for the project is \$34,206,898.

PROJECT CONCERNS AND OBJECTIVES

Some of the information from the concept report and the designer’s presentation indicated the following important points about the project:

- Reduce traffic congestion
- Create better emergency coastal evacuation
- Improve Level of Service
- Comply with regulations

VALUE ENGINEERING PROCESS

The Value Engineering team followed the seven step Value Engineering job plan as promulgated by SAVE International. This seven step job plan includes the following:

- Investigative
- Analysis
- Speculation
- Evaluation
- Development
- Recommendation
- Presentation

This report is a component of the Presentation Phase. As part of the VE workshop in Atlanta, the team made an informal presentation of their results on the last morning of the workshop. This report is intended to formalize the workshop results and set the stage for a formal implementation meeting in which alternatives and design suggestions will typically be accepted, accepted with modifications, or rejected for cause. The worksheet that follows, along with the formally developed alternatives and design suggestions can be used as a “score sheet” for the implementation meeting. It is also included in this report to identify, on a summary basis, the results of the workshop. The reader is encouraged to visit the third tabbed section of this report entitled **Study Results** for a review of the details of the developed alternatives. The tabbed section **Project Description** includes information about the project itself and the tabbed section **Value Engineering Process** presents the detailed process of the Value Engineering Study.

OBSERVATIONS

- There appears to be an opportunity to overlay the existing ramps on I-95 in-lieu of replacing them with new concrete ramps
- The ramp shoulders appear to be greater in width than recommended by ASHTO
- There appears to be an opportunity to improve drainage issues – drainage plans are not available at this stage to review
- There are no potentially eligible historic sites on Colerain Road
- There are no hazardous waste sites identified or significant environmental issues
- Introducing a reverse crown may not be necessary

CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified **26 Alternative Ideas** that appeared to hold potential for reducing the construction cost, improving the end product, and/or reducing the difficulty and time of project construction. After the evaluation phase was completed, **12 Alternative Ideas and 2 Design Suggestions** remained for further development. These Alternative Ideas may be found, in their documented form, in the section of this report entitled **Study Results**.

The following **Summary of Alternatives and Design Suggestions** coupled with the documentation of the developed alternatives should provide the reader with the information required to fully evaluate the merits of each of the alternatives.

Summary of Alternatives & Design Suggestions



PROJECT: **Georgia Department of Transportation
CSSTP-00007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

SHEET NO.: 1 of 1

ALTERNATIVE NUMBER	DESCRIPTION OF ALTERNATIVE	INITIAL COST SAVINGS
DRAINAGE (DR)		
DR-1	Eliminate the reverse crown	DS
DR-2	Modify or replace box culvert and utilize existing pavement from Sta. 265+00 and Sta. 295+00	\$115,371
DR-3	Slope urban section shoulders away from roadway to reduce earthwork and drainage	\$130,310
BRIDGES (BR)		
BR-1	Use a two span bridge with MSE walls	\$707,879
BR-2	Reduce the multi-use trail from 16'-6" to 12'-0"	\$145,035
BR-3	Build twin bridges	\$555,968
ROADWAY (RD)		
RD-2	Utilize a 4' paved shoulder in the rural section	\$126,328
RD-3	Reconstruct ramps as a Tight Urban Diamond	\$1,094,467
RD-12	Utilize the rural typical section from Station 186+21 to Station 251+00	\$785,367
RD-15	Add left turn lane eastbound at Wildcat Drive	DS
RD-16	Reduce construction on Brazell Road	\$25,345
RD-18	Make Jimmy Lane and Bessie Lane right-in/right-out only and eliminate the turn lanes	\$264,811
RD-19	Overlay existing ramps and widen to the inside	\$2,406,111
RD-20	Reduce the sum of the ramp shoulders from 14' to 12'	\$249,137

STUDY RESULTS

INTRODUCTION

This section includes the study results presented in the form of fully developed value engineering alternatives that include descriptions of the original design, description of the alternative design configurations, comments on the technical justifications, opportunities and risks associated with the alternatives, sketches, calculations and technical justification for these alternatives. For the most part, these fully developed alternatives represent an array of choices that clearly could have an impact on the eventual cost and performance of the finished project.

This introductory sheet is followed by a **Summary of Alternatives and Design Suggestions**. It should be noted that the alternatives that are included, which have cost estimates attached are not necessarily representative of the final cost outcome for each alternative. Some of these alternatives have components that are mutually exclusive so they may not be added together.

The users of this report are asked to consider these alternatives and design suggestions as a smorgasbord of choices for selection and use as the project moves forward. The enclosed **Summary of Alternatives and Design Suggestions** may also be used as a “score sheet” within the bounds of an implementation meeting.

COST CALCULATIONS

The cost calculations are intended only as a guide to the approximate results that might be expected from implementation of the alternatives. They should be helpful in making clear choices as to the pursuit of individual alternatives.

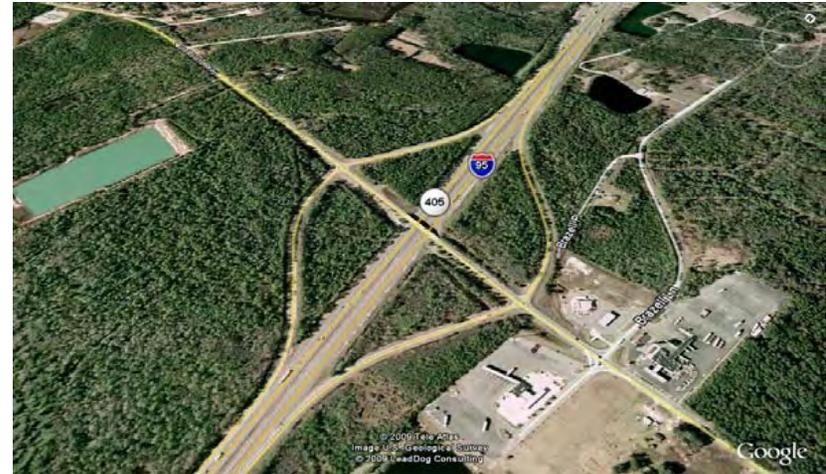
The composite mark-up of 10% for the construction cost comparisons was derived from the cost estimate for the project. This estimate can be found in the section of this report entitled **Project Description**.

CSSTP-0007-00(414)

P.I. No. 0007414

Widening of Colerain Road from I-95 to Kings Bay Road
Camden County

- Overview of I-95 interchange at Laurel Island Parkway/ Colerain Road



- Existing bridge over the I-95 interchange

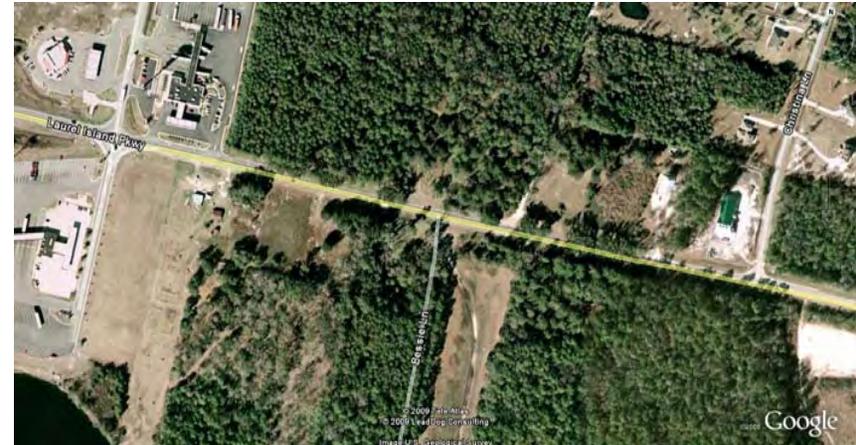


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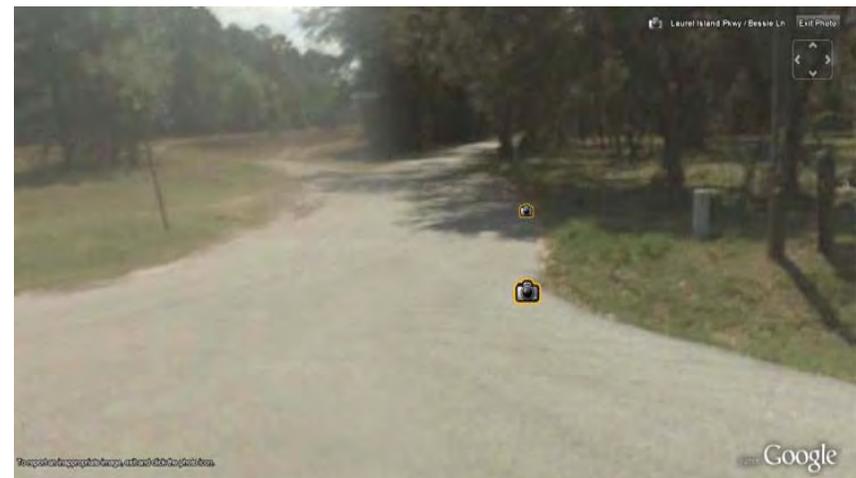
P.I. No. 0007414

Widening of Colerain Road from I-95 to Kings Bay Road
Camden County

- Overview of Colerain Road and Bessie Lane



- Bessie Lane Street View taken from Colerain Road



CSSTP-0007-00(414)

P.I. No. 0007414

Widening of Colerain Road from I-95 to Kings Bay Road
Camden County

- Wildcat Blvd. and Colerain Rd. intersection



- Kings Bay Rd. and Colerain Rd.



Summary of Alternatives & Design Suggestions



PROJECT: **Georgia Department of Transportation**
CSSTP-00007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

SHEET NO.: 1 of 1

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RD-20	Reduce the sum of the ramp shoulders from 14' to 12'	\$249,137

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
BR-1

DESCRIPTION: **Use a two span bridge with MSE walls**

SHEET NO.: **1 of 4**

Original Design:

The original design calls for a four span (48'-0", 98'-6", 98'-6", 48'-0") bridge structure to cross over I-95. The 293'-0" long bridge will have a CIP superstructure supported by 11- PSC 54" Bulb Tees beams spaced at 9'-0". The overall out-to-out width is 96'-11" and it will provide two sidewalks (6'-0" and 16'-6"), four-12'-0" traffic lanes (two on each direction), one 16'-0" inside median and two 2'-0" shoulders. The bridge will be on a 68°-17'-19" skew. All bents are parallel.

Alternative:

The alternative design calls for a two span (103'-0", 103'-0") bridge structure to cross over I-95. The 206'-0" long bridge will have a CIP superstructure supported by 12- PSC 54" Bulb Tees beams spaced at 8'-1". The overall out-to-out width is 96'-11" and it will provide two sidewalks (6'-0" and 16'-6"), four-12'-0" traffic lanes (two on each direction), one 16'-0" inside median and two 2'-0" shoulders. The end bent fills will be retained by MSE walls running parallel to the I-95. The bridge will be on a 68° - 17'-19" skew. All bents are parallel.

Opportunities:

- Potential saving in construction cost and construction time
- Reduction in beam spacing
- Reduction in deck thickness
- Lower concrete strength for beams

Risks:

- Possible adjustments to bridge sequence of construction due to new beam spacing
- One more beam line
- Heavier pile loads

Technical Discussion:

The use of MSE walls will help reduce the proposed bridge length. The overall sequence of construction will not change and as a result from the reduction in overall bridge length and beam spacing less material will be used.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,123,624	\$ 0	\$3,123,624
ALTERNATIVE	\$ 2,415,744	\$ 0	\$2,415,744
SAVINGS	\$ 707,879	\$ 0	\$707,879

3.123

Illustration

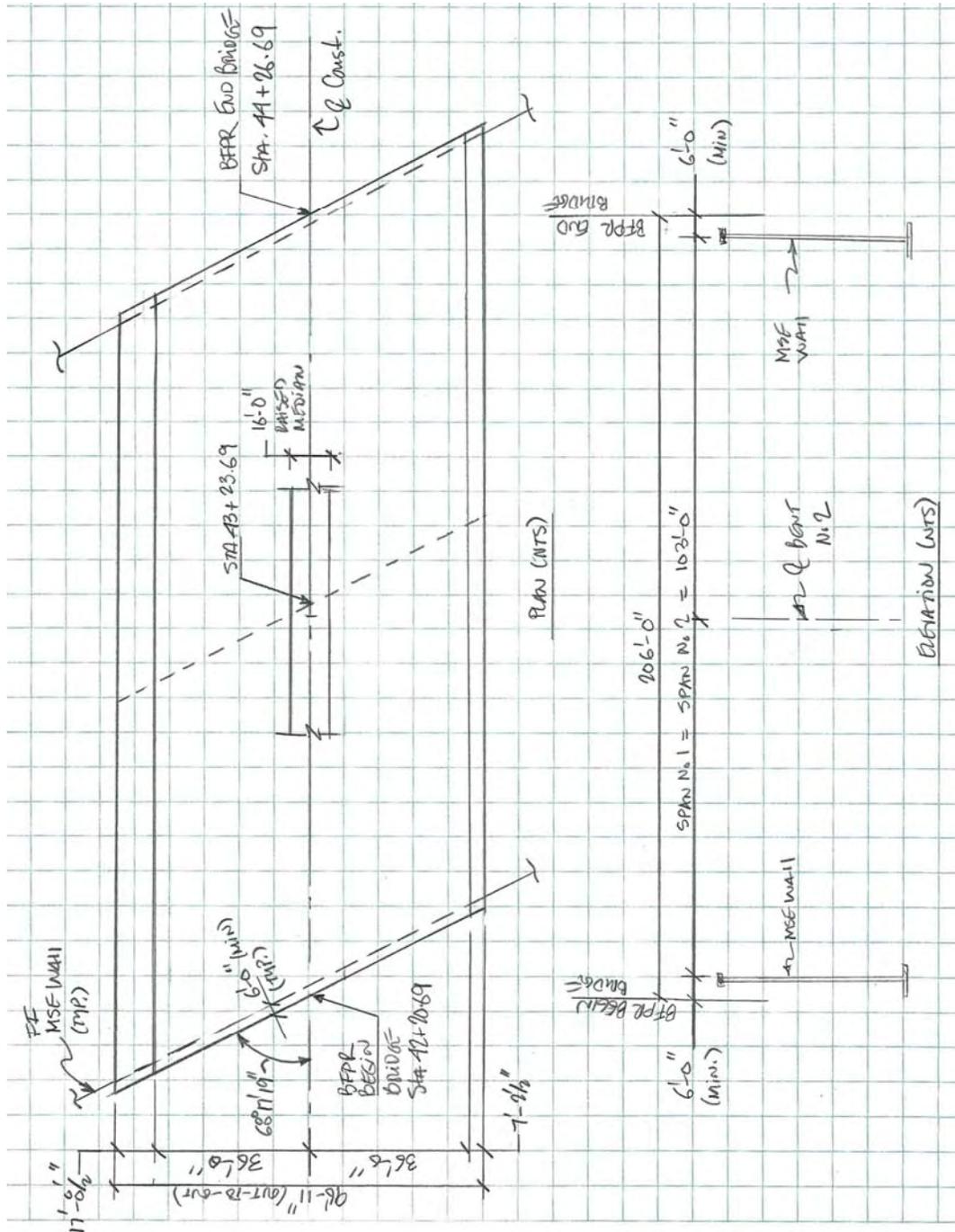


PROJECT: Georgia Department of Transportation
 CSSTP-0007-00(414)) – P.I. No. 0007414
 CR90/Colerain Road from I-95 to Kings Bay Road
 Camden County

ALTERNATIVE NO.:
BR-1

DESCRIPTION: Use a two span bridge with MSE walls

SHEET NO.: 2 of 4



Calculations



PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
BR-1

DESCRIPTION: Use a two span bridge with MSE walls

SHEET NO.: 3 of 4

BRIDGE COST AS PROPOSED

$$\text{BRIDGE LENGTH} = 293'-0''$$

$$\text{BRIDGE WIDTH} = 96'-11''$$

$$\text{BRIDGE AREA} = 28,396.58 \text{ sf}$$

$$\text{ASSUMED } \$/\text{SF} = \$100/\text{SF}$$

BRIDGE COST FOR BR-1

$$\text{BRIDGE LENGTH} = 206'-0''$$

$$\text{BRIDGE WIDTH} = 96'-11''$$

$$\text{BRIDGE AREA} = 19,961.83 \text{ sf}$$

$$\text{ASSUMED } \$/\text{SF} = \$110/\text{SF} \text{ (ADDING EXTRA DUE TO MSE WALLS)}$$

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	BR-1
DESCRIPTION:	Use a two span bridge with MSE walls	SHEET NO.:	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Bridge Deck Area	SF	28,397	\$ 100.00	\$ 2,839,658	19,965	\$ 110.00	\$ 2,196,131
Sub-total				\$ 2,839,658			\$ 2,196,131
Mark-up at 10.00%				\$ 283,966			\$ 219,613
TOTAL				\$ 3,123,624			\$ 2,415,744

Estimated Savings: \$707,879

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414)) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	BR-2
DESCRIPTION:	Reduce multi-use trail from 16'-6" to 12'-0"	SHEET NO.:	1 of 4

Original Design:

The original design calls for a four span (48'-0", 98'-6", 98'-6", 48'-0") bridge structure to cross over I-95. The 293'-0" long bridge will have a CIP superstructure supported by 11- PSC 54" Bulb Tees beams spaced at 9'-0". The overall out-to-out width is 96'-11" and it will provide two sidewalks (6'-0" and 16'-6"), four-12'-0" traffic lanes (two on each direction), one 16'-0" inside median and two 2'-0" shoulders. The bridge will be on a 68°-17'-19" skew. All bents are parallel.

Alternative:

The alternative calls for the reduction in width for the Multi-Use Trail from 16'-6" to 12'-0". The 293'-0"-0" long bridge will have a CIP superstructure supported by 11- PSC 54" Bulb Tees beams spaced at 8'-9". The overall out-to-out width is 92'-5" and it will provide two sidewalks (6'-0" and 12'-0"), four-12'-0" traffic lanes (two each direction), one 16'-0" inside median and two 2'-0" shoulders. The bridge will be on a 68°-17'-19" skew. All bents are parallel.

Opportunities:

- Potential saving in construction cost
- Reduced beam spacing
- Same stage construction

Risks:

- Minimum design effort

Technical Discussion:

The proposed alternative will reduce the overall bridge width from 96'-11" to 92'-5".

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,123,624	\$ 0	\$3,123,624
ALTERNATIVE	\$ 2,978,589	\$ 0	\$2,978,589
SAVINGS	\$ 145,035	\$ 0	\$145,035

Illustration

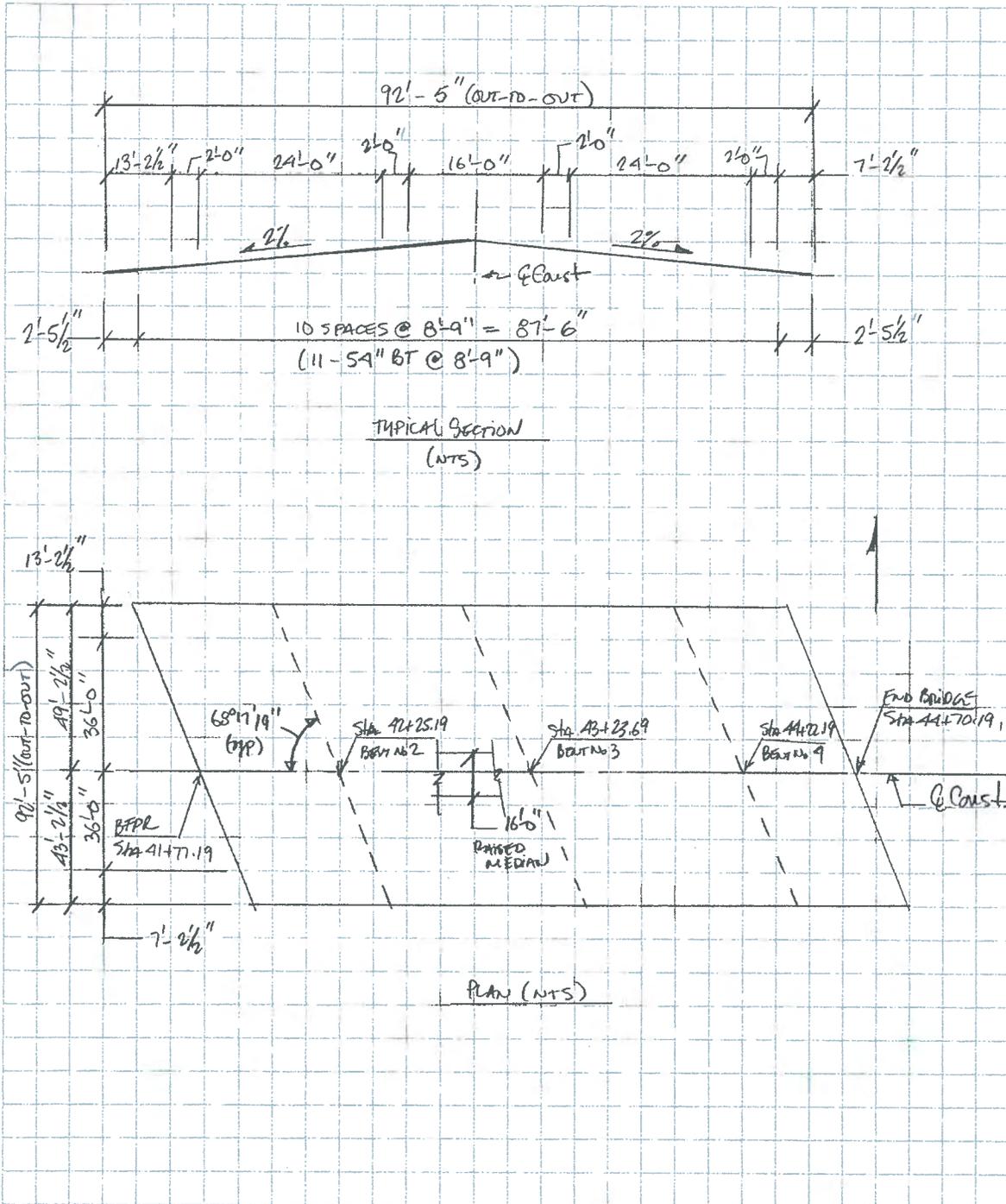


PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
BR-2

DESCRIPTION: **Reduce multi-use trail from 16'-6" to 12'-0"**

SHEET NO.: **2 of 4**



Calculations



PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:

BR-2

DESCRIPTION: Reduce multi-use trail from 16'-6" to 12'-0"

SHEET NO.: 3 of 4

BRIDGE AS PROPOSED

$$\text{BRIDGE AREA} = 28,396.53 \text{ SF}$$

$$\text{ASSUMED } \$/\text{SF} = \$100/\text{SF}$$

BRIDGE COST FOR BR-2

$$\text{BRIDGE LENGTH} = 293'-0"$$

$$\text{BRIDGE WIDTH} = 92'-5"$$

$$\text{BRIDGE AREA} = 27,078.08 \text{ SF}$$

$$\text{ASSUMED } \$/\text{SF} = \$100/\text{SF}$$

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	BR-3
DESCRIPTION:	Use twin bridges	SHEET NO.:	1 of 4

Original Design:

The original design calls for a four span (48'-0", 98'-6", 98'-6", 48'-0") bridge structure to cross over I-95. The 293'-0" long bridge will have a CIP superstructure supported by 11- PSC 54" Bulb Tees beams spaced at 9'-0". The overall out-to-out width is 96'-11" and it will provide two sidewalk (6'-0" and 16'-6"), four-12'-0" traffic lanes (two on each direction), one 16'-0" inside median and two 2'-0" shoulders. The bridge will be on a 68° - 17'-19" skew. All bents are parallel.

Alternative:

The alternative calls for two four span (48'-0", 98'-6", 98'-6", 48'-0") twin bridge structures to cross over I-95. The North bridge will have an overall out-to-out width of 46'-10" and it will provide a sidewalk (12'-0"), two-12'-0" traffic lanes and two 2'-0" shoulders. A total of 6-54" Bulb Tees spaced at 8'-0" will support the CIP superstructure. The South bridge will have an overall out-to-out width of 36'-10" and it will provide a sidewalk (6'-0"), two-12'-0" traffic lanes and two 2'-0" shoulders. A total of 5-54" Bulb Tees spaced at 8'-0" will support the CIP superstructure. Both bridges will be on a 68°-17'-19" skew. All bents are parallel.

Opportunities:

- Potential saving in construction cost
- Reduction in deck thickness
- Smaller beam spacing
- Use of lower concrete strength for beams
- Eliminates Stage III Construction
- Better bridge construction sequence
- No need for temporary barriers
- Lower pile loads

Risks:

- Using more beams
- Two individual bridges
- Future widening might require construction in between bridges

Technical Discussion:

The use of twin bridges will provide saving in construction cost. The use of twin bridges will eliminate the need of the 16'-0" raised median and temporary barriers. Additionally, this alternative calls for the reduction in width for the multi-use trail from 16'-6" to 12'-0" (North Bridge).

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,123,624	\$ 0	\$3,123,624
ALTERNATIVE	\$ 2,567,656	\$ 0	\$2,567,656
SAVINGS	\$ 555,968	\$ 0	\$555,968

Illustration

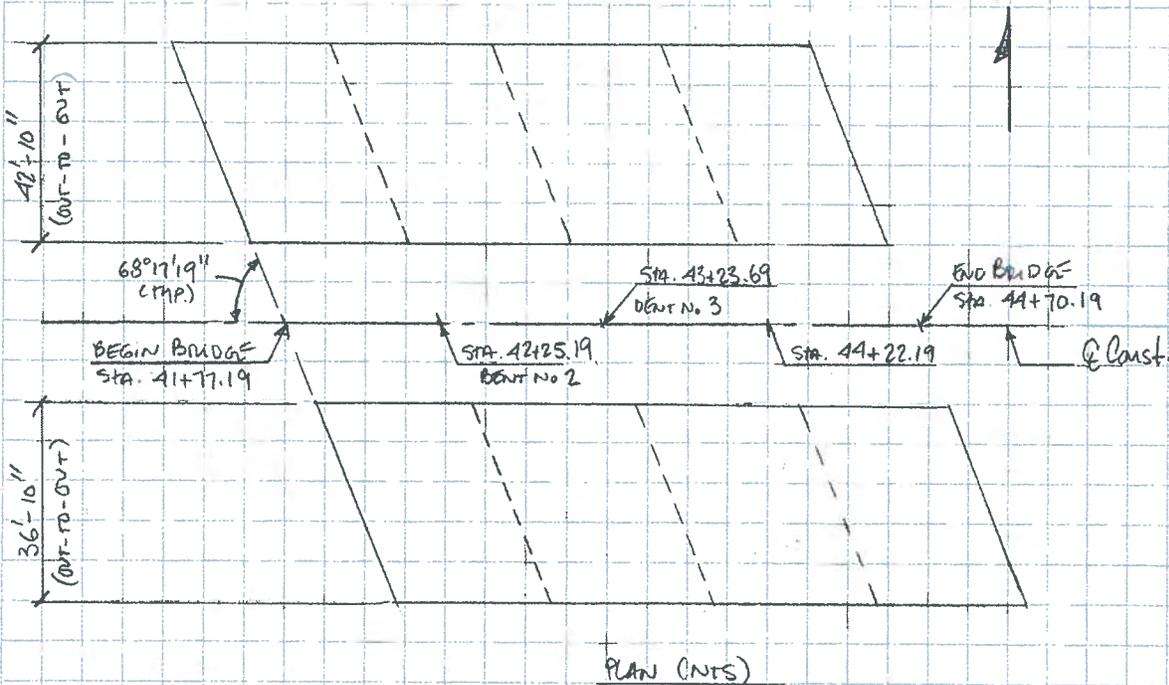
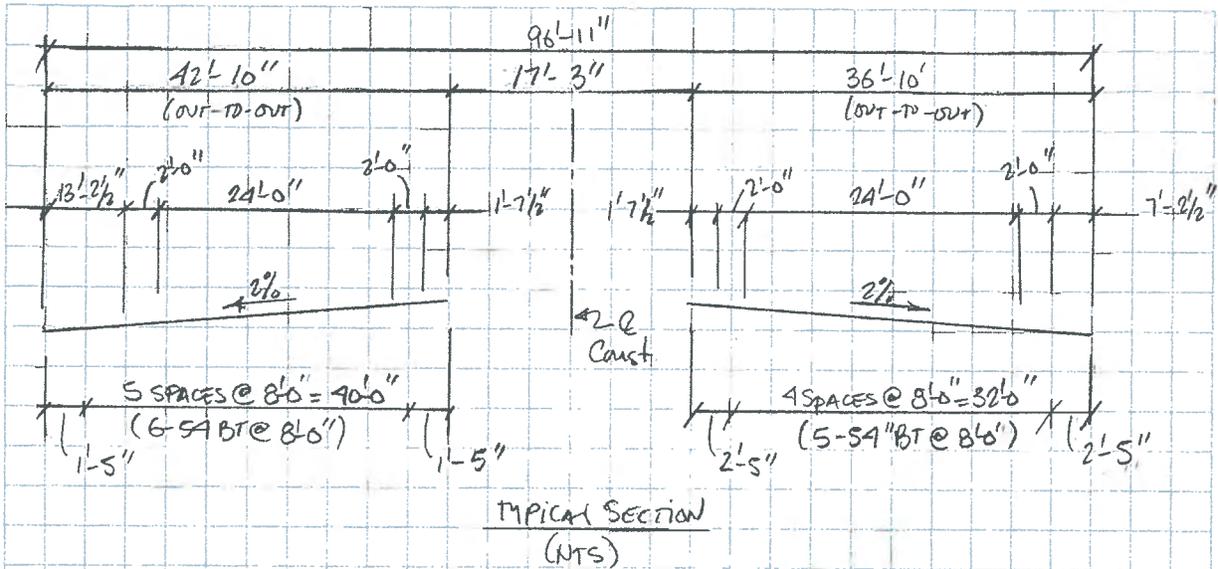


PROJECT: Georgia Department of Transportation
 CSSTP-0007-00(414) – P.I. No. 0007414
 CR90/Colerain Road from I-95 to Kings Bay Road
 Camden County

ALTERNATIVE NO.:
BR-3

DESCRIPTION: Use twin bridges

SHEET NO.: 2 of 4



Calculations



PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
BR-3

DESCRIPTION: Use twin bridges

SHEET NO.: 3 of 4

BRIDGE AS PROPOSED

$$\text{BRIDGE AREA} = 28,396.58 \text{ SF}$$

$$\text{ASSUMED } \$/\text{SF} = \$100/\text{SF}$$

BRIDGE COST FOR BR-3

$$\text{NORTH BRIDGE LENGTH} = 293'-0''$$

$$\text{WIDTH} = 42'-10''$$

$$\text{AREA} = 12,550.167 \text{ SF}$$

$$\text{SOUTH BRIDGE LENGTH} = 293'-0''$$

$$\text{WIDTH} = 36'-10''$$

$$\text{AREA} = 10,792.167 \text{ SF}$$

$$\text{TOTAL AREA} = 23,342.33$$

$$\text{ASSUMED } \$/\text{SF} = \$100/\text{SF}$$

Cost Worksheet



PROJECT: Georgia Department of Transportation
 CSSTP-0007-00(414) - P.I. No. 0007414
 CR90/Colerain Road from I-95 to Kings Bay
 Road
 Camden County

ALTERNATIVE NO.:

BR-3

DESCRIPTION: Use twin bridges

SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Bridge Deck Area	SF	28,397	\$ 100.00	\$ 2,839,658	23,342	\$ 100.00	\$ 2,334,233
Sub-total				\$ 2,839,658			\$ 2,334,233
Mark-up at 10.00%				\$ 283,966			\$ 233,423
TOTAL				\$ 3,123,624			\$ 2,567,656

Estimated Savings: \$555,968

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
DR-1

DESCRIPTION: **Eliminate the Reverse Crown**

SHEET NO.: **1** of **1**

Original Design: Utilize reverse crown at extensions to existing cross drains structures

The original design calls for transitioning the normal crown section to a reverse crown section at extensions to existing cross drain pipes to get adequate clearance. Doing this will require additional drainage considerations at the curbed median.

Alternative: Eliminate the transition to reverse crown and keep the normal crown section over existing cross drain structures

The alternative would extend existing cross drain with an arch pipe, which has less rise height and would provide adequate cover to the normal crown section. Another method to achieve adequate cover with the normal crown section is to design an independent profile for the westbound profile that is raised over the cross drain extensions.

Opportunities:

- Maintain normal crown in tangent roadway
- Eliminate undesirable transition to reverse crown
- Eliminate drainage to the median

Risks:

- Minimal revisions to profile grade design
- Requires additional earthwork costs
- Creates roadway bifurcation

Technical Discussion:

The transition to a reverse crown section in a tangent roadway is undesirable and can cause drainage problems. The transitions are located in an area with very flat longitudinal grades. The transition introduces additional areas with flat lateral or cross slopes. The combination of flat longitudinal and flat cross slopes creates potential drainage problems and will require extreme care in the hydraulic design and construction. This can be avoided by utilizing either of the following:

1. Extend existing cross drain pipes with arch pipe. Arch pipes have reduced heights and would allow for adequate pipe cover to a normal crown section. Arch pipe has the additional benefit of better low-flow performance.
2. Design an independent profile grade for a section of the westbound roadway. This profile can be raised to achieve minimum cover requirements over the cross drain extensions.

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414)) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	DR-2
DESCRIPTION:	Modify or replace Box Culverts and utilize existing pavement from 265+00 to 295+00.	SHEET NO.:	1 of 3

Original Design:

The original design calls for removing the existing pavement and reconstructing new full depth pavement at a higher elevation to provide adequate cover over the existing box culverts. This applies from Sta. 265+00 to 295+00.

Alternative:

The alternative is to replace the existing box culverts with hydraulically-equivalent multiple pipes that are shallow enough to allow for retaining the existing roadway. The existing pavement from Sta. 265+00 to 295+00 can be retained and widened as necessary.

Opportunities:

- Reduce amount of new pavement construction and costs
- Reduce earthwork costs
- Reduces time of construction

Risks:

- Moderate effort to redesign profile
- New design of roadway pipe culvert

Technical Discussion:

The information from the presentation and the project documentation does not state that the roadway needs to be raised for specific design reasons. The raising of the roadway was only to obtain adequate clearance over the existing box culverts. By replacing the 5' x 4' RCBC with hydraulically-equivalent pipes, (such as dbl. line of 56" x 42" arch RCP or tpl. line of 36" RCP), adequate cover over the pipe could be achieved and the existing roadway pavement retained.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 449,632	\$ 0	\$ 449,632
ALTERNATIVE	\$ 334,262	\$ 0	\$ 334,262
SAVINGS	\$ 115,371	\$ 0	\$ 115,371

Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
DR-2

DESCRIPTION: **Modify or replace box culverts and utilize existing
pavement from Station 265+00 to Station 295+00**

SHEET NO.: **2** of **3**

Original Design

Remove 3000' of existing pavement, reconstruct 3000' of new full-depth pavement at higher elevation.

Earthwork-

Assume to be 1.5' above existing pavement = $1.5' \times 3000' \times 40' \text{ width} = 180,000 \text{ cf} = 6,700 \text{ cy}$

Pavement for Eastbound Roadway

Mainline = $3000' \times 24' \text{ wide} = 72,000 \text{ sf} = 8,000 \text{ sy}$

RAC 12.5MM Superpave = $8,000 \text{ sy} \times 165 \text{ lbs/sy} = 1,320,000 \text{ lbs} = 660 \text{ tons}$

RAC 19 MM Superpave = $8,000 \text{ sy} \times 220 \text{ lbs/sy} = 1,760,000 \text{ lbs} = 880 \text{ tons}$

RAC 25mm Superpave = $8,000 \text{ sy} \times 440 \text{ lbs/sy} = 3,520,000 \text{ lbs} = 1,760 \text{ tons}$

GAB = $72,000 \text{ sf} \times 10''/12 = 60,000 \text{ cf} = 2,250 \text{ cy}$

Box Culvert Extension

Assume 2.0 CY Concrete / lin.ft.

Total length of extensions = $70' + 70' = 140' = 140' \times 2.0 = 280 \text{ cy}$

Alternative

Remove the two existing 5'x4' RCBC and replace with hydraulically-equivalent multiple pipes

Earthwork-

Since the existing pavement was matched, no additional earthwork was assumed

Pavement for Eastbound Roadway

Assume average widening width of 7'

Mainline Widening = $3000' \times 7' \text{ wide} = 21,000 \text{ sf} = 2,300 \text{ sy}$

RAC 12.5MM Superpave = $8,000 \text{ sy} \times 165 \text{ lbs/sy} = 1,320,000 \text{ lbs} = 660 \text{ tons}$

RAC 19 MM Superpave = $2,300 \text{ sy} \times 220 \text{ lbs/sy} = 506,000 \text{ lbs} = 253 \text{ tons}$

RAC 25mm Superpave = $2,300 \text{ sy} \times 440 \text{ lbs/sy} = 1,012,000 \text{ lbs} = 506 \text{ tons}$

RAC Leveling = assumed 1.5" avg = $1.5''/12 \times 72,000 \text{ sf} = 9,000 \text{ cf} = 330 \text{ cy} = 670 \text{ tons}$

GAB = $21,000 \text{ sf} \times 10''/12 = 17,500 \text{ cf} = 650 \text{ cy}$

Mill Asphalt Concrete = 8,000 sy

Box Culvert Removal

Length of removal = $50' + 50' = 140'$

Required Cross Drain

Assume replacement pipe double line of 54" x 42" Arch pipe with safety end sections

Length of new pipe = $120' \times 2 \times 2 = 480'$

Safety End Sections = $2 \times 2 \times 2 = 8$

(Outside shoulder and C & G at median are same for both designs)

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	DR-2
DESCRIPTION:	Modify or replace box culverts and utilize existing pavement from Sta. 265+00 to 295+00	SHEET NO.:	3 of 3

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Unclassified Excavation	CY	6,700	\$ 5.00	\$ 33,500			\$ -
RAC 12.5MM Superpave	TN	660	\$ 62.42	\$ 41,197	660	\$ 62.42	\$ 41,197
RAC 19MM Superpave	TN	880	\$ 81.96	\$ 72,125	253	\$ 81.96	\$ 20,736
RAC 12.5MM Superpave	TN	1,760	\$ 62.68	\$ 110,317	506	\$ 62.68	\$ 31,716
GAB	TN	2,250	\$ 20.50	\$ 46,125	650	\$ 20.50	\$ 13,325
RAC Leveling	TN				670	\$ 110.00	\$ 73,700
Cl.A Concrete - Culvert	CY	280	\$ 376.76	\$ 105,493			\$ -
Box Culvert Removal	LS			\$ -	2	\$ 2,000.00	\$ 4,000
Storm Drain Pipe, 54" x 42"	LF			\$ -	480	\$ 115.00	\$ 55,200
Safety End Section 54" x 42"	EA			\$ -	12	\$ 2,000.00	\$ 24,000
Mill Asph Concrete	SY			\$ -	8000	\$ 5.00	\$ 40,000
Sub-total				\$ 408,757			\$ 303,874
Mark-up at 10.00%				\$ 40,876			\$ 30,387
TOTAL				\$ 449,632			\$ 334,262
Estimated Savings:							\$115,371

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414)) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	DR-3
DESCRIPTION:	Slope urban section shoulders away from roadway to reduce earthwork and drainage	SHEET NO.:	1 of 4

Original Design: Utilize standard urban section shoulders sloped to the curb and gutter.

The original design utilizes the standard design with both urban section shoulders sloped to drain to the curb and gutter section.

Alternative: Revise the slope of the fill shoulder to drain away from the roadway.

The alternative allows drainage away from the curb and gutter to more closely match the existing natural patterns.

Opportunities:

- Reduce earthwork
- Reduce drainage requirements
- Reduce point discharges

Risks:

- Non-standard roadway section

Technical Discussion:

The current natural drainage pattern allows sheet flow off of the roadway. The original design will modify the natural pattern by capturing flow in catch basin and release concentrated flows at new discharge points. Allowing the shoulder to sheet flow away from the roadway, will more closely match the existing drainage patterns and will reduce the amount of concentrated flow in the closed systems by up to 25% being discharged to new points.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 130,310	\$ 0	\$ 130,310
ALTERNATIVE	\$ 0	\$ 0	\$ 0
SAVINGS	\$ 130,310	\$ 0	\$ 130,310

Illustration

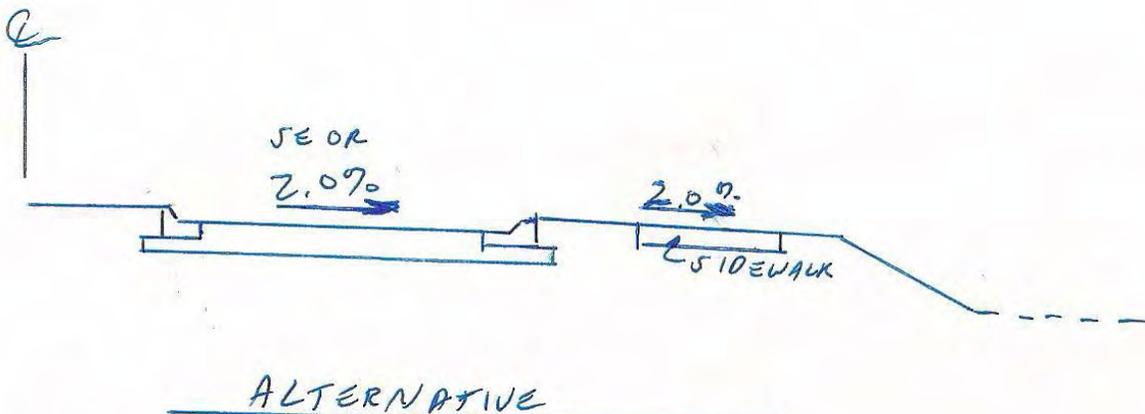
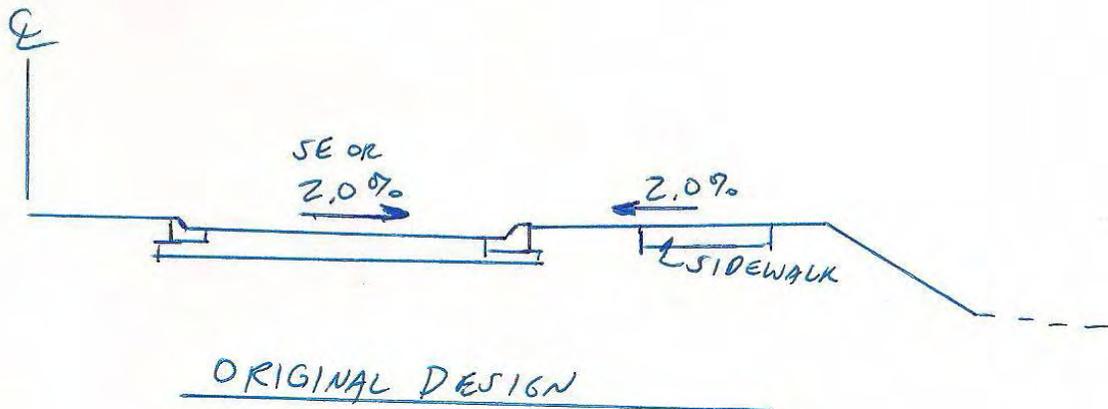


PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
DR-3

DESCRIPTION: Slope urban section shoulders away from roadway to
reduce earthwork and drainage

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
DR-3

DESCRIPTION: **Slope urban section shoulders away from roadway to
reduce earthwork and drainage**

SHEET NO.: **3** of **4**

Original Design

The standard Urban Section shoulder slopes to the C&G.

Alternative

The shoulder section slopes away from the roadway.

Reduced Earthwork

Difference in elevation at hinge point = $17.5' \times 2.0\% \times 2 = 0.70'$

Assume 75% of shoulders on project are fill shoulders

Approximately 22,000 length of project as Urban Section

Assumed average width of earthwork = 10'

Reduced earthwork = $22,000' \text{ length} \times 2 \times 0.75 \times 10' \text{ width} \times 0.70' \text{ depth} = 330,000 \text{ cf} = 12,200 \text{ cy}$

Reduced Drainage required

Approximately 25% reduction of flow within the Urban Section. This requires fewer catch basins to remove surface runoff.

Assume a 20% reduction in the amount of catch basins needed.

Total estimated Catch Basins = 110 ea.

Reduced Catch Basins = $110 \times 0.20 = 22$ each

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-2

DESCRIPTION: **Utilize a 4' paved shoulder in the rural section**

SHEET NO.: **1** of **4**

Original Design:

The original design provides a 6'-6" paved shoulder from Station 251+00 to Station 324+50

Alternative:

The alternative design would provide a 4'-0" paved shoulder from Station 251+00 to Station 324+50

Opportunities:

- Reduces paving costs

Risks:

- Less paved area for bike and pedestrian traffic

Technical Discussion:

AASHTO Policy on Geometric Design of Highways and Streets would allow the use of a 4' shoulder. This would be the minimum to accommodate bike traffic as outlined On Page 16 of AASHTO's guide for development of bicycle facilities. Since the subject road is a "low speed" facility and classified as a Minor Rural Arterial the use of rumble strips on the shoulders would not be required.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 328,504	\$ 0	\$ 328,504
ALTERNATIVE	\$ 202,176	\$ 0	\$ 202,176
SAVINGS	\$ 126,328	\$ 0	\$ 126,328

Illustration

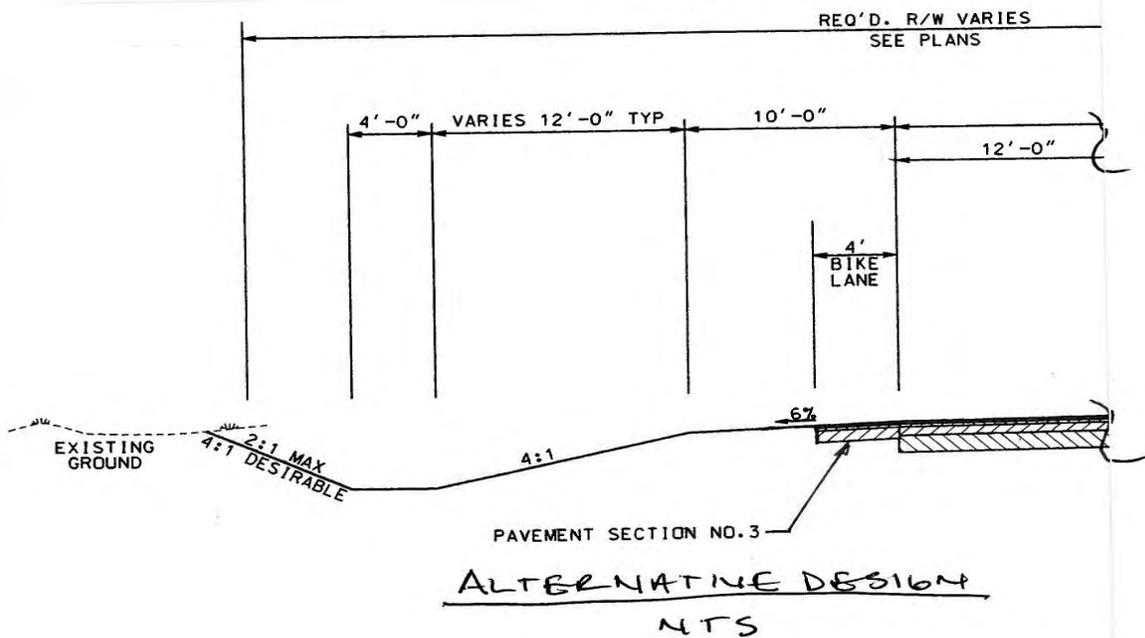
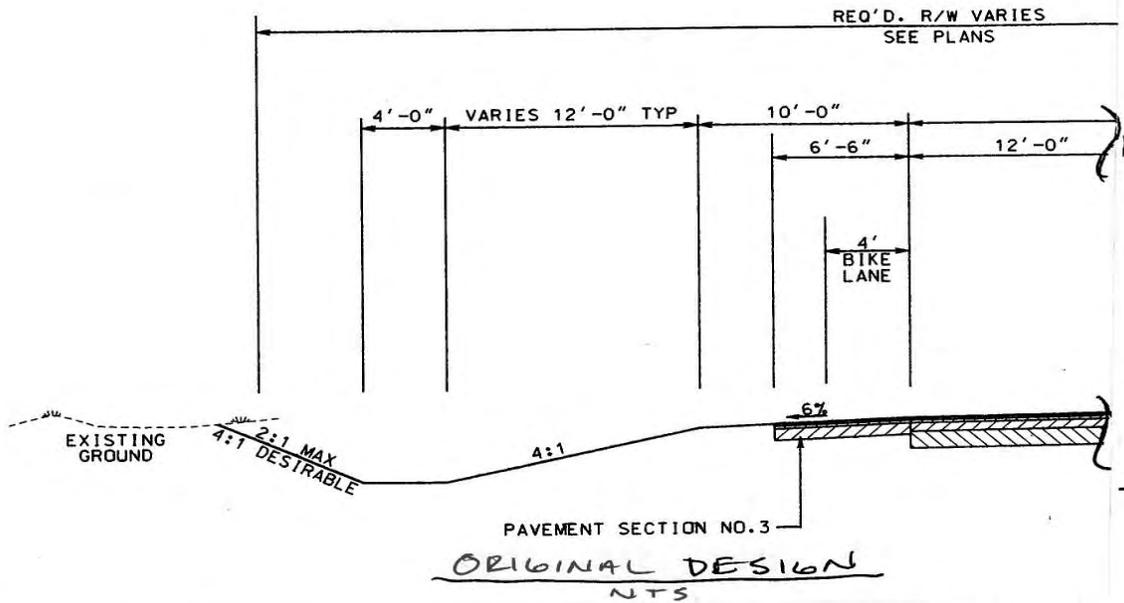


PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
RD-2

DESCRIPTION: Utilize a 4' paved shoulder in the rural section

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-2

DESCRIPTION: **Utilize a 4' paved shoulder in the rural section**

SHEET NO.: **3** of **4**

Station 251+00 to Station 324+50 = 7,350 LF

Length of the roadway = 7,350 LF,

Original 6.5' shoulders

Total Area of Paved Shoulder = $(7,350 \text{ LF} \times 13.0') / (9 \text{ SF} / \text{SY}) = 10,616.7 \text{ SY} \Rightarrow 10,617 \text{ SY}$

Superpave 12.5mm = $[10,617 \text{ SY} * 165\#/\text{SY-IN} (2000\#/\text{Ton})] \Rightarrow 876 \text{ TN}$

Superpave 19.0mm = $[10,617 \text{ SY} * 220\#/\text{SY-IN} (2000\#/\text{Ton})] \Rightarrow 1,168 \text{ TN}$

8" GAB = 10,617 SY

Alternative 4.0' shoulders

Total Area of Paved Shoulder = $(7,350 \text{ LF} \times 8.0') / (9 \text{ SF} / \text{SY}) = 6533.3 \text{ SY} \Rightarrow 6534 \text{ SY}$

Superpave 12.5mm = $[6534 \text{ SY} * 165\#/\text{SY-IN} (2000\#/\text{Ton})] \Rightarrow 539 \text{ TN}$

Superpave 19.0mm = $[6534 \text{ SY} * 220\#/\text{SY-IN} (2000\#/\text{Ton})] \Rightarrow 719 \text{ TN}$

8" GAB = 6534 SY

Cost Worksheet



PROJECT: **Georgia Department of Transportation** ALTERNATIVE NO.:
CSSTP-0007-00(414) - P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay **RD-2**
Road
Camden County

DESCRIPTION: **Utilize a 4' paved shoulder in the rural section** SHEET NO.: **4 of 4**

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
G.A.B. 8"	SY	10,617	\$ 15.32	\$ 162,652	6,534	\$ 15.32	\$ 100,101
12.5mm Superpave	TN	876	\$ 64.41	\$ 56,423	539	\$ 64.41	\$ 34,717
19.0mm Superpave	TN	1,168	\$ 68.12	\$ 79,564	719	\$ 68.12	\$ 48,978
Sub-total				\$ 298,640			\$ 183,796
Mark-up at 10.00%				\$ 29,864			\$ 18,380
TOTAL				\$ 328,504			\$ 202,176

Estimated Savings: \$126,328

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-3

DESCRIPTION: **Reconstruct ramps as a Tight Urban Diamond**

SHEET NO.: **1** of **4**

Original Design:

The original design provides for completely reconstructing the existing ramps with concrete pavement.

Alternative:

The alternative design would propose reconstructing the interchange as a Tight Urban Diamond.

Opportunities:

- Reduced paving costs
- Simplified construction sequencing
- Reduced Right-of-Way acquisition

Risks:

- Major re-design effort
- Increased bridge cost

Technical Discussion:

By reconstructing the ramps as a Tight Urban Diamond this will simplify the construction sequencing. Moving the ramps will result in improved intersection spacing and eliminate the necessity to relocate Brazell Road, Access Road and Service Road #2.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,485,187	\$ 0	\$ 1,485,187
ALTERNATIVE	\$ 390,720	\$ 0	\$ 390,720
SAVINGS	\$ 1,094,467	\$ 0	\$ 1,094,467

Illustration

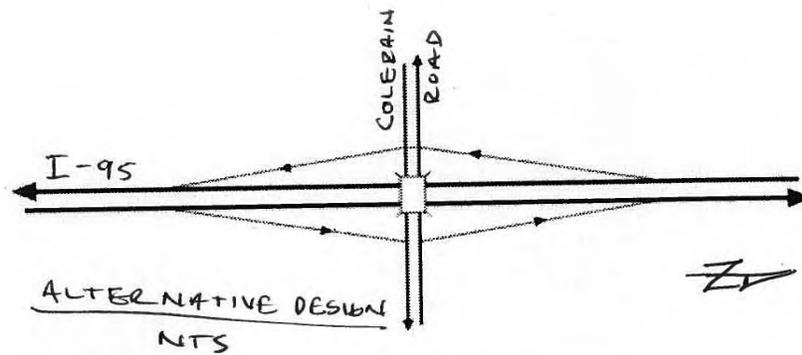
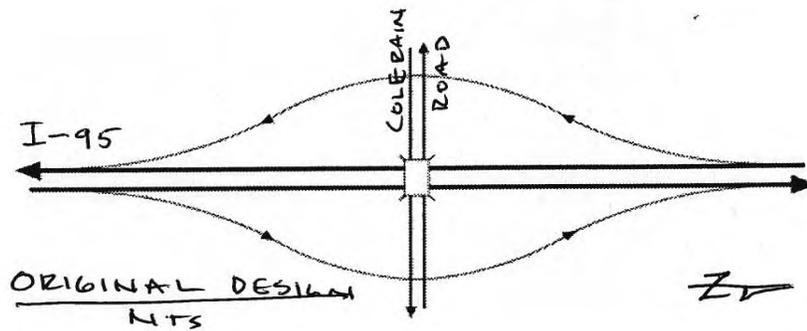


PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
RD-3

DESCRIPTION: Reconstruct ramps as a Tight Urban Diamond

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-3

DESCRIPTION: **Reconstruct ramps as a tight urban diamond**

SHEET NO.: **3** of **4**

It was assumed the ramp reconstruction cost would be approximately the same. While the TUDI will require additional guardrail and borrow material it will result in slightly shorter ramps and reduced cost due to simpler construction sequencing. These costs should offset each other.

Access Road 'A' – $(700LF \times 32') / (9 SF / SY) \Rightarrow 2,489 SY$

Access Road 'B' – $[(375LF \times 32') + (100LF \times 38') + (200' \times 44')] / (9 SF / SY) \Rightarrow 2,734 SY$

Brazell Road – $[(1,350LF \times 46') + (200LF \times 32')] / (9 SF / SY) \Rightarrow 7,612 SY$

Brazell Lane – $(770LF \times 32') / (9 SF / SY) \Rightarrow 2,738 SY$

Service Road #2 – $(1,000LF \times 32') / (9 SF / SY) \Rightarrow 3,556 SY$

Total $\Rightarrow 19,129 SY$

Assumed build-up for side roads

Superpave 12.5mm = $[19,129 SY \times 165\#/SY-IN (2000\#/Ton)] \Rightarrow 1,578 TN$

Superpave 19.0mm = $[19,129 SY \times 220\#/SY-IN (2000\#/Ton)] \Rightarrow 2,104 TN$

10" GAB = 19,129 SY

Additional bridge cost 12' x 296' = 3552 SF

Right of Way

Service Road #2

830' x 60' = 49,600 SF

49,800 sf x \$1.50/sf \Rightarrow \$74,700

Right of way: Net cost	= \$74,700
Scheduling @ 55%	= \$41,085
Court cost @ 60%	= \$44,820
Total	= \$160,605

Brazell Road 7,920 sf x \$1.50/sf \Rightarrow \$11,880

Right of way: Net cost	= \$11,880
Scheduling @ 55%	= \$6,534
Court cost @ 60%	= \$7,128
Total	= \$25,542

Brazell Road Relocated 1320' x 80' = 105,600 sf

105,600 sf x \$1.50/sf \Rightarrow \$158,400

Right of way: Net cost	= \$158,400
Scheduling @ 55%	= \$87,120
Court cost @ 60%	= \$95,040
Total	= \$340,560

Access Rd. 1030' x 80' = 82,400 sf

82,400 sf x \$1.50/sf \Rightarrow \$123,600

Right of way: Net cost	= \$123,600
Scheduling @ 55%	= \$67,980
Court cost @ 60%	= \$74,160
Total	= \$265,740

Total Cost: \$792,447

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:
		RD-3
DESCRIPTION:	Reconstruct ramps as a Tight Urban Diamond	SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
G.A.B. 10"	SY	19,129	\$ 16.35	\$ 312,759	0	\$ 15.32	\$ -
12.5mm Superpave	TN	1,578	\$ 64.41	\$ 101,639	0	\$ 64.41	\$ -
19.0mm Superpave	TN	2,104	\$ 68.12	\$ 143,324	0	\$ 68.12	\$ -
Bridge	SF	0	\$ 100.00	\$ -	3,552	\$ 100.00	\$ 355,200
Right-of -Way	LS	1	\$ 792,447.00	\$ 792,447	0		\$ -
Sub-total				\$ 1,350,170			\$ 355,200
Mark-up at 10.00%				\$ 135,017			\$ 35,520
TOTAL				\$ 1,485,187			\$ 390,720
Estimated Savings:							\$1,094,467

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414)) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	RD-12
DESCRIPTION:	Utilize the rural typical section from Station 186+21 to Station 251+00	SHEET NO.:	1 of 4

Original Design:

The original design provides a 6'-6" a curb and gutter section from Station 20+00 to Station 251+00

Alternative:

The alternative design would propose a rural section for the section from Station 186+21 to Station 251+00.

Opportunities:

- Reduce overall drainage costs
- Reduce point discharges
- Reduce ponding on the roadway
- Reduced earthwork

Risks:

- Moderate to Major redesign effort
- Less separation of pedestrian traffic

Technical Discussion:

It appears the rural typical section could be extended to the current project on Colerain Road in the vicinity of Marsh Harbor Parkway with positive effects. The only real area of concern is in the vicinity of the trees that need to be preserved and this could be accommodated by simply widening all to the north and utilizing a portion of the existing pavement as the shoulder.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,208,331	\$ 0	\$ 1,208,331
ALTERNATIVE	\$ 422,964	\$ 0	\$ 422,964
SAVINGS	\$ 785,367	\$ 0	\$ 785,367

Illustration

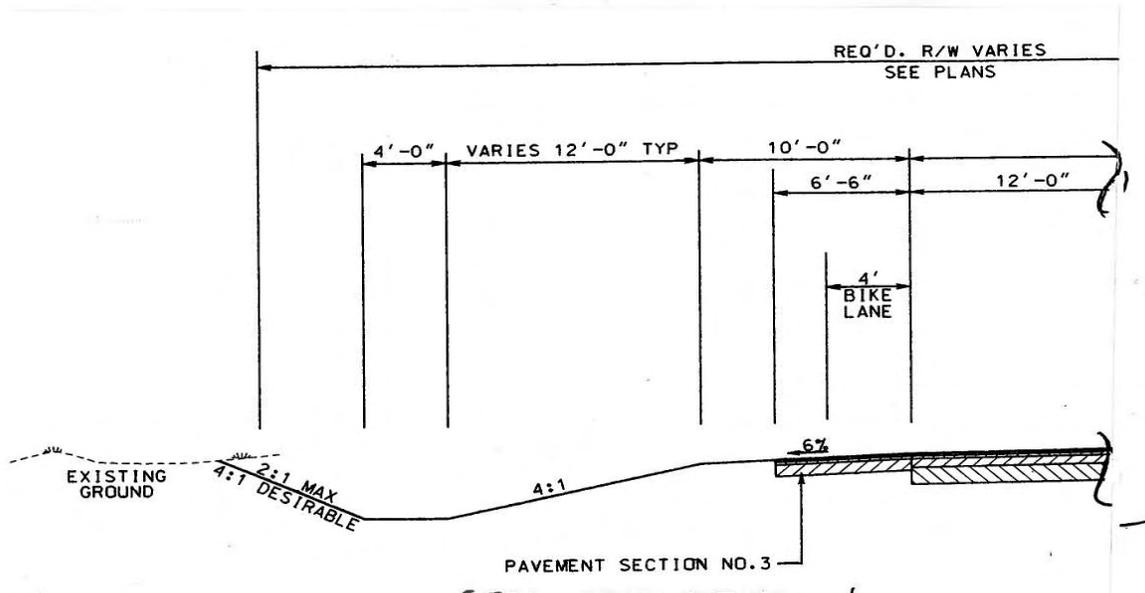


PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
RD-12

DESCRIPTION: Utilize the rural typical section from Station 186+21 to
Station 251+00

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-12

DESCRIPTION: **Utilize the rural typical section from Station 186+21 to
Station 251+00**

SHEET NO.: **3** of **4**

Station 186+21 to Station 251+00 = 6,479 LF

Assume percentage of total curb closed drainage system cost for proposed section => 6,479' / 21,390' => 30%

Original design:

Curb & Gutter	= 2 x 6,479 LF	=> 12,958 LF
Catch Basin	= .30 x 343 EA	=> 103 EA
Drop Inlets	= .30 x 30 EA	=> 9 EA
Safety Grates	= .30 x 838 EA	=> 251 EA
18" RCP	= .30 x 25,500	=> 7,650 LF
24" RCP	= .30 x 8,800	=> 2,640 LF
30" RCP	= .30 x 2700	=> 810 LF
Sidewalk and multi-use trail	= [(10.0' + 5.0') x (6479 lf)] / 9SF/SY	=> 11,248 SY

Alternative design:

Assume eastbound widening will be full depth

Eastbound (6,479 LF x 9.5') / (9 SF/SY) => 6,839 SY

Westbound (6,479 LF x 4.0') / (9 SF/SY) => 2,880 SY

Superpave 12.5mm	= [(6,839 SY + 2,880 SY) x 165#/SY-IN / (2000#/Ton)]	=> 802 TN
Superpave 19.0mm	= [(6,839 SY + 2,880 SY) x 220#/SY-IN / (2000#/Ton)]	=> 1,069 TN
Superpave 25.0mm	= [6,839 SY x 440 #/SY-IN / (2000#/Ton)]	= >1,505 TN
8" GAB	= 6,839 SY	
10" GAB	= 2,880 SY	

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Rd from I-95 to Kings Bay Rd Camden County	ALTERNATIVE NO.:	RD-12
DESCRIPTION:	Utilize the rural typical section from Station 186+21 to Station 251+00	SHEET NO.:	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Concrete Sidewalk 4"	SY	11,248	\$ 32.12	\$ 361,286	0		\$ -
12.5mm Superpave	TN	0	\$ 64.41	\$ -	802	\$ 64.41	\$ 51,657
19.0mm Superpave	TN	0	\$ 68.12	\$ -	1,069	\$ 68.12	\$ 72,820
25.0mm Superpave	TN	0	\$ 60.01	\$ -	1,505	\$ 60.01	\$ 90,315
G.A.B. 8"	SY	0	\$ 15.67	\$ -	6,839	\$ 15.67	\$ 107,167
G.A.B. 10"	SY	0	\$ 21.72	\$ -	2,880	\$ 21.72	\$ 62,554
Catch Basins	EA	103	\$ 2,481.45	\$ 255,589	0	\$ 2,481.45	\$ -
Drop inlets	EA	9	\$ 2,410.48	\$ 21,694	0	\$ 2,410.48	\$ -
Safety Grates	EA	251	\$ 50.00	\$ 12,550	0	\$ 50.00	\$ -
18" RCP	LF	7,650	\$ 37.73	\$ 288,635	0	\$ 37.73	\$ -
24" RCP	LF	2,640	\$ 43.32	\$ 114,365	0	\$ 43.32	\$ -
30" RCP	LF	810	\$ 54.77	\$ 44,364	0	\$ 54.77	\$ -
Sub-total				\$ 1,098,482			\$ 384,513
Mark-up at 10.00%				\$ 109,848			\$ 38,451
TOTAL				\$ 1,208,331			\$ 422,964

Estimated Savings:	\$785,367
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Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-15

DESCRIPTION: **Add left turn lane eastbound at Wildcat Drive**

SHEET NO.: **1** of **1**

Original Design:

The original design provides no left turn bay for eastbound traffic at Wildcat Drive

Alternative:

The alternative would propose providing a left turn bay with a u-turn eyebrow for eastbound traffic at Wildcat Drive

Opportunities:

- Provide increased access
- Provide consistency of intersection design.

Risks:

- Addition of a conflict point to the roadway (U-turn traffic with the school exit)
- Increase paving cost

Technical Discussion:

All intersections on the project provide left turn bays with eyebrows to accommodate u-turning vehicles. By constructing Wildcat Drive in the same manner it will provide improved access and more consistency in the design.

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-16

DESCRIPTION: **Reduce construction on Brazell Road**

SHEET NO.: **1 of 4**

Original Design: Construct roadway for entire length of Brazell Rd.

The original design requires construction on Brazell Road for entire the length of the roadway. At this point in the plan development, the Typical Sections for all of Brazell Road have not been developed. It is assumed that new full-depth roadway is required at the tie-ins with Relocated Brazell Rd and the Mainline and the remaining roadway is being overlaid.

Alternative: Reduce the construction on Brazell Road.

The alternative is to limit the roadway construction to the tie-ins at either end. There is considerable rework of an existing roadway that may not be necessary.

Opportunities:

- Reduce construction costs
- Reduce MOT

Risks:

- Minimal design of revised profiles at tie-ins

Technical Discussion:

During the designers presentation, it was mentioned that Brazell Rd was not in need of repairs. This alternative, therefore, is to only make minimal revisions to the profile to tie-in to existing Brazell Rd and eliminate the overlay section from Sta. 2+50 to 7+75.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 25,345	\$ 0	\$ 25,345
ALTERNATIVE	\$ 0	\$ 0	\$
SAVINGS	\$ 25,345	\$ 0	\$ 25,345

Illustration

PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

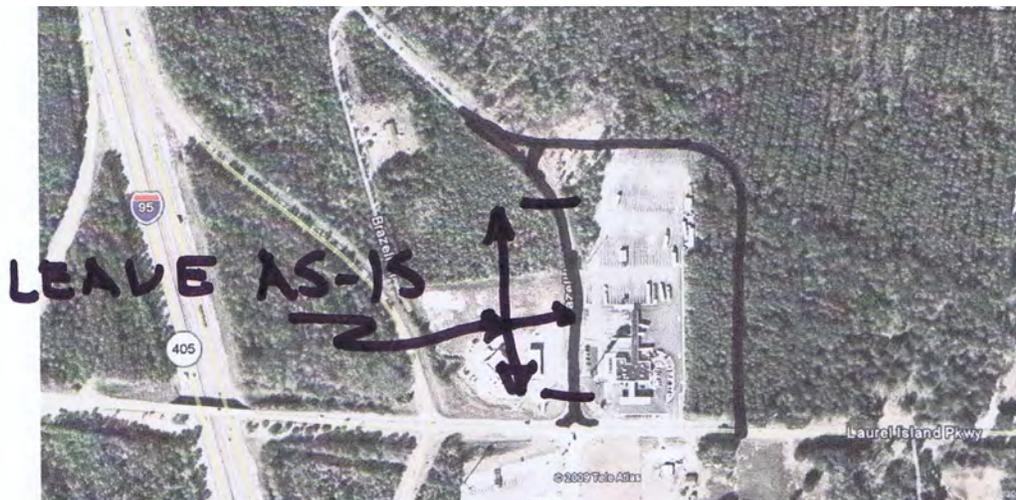
ALTERNATIVE NO.:
RD-16

DESCRIPTION: **Reduce construction on Brazell Road**

SHEET NO.: **2 of 4**



Current Design



Alternate Design – let main portion of Brazell Road remain as-is.

Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-16

DESCRIPTION: **Reduce construction on Brazell Road**

SHEET NO.: **3** of **4**

Original Design

Place full-depth pavement for the tie-ins at either end of the roadway, and overlay the entire length of the roadway. It is unclear at this point in development if Brazell Rd. pavement is being removed and replaced or if the existing road is being overlaid. This estimate is based on overlaying Brazell Rd.

Overlay Area = $525' \times 24' = 12,600 \text{ sf} = 1,400 \text{ sy}$

Milling = 1,400 sy

RAC Leveling (assume 1" avg.) = $12,600 \text{ sf} \times 1"/12 = 1,050 \text{ cf} = 40 \text{ cy} = 80 \text{ tons}$

RAC 12.5MM Superpave = $1400 \text{ sy} \times 165 \text{ lbs/sy} = 231,000 \text{ lbs} = 116 \text{ tons}$

Alternative

Eliminate the Overlay Area and limit the required construction to the tie-ins at either end with full-depth pavement.

There are additional reductions associated with Maintenance of Traffic, striping and possible drainage costs that are not quantified here.

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.: RD-16
DESCRIPTION:	Reduce construction on Brazell Road	SHEET NO.: 4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Milling	SY	1,400	\$ 5.00	\$ 7,000	0	\$ 5.00	\$ -
RAC Leveling	TN	80	\$ 110.00	\$ 8,800	0	\$ 110.00	\$ -
RAC 12.5MM Superpave	TN	116	\$ 62.42	\$ 7,241	0	\$ 62.42	\$ -
Sub-total				\$ 23,041			\$ -
Mark-up at 10.00%				\$ 2,304			\$ -
TOTAL				\$ 25,345			\$ -

Estimated Savings:	\$25,345
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Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414)) – P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	RD-18
DESCRIPTION:	Make Jimmy Lane and Bessie Lane Right-in/Right-out only	SHEET NO.:	1 of 4

Original Design:

The original design realigns Bessie Lane to create a new 4-way intersection with Jimmy Lane and the mainline. The intersection features left and right turn lanes and acceleration lanes in both directions on the mainline with a median opening.

Alternative:

The alternative eliminates the intersection design and median opening and makes Jimmy Lane and Bessie Lane right-in/right-only at the tie-in with the mainline. Additionally it would provide a nominal 100' section of paved roadway at the turnouts. This will eliminate the need to realign Bessie Lane allowing the right-in/right-out to be located at its present tie in with the mainline.

Opportunities:

- Eliminates low-volume 4-way intersection
- Reduces construction costs
- Reduces ROW costs

Risks:

- Eliminates through and u-turn movements
- Reduces access to side roads

Technical Discussion:

The turn movements for these two side roads were not included in the documentation, but are expected to be extremely low, since both are gravel roads. The original design calls for realignment of Bessie Lane to form a new 4-way intersection. Due to the low traffic, this intersection will have marginal use. Additionally this intersection is in an area of 3000' with four closely-spaced intersections. Making both side roads right-in/right-out is an adequate design for such low traffic volumes.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 309,407	\$ 0	\$ 309,407
ALTERNATIVE	\$ 44,596	\$ 0	\$ 44,596
SAVINGS	\$ 264,811	\$ 0	\$ 264,811

Illustration



PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
RD-18

DESCRIPTION: Make Jimmy Lane and Bessie Lane Right-in/Right-out
only

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

DESCRIPTION: **Make Jimmy Lane and Bessie Lane Right-in/Right-out
only**

ALTERNATIVE NO.:
RD-18

SHEET NO.: **3** of **4**

Original Design

Left turn lanes at crossover = $(400' + 400') \times 12' = 9,600 \text{ sf} = 1,070 \text{ sy}$

Right turn Lanes to side roads = $(350' + 350') \times 12' = 8,400 \text{ sf} = 930 \text{ sy}$

Acceleration lanes = $(150' + 150') \times 12' = 3,600 \text{ sf} = 400 \text{ sy}$

Total Mainline Pavement = $1,070 + 930 + 400 = 2,400 \text{ sy}$

RAC 12.5MM Superpave = $2,400 \text{ sy} \times 165 \text{ lbs/sy} = 396,000 \text{ lbs} = 200 \text{ tons}$

RAC 19 MM Superpave = $2,400 \text{ sy} \times 220 \text{ lbs/sy} = 528,000 \text{ lbs} = 265 \text{ tons}$

RAC 25mm Superpave = $2,400 \text{ sy} \times 440 \text{ lbs/sy} = 1,056,000 \text{ lbs} = 530 \text{ tons}$

GAB = $21,600 \text{ sf} \times 10''/12 = 18,000 \text{ cf} = 670 \text{ cy} = 1,340 \text{ tons}$

Assumed Build-up for Relocated Bessie Lane = $700' \times 24' = 16,800 \text{ sf} = 1,800 \text{ sy}$

RAC 12.5MM Superpave = $1,800 \text{ sy} \times 165 \text{ lbs/sy} = 297,000 \text{ lbs} = 150 \text{ tons}$

RAC 19 MM Superpave = $1,800 \text{ sy} \times 220 \text{ lbs/sy} = 396,000 \text{ lbs} = 200 \text{ tons}$

GAB = $16,800 \text{ sf} \times 6''/12 = 8,400 \text{ cf} = 310 \text{ cy} = 620 \text{ ton}$

Assumed Earthwork = 2500 cy

Right of Way-

$525' \times 80' = 42,000 \text{ SF}$

$42,000 \text{ sf} \times \$1.50/\text{sf} \Rightarrow \$63,000$

Right of way: Net cost = \$63,000

Scheduling @ 55% = \$34,650

Court cost @ 60% = \$37,800

Total = \$135,450

Alternative

No required turn lanes or acceleration lanes

Right-in-Right-out Island = $200 \text{ sy} \times 2 = 400 \text{ sy}$

Assumed Build-up for Relocated Bessie Lane = $100' \times 24' = 2,400 \text{ sf} = 270 \text{ sy}$

RAC 12.5MM Superpave = $270 \text{ sy} \times 165 \text{ lbs/sy} = 44,550 \text{ lbs} = 25 \text{ tons}$

RAC 19 MM Superpave = $270 \text{ sy} \times 220 \text{ lbs/sy} = 59,400 \text{ lbs} = 30 \text{ tons}$

GAB = $2,400 \text{ sf} \times 6''/12 = 1,200 \text{ cf} = 45 \text{ cy} = 90 \text{ ton}$

Assumed Earthwork = 700 cy

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	
		RD-18	
DESCRIPTION:	Make Jimmy Lane and Bessie Lane Right-in/ Right-out only	SHEET NO.:	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Unclassified Excavation	CY	2,500	\$ 5.00	\$ 12,500	700	\$ 5.00	\$ 3,500
RAC 12.5MM Superpave	TN	350	\$ 62.42	\$ 21,847	25	\$ 62.42	\$ 1,561
RAC 19MM Superpave	TN	465	\$ 81.98	\$ 38,121	30	\$ 465.00	\$ 13,950
RAC 25MM Superpave	TN	530	\$ 62.68	\$ 33,220		\$ 530.00	\$ -
GAB	TN	1,960	\$ 20.48	\$ 40,141	90	\$ 20.48	\$ 1,843
Concrete Median	SY			\$ -	400	\$ 49.22	\$ 19,688
R.O.W.	LS	1	\$ 135,450.00	\$ 135,450			\$ -
Sub-total				\$ 281,279			\$ 40,542
Mark-up at 10.00%				\$ 28,128			\$ 4,054
TOTAL				\$ 309,407			\$ 44,596

Estimated Savings:	\$264,811
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Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-19

DESCRIPTION: **Overlay existing ramps and widen to the inside**

SHEET NO.: **1** of **4**

Original Design:

The original design provides for completely reconstructing the existing ramps with concrete pavement.

Alternative:

The alternative design would propose overlaying the existing ramps and placing the ramp widening to the towards the interchange infield.

Opportunities:

- Reduced paving costs
- Simplified construction sequencing

Risks:

- Potential for pavement failure if truck counts increase significantly

Technical Discussion:

According to the 5th District Personnel the existing ramps appear to be functioning adequately with no evidence of operational deficiencies. It was also indicated that there does not appear to be any significant rutting or pushing/skid abrasion due to truck traffic which is only 4% (6% - 24 hour). Due to the low truck counts and the absence of any apparent operational issues, the ramps could be rehabilitated and then replaced in the future if necessary.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 2,838,756	\$ 0	\$ 2,838,756
ALTERNATIVE	\$ 432,644	\$ 0	\$ 432,644
SAVINGS	\$ 2,406,111	\$ 0	\$ 2,406,111

Illustration

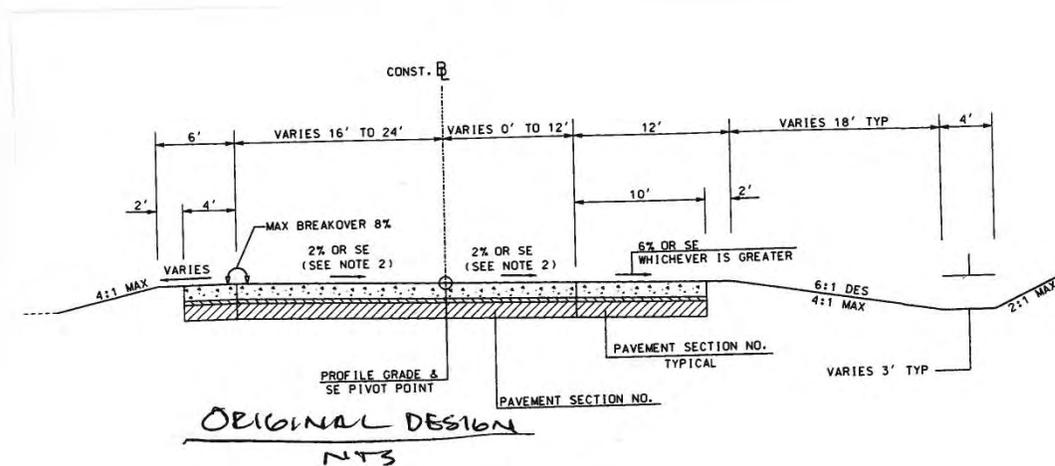
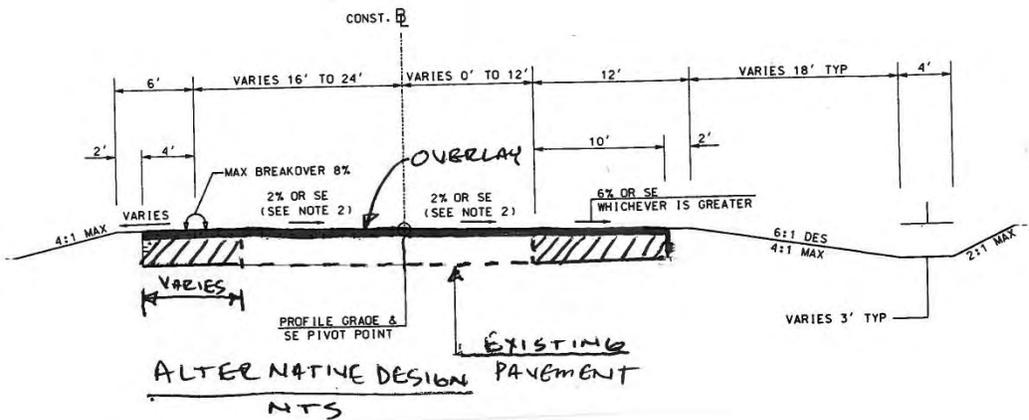


PROJECT: Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County

ALTERNATIVE NO.:
RD-19

DESCRIPTION **Overlay existing ramps and widen to the inside**

SHEET NO.: **2** of **4**



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-19

DESCRIPTION: **Overlay existing ramps and widen to the inside**

SHEET NO.: **3** of **4**

Original concrete ramps:

Ramp 'A' Station 36+20.00 to Station 50+00.00

$(30' \times 630') + (40' \times 100') + (50' \times 620) = 53,900 \text{ SF} / (9 \text{ SF/SY}) \Rightarrow 5,989 \text{ SY}$

Ramp 'B' Station 50+00.00 to Station 67+81.00

$(30' \times 1780') = 53,400 \text{ SF} / (9 \text{ SF/SY}) \Rightarrow 5,934 \text{ SY}$

Ramp 'C' Station 35+92.00 to Station 50+11.04

$(30' \times 630') + (34' \times 100') + (38' \times 550) = 43,200 \text{ SF} / (9 \text{ SF/SY}) \Rightarrow 4,800 \text{ SY}$

Ramp 'D' Station 50+11.04 to Station 68+21.00

$(30' \times 1810') = 54,300 \text{ SF} / (9 \text{ SF/SY}) \Rightarrow 6034 \text{ SY}$

Total Area of ramp pavement = 22,757 SY

Superpave 19.0mm = $[22,757 \text{ SY} \times 330\#/\text{SY-IN} \times (2000\#/\text{TN})] \Rightarrow 3755 \text{ TN}$

12" GAB = 22,757 SY

Alternative asphalt ramps- Overlay with 165# of 12.5mm Superpave and 220# of 19.0mm Superpave.

Total Area of Paving $\Rightarrow 22,757 \text{ SY}$

Superpave 12.5mm = $[22,757 \text{ SY} \times 165\#/\text{SY-IN} \times (2000\#/\text{TN})] \Rightarrow 1,863 \text{ TN}$

Superpave 19.0mm = $[22,757 \text{ SY} \times 220\#/\text{SY-IN} \times (2000\#/\text{TN})] \Rightarrow 2,504 \text{ TN}$

Widening:

Ramp 'A' Station 36+20.00 to Station 50+00.00

$(4' \times 100') + (20' \times 620) = 12,500 \text{ SF} / (9 \text{ SF/SY}) 1,389 \text{ SY}$

Ramp 'C' Station 35+92.00 to Station 50+11.04

$(4' \times 100') + (8' \times 550) = 4,500 \text{ SF} / (9 \text{ SF/SY}) \Rightarrow 500 \text{ SY}$

Total Area of ramp widening = 1,889 SY

Superpave 25.0mm = $[1,889 \text{ SY} \times 880 \#/\text{SY-IN} \times (2000\#/\text{TN})] \Rightarrow 832 \text{ TN}$

12" GAB = 1,889 SY

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	RD-19
DESCRIPTION:	Overlay existing ramps and widen to the inside	SHEET NO.:	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
G.A.B. 12"	SY	22,757	\$ 27.96	\$ 636,286	1,889	\$ 27.96	\$ 52,816
12.5mm Superpave	TN	0	\$ 64.41	\$ -	1863	\$ 64.41	\$ 119,996
19.0mm Superpave	TN	0	\$ 68.12	\$ -	2504	\$ 68.12	\$ 170,572
25.0mm Superpave	TN	3,755	\$ 60.01	\$ 225,338	832	\$ 60.01	\$ 49,928
12" PCP	SY	22,757	\$ 75.54	\$ 1,719,064	0	\$ 75.54	\$ -
Sub-total				\$ 2,580,687			\$ 393,313
Mark-up at 10.00%				\$ 258,069			\$ 39,331
TOTAL				\$ 2,838,756			\$ 432,644

Estimated Savings: \$2,406,111

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-20

DESCRIPTION: **Reduce the sum of the ramp shoulders from 14' to 12'**

SHEET NO.: **1** of **4**

Original Design:

The original design proposes a 4' left shoulder and a 10' right shoulder for a sum total of 14'.

Alternative:

The alternative design would propose utilizing either a 2' left shoulder and a 10' right shoulder or a 4' left shoulder and an 8' right shoulder.

Opportunities:

- Reduced paving costs
- Comply with AASHTO policy

Risks:

- None apparent
- Minimal design effort.

Technical Discussion:

According to AASHTO's Policy on Geometric Design of Highways and Streets (Page 838), for one way ramps," the sum of the left and right shoulder widths should not exceed 10 to 12 feet".

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,101,721	\$ 0	\$ 1,101,721
ALTERNATIVE	\$ 852,584	\$ 0	\$ 852,584
SAVINGS	\$ 249,137	\$ 0	\$ 249,137

Illustration

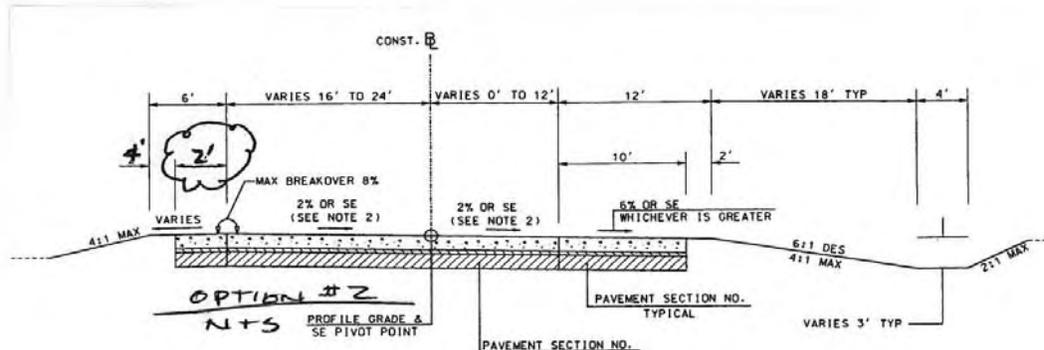
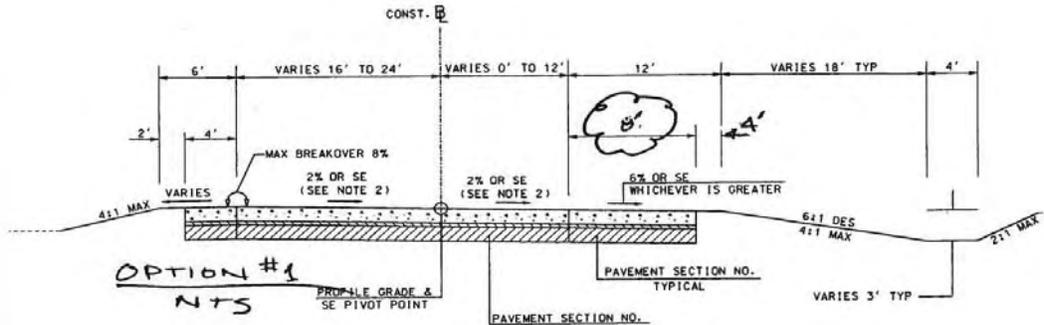
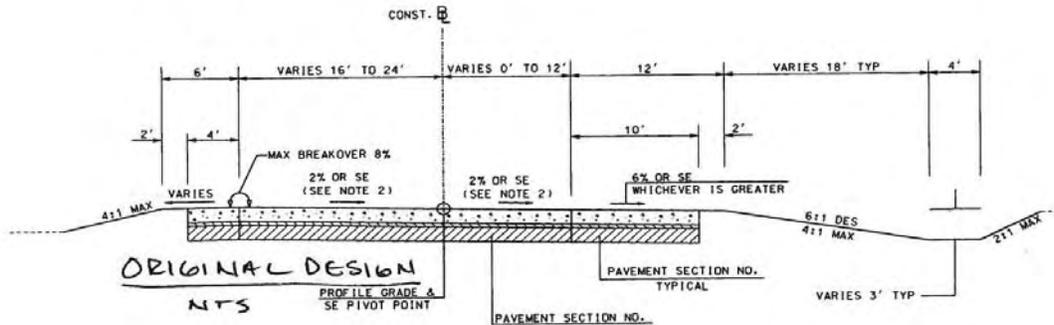


PROJECT: Georgia Department of Transportation
 CSSTP-0007-00(414) – P.I. No. 0007414
 CR90/Colerain Road from I-95 to Kings Bay Road
 Camden County

ALTERNATIVE NO.:
RD-20

DESCRIPTION: Reduce the sum of the ramp shoulders from 14' to 12'

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
CSSTP-0007-00(414)) – P.I. No. 0007414
CR90/Colerain Road from I-95 to Kings Bay Road
Camden County**

ALTERNATIVE NO.:
RD-20

DESCRIPTION: **Reduce the sum of the ramp shoulders from 14' to 12'**

SHEET NO.: **3** of **4**

Ramp 'A' Station 36+20.00 to Station 50+00.00
Ramp 'B' Station 50+00.00 to Station 67+81.00
Ramp 'C' Station 35+92.00 to Station 50+11.04
Ramp 'D' Station 50+11.04 to Station 68+21.00
Total Length = 6390 FT

Original Design:

Area = (6390 FT x 14.0 FT) / (9 SF/SY) = 9940 SY

12" PCP = 9940 SY

Superpave 25.0mm = [9940 SY x 330 #/SY-IN x(2000#/TN)] = >1640 TN

12" GAB = 9940 SY

Alternative Design:

Area = (6390 FT x 12.0 FT) / (9 SF/SY) = 8520 SY

12" PCP = 8520 SY

Superpave 25.0mm = [8520 SY x 330 #/SY-IN x(2000#/TN)] = >1406 TN

12" GAB = 8520 SY

Cost Worksheet



PROJECT:	Georgia Department of Transportation CSSTP-0007-00(414) - P.I. No. 0007414 CR90/Colerain Road from I-95 to Kings Bay Road Camden County	ALTERNATIVE NO.:	RD-20
DESCRIPTION:	Reduce the sum of the ramp shoulders from 14' to 12'	SHEET NO.:	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
G.A.B. 12"	SY	9,940	\$ 15.32	\$ 152,281	8,520	\$ 15.32	\$ 130,526
12" PCP	SY	9,940	\$ 75.54	\$ 750,868	8520	\$ 64.41	\$ 548,773
25.0mm Superpave	TN	1,640	\$ 60.01	\$ 98,416	1406	\$ 68.12	\$ 95,777
Sub-total				\$ 1,001,565			\$ 775,076
Mark-up at 10.00%				\$ 100,156			\$ 77,508
TOTAL				\$ 1,101,721			\$ 852,584

Estimated Savings: \$249,137

PROJECT DESCRIPTION

INTRODUCTION

This Value Engineering Study is for the widening of CR90/ Colerain Road from I-95 to Kings Bay Road in Camden County. The project number is CSSTP-0007-00(414) – P.I. No. 0007414.

The designer is Moreland Altobelli Associates, Inc. The plans are at the preliminary stage.

The proposed project would widen Colerain Road from a two-lane to a four-lane divided road with a twenty foot raised median and twelve foot right turn lanes at all major intersections and major commercial drives.. The purpose is to relieve traffic congestion on SR 40. It would also provide increased capacity for westbound coastal evacuation. In addition, the improvement should facilitate future economic growth. This route is on the Camden County bike route system and therefore bike lanes are planned.

The 2006 average daily traffic on Colerain road was at 10,600 vehicles. This number is projected to be 18,100 vpd by the build year 2010 and reach 30,200 vpd by the design year 2030. The existing intersections are currently operating at levels of service “B” or “C” during peak hours. If a no build option were chosen Level of service would decline to “F” by 2030.

Other proposed design features include improving the I-95 ramps and increasing the shoulders to a six foot inside shoulder and a ten foot outside shoulder. The Colerain Bridge over I-95 will be replaced.

The proposed design speed on Colerain Road is 45 mph, 35 mph on side streets, and 45 mph on the I-95 ramps. The length of the project is 4.9 miles

.Estimated construction cost for the project is \$28,246,899. In addition, Right-of-Way costs are anticipated to be \$5,260,000 and reimbursable utilities cost of \$700,000. The projected total cost for the project is \$34,206,898.

REPRESENTATIVE DOCUMENTS

- Georgia Department of Transportation
 - Construction Cost Estimates
 - Preliminary Right-of-Way Cost Estimate
 - Concept Reports
 - Project Location Maps
 - Accident Data

The VE Team utilized the GDOT supplied project materials noted above plus the preliminary plans provided by Moreland Altobelli Associates, Inc.

Preliminary Cost Estimate Report for Project CSSTP-0007-00(414)
Widening of Colerain Road From I-95 To Kings Bay Road
5-14-2009

Section Major Structures					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
207-0203	86	CY	53.69	FOUND BKFILL MATL, TP II	4617.34
500-3101	73	CY	276.35	CLASS A CONCRETE	20173.55
511-1000	7700	LB	0.91	BAR REINF STEEL	7007.00
Section Sub Total:					\$31,797.89

Section Bridge No. 1					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
207-0203	77	CY	53.69	FOUND BKFILL MATL, TP II	4134.13
211-0200	603	CY	34.03	BRIDGE EXCAVATION, GRADE SEPARATION	20520.09
441-0004	1187	SY	45.51	CONC SLOPE PAV, 4 IN	54020.37
500-0100	2903	SY	4.35	GROOVED CONCRETE	12628.05
500-1006	Lump	LS	730.56	SUPERSTR CONCRETE, CL AA, BR NO - 1 (920)	672115.20
500-3002	590	CY	489.58	CLASS AA CONCRETE	288852.20
507-9002	973	LF	115.41	PSC BEAMS, AASHTO TYPE II, BR NO - 1	112293.93
507-9030	2479	LF	176.92	PSC BEAMS, AASHTO, BULB TEE, 54 IN, BR NO - 1	438584.68
511-1000	85412	LB	0.91	BAR REINF STEEL	77724.92
511-3000	Lump	LS	0.95	SUPERSTR REINF STEEL, BR NO - 1 (194560)	184832.00
520-2216	1277	LF	61.59	PILING, PSC, 16 IN SQ	78650.43
520-2218	3230	LF	62.26	PILING, PSC, 18 IN SQ	201099.80
540-1101	Lump	LS	100000.00	REMOVAL OF EXISTING BR, STA NO - 340+19	100000.00
620-0100	1040	LF	29.89	TEMPORARY BARRIER, METHOD NO. 1	31085.60
Section Sub Total:					\$2,276,541.40

Section Grading and Drainage					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
208-0100	216600	CY	6.30	IN PLACE EMBANKMENT	1364580.00
500-3800	116	CY	717.69	CLASS A CONCRETE, INCL REINF STEEL	83252.04
550-1180	25500	LF	37.73	STORM DRAIN PIPE, 18 IN, H 1-10	962115.00
550-1240	8800	LF	43.32	STORM DRAIN PIPE, 24 IN, H 1-10	381216.00
550-1300	2700	LF	54.77	STORM DRAIN PIPE, 30 IN, H 1-10	147879.00
550-1360	360	LF	65.04	STORM DRAIN PIPE, 36 IN, H 1-10	23414.40
550-1480	100	LF	105.85	STORM DRAIN PIPE, 48 IN, H 1-10	10585.00
550-1540	60	LF	113.00	STORM DRAIN PIPE, 54 IN, H 1-10	6780.00
550-2180	160	LF	34.29	SIDE DRAIN PIPE, 18 IN, H 1-10	5486.40
550-2240	320	LF	32.24	SIDE DRAIN PIPE, 24 IN, H 1-10	10316.80
550-3418	3	EA	562.15	SAFETY END SECTION 18 IN, SIDE DRAIN, 4:1 SLOPE	1686.45
550-3424	8	EA	497.39	SAFETY END SECTION 24 IN, SIDE DRAIN, 4:1 SLOPE	3979.12
550-3518	3	EA	1142.78	SAFETY END SECTION 18 IN, STORM DRAIN, 6:1 SLOPE	3428.34
550-3524	8	EA	849.00	SAFETY END SECTION 24 IN, STORM DRAIN, 6:1 SLOPE	6792.00

550-4218	4	EA	616.24	FLARED END SECTION 18 IN, STORM DRAIN	2464.96
550-4224	5	EA	698.66	FLARED END SECTION 24 IN, STORM DRAIN	3493.30
550-4230	4	EA	844.49	FLARED END SECTION 30 IN, STORM DRAIN	3377.96
550-4418	4	EA	304.25	FLARED END SECTION, 18 IN, SLOPE DRAIN	1217.00
576-1018	180	LF	34.50	SLOPE DRAIN PIPE, 18 IN	6210.00
668-1100	343	EA	2481.45	CATCH BASIN, GP 1	851137.35
668-2100	30	EA	2410.48	DROP INLET, GP 1	72314.40
668-8011	316	SF	98.00	SAFETY GRATE, TP 1	30968.00
668-8012	311	SF	52.17	SAFETY GRATE, TP 2	16224.87
668-8013	49	SF	32.00	SAFETY GRATE, TP 3	1568.00
668-8014	162	SF	32.00	SAFETY GRATE, TP 4	5184.00

Section Sub Total: \$4,005,670.39

Section Base and Paving

Item Number	Quantity	Units	Unit Price	Item Description	Cost
310-1101	119700	TN	17.76	GR AGGR BASE CRS, INCL MATL	2125872.00
402-1811	8100	TN	112.72	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL	913032.00
402-3121	33800	TN	60.01	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	2028338.00
402-3130	21200	TN	64.41	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	1365492.00
402-3190	17000	TN	68.12	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1158040.00
413-1000	19600	GL	2.13	BITUM TACK COAT	41748.00
432-5010	14600	SY	1.24	MILL ASPH CONC PVMT, VARIABLE DEPTH	18104.00

Section Sub Total: \$7,650,626.00

Section Concrete Work

Item Number	Quantity	Units	Unit Price	Item Description	Cost
439-0026	22700	SY	75.54	PLAIN PC CONC PVMT, CL 3 CONC, 12 INCH THK	1714758.00
441-0016	120	SY	41.87	DRIVEWAY CONCRETE, 6 IN TK	5024.40
441-0018	91	SY	46.28	DRIVEWAY CONCRETE, 8 IN TK	4211.48
441-0104	33000	SY	32.12	CONC SIDEWALK, 4 IN	1059960.00
441-0748	34200	SY	54.06	CONCRETE MEDIAN, 6 IN	1848852.00
441-0754	660	SY	57.74	CONCRETE MEDIAN, 7 1/2 IN	38108.40
441-4020	590	SY	44.62	CONC VALLEY GUTTER, 6 IN	26325.80
441-4030	170	SY	45.37	CONC VALLEY GUTTER, 8 IN	7712.90
441-6222	41800	LF	15.79	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	660022.00
441-6740	51600	LF	13.66	CONC CURB & GUTTER, 8 IN X 30 IN, TP 7	704856.00

Section Sub Total: \$6,069,830.98

Section Signing, Striping, and Signals

Item Number	Quantity	Units	Unit Price	Item Description	Cost
500-3101	10	CY	276.35	CLASS A CONCRETE	2763.50
636-1020	235	SF	16.60	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	3901.00

636-1029	250	SF	14.66	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	3665.00
636-1033	395	SF	20.14	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 9	7955.30
636-1041	50	SF	37.29	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	1864.50
636-1072	1400	SF	30.53	HIGHWAY SIGNS, ALUM EXTRUDED PANELS, REFL SHEETING, TP 3	42742.00
636-2070	700	LF	8.76	GALV STEEL POSTS, TP 7	6132.00
636-2080	830	LF	11.55	GALV STEEL POSTS, TP 8	9586.50
636-3000	4000	LB	3.65	GALV STEEL STR SHAPE POST	14600.00
636-5010	50	EA	46.74	DELINEATOR, TP 1	2337.00
636-9094	24	LF	66.35	PILING IN PLACE, SIGNS, STEEL H, HP 12 X 53	1592.40
639-2002	800	LF	3.80	STEEL WIRE STRAND CABLE, 3/8 IN	3040.00
639-4003	8	EA	6510.71	STRAIN POLE, TP III	52085.68
639-4004	32	EA	5837.80	STRAIN POLE, TP IV	186809.60
647-1000	8	LS	54154.86	TRAFFIC SIGNAL INSTALLATION NO -	433238.88
647-2150	8	EA	1789.22	PULL BOX, PB-5	14313.76
652-0091	25	EA	52.50	PAVEMENT MARKING, SYMBOL, TP 1	1312.50
652-0094	25	EA	37.59	PAVEMENT MARKING, SYMBOL, TP 4	939.75
653-0110	2	EA	66.23	THERMOPLASTIC PVMT MARKING, ARROW, TP 1	132.46
653-0120	104	EA	72.94	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	7585.76
653-0170	4	EA	88.05	THERMOPLASTIC PVMT MARKING, ARROW, TP 7	352.20
653-0210	8	EA	101.73	THERMOPLASTIC PVMT MARKING, WORD, TP 1	813.84
653-1501	32950	LF	0.44	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	14498.00
653-1502	61900	LF	0.45	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	27855.00
653-1706	2500	LF	3.00	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, YELLOW	7500.00
653-1804	8000	LF	1.69	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	13520.00
653-3501	59100	GLF	0.33	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	19503.00
654-1001	200	EA	3.07	RAISED PVMT MARKERS TP 1	614.00
654-1003	1560	EA	3.23	RAISED PVMT MARKERS TP 3	5038.80
657-1085	7500	LF	5.17	PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-WHITE), TP PB	38775.00
657-3085	2000	GLF	4.17	PREFORMED PLASTIC SKIP PVMT MKG, 8 IN, CONTRAST (BLACK-WHITE), TP PB	8340.00
657-6085	7500	LF	5.17	PREFORMED PLASTIC SOLID PVMT MKG, 8 IN, CONTRAST (BLACK-YELLOW), TP PB	38775.00
682-6233	1100	LF	3.07	CONDUIT, NONMETL, TP 3, 2 IN	3377.00
927-0300	8	EA	3632.58	2070 MOUNT SPREAD SPECTRUM WIRELESS TRANSCEIVER WITH RS 232 CONNECTION	29060.64
927-0600	1	EA	1265.00	OMNI DIRECTIONAL RADIO ANTENNA AND CONNECTING CABLE	1265.00
927-0800	1	EA	2740.00	SPREAD SPECTRUM WIRELESS RADIO SURVEY	2740.00
927-0900	1	LS	3583.33	SPREAD SPECTRUM WIRELESS TRAINING	3583.33

Section Sub Total: \$1,012,208.40

Section Guardrail

Item Number	Quantity	Units	Unit Price	Item Description	Cost
641-1100	84	LF	54.49	GUARDRAIL, TP T	4577.16
641-1200	6500	LF	18.38	GUARDRAIL, TP W	119470.00

641-5001	16	EA	684.10	GUARDRAIL ANCHORAGE, TP 1	10945.60
641-5012	16	EA	1869.18	GUARDRAIL ANCHORAGE, TP 12	29906.88
Section Sub Total:					\$164,899.64

Section Traffic Control

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	Lump	LS	2335000.00	TRAFFIC CONTROL - PROJECT CSSTP-0007-00(414)	2335000.00
Section Sub Total:					\$2,335,000.00

Section Landscaping and Erosion Control

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	32	AC	311.88	TEMPORARY GRASSING	9980.16
163-0240	300	TN	165.45	MULCH	49635.00
163-0300	70	EA	1174.43	CONSTRUCTION EXIT	82210.10
163-0503	20	EA	481.37	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	9627.40
163-0520	4000	LF	15.03	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	60120.00
163-0531	26	EA	10913.09	CONSTRUCT AND REMOVE SEDIMENT BASIN, TP 1, STA NO -	283740.34
163-0550	373	EA	209.07	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	77983.11
165-0010	13500	LF	0.67	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	9045.00
165-0030	1350	LF	0.74	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	999.00
165-0060	26	EA	1929.89	MAINTENANCE OF TEMPORARY SEDIMENT BASIN, STA NO -	50177.14
165-0087	20	EA	114.66	MAINTENANCE OF SILT CONTROL GATE, TP 3	2293.20
165-0101	70	EA	474.28	MAINTENANCE OF CONSTRUCTION EXIT	33199.60
165-0105	373	EA	82.23	MAINTENANCE OF INLET SEDIMENT TRAP	30671.79
167-1000	2	EA	483.11	WATER QUALITY MONITORING AND SAMPLING	966.22
167-1500	24	MO	718.48	WATER QUALITY INSPECTIONS	17243.52
171-0010	27000	LF	2.39	TEMPORARY SILT FENCE, TYPE A	64530.00
171-0030	2700	LF	3.61	TEMPORARY SILT FENCE, TYPE C	9747.00
201-1500	Lump	LS	1120000.00	CLEARING & GRUBBING - PROJECT CSSTP-0007-00(414)	1120000.00
700-6910	63	AC	792.72	PERMANENT GRASSING	49941.36
700-7000	190	TN	66.74	AGRICULTURAL LIME	12680.60
700-7010	160	GL	22.03	LIQUID LIME	3524.80
700-8000	57	TN	405.48	FERTILIZER MIXED GRADE	23112.36
700-8100	3200	LB	2.36	FERTILIZER NITROGEN CONTENT	7552.00
716-2000	24400	SY	0.96	EROSION CONTROL MATS, SLOPES	23424.00
Section Sub Total:					\$2,032,403.70

Section Miscellaneous Items

Item Number	Quantity	Units	Unit Price	Item Description	Cost
153-1300	1	EA	77626.78	FIELD ENGINEERS OFFICE TP 3	77626.78
634-1200	230	EA	97.36	RIGHT OF WAY MARKERS	22392.80
Section Sub Total:					\$100,019.58

Total Estimated Cost: \$25,678,997.98

Subtotal Construction Cost	\$25,678,997.98
E&C Rate 10.0 %	\$2,567,899.80
Inflation Rate 0.0 % @ 0 Years	\$0.00
	<hr/>
Total Construction Cost	\$28,246,897.78
Right Of Way	\$5,260,000.00
ReImb. Utilities	\$700,000.00
	<hr/>
Grand Total Project Cost	\$34,206,897.78

Preliminary Right of Way Cost Estimate

Date: May 11, 2009
Project: CSSTP-0007-00(414) **P.I. Number** 0007414
Existing/Required R/W: 100'+/- / 140'+/- **No. Parcels** 73
Project Termini: Colerain Road: 0.5 mile West of I-95 to 0.25 mile South of Kings Bay Road
Project Description: Colerain Road widening in Camden County

Fee Simple:

Interstate Commercial				
267,776	sf	@	\$	2.30 /sf = \$ 615,884
Light Commercial				
38,541	sf	@	\$	1.15 /sf = \$ 44,322
Small Residential				
63,336	sf	@	\$	1.15 /sf = \$ 72,837
Large Residential				
747,732	sf	@	\$	0.57 /sf = \$ 426,207
Premium Residential Lot				
4,779	sf	@	\$	4.59 /sf = \$ 21,937
				\$ 1,181,187

Permanent Construction Easement:

Interstate Commercial				
266,008	sf	@	\$	1.15 /sf = \$ 305,909
Light Commercial				
21,963	sf	@	\$	0.58 /sf = \$ 12,738
Small Residential				
179,124	sf	@	\$	0.58 /sf = \$ 103,892
Large Residential				
813,828	sf	@	\$	0.29 /sf = \$ 236,010
Premium Residential Lot				
0	sf	@	\$	2.30 /sf = \$ 0
TOTAL				\$ 658,549

Improvements:

0 Residential	=	\$	0
1 Commercial	=	\$	5,000
TOTAL			\$ 5,000

Relocation:

0 Residential	=	\$	0
0 Commercial	=	\$	0
TOTAL			\$ 0

Damages:

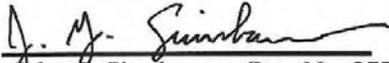
Proximity -	5 Parcels	\$	25,000
Consequential -	2 Parcels	\$	200,000
Cost to Cure -	1 Parcels	\$	50,000
TOTAL			\$ <u>275,000</u>

SUB-TOTAL **\$ 2,119,736**

Net Cost		\$	2,119,736
Scheduling Contingency	55%	\$	1,165,855
Adm/Court Cost	60%	\$	1,971,355
		\$	5,256,946

Total Cost

\$ 5,260,000

Prepared By:  Reviewed / Approved: _____
 John G. Simshauser, Cert. No. 2772 Howard P. Copeland
 Moreland Altobelli Associates, Inc. R/W Administrator

Note: Accuracy of estimate is the sole responsibility of the Preparer.

Note: The Market Appreciation (40%) is not included in this Preliminary Cost Estimate.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

District 5 Jesup

PROJECT CONCEPT REPORT

Project Numbers: CSSTP-0007-00 (414)
County: Camden County
P. I. Number: 0007414

Federal Route Number: N/A
State Route Number: N/A

*Regional or Wide area location sketch and Project
Description (See Page 2)*

Date of Report: July 28, 2008

Recommendation for approval:

DATE _____
Project Manager

DATE _____
District Engineer

The concept as presented herein and submitted for approval is consistent with that which is included in the Regional Transportation Improvement Program (RTP) and the State Transportation Improvement Program (STIP).

DATE _____
State Transportation Planning Administrator

DATE _____
State Financial Management Administrator

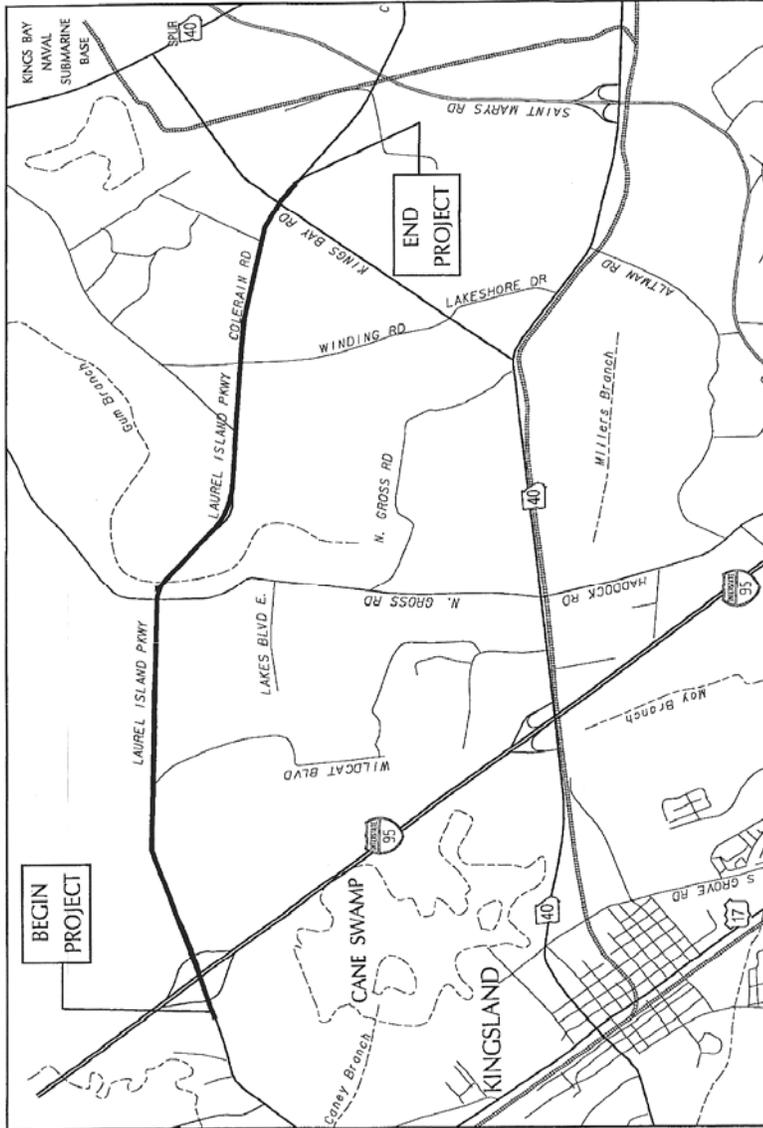
DATE _____
State Environmental/Location Engineer

DATE _____
State Traffic Operations Engineer

DATE _____
Project Review Engineer

DATE _____
State Bridge Design Engineer

Project Concept Report page 2
Project Number: CSSIP-0007-00 (414)
P.I. Number: 0007414
County: Camden County



Need and Purpose:

The proposed project would widen and improve Colerain Road/Laurel Island Parkway from I-95 east to Kings Bay Road from a two-lane to a four-lane divided with a 20-foot raised median. This project would serve as an alternate route to relieve traffic congestion on SR 40 from I-95 to Kings Bay Road and provide additional capacity for westbound coastal evacuation. The current two-lane configuration of Laurel Island Parkway is inadequate to handle the projected (year 2030) traffic volumes.

Planning Background and Project History

There are approximately 30,000 people who live south of the Satilla River and east of US 17 in Camden County. In the event of a mandatory hurricane evacuation all of these citizens would have to utilize SR 40 west to I-95 and beyond to Folkston as an evacuation route. In 2004, we witnessed the devastating effects that hurricanes can have on people and property along the southeastern coastline of the United States. Emergency evacuation has become more important with each new house built in this part of Camden County. Past evacuations have shown that Colerain Road, a 2-lane facility does not have the capacity to handle an evacuation in a timely and efficient manner.

There have been several studies made to recommend projects to increase the capacity of SR 40. All of these studies have identified the widening of SR 40 to Folkston as the key component to improving the capacity of SR 40. The major obstacle to this improvement is the section of SR 40 through the city of Kingsland including the intersection of SR 40 and US 17. This intersection is bordered by historical structures that are part of the Kingsland Commercial Historic District, which is included in the National Register of Historic Places. Additionally, the right-of-way has major utility lines, both overhead and underground.

The cities of Saint Mary's and Kingsland and the Camden County Board of Commissioners agreed that the most practical solution to this problem would be to construct a bypass around Kingsland. A preliminary route was identified with connections to Kings Bay Naval Submarine Base and SR 40 on the east. Improving Colerain Road/Laurel Island Parkway will provide a bypass evacuation route around the City of Kingsland.

The Kingsland Bypass would begin at SR 40 at the intersection of Colerain Road on the west side of Kingsland, then it would continue northeasterly along the alignment of Colerain Road. The bypass would continue on new alignment near the intersection of CR 109. The new alignment bypass would then bridge over the railroad and US 17, where it would then continue east onto the existing alignment of Colerain Road. The bypass would continue in a southeasterly direction on Colerain Road/Laurel Island Parkway crossing I-95, North Gross Road, Winding Road, Kings Bay Road, St. Marys Road and intersecting with SR 40 Spur one mile north of SR 40 on the east side of Kingsland in the City of St. Marys. Project CSSTP-0007-00 (414), P.I. Number 0007414, the widening of Colerain Road/Laurel Island Parkway from I-95 to Kings Bay Road would be the first phase of the Kingsland Bypass. This section was chosen as the first phase because it would provide an improved connection from the Kings Bay Naval Submarine Base to I-95. The second phase would be from I-95 west to SR 40, which would complete a four-lane alignment (bypass) around Kingsland. The third phase would be an improvement of

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County: Camden County

Colerain Road from Kings Bay Road to SR 40 Spur, which would extend into St. Marys a four-lane to connect to SR 40.

Colerain Road/Laurel Island Parkway is currently classified as a rural minor collector. However, because the improved route, Laurel Island Parkway is projected to serve the needs of regional commercial and commuter traffic around the City of Kingsland. Therefore, this route has been recently reclassified as a minor arterial.

In addition to providing traffic relief to SR 40 and an evacuation route, this project would also provide regional economic benefits by facilitating access to area development and providing the necessary infrastructure for continued future economic development. This route is shown on the Camden County bike route system and therefore bike lanes will be provided along the length of this route.

Traffic Volumes and Level of Service

The residential and commercial properties, and other land uses adjacent to the roadway contributed to the current traffic volumes on the existing facility. The 2006 Average Daily Traffic (ADT) on Colerain Road within the project area is 10,600 vehicles per day (vpd), which is projected to increase to 18,100 by the build year 2010 and 30,200 vpd by the design year 2030.

Intersection capacity analysis was performed under existing and future traffic conditions with and without the proposed project. The vehicular delay value that results from the capacity analysis is used to determine the level of service (LOS) of an intersection. Level of service (LOS) is a letter designation used to describe traffic operating conditions, on a declining scale from A to F. LOS "A" represents free-flow traffic conditions and LOS "F" represents extreme delays with stopped traffic conditions. A summary of the intersection capacity analyses in terms of level of service for existing, no-build and build conditions are shown in Table 1 on the following page.

As shown in Table 1, the existing intersections are operating at levels of service "B" or "C" during the peak hours. All the intersections with Colerain Road/Laurel Island Parkway are unsignalized except at North Gross Road and Kings Bay Road.

The year 2030 levels of service without the project would decline to LOS F at most of the intersections. However, with the proposed project, the intersections would operate at LOS C or above throughout the project corridor.

Table 1
Summary of HCS Level of Service Analysis Results

Intersections	Existing Year 2006		No-Build Year 2030		Proposed Design Year 2030	
	AM	PM	AM	PM	AM	PM
Kingsland Bypass @ I-95 Southbound Ramps	C*	C*	F	F	B	B
Kingsland Bypass @ I-95 Northbound Ramps	B*	B*	F	F	B	B
Kingsland Bypass @ Brazell Road	--	--	D	F	B	C
Kingsland Bypass @ Bristol Hammock Road	--	--	F	E	B	B
Kingsland Bypass @ Wildcat Drive	--	--	F	F	D	C
Kingsland Bypass @ Shopping Center/Local Street	--	--	F	E	C	C
Kingsland Bypass @ N. Gross Rd/Marsh Harbor Pkwy	B	B	C	C	C	C
Kingsland Bypass @ New Subdivision – Local Streets	--	--	F	F	C	C
Kingsland Bypass @ Winding Road	--	--	F	F	C	C
Kingsland Bypass @ Kings Bay Road	B	C	F	E	C	C

* For unsignalized intersections, LOS is given for minor street approach.

Safety Improvements

A summary of the crash history for SR 40 from Kings Bay Road to Henrietta Street is provided in Table 2. The table lists the total number of crashes and injuries on this section of SR 40 for the three most recent years that data was available (2004, 2005 and 2006). There were no fatalities reported. The crash and injury rates were calculated and shown beside the statewide rates for urban principal arterials. The crash and injury rates provided are in units of 100 million vehicle miles.

Table 2
Summary of Traffic Crashes
SR 40 from Kings Bay Road to Henrietta Street

Year	No. Of Crashes	Crash Rate (Statewide)	No. Of Injuries	Injury Rate (Statewide)
2004	196	597 (463)	74	226 (116)
2005	191	601 (513)	92	290 (128)
2006	186	534 (494)	63	181 (120)

The results of the crash analysis indicate that the crash and injury rates for SR 40 are above the statewide averages for urban principal arterials for all three years. The proposed Kingsland

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Project Number: CSSTP-0007-00 (414)
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Bypass would serve to relieve traffic congestion on SR 40 and would help to reduce the risk of various common crashes, specifically rear-end and angle collisions at intersections.

In summary, the proposed project including the SR 40 connector would provide an evacuation route, provide traffic relief for SR 40, improve traffic safety and increase the capacity of the roadway to facilitate the projected new traffic growth from development.

Logical Termini

The logical western terminus of the first phase of the Kingsland Bypass would be the I-95 interchange because 61% of projected traffic from Laurel Island Parkway (east of I-95) travels onto I-95. Only 39% continue on Laurel Island Parkway west of I-95. For this reason, I-95 interchange was chosen as the western terminus for the project.

The logical terminus for the eastern terminus is at the intersection of Kings Bay Road. Kings Bay Road would capture commercial and regional traffic from SR 40 that wants to bypass the city of Kingsland. Also, the main gate to the Kings Bay Naval Submarine Base is located on Kings Bay Road. The Base generates a high volume of traffic to and from I-95 via Laurel Island Parkway. 55% of the projected traffic on the Bypass travels onto Kings Bay Road with 45% continuing on Laurel Island Parkway. For this reason, Kings Bay Road was chosen as the logical terminus.

The termini does allow for a full evaluation of the environmental impacts of the first phase of the Kingsland Bypass. The first phase of the Kingsland Bypass serves as a parallel route to SR 40, and would relieve future traffic congestion along that route. The widening of Laurel Island Parkway has independent utility because it provides additional capacity to the east-west travel movement that is projected to operate at LOS F under the no-build condition. The first phase of the Kingsland Bypass also provides the proposed four-lane for hurricane evaluation in bypassing the City of Kingsland.

The first phase of the Kingsland Bypass would not restrict consideration of alternatives for other reasonable foreseeable transportation improvements. The second phase of the Kingsland Bypass would start at the western terminus of Phase 1 and continue westerly. The eastern most segment of Phase 2 of the Bypass was evaluated for environmental constraints, which would limit the ability of that segment connecting to the western terminus of Phase. 1. That evaluation did not identify any environmental issues that would act as a fatal flaw to the future extension of Phase 1. The proposed improvements associated with Phase 1 would not force future improvements in Phase 2 that would have a significant adverse impact upon environmental resources located along the Phase 2 corridor.

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Other Projects in the Area

- GDOT Project 0000654, CS 565/Mariners Crossing in Kingsland - RR crossing warning devices.
- GDOT Project 0005897, CR 200/Lakes Blvd - RR crossing warning devices.

- GDOT Project 0006455, SR 25; SR 40 & SR 40 Spur @ 10 Locations - Upgrade traffic signals
- GDOT Project 0006701, St. Mary's Road Paving Project – Pavement Rehabilitation
- GDOT Project 0008666, Colerain-St. Marys Road from SR 40 to I-95.

Description of the proposed project:

The proposed project would widen and improve Colerain Road/Laurel Island Parkway from I-95 east to Kings Bay Road. The project proposes to widen the existing two-lane roadway to provide an urban four-lane divided highway with a 20-foot raised median and auxiliary lanes at major intersections. The roadway would have 4-foot bike lanes on each side with urban shoulders, which have curb and gutter and 5-foot sidewalks on both sides.

The interchange at I-95 would remain a diamond interchange, however the ramps would be reconstructed with concrete. The concrete ramps would be reconstructed to meet the geometric design speed of 45 mph, which may require the ramps to be lengthened. The reconstructed 16-foot wide off-ramps would be widened to provide two 12-foot left turn lanes and one 12-foot right turn lane at the intersection approaches to Laurel Island Pkwy/Colerain Road.

The total length of the project would be approximately 4.9 miles.

Is the project located in a Non-attainment area? Yes No.

PDP Classification: Major Minor

Federal Oversight: Full Oversight (), Exempt (X), State Funded (), or Other ()

Functional Classification: Rural Minor Arterial

U. S. Route Number(s): N/A State Route Number(s): N/A

Traffic (AADT):

Base Year: (2010) 18,100 Design Year: (2030) 30,200

Existing design features:

- Typical Section: The roadway segments of Colerain Road/Laurel Island Parkway are currently 2-lane roadways with 11 to 12-foot lanes in each direction and rural open-ditch shoulders.

- Posted speed:
 - Colerain Road – 50 mph
 - Kings Bay Road – 35 mph
- Minimum radius for curve:
- Maximum super-elevation rate for curve: 6.00%
- Maximum grade: 2%
- Width of right of way: Colerain Road - varies 80 ft. to 130 ft.
Kings Bay – 50 ft.
- Major structures:
 - Bridge over I-95 – See attached bridge inventory.
 - Culverts over streams
- Major interchanges or intersections along the project: Colerain Road/Laurel Island Parkway at I-95 Interchange Ramps, Brazell Road, Bristol Hammock Road, Wildcat Drive, North Gross Road, Winding Road and Kings Bay Road. The I-95 interchanges located north and south of CR 90/Laurel Island Parkway are CR 141/Harrietts Bluff Road (1.5 miles) and SR 40 (2.44 miles), respectively.
- Existing length of roadway segment 4.9 miles of existing roadway
- Mile log for Colerain Road (CR 90)
 - CR 90: From 0.32 to 2.17
 - CR 333: From 0.00 to 2.65
 - CS 588: From 0.00 to 0.24
 - CS 530: From 0.00 to 0.16
- Mile log for I-95 Interchange
 - Camden County mile post: 5.72

Proposed Design Features:

- Proposed typical sections:
 - Kingsland Bypass (Colerain Road/Laurel Island Pkwy) - The typical section includes two 12-foot travel lanes and 4-foot bike lane in each direction, with a 20-foot raised median; and 12-foot right turn (auxiliary) lanes at all major intersections and major commercial drives. The proposed section from 2,300 feet west of I-95 to Brazell Road and from 3,800 feet west of Winding Road to 1,000 feet east of Kings Bay Road would include rural 10-foot shoulders with 6.5 feet paved and 3.5 feet grassed. The proposed section from Brazell Road to 3,800 feet west of Winding Road would include curb and gutter and 5-foot sidewalks on both sides.
 - Colerain Road/Laurel Island Pkwy Bridge over I-95 – The bridge typical section would include two 12-foot travel lanes and a 12-foot shoulder in each direction, with a 20-foot median (16-foot raised). (See attached bridge typical section)
 - I-95 ramps (reconstructed) – The I-95 ramps would be reconstructed with concrete and would consist of a full depth section (see attached typical section). The typical would have one 16-foot travel lane, a 6-foot inside shoulder and 10-foot outside shoulder. At the intersection approaches to Laurel Island Pkwy, the northbound and southbound off-ramps would have two 12-foot left turn lanes and one 12-foot right turn lane.

- Proposed Design Speed
 - Colerain Road/Laurel Island 45 mph
 - I-95 Ramps 45 mph
 - Brazell Road 35 mph
 - Bessie Lane 35 mph
 - Winding Road 35 mph
 - Kings Bay Road 55 mph
- Proposed Maximum grade Mainline 2% Maximum grade 6%
- Proposed Maximum grade Side Streets 2% Maximum grade 7%
- Proposed Maximum grade driveway 5%
- Proposed Minimum radius for curve for Colerain Road 1800'
Minimum radius allowable 643'
- Proposed Minimum radius for curve for side streets:
 - 935' I-95 Ramps Minimum radius 643'
 - 500' Brazell Road Minimum radius 340'
 - 500' Bessie Lane Minimum radius 340'
 - tangent Winding Road Minimum radius 340'
 - tangent Kings Bay Road Minimum radius 1060'
- Proposed Maximum superelevation rate for curve 6.00%
- Right of way
 - Width: Varies from 120 to 145 feet (typical)
 - Easements: Temporary (X), Permanent (X), Utility (), Other ().
 - Type of access control: Full (), Partial (), By Permit (X), Other ().
 - Number of parcels: 67 Number of displacements:
 - Business: 0
 - Residences: 0
 - Mobile homes: 0
 - Other: 0

- Structures:

- Bridge

Kingsland Bypass Bridge over I-95	
Bridge Type	Concrete
No. of spans	2
Length	273'
Maximum Span	94'
Deck Structure Width	95'-3"
Roadway Width	68'
Minimum Vertical Clearance	17'-6"
Total Horizontal Clearance	28.8'

- Culverts

- Major intersections and interchanges: Colerain Road/Laurel Island Parkway at I-95 Interchange Ramps, Brazell Road, Bristol Hammock Road, Wildcat Drive, North Gross Road, Winding Road and Kings Bay Road. The I-95 interchanges located north and south

of CR 90/Laurel Island Parkway are CR 141/Harrietts Bluff Road (1.5 miles) and SR 40 (2.44 miles), respectively.

- Traffic control during construction: Traffic control will consist of staged construction and will allow for Colerain Road to remain open during construction.
- Design Exceptions for controlling criteria anticipated:

	<u>UNDETERMINED</u>	<u>YES</u>	<u>NO</u>
HORIZONTAL ALIGNMENT:	()	()	(X)
ROADWAY WIDTH:	()	()	(X)
SHOULDER WIDTH:	()	()	(X)
VERTICAL GRADES:	()	()	(X)
CROSS SLOPES:	()	()	(X)
STOPPING SIGHT DISTANCE:	()	()	(X)
SUPERELEVATION RATES:	()	()	(X)
HORIZONTAL CLEARANCE:	()	()	(X)
SPEED DESIGN:	()	()	(X)
VERTICAL CLEARANCE:	()	()	(X)
BRIDGE WIDTH:	()	()	(X)
BRIDGE STRUCTURAL CAPACITY:	()	()	(X)
LIMITS OF ACCESS*	()	()	(X)

*The full access (median openings) on each side of the I-95 interchange will be restricted to a minimum of 1,000 feet on each side of the interchange terminals. The nearest “right-in and right-out” driveway on the east side of the interchange is located approximately 500 feet and the nearest “right-in and right-out” driveway on the west side of the interchange is located approximately 423 feet west of the interchange. These distances are greater than the minimum distance of 300 feet so therefore no design exception is needed. To eliminate the driveway on the east side, it would require that a large truck stop business be purchased. The cost of purchasing this business would be very expensive. Also, the County and local business community is not in favor of the purchase of this business. Therefore a relocated full access roadway (median opening) will be constructed approximately 1,100 feet from the interstate terminal in order for this business to have full access with the reconstruction and widening of Colerain Road/Laurel Island Pkwy.

The property with the driveway on the west side of the interchange is currently undeveloped and the property would be landlocked without the right-in and right-out driveway. There is 114 acres of property that would need to be purchased in order to eliminate the right-in and right-out driveway.

- Design Variances: None anticipated.
- Environmental concerns:
 - A preliminary environmental inventory was conducted which included field surveys and review of applicable federal and state databases.
 - There is no known UST/hazardous waste sites from which right-of-way would be required.
 - There are no potentially eligible historic resources along Colerain Road.
 - There are no environmental justice issues.
 - Level of environmental analysis: Not determined yet.

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- Are Time Savings Procedures appropriate? Yes () No (X)
 - Categorical exclusion ()
 - Environmental Assessment/Finding of No Significant Impact (FONSI) (X), or
 - Environmental Impact Statement (EIS) ().
- Utility involvements: Camden County will be responsible for all reimbursable utility relocations. Possible affected utilities include telephone, cable, power, gas, ATMS and water.

Project responsibilities:

- Design: Camden County
- Right-of-Way Acquisition: Camden County
- Relocation of Utilities: Camden County
- Letting to contract: Georgia DOT
- Supervision of construction: Georgia DOT
- Providing material pits: Contractor (if required)
- Providing detours: Contractor (if required)

Coordination

- Initial Concept Team Meeting: Held on March 15, 2007. See attached minutes.
- Concept Team Meeting: To be held.
- P. A. R.: A Practical Alternatives Report (P.A.R.) is not expected for this project.
- FEMA, USCG, and/or TVA. - None
- Public involvement: PIM and Public Hearing to be held.
- VE Study Required
- Local government comments.
- Other projects in the area:
 - GDOT Project 0000654, CS 565/Mariners Crossing in Kingsland - RR crossing warning devices.
 - GDOT Project 0005897, CR 200/Lakes Blvd - RR crossing warning devices.
 - GDOT Project 0006455, SR 25; SR 40 & SR 40 Spur @ 10 Locations - Upgrade traffic signals
 - GDOT Project 0006701, St. Mary's Road Paving Project – Pavement Rehabilitation
 - GDOT Project 0008666, Colerain-St. Marys Road from SR 40 to I-95.
- Other coordination to date: None
- Railroads: Not applicable

Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 15 Months.
- Time to complete preliminary construction plans: 12 Months.
- Time to complete right-of-way plans: 6 Months.
- Time to complete final construction plans: 6 Months.
- Time to complete to purchase right-of-way: 24 Months.

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County: Camden County

Other alternates considered:

No-Build Alternative

The no-build alternative is an alternative in which Camden County would take no action to construct the project. Traffic congestion and operational problems would result on Colerain Road/Laurel Island Pkwy because the existing two-lane roadway would be inadequate to handle the future year 2030 traffic volumes.

Additionally, traffic congestion would worsen on SR 40 without an alternative route. Also, high levels of traffic congestion on SR 40 would continue to increase the risk of traffic accidents.

SR 40 would not have enough capacity to provide a safe evacuation route for coastal communities. There have been several studies of the SR 40 corridor that identified the widening of SR 40 to Folkston as the key component to improving the capacity of SR 40 for an evacuation route. The major obstacle to this improvement is the section of SR 40 through the city of Kingsland including the intersection of SR 40 and US 17. This intersection is bordered by historical structures that are part of the Kingsland Commercial Historic District, which is included in the National Register of Historic Places. Additionally, the right-of-way has major utility lines, both overhead and underground. Consequently, without the Kingsland Bypass, there would not be a viable evacuation route around the City of Kingsland.

Comments: None.

Attachments:

1. Cost Estimates:
 - a. Construction including E&C
 - b. Right-of-Way
 - c. Utilities
2. Typical sections,
3. Traffic flow diagrams and capacity analysis,
4. Bridge inventory,
5. Minutes of Initial Concept Team meeting,
6. Minutes of Concept Team meeting,
7. Benefit-Cost Analysis

VALUE ENGINEERING PROCESS

This report summarizes the analysis and conclusions by the PBS&J Value Engineering team as they performed a VE Study during the period of June 8 through June 11, 2009 in Atlanta, Georgia, for the Georgia Department of Transportation.

INTRODUCTION

The Value Engineering Study team and its leadership were provided by PBS&J. This VE Team consisted of the following:

Les M. Thomas, PE, CVS-Life	Team Leader
Luke Clarke, PE, AVS	Senior Highway Design Engineer
Jeff Strickland, PE	Highway Construction Specialist
Fabricio Quinonez, PE	Senior Structural Engineer
Randy S. Thomas, CVS	Assistant Team Leader

The Value Engineering Team followed the Seven Step Value Engineering job plan as promulgated by SAVE International. This Seven Step job plan includes the following:

- **Investigation/Information Phase** – during this phase of the VE Team’s work, the team received a briefing from the Georgia Department of Transportation (GDOT) staff and Parsons Engineering. This briefing included discussions of the design intent behind the project, the cost concerns, and the physical project limitations. In the working session that followed, the VE Team developed cost models from the cost data provided by the designers and familiarized themselves with the construction drawings and other data that was available to the team. Some of the representative project information (concept report, cost estimate, and special provisions) may be found in the tabbed section of this report entitled **Project Description**. Following this current narrative the reader will also find a cost model done in the Pareto fashion, i.e., identifying the highest costs down to the lowest costs for the larger construction cost elements. This cost model, developed by the VE Team, was used by the VE Team to help focus their week of work. The headings on the Pareto Chart also were used as headings for creative phase activities.
- **Analysis Phase** – during this phase the VE Team determined the “**Functions**” of the project. This was accomplished by reviewing the project from the simplest format in asking the questions of “What is the project supposed to do?”, and “How is it supposed to accomplish this purpose? In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns.

These verb/noun pairs form the basis of the function analysis which distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. A FAST diagram was prepared highlighting the projects required functions.

- The important functions of the project were identified as follows:
 - **Project Objective/Goals**
 - **Improve evacuation**
 - **Improve Level of Service**
 - **Reduce congestion**
 - **Enhance economic development**
 - **Replace bridge**
 - **Improve I-95 ramps**
 - **Project Basic Functions**
 - **Increase capacity**
 - **Improve traffic operations**
 - **Improve safety**
- **Speculation Phase** - The VE team performed a brainstorming session to identify ideas that might help meet the project objectives:
 - **Improve drainage**
 - **Reduce ROW required**
 - **Classify as a rural section**
 - **Eliminate non-functional work**
 - **Overlay ramps**

This brainstorming session initially identified numerous ideas that were then evaluated in the Judgment phase. The reader will find the creative worksheets enclosed. These same work sheets were also used to record the results of the Judgment/Evaluation Phase.

- **Evaluation Phase** – Once the VE Team identified the creative ideas, it was necessary to decide which alternatives should be carried forward. This is the work of the Evaluation or Judgment Phase. The VE Team reflected back on the project constraints and objectives shared with the team by the owner's representatives, in the kick-off meeting on the first day of the workshop. From that guidance, the team selected ideas that they believed would improve the project by a vote process.

- Following that selection process, the VE Team used the following values as measures of whether or not an alternative had enough merit to be carried forward in the VE process:
 - Construction cost savings
 - Improve value
 - Maintainability
 - Ability to implement the idea
 - General acceptability of the alternatives
 - Constructability
 - Scheduling delays

Based on these criteria, the VE Team evaluated the alternatives and graded them from 5 (Excellent) down to 1 (Poor). Other notes about the alternatives are annotated at the bottom of the enclosed creative and evaluation sheets.

- **Development Phase** – During this phase, the VE Team developed each of the selected design alternatives whose rating was “4” or “5” because of time constraints. If time permitted, the team will develop additional recommendations. This effort included a detailed explanation of the idea with sketches as appropriate to clarify the idea from the original concept, advantages and disadvantages, a technical explanation and an estimation of the cost and resultant savings if implemented. (see the tabbed section – Study Results)
- **Recommendation Phase** – During this phase the VE Team reviews the alternative ideas to confirm which ones are appropriate for the project, have an opportunity for success and which will improve the value of the project if implemented.
- **Presentation Phase** – As noted earlier, the team made an informal “out-briefing” on the last day of the workshop, designed to inform the Owners and the Designers of the initial findings of the VE Study. This written report is intended to formalize those findings.

VALUE ENGINEERING STUDY AGENDA
for
Georgia Department of Transportation
CSSTP-0007-00(414) – P.I. No. 0007414
CR 90/Colerain Road from I-95 to Kings Bay Road
Camden County

June 8-11, 2009

Pre-Workshop Activities

VE Team Leader organizes study, coordinates with the Owner and Designer the project objectives and materials necessary. The VE Team receives and reviews all project documents. The team develops a Pareto Chart and/or Cost Model for the project.

Day One

9:00-10:30 Design Team Presentation (Information Phase)

- Introduction of participants, owner, designer, and VE team members
- Presentation of the project by the design engineer including:
 - History and background
 - Design Criteria and Constraints
 - Special “U” turn requirements
 - Special needs (schools, businesses, etc.)
 - Sidewalks, bicycle lanes, and or multi-use trails
 - Historical Property protection
 - Current Construction Completion Schedule
 - Project Cost Estimate and Budget Constraints
- Owner Presentation – special requirements, definition of life cycle period and interest rate for life cycle costs
- Review VE Pareto Chart/Cost Model
- Discussion, questions and answers
- Overview of the VE Process and Agenda – Workshop goals & project goals

10:30-12:00 VE Team reviews project (Information Phase)

- Review design team’s presentation
- Review agenda and goals of the study
- Visit project site if time permits

1:00-2:30 Function Analysis Phase

- Analyze Cost Model – Pareto
- Identify basic and secondary functions
- Complete Function Matrix/FAST Diagram

2:30-5:00 Creative Phase

- Brainstorming of alternative ideas

Day Two

8:00-10:00 Evaluation Phase

- Establish criteria for evaluation
- Rank ideas
- Identify “best” ideas for development
- Identify those ideas that will become Design Suggestions
- Develop a cost/worth analysis
- Identify a “champion” for each idea to be developed

10:00-5:00 Development Phase

- Develop alternative ideas design suggestions with assessment of original design and write up new alternatives including:
 - Opportunities & risks
 - Illustrations
 - Calculations
 - Cost worksheets
 - Life cycle cost analysis

Day Three

8:00-5:00 Development Phase

- Continue developing Alternative Ideas
- Continue developing Design Suggestions
- Prepare for presentation to Owners and Designers

Day Four

8:00-9:00 Prepare Presentation

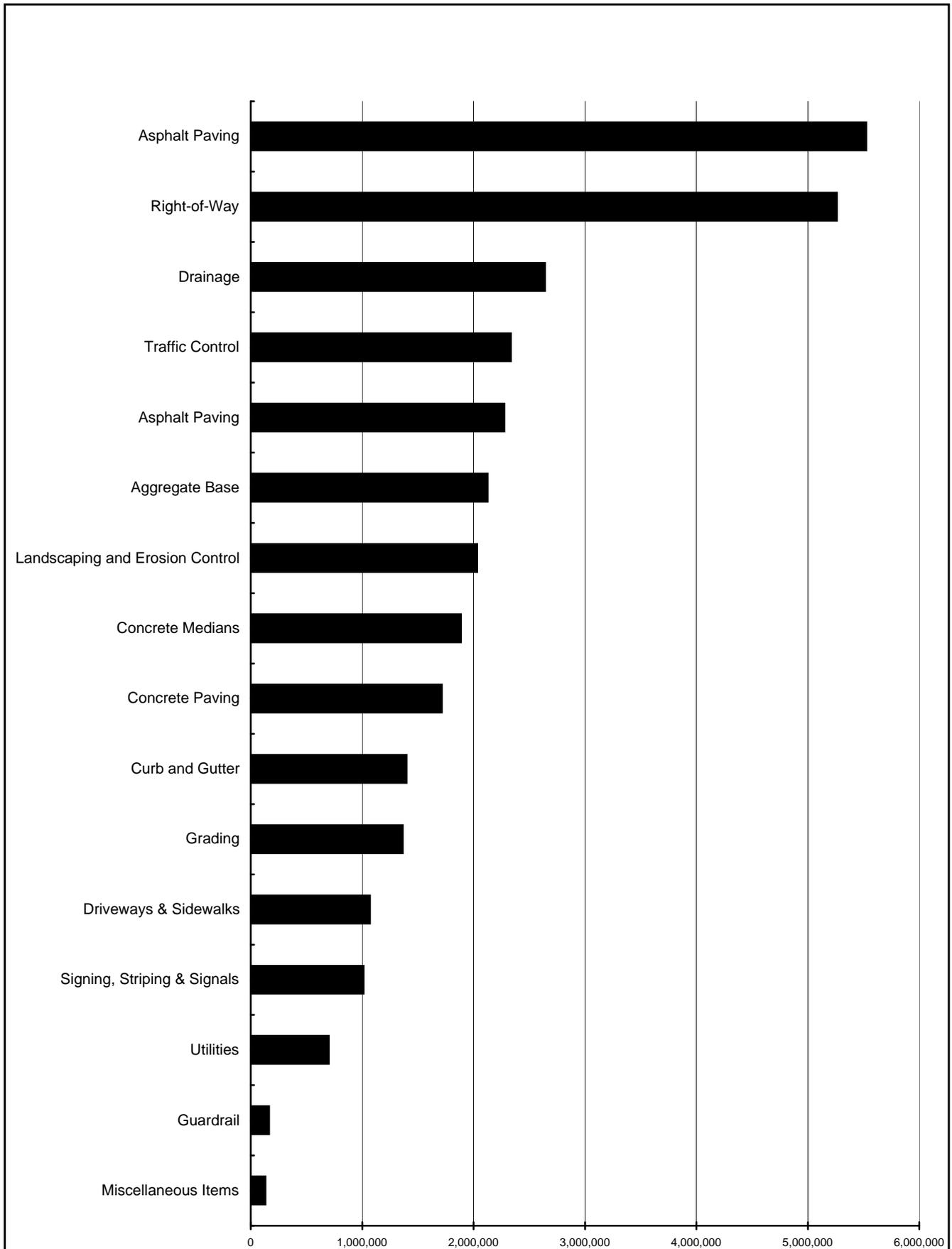
9:00-10:00 VE Team Presentation

PARETO CHART - COST HISTOGRAM



PROJECT: Georgia Department of Transportation
 CSSTP-0007-00(414) - P.I. No. 0007414
 CR 90/Colerain Road from I-95 to Kings Bay Road
 Camden County

PROJECT ELEMENT	COST	PERCENT	CUM. PERCENT
Asphalt Paving	5,524,754	17.46%	17.46%
Right-of-Way	5,260,000	16.63%	34.09%
Drainage	2,641,090	8.35%	42.43%
Traffic Control	2,335,000	7.38%	49.81%
Asphalt Pavi Bridge	2,276,541	7.20%	57.01%
Aggregate Base	2,125,872	6.72%	63.73%
Landscaping and Erosion Control	2,032,403	6.42%	70.15%
Concrete Medians	1,886,960	5.96%	76.12%
Concrete Paving	1,714,758	5.42%	81.54%
Curb and Gutter	1,398,917	4.42%	85.96%
Grading	1,364,580	4.31%	90.27%
Driveways & Sidewalks	1,069,195	3.38%	93.65%
Signing, Striping & Signals	1,012,208	3.20%	96.85%
Utilities	700,000	2.21%	99.06%
Guardrail	164,900	0.52%	99.58%
Miscellaneous Items	131,818	0.42%	100.00%
Construction Cost including ROW & Utilites	\$ 31,638,996		
Construction Cost less ROW & Utilites	\$ 25,678,996		
E & C Rate @10%	\$ 2,567,900		
Total Construction Costs	\$ 28,246,896		
Right-of-Way	\$ 5,260,000		
Utilities Reimbursement	\$ 700,000		
TOTAL	\$ 34,206,896		



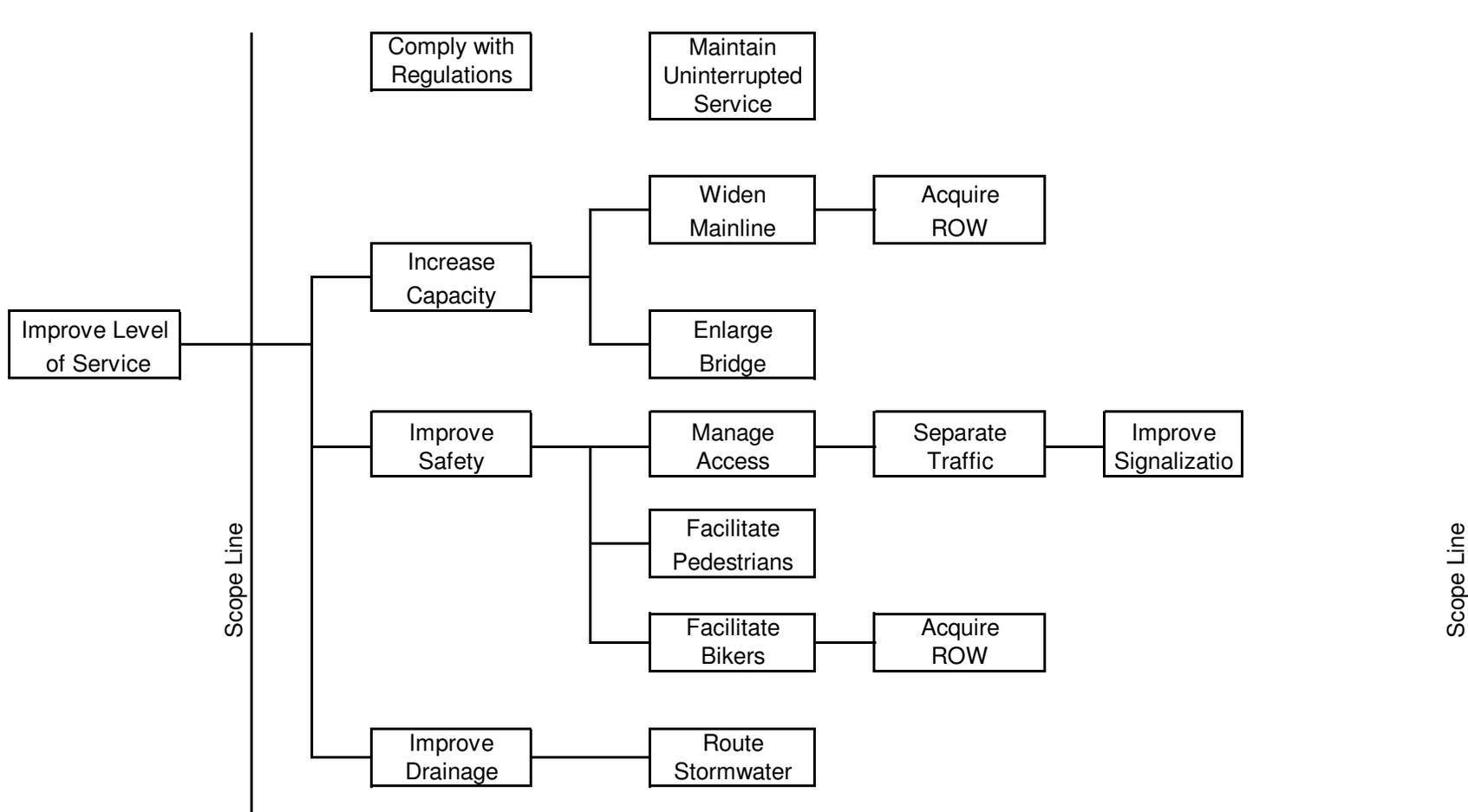
Camden County
CR 90/Colerain Road from I-95 to Kings Bay Road



FAST DIAGRAM

HOW →

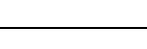
← WHY



DESIGNER PRESENTATION



MEETING PARTICIPANTS

Geogia Department of Transportation		June 8, 2009	
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VE TEAM PRESENTATION



MEETING PARTICIPANTS

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CREATIVE IDEA LISTING



**PROJECT: Georgia Department of Transportation
 CSSTP-00007-009414) – P.I. No. 0007414
 CR90/Colerain Road from I-95 to Kings Bay Road
 Camden County**

SHEET NO.: 1 of 2

NO.	IDEA DESCRIPTION	RATING
DRAINAGE (DR)		
DR-1	Eliminate the reverse crown	DS
DR-2	Modify or replace box culvert and utilize existing pavement from Sta. 265+00 and Sta. 295+00	4
DR-3	Slope urban section shoulders away from roadway to reduce earthwork and drainage	4
BRIDGE (BR)		
BR-1	Use a two span bridge with MSE walls	5
BR-2	Reduce the multi-use trail from 16'-6" to 12'-0"	5
BR-3	Build twin bridges	5
ROADWAY (RD)		
RD-1	Shift Colerain Road to the south – do not realign Bristol Hammock Road	3
RD-2	Utilize a 4' paved shoulder in the rural section	4
RD-3	Reconstruct ramps as a Tight Urban Diamond	4
RD-4	Purchase property instead of relocating Service Road #2	2
RD-5	Connect Brazell Road to Jimmy Road and Access Road to Bessie Lane	2
RD-6	Relocate Service Road #2 to 1,000 feet from ramps	2
RD-7	Connect Bristol Hammock Road to Wildcat Boulevard	2

**Rating: 1→2 = Not to be Developed; 3 = Varying Degrees of Development Potential;
 4→5 = Most likely to be Developed; DS = Design Suggestion; ABD = Already Being Done; OB= Observation**

CREATIVE IDEA LISTING



**PROJECT: Georgia Department of Transportation
 CSSTP-00007-009414) – P.I. No. 0007414
 CR 90/Colerain Road from I-95 to Kings Bay Road
 Camden County
 DeKalb County**

SHEET NO.: 2 of 2

NO.	IDEA DESCRIPTION	RATING
ROADWAY (RD) -continued		
RD-8	Shift Colerain Road from Sta. 255 to Sta. 305 south to avoid existing residence	See DR-2
RD-9	Use 2' in-lieu of 6' separation between the multi-use trail and curb	2
RD-10	Use asphalt in-lieu of concrete for the multi-use trail	3
RD-11	Modify Profile Grade Line to save as much pavement as possible from Sta. 154+50 to Sta. 169`+50 and from Sta. 186+50 to Sta. 196+00	ABD
RD-12	Utilize the rural typical section from Station 186=21 to Station 251+00	5
RD-13	Utilize rural section for entire project with 10' paved shoulders	1
RD-14	Delay installation of selected signals	2
RD-15	Add left turn lane eastbound at Wildcat Drive	DS
RD-16	Reduce construction on Brazell Road	4
RD-17	Tie Bessie Lane into Access Road and close median opening at Sta. 71+00	3
RD-18	Make Jimmy Lane and Bessie Lane right-in/right-out only and eliminate the turn lanes	4
RD-19	Overlay existing ramps and widen to the inside	4
RD-20	Reduce ramp shoulders from 14' to 12'	4

**Rating: 1→2 = Not to be Developed; 3 = Varying Degrees of Development Potential;
 4→5 = Most likely to be Developed; DS = Design Suggestion; ABD = Already Being Done; OB= Observation**