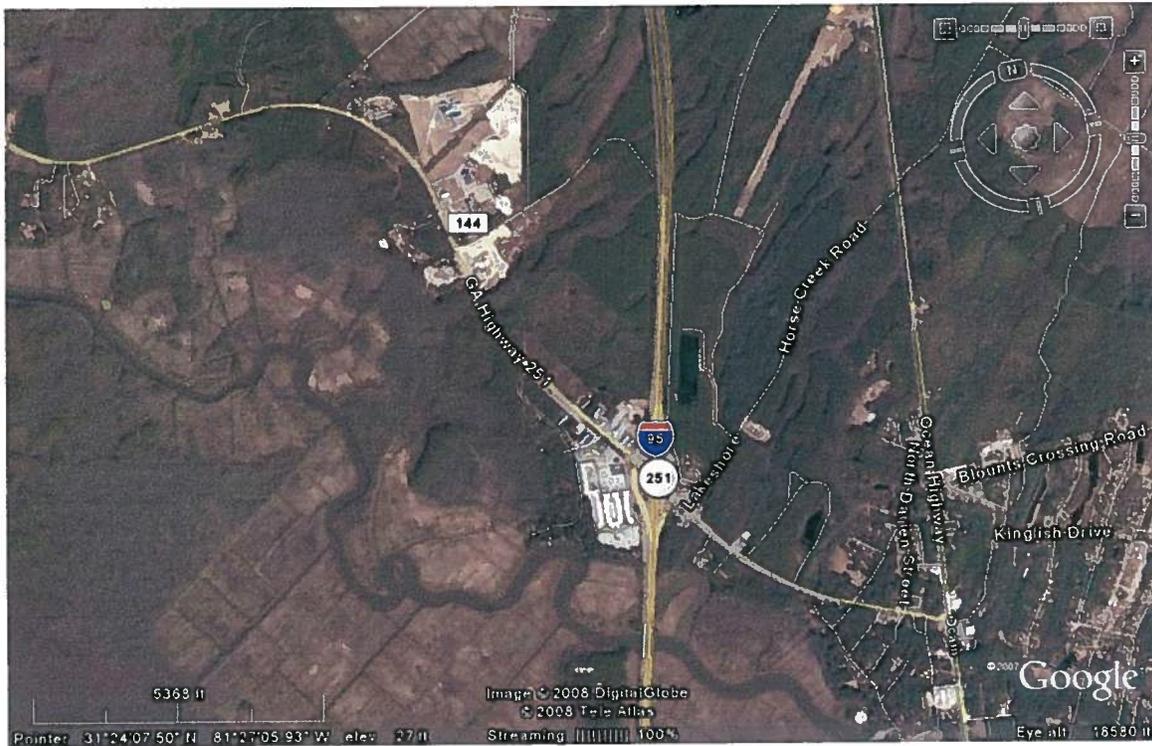


# Value Engineering Study Report

*Projects – STP-2387(4) & CSNHS-0007-00(421)  
P.I. No. 542070 & P.I. 0007421*

*Widening of SR 251  
Reconstruction of the I-95 and SR 251 Interchange  
McIntosh County*



Value Management Team



Design Team



January 2008



February 8, 2008

Ms. Lisa Myers  
Design Review Engineer Manager  
Georgia Department of Transportation  
#2 Capitol Square, Room 266  
Atlanta, GA 30334

RE: Submittal of the final Value Engineering Report  
Projects – STP-2387(4) & CSNHS-0007-00(421)  
McIntosh County  
P.I. No. 542070 & P.I. No. 0007421  
Widening of SR 251 and Reconstruction of I-95 and SR 251 Interchange  
PBS&J Project Task Order No. 26

Dear Ms. Myers:

Please find enclosed four (4) hard copies and a CD of our final Value Engineering Report for the Widening of SR 251 and Reconstruction of I-95 and SR-251 Interchange. as referenced above.

This Value Engineering Study, which was performed during the period January 22 through January 25, 2008, identified **36 Alternative Ideas**, of which **16 are recommended for implementation**. The VE Team also identified **2 Design Suggestion Ideas** which are recommended for the Engineer to consider in his final design. We believe that the **16 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

# ***Value Engineering Study Report***

***Projects – STP- 2387(4) & CSNHS-0007-00(421)***

***P.I. No. 542070 & P.I. No. 0007421***

***Widening of SR 251 and the Reconstruction of I-95 and SR 251  
Interchange***

***McIntosh County***

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## ***EXECUTIVE SUMMARY***

## ***EXECUTIVE SUMMARY***

### **INTRODUCTION**

This report summarizes the analysis and conclusions by the PBS&J Value Engineering workshop team as they performed a VE study during the period of January 22 – January 25, 2008 in Atlanta, at the office of the Georgia Department of Transportation. The subject of the Value Engineering study was Project STP-2387(4) & CSNHS-0007-00(421) McIntosh County, P.I.Nos. 542070 & 0007421. The concept designs for the project have been prepared by The LPA Group. At the time of the workshop, the plans had advanced to the concept design level.

### **PROJECT DESCRIPTION**

Project STP-2387(4), SR 251, is classified as a rural major collector and is one of the two east-to-west State Routes in McIntosh County. Consequently, SR 251 is also one of the two east-west hurricane evacuation routes in McIntosh County.

Currently, within a half mile of the SR 251 at I-95 interchange there are multiple businesses that cater to travelers: service stations, convenience stores, truck stops, restaurants, hotels, and a major regional outlet mall containing approximately 100 retail stores (located in the southwest quadrant of the SR 251 and I-95 interchange). Less than a mile west of the interchange is the McIntosh County Industrial Park. Due primarily to these developments, the total number of vehicles per day on SR 251 have increased significantly.

The length of the project is 3.03 miles, with additional 0.9 mile subsection known as proposed GDOT Project CSNHS-0007-00(421) to widen and reconstruct the SR 251 over I-95. At the eastern terminus, State Route 251 terminates at U.S. 17, a major north-south route through Darien, which is McIntosh County's largest city and the county seat. On the western terminus, SR 251 will transition back to two lanes near the intersection of King Swamp Road, which is the first intersection west of the Industrial Park. King Swamp Road provides east-west access across I-95, via an existing grade separation, and terminates on the east at U.S. 17.

Project CSNHS-0007-00(421), represents the complete reconstruction of the SR 251/I-95 Interchange including ramps, the bridge over I-95, and the bridge approaches on SR 251.

For Project STP-2387(4) the estimated construction cost is \$12,571,234. The preliminary ROW acquisition cost is \$16,328,850.

For Project CSNHS-0007-00(421) the estimated construction cost is \$15,408,075. The preliminary ROW acquisition cost is \$17,402,725.

These projects are rather fully described in the documentation that is located in Tab 4 of this report, entitled *Project Description*.

## **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:

- There are three large oak trees that cannot be removed.
- There are three cemeteries (1 directly located adjacent to the Right-of-Way).
- Mall entrance will be moved and signalized.
- Proposed bridge will be approximately 6' higher than the existing bridge resulting in a 2' grade change across the bridge.
- A drainage problem exists at U.S.17 and SR 251 with ditches often full with 6 feet of water.
- Accident rates for SR 251 between 2004 and 2006 were well above the state average.
- Effort is needed to avoid moving large transmission lines on north side of SR 251.

## **VALUE ENGINEERING PROCESS**

The Value Engineering team followed the seven step Value Engineering job plan as promulgated by the Georgia Department of Transportation. 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 detail process of the Value Engineering Study.

## CONCLUSIONS AND RECOMMENDATIONS

During the speculation phase the VE Team identified **36 *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, **16 *Alternative Ideas*** and **2 *Design Suggestions*** remained for further consideration. These Alternative Ideas and Design Suggestions 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.

These and the other alternatives and design suggestions may be reviewed more thoroughly where they are documented in the third tab of this report entitled ***Study Results***.

**SUMMARY OF ALTERNATIVES & DESIGN SUGGESTIONS**



Georgia Department of Transportation I-95 and SR 251 Interchange - CSNHS-0007-00(421) - P.I. No. 0007421		
Alternative Number	Description of Alternative	Initial Cost Savings
<b>BRIDGE (BR)</b>		
BR - 1	Use a 10' flush shoulder for bike and pedestrian traffic	\$20,654
BR - 3	Use a 14' center turn lane with no separation	\$816,920
BR - 4	Reduce distance to end points to 20' and use pier protection and guard rails	\$259,936
BR - 5	Use MSE walled abutments	\$904,813
BR - 9	Reduce end spans to 40'	\$469,138
<b>WALLS (WL)</b>		
WL - 2	Use modular block walls in-lieu of gravity walls	\$148,465
WL - 3	Use tree pits in-lieu of gravity wall for tree protection	DS
<b>ROADWAY (RD)</b>		
RD - 1	Use asphaltic concrete in lieu of concrete	\$2,393,600
RD - 4	Relocate new mall entrance	\$7,012,500
RD - 7	Use a raised median section east of I-95	\$128,041
RD - 9	Use a 12' shoulder in all urban sections	687,744
RD - 11	Modify control radii on entrance ramps	DS
RD - 12	Reduce GAB thickness for concrete pavement	\$157,297



---

## ***Study Results***

# *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.

The documented alternatives also include Design Suggestions (DS). As their name implies, these are short write-ups making note of VE perspectives on technical issues and sharing some thoughts for consideration as the design moves forward.

This introductory sheet is followed by a *Summary of Alternatives & Design Suggestions* table. 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 following *Summary of Alternatives & 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.

A 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*.

**SUMMARY OF ALTERNATIVES & DESIGN SUGGESTIONS**



Georgia Department of Transportation		
<i>I-95 and SR 251 Interchange - CSNHS-0007-00(421) - P.I. No. 0007421</i>		
Alternative Number	Description of Alternative	Initial Cost Savings
<b>BRIDGE (BR)</b>		
BR – 1	Use a 10’ flush shoulder for bike and pedestrian traffic	\$20,654
BR – 3	Use a 14’ center turn lane with no separation	\$816,920
BR – 4	Reduce distance to end points to 20’ and use pier protection and guard rails	\$259,936
BR – 5	Use MSE walled abutments	\$904,813
BR – 9	Reduce end spans to 40’	\$469,138
<b>WALLS (WL)</b>		
WL – 2	Use modular block walls in-lieu of gravity walls	\$148,465
WL – 3	Use tree pits in-lieu of gravity wall for tree protection	DS
<b>ROADWAY (RD)</b>		
RD – 1	Use asphaltic concrete in lieu of concrete	\$2,393,600
RD – 4	Relocate new mall entrance	\$7,012,500
RD – 7	Use a raised median section east of I-95	\$128,041
RD – 9	Use a 12’ shoulder in all urban sections	687,744
RD – 11	Modify control radii on entrance ramps	DS
RD – 12	Reduce GAB thickness for concrete pavement	\$157,297

## SUMMARY OF ALTERNATIVES & DESIGN SUGGESTIONS



Georgia Department of Transportation		
<i>Widening of SR 251 - STP-2387(4) - P.I. No. 542070</i>		
Alternative Number	Description of Alternative	Initial Cost Savings
	<b>ROADWAY (RD)</b>	
RD – 21	Delete the bike lanes	\$750,354
RD – 22	Use divided median section west of I-95	\$5,580
RD – 23	Use multi – use trails	\$241,674
RD – 24	Use 12’ shoulders in all urban sections	\$1,465,408
RD – 26	Use single cell precast CONSPAN in-lieu of box culvert at Horse Creek	\$132,483

# Value Analysis Design Alternative



<b>PROJECT:</b> Georgia Department of Transportation CSNHS-0007-00(421) – P.I. No. 0007421 I-95 and SR 251 Interchange – McIntosh County	<b>ALTERNATIVE NO.:</b>  <b>BR-1</b>
<b>DESCRIPTION:</b> USE A 10' FLUSH SHOULDER	<b>SHEET NO.:</b> 1 of 4

**Original Design:**

The original design utilizes a 4' bike lane, a 2' gutter and a 6' raised sidewalk.

**Alternative:**

The alternative design proposes using a 10' flush shoulder on the bridge and extends full width shoulders through interchange to the ramp terminals.

**Opportunities:**

- Reduced paving cost
- Improved safety and operations
- Flush shoulder will better accommodate future widening.

**Risks:**

- Minimal design effort

**Technical Discussion:**

Utilizing a flush shoulder across the bridge will provide several benefits beyond mere cost savings. The flush shoulder will accommodate the bike and pedestrian traffic, but could also be utilized by cars and trucks during emergency situations. The flush section will provide reduced cost and easier construction sequencing if the roadway is widened in the future. If asphalt pavement is used in lieu concrete or asphalt shoulders are used in the interchange, an additional savings of approximately \$150,000.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
<b>ORIGINAL DESIGN</b>	\$ 256,952	\$	\$ 256,952
<b>ALTERNATIVE</b>	\$ 236,298	\$	\$ 236,298
<b>SAVINGS</b>	\$ 20,654	\$	\$ 20,654

# Illustrations



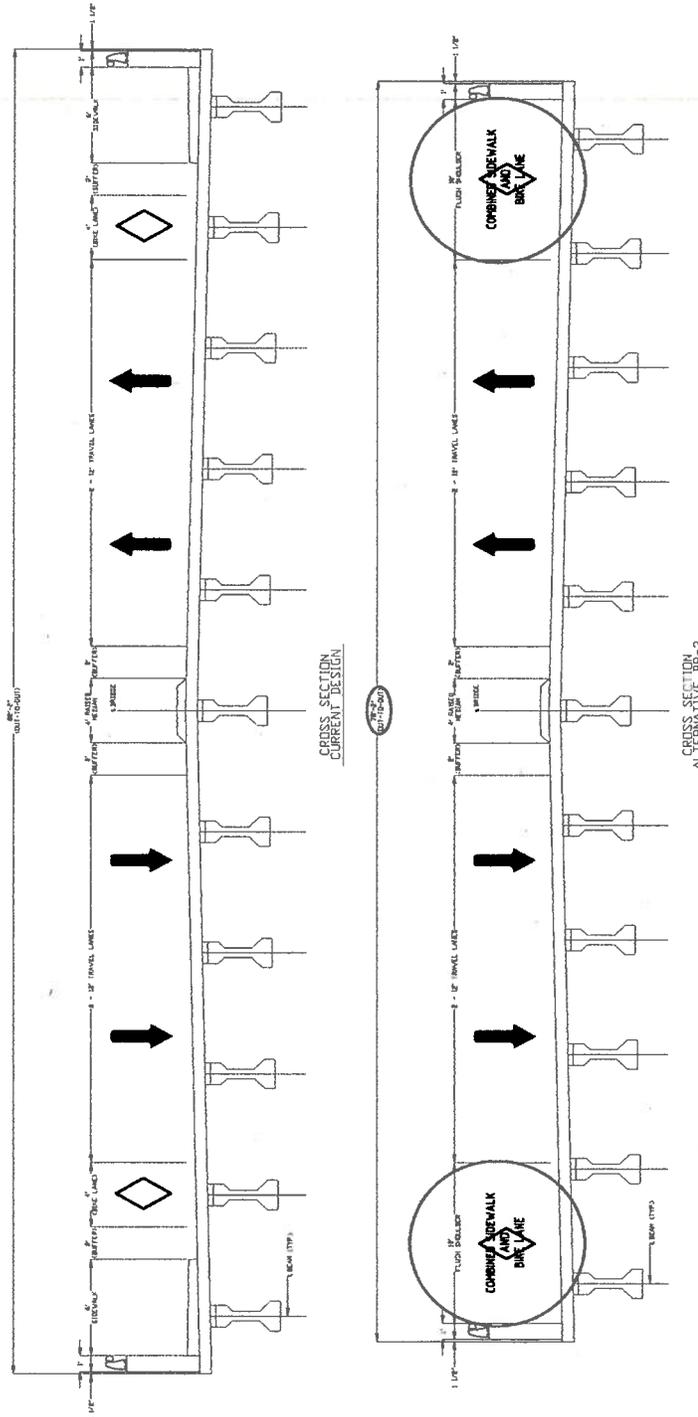
PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-1**

DESCRIPTION: **USE A 10' FLUSH SHOULDER**

SHEET NO.: 2 of 4



# Calculations



PROJECT **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-1**

DESCRIPTION: **USE A 10' FLUSH SHOULDER**

SHEET NO.: 3 of 4

Station 127+40 to Station 137+50 Plan sheets 25,26 &27

### Reduction in Quantity-

Curb and Gutter:  $280' + 180' + 60' + 45' + 200' + 230' = 1715$  lf

Sidewalk: Roadway  $[(225' + 105' + 70' + 45' + 65' + 210') \times 5'] / (9\text{sf/sy}) = 400$  sy

Bridge  $(408' \times 2\text{each} \times 6') / (9\text{sf/sy}) = 544$  sy

Total 944 sy

Bridge:  $408$  lf  $\times 2' \times 2$  each = 1632 sf

### Additional Quantities-

GAB-  $1715$  lf  $\times 7.5'$  wide /  $(9\text{sf/sy}) = 1429$  sy

19.0 mm Superpave-  $[(10$  ft  $\times 1715\text{lf}) / (9\text{sf/sy})] \times [(330\#/\text{sy}) / (2000\#/\text{ton})] \Rightarrow 31$  tons

11" Reinforced Concrete Pavement-  $1715$  lf  $\times 10.0'$  wide /  $(9\text{sf/sy}) = 1906$  sy



# Value Analysis Design Alternative



<b>PROJECT:</b>	<b>Georgia Department of Transportation</b> <b>CSNHS-0007-00(421) – P.I. No. 0007421</b> <b>I-95 and SR 251 Interchange – McIntosh County</b>	<b>ALTERNATIVE NO.:</b>	<b>BR-3</b>
<b>DESCRIPTION:</b>	<b>USE A 14' CENTER TURN LANE WITH NO SEPARATION</b>	<b>SHEET NO.:</b>	1 of 4

**Original Design:**

The original bridge design for SR 251 across I-95 calls for the construction of a 408' long, 4 span bridge, 106'-5" wide with bents skewed about 50°. The end spans are 60' and comprise of Type II AASHTO Girders while the intermediate spans are 143' and 145' each and comprise of BT 74 Girders. The superstructure accommodates on each side a concrete side barrier of special design with a chain link fence, 6' raised sidewalk, 2' buffer, 4' bike lane, 2 – 12' travel lanes, a 12' dedicated turn lane and a 2' buffer. Opposing traffic is separated by a 4' raised median.

The new bridge replaces an existing 2 lane bridge and is built 6' higher to provide adequate vertical clearance to widened I-95 lanes.

**Alternative:**

The alternative proposes a 14' shared turn lane over the bridge in-lieu of two dedicated turn lanes and an 8' median.

The alternative maintains all other original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time
- Reduced land disturbance
- Consistent cross section with the rest of the roadway project

**Risks:**

- Minimal redesign effort
- Design exception may be required

**Technical Discussion:**

For the design traffic and future forecast traffic along SR 251 and at the interchange with I-95, a back-to-back turn lane may be adequate across the bridge.

The revised superstructure will accommodate on each side a concrete side barrier of special design with a chain link fence, 6' raised sidewalk, 2' buffer, 4' bike lane, 2 – 12' travel lanes, a 14' back-to-back turn lane and a 2' buffer.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 816,920	\$	\$ 816,920
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 816,920	\$	\$ 816,920

# Illustrations



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

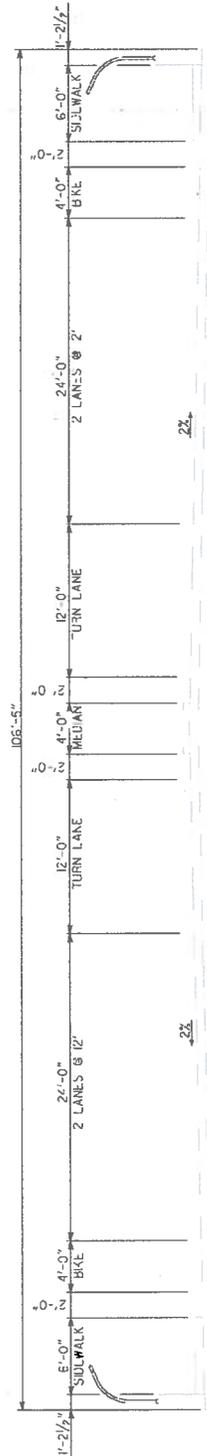
ALTERNATIVE NO.:

**BR-3**

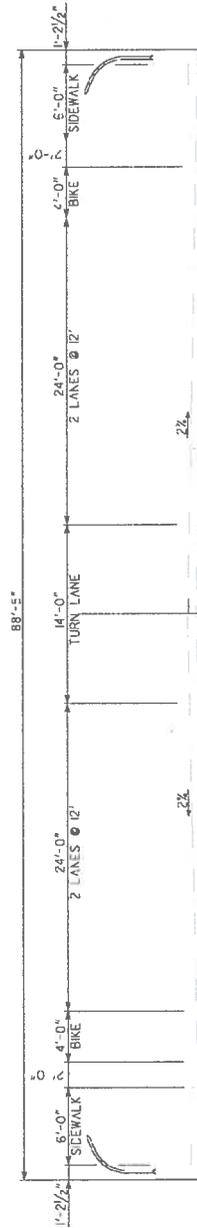
DESCRIPTION: **USE A 14' CENTER TURN LANE WITH NO SEPARATION**

SHEET NO.:

**2 of 4**



BRIDGE SECTION  
ORIGINAL DESIGN



BRIDGE SECTION  
ALTERNATIVE BR-3

# Calculations



PROJECT: **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-3**

DESCRIPTION: **USE A 14' CENTER TURN LANE WITH NO SEPARATION**

SHEET NO.:

3 of 4

## Note:

- 1) The VE team is cognizant of the fact that the project design is in its preliminary phase.
- 2) Revised Bridge Preliminary Plan & Elevation were made available at the time of the VE study.
- 3) Since the substructure design had not been completed at the time of the VE study and existing conditions were not readily available, certain assumptions have been made.

## Current Design:

106'-5" wide bridge 408' long.

## Alternative BR-3:

This alternative proposes building the bridge 88'-5" wide.

Reduction in width of Deck =  $[(106'-5") - (88'-5")] = 18'-0"$

Total area of decreased bridge surface =  $[408' \times 18'] = 7344 \text{ SF}$

Area of decreased raised median =  $[408' \times 4'] / 9 = 181.33 \text{ SY}$

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps, and superstructure components).}**

## NOTE:

**Reduction from current design = savings for alternative.**



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation CSNHS-0007-00(421) – P.I. No. 0007421 I-95 and SR 251 Interchange – McIntosh County</b>	ALTERNATIVE NO.:	<b>BR-4</b>
DESCRIPTION:	<b>REDUCE DISTANCE TO END BENTS TO 20' AND USE PIER PROTECTION AND GUARD RAILS</b>	SHEET NO.:	1 of 4

**Original Design:**

The original bridge design for SR 251 across I-95 calls for the construction of a 408' long, 4 span bridge, 106'-5" wide with bents skewed about 50°. The end spans are 60' and comprise of Type II AASHTO Girders while the intermediate spans are 143' and 145' each and comprise of BT 74 Girders. The superstructure accommodates on each side a concrete side barrier of special design with a chain link fence, 6' raised sidewalk, 2' buffer, 4' bike lane, 2 – 12' travel lanes, a 12' dedicated turn lane and a 2' buffer. Opposing traffic is separated by a 4' raised median.

The new bridge replaces an existing 2 lane bridge and is built 6' higher to provide adequate vertical clearance to widened I-95 lanes. Also, the distance from the edge of I-95 travel lane to the first interior pier is 36' (14' shoulder + 18' clear + 4' ditch).

**Alternative:**

The alternative proposes reducing the distance from the edge of I-95 travel lane to the first interior pier to 24' and providing a side barrier for pier protection.

The alternative maintains all other original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time
- Reduced land disturbance
- Opportunity to lower the profile

**Risks:**

- Minimal redesign effort
- Design exception may be required

**Technical Discussion:**

By moving the end spans inward by 12' on each side the revised span arrangement will reduce the bridge length by 24'. The end spans will remain at 60' and comprise of Type II AASHTO Girders while the intermediate spans will be approximately 131' and 133' each and comprise of BT 74 Girders. Additionally, an opportunity may exist to use shallower beams (BT 63) resulting in lowering the profile which will be highly beneficial to the overall interchange configuration. This opportunity may have to be further investigated by the design team.

See the next sheet for the calculation of the savings noted below.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 281,474	\$	\$ 281,474
ALTERNATIVE	\$ 21,538	\$	\$ 21,538
SAVINGS	\$ 259,936	\$	\$ 259,936

# Illustrations



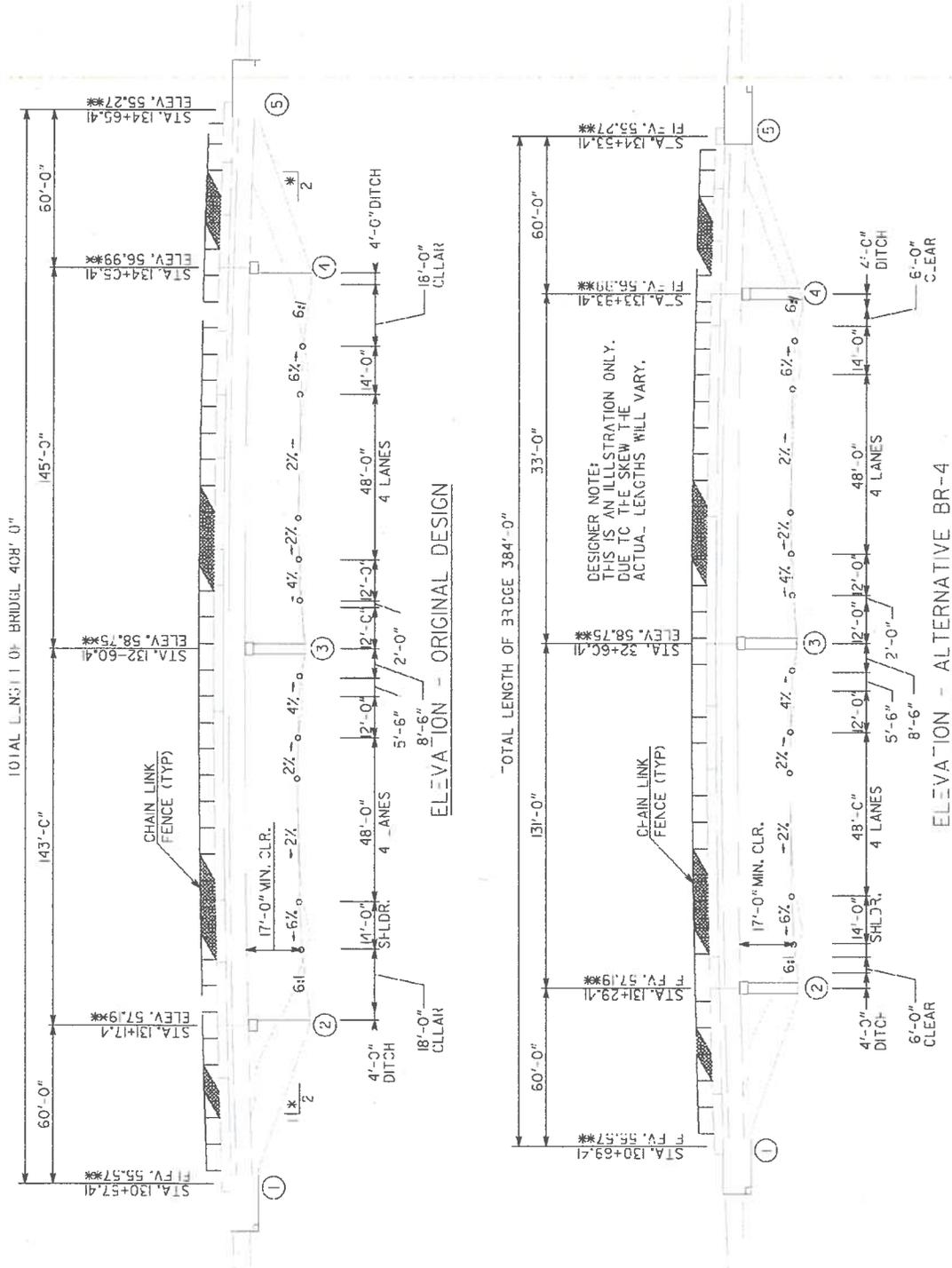
PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-4**

DESCRIPTION: **REDUCE DISTANCE TO END BENTS TO 20' AND USE  
PIER PROTECTION AND GUARD RAILS**

SHEET NO.: **2 of 4**



# Calculations



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-4**

DESCRIPTION: **REDUCE DISTANCE TO END BENTS TO 20' AND USE  
PIER PROTECTION AND GUARD RAILS**

SHEET NO.: 3 of 4

## Note:

- 1) The VE team is cognizant of the fact that the project design is in its preliminary phase.
- 2) Revised Bridge Preliminary Plan & Elevation were made available at the time of the VE study.
- 3) Since the substructure design had not been completed at the time of the VE study and existing conditions were not readily available, certain assumptions have been made.

## Current Design:

106'-5" wide bridge 408' long.

## Alternative BR-4:

This alternative proposes building the bridge approximately 384' long.

Reduction in length of bridge =  $[(408' - 384')] = 24'-0"$

Total area of decreased bridge surface =  $[24' \times 106.42'] = 2554 \text{ SF}$

Area of decreased raised median =  $[24' \times 4'] / 9 = 10.67 \text{ SY}$

Approximate length of side barrier required for pier protection =  $2 \times 140' = 280'$

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps, and superstructure components).}**

## **NOTE:**

**Reduction from current design = savings for alternative.**



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
 CSNHS-0007-00(421) – P.I. No. 0007421  
 I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:

**BR-5**

**DESCRIPTION:** USE MSE WALLED ABUTMENTS

SHEET NO.: 1 of 4

**Original Design:**

The original bridge design for SR 251 across I-95 calls for the construction of a 408' long, 4 span bridge, 106'-5" wide with bents skewed about 50°. The end spans are 60' and comprise of Type II AASHTO Girders while the intermediate spans are 143' and 145' each and comprise of BT 74 Girders. The superstructure accommodates on each side a concrete side barrier of special design with a chain link fence, 6' raised sidewalk, 2' buffer, 4' bike lane, 2 – 12' travel lanes, a 12' dedicated turn lane and a 2' buffer. Opposing traffic is separated by a 4' raised median.

The new bridge replaces an existing 2 lane bridge and is built 6' higher to provide adequate vertical clearance to widened I-95 lanes. Also, the distance from the edge of I-95 travel lane to the first interior pier is 36' (14' shoulder + 18' clear + 4' ditch).

**Alternative:**

The alternative proposes eliminating the 60' end spans and providing MSE Walled abutments at the location of current Bents 2 and 4. The ditch can be replaced with a buried drainage pipe and the clear distance may be reduced to 12'. Side barriers may be placed to protect the MS Walls.

The alternative maintains all other original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time
- Reduced land disturbance

**Risks:**

- Minimal redesign effort
- Design exception may be required

**Technical Discussion:**

By eliminating the end spans on each side and providing MSE Walled abutments in place of the current Bents 2 and 4, the total bridge length reduces to 288'. Type 7-C side barriers may be used to protect the MSE Walls. The 4' ditch can be replaced by a buried pipe to channel runoff across the bridge footprint. The 143' and 145' spans remain the same.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,407,414	\$	\$ 1,407,414
ALTERNATIVE	\$ 502,602	\$	\$ 502,602
SAVINGS	\$ 904,813	\$	\$ 904,813

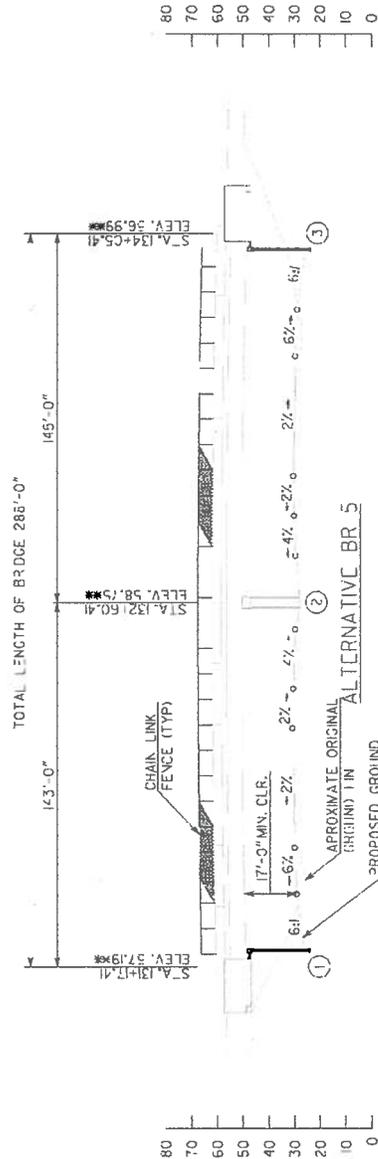
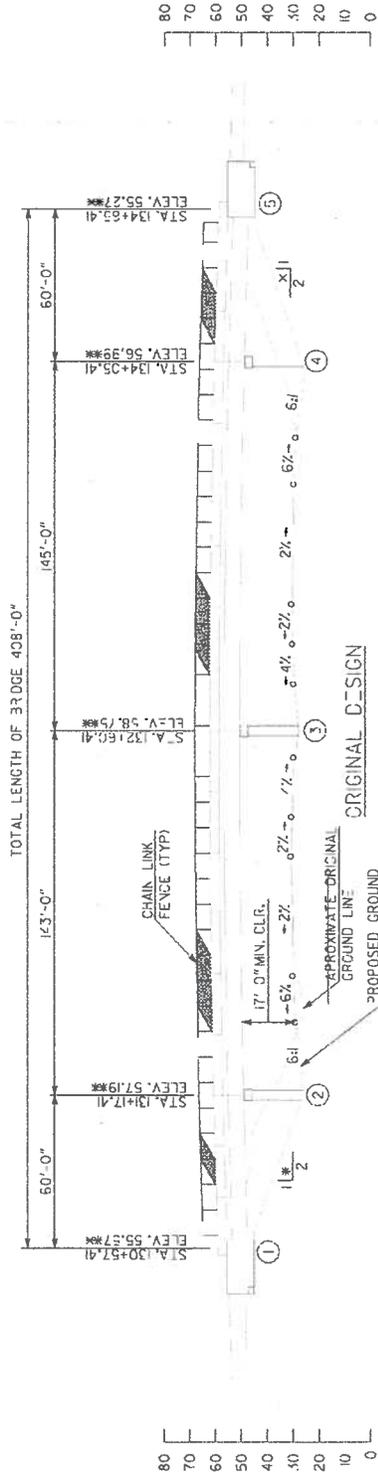
PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-5**

DESCRIPTION: **USE MSE WALLED ABUTMENTS**

SHEET NO.: **2 of 4**



# Calculations



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-5**

DESCRIPTION: **USE MSE WALLED ABUTMENTS**

SHEET NO.: 3 of 4

## Note:

- 1) The VE team is cognizant of the fact that the project design is in its preliminary phase.
- 2) Revised Bridge Preliminary Plan & Elevation were made available at the time of the VE study.
- 3) Since the substructure design had not been completed at the time of the VE study and existing conditions were not readily available, certain assumptions have been made.

## Current Design:

106'-5" wide bridge 408' long.

## Alternative BR-5:

This alternative proposes building a 2 span bridge 288' long.

Reduction in length of bridge =  $[(408' - 288')] = 120'-0"$

Total area of decreased bridge surface =  $[120' \times 106.42'] = 12770.4 \text{ SF}$

Area of decreased raised median =  $[120' \times 4'] / 9 = 53.33 \text{ SY}$

Approximate length of side barrier required for Wall protection =  $2 \times (140' + 72 + 72) = 576'$

Assuming a 18' high MSE Wall tapering down at 4:1 on the sides:

Area of MSE Walls =  $2 \times \{0.5 \times (2 \times 72' \times 18') + (140' \times 18')\} = 7632 \text{ SF}$

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction and \$54.59 per square foot for MSE Walls. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps, and superstructure components).}**

## NOTE:

**Reduction from current design = savings for alternative.**



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation CSNHS-0007-00(421) – P.I. No. 0007421 I-95 and SR 251 Interchange – McIntosh County</b>	ALTERNATIVE NO.:	<b>BR-9</b>
DESCRIPTION:	<b>REDUCE END SPANS TO 40'</b>	SHEET NO.:	1 of 4

**Original Design:**

The original bridge design for SR 251 across I-95 calls for the construction of a 408' long, 4 span bridge, 106'-5" wide with bents skewed about 50°. The end spans are 60' and comprise of Type II AASHTO Girders while the intermediate spans are 143' and 145' each and comprise of BT 74 Girders. The superstructure accommodates on each side a concrete side barrier of special design with a chain link fence, 6' raised sidewalk, 2' buffer, 4' bike lane, 2 – 12' travel lanes, a 12' dedicated turn lane and a 2' buffer. Opposing traffic is separated by a 4' raised median.

The new bridge replaces an existing 2 lane bridge and is built 6' higher to provide adequate vertical clearance to widened I-95 lanes. Also, the distance from the edge of I-95 travel lane to the first interior pier is 36' (14' shoulder + 18' clear + 4' ditch).

**Alternative:**

The alternative proposes reducing the 60' end spans to 40'. The bridge beginning and ending may be shifted 20' towards the inside.

The alternative maintains all other original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time
- Reduced land disturbance

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

By reducing the end spans on each side by 20' the total bridge length reduces to 268'. The actual bridge profile will have to be verified by the design team.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 469,138	\$	\$ 469,138
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 469,138	\$	\$ 469,138

# Illustrations

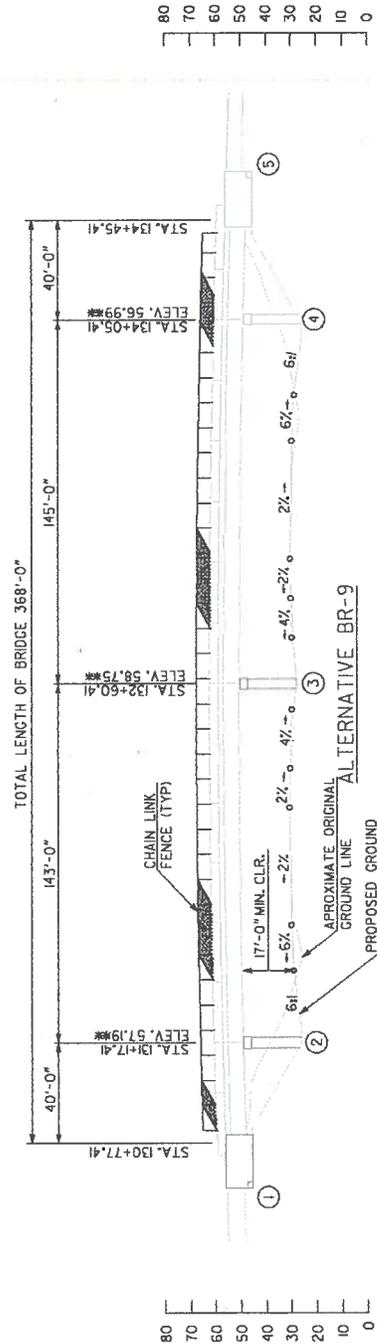
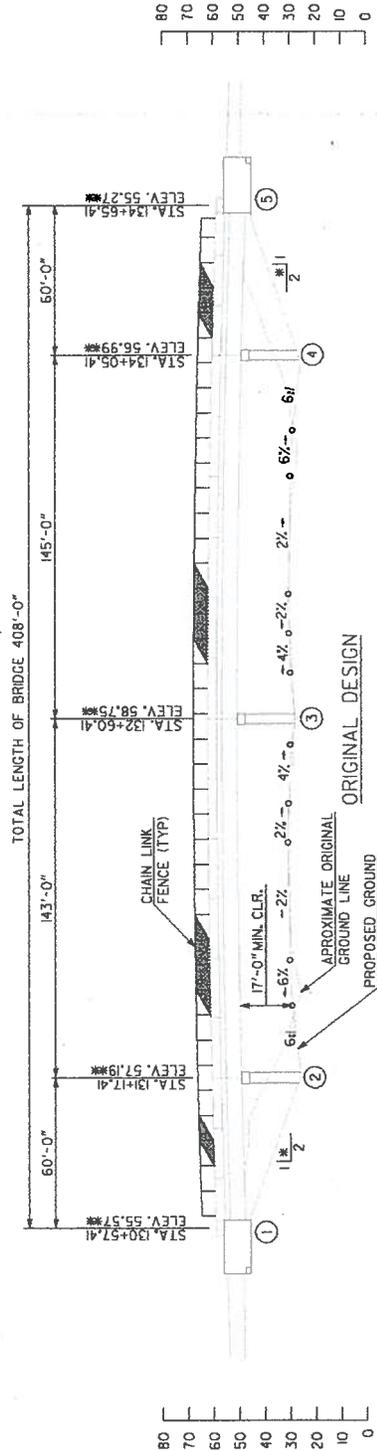
PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-9**

DESCRIPTION: **REDUCE END SPANS TO 40'**

SHEET NO.: **2 of 4**



# Calculations



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**BR-9**

DESCRIPTION: **REDUCE END SPANS TO 40'**

SHEET NO.: 3 of 4

**Note:**

- 1) The VE team is cognizant of the fact that the project design is in its preliminary phase.
- 2) Revised Bridge Preliminary Plan & Elevation were made available at the time of the VE study.
- 3) Since the substructure design had not been completed at the time of the VE study and existing conditions were not readily available, certain assumptions have been made.

**Current Design:**

106'-5" wide bridge 408' long.

**Alternative BR-9:**

This alternative proposes building a bridge 268' long.

Reduction in length of bridge =  $[(408' - 268')] = 40-0''$

Total area of decreased bridge surface =  $[40' \times 106.42'] = 4256.8 \text{ SF}$

Area of decreased raised median =  $[40' \times 4'] / 9 = 17.77 \text{ SY}$

**{In comparing costs of original design and alternative, \$100 per square foot has been assumed for the bridge construction and \$54.59 per square foot for MSE Walls. A more detailed cost analysis may be performed when the bridge design progresses sufficiently to be able to itemize major components. A detailed analysis may show greater cost savings than that shown in this report. Detailed estimate should include savings in substructure components (piles, piers, caps, and superstructure components).}**

**NOTE:**

**Reduction from current design = savings for alternative.**



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**WL-2**

DESCRIPTION: **USE MODULAR BLOCK WALLS IN-LIEU OF GRAVITY  
WALLS**

SHEET NO.: 1 of 4

**Original Design:**

The original roadway design drawings call for cast-in-place concrete barrier walls per GDOT Special Design Standards to the North and South of SR 251 and just West of the relocated Mall entrance. The purpose of the wall to the South of SR 251 is to protect the Oak trees within the footprint of the roadway embankment while the wall to the North of SR 251 reduces the encroachment into a parking lot.

**Alternative:**

The alternative proposes the use of Modular Block walls with parapet and handrail (similar to the original wall design) in-lieu of the cast-in-place concrete barrier walls and MSE walls.

The alternative maintains the original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time
- Improved aesthetics

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

Modular Block walls are easy to construct and have demonstrated acceptable performance and durability. It is not uncommon to use these types of walls in an Urban Commercial environment.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 279,178	\$	\$ 279,178
ALTERNATIVE	\$ 130,713	\$	\$ 130,713
SAVINGS	\$ 148,465	\$	\$ 148,465

PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**WL-2**

DESCRIPTION: **USE MODULAR BLOCK WALLS IN-LIEU OF GRAVITY  
WALLS**

SHEET NO.: **2 of 4**

## KEY FEATURES

*All of the features of the Keystone Compac units plus:*

### *Inextensible Steel Reinforcement*

- ▶ Significantly reduced deflection or movement within the reinforced mass. Deflections with steel reinforcement are reduced by over 66% compared to geosynthetic reinforcement.
- ▶ Performance is not time dependent such as polymer creep effects with extensible reinforcing (geogrids).
- ▶ Backfill of up to 4" to 6" maximum size can be used. With geosynthetics, the maximum size is generally limited to approximately 3/4" due to erratic resistance and installation damage with larger particle sizes.

### *Designed to More Rigorous AASHTO Standards*

- ▶ Increased factors of safety and confidence in wall system performance.

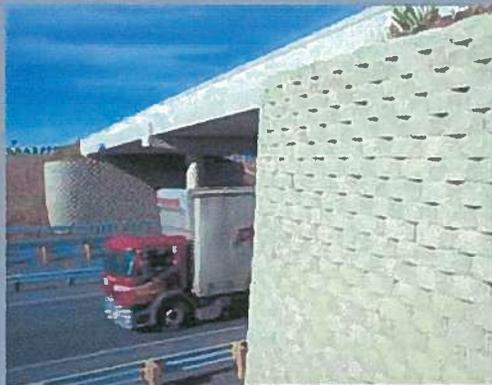
### *Intended for the Most Demanding Applications*

- ▶ Deflection sensitive applications such as:
  - Bridge abutments
  - Tall walls
  - Walls with heavy surcharges
  - Walls where loads or structures bear on or immediately behind the reinforced mass
- ▶ Transportation or other projects requiring AASHTO compliance.
- ▶ HITEC Evaluation #40478.



**Note: Sample of KEYSTONE™ Modular Block Wall applications shown.  
Source: [www.keystonewalls.com](http://www.keystonewalls.com)**

## *Endless Applications*



### GOVERNMENTAL

The rigorous standards for government projects are routinely met by Keystone products and services. Government agencies that use Keystone include:

- ▶ U.S. Federal Highway Administration
- ▶ State Department of Transportation Roadway and Freeway Projects
- ▶ Army Corps of Engineers
- ▶ Department of Transportation for individual U.S. states



# Calculations



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**WL-2**

DESCRIPTION: **USE MODULAR BLOCK WALLS IN-LIEU OF GRAVITY  
WALLS**

SHEET NO.: 3 of 4

## **Current Design (Cast-in-Place Gravity Wall with Parapet and Handrail)**

Volume of concrete for South Wall (assume pay Item 500-3110 & 3115 for entire wall) = P1 @ 35 CY, P2 @ 101 + P3 @ 130) = 266 CY

(Note: Volume obtained from design drawings provided at the time of the VE Study)

For the North Wall, no design drawings were provided. The Wall is assumed to be of uniform height of 15' (top of footing to top of parapet) and similar to the South Wall.

Volume of Wall concrete (assume P2 for entire wall) for North Wall (Sta. 121 + 20.80 to Sta. 122+87.81) = 167.01 LF X 13" Thk. X 15' H / 12 X 27) = 100.52 CY

Volume of foundation concrete for North Wall (assume P3) = 167.01 LF X 1.25' X 8' = 61.86 CY

## **Alternative (Modular Block Walls with Coping)**

Area of required Modular Block Walls to the South in place of Gravity Walls =  $0.5 \times \{(27.46 \times 7.42) + 5.25 \times (7.42 + 7.60) + 25.01 \times (7.60 + 8.45) + 50.01 \times (8.45 + 10.15) + 50.01 \times (10.15 + 11.85) + 32.38 \times (11.85 + 12.95) + 17.63 \times (12.95 + 13.65) + 7.50 \times (13.65 + 13.81) + (50.12 \times 13.81)\}$  = 2442.25 SF

Length of Concrete Side Barrier on South Wall = 25.01 + 50.01 + 50.01 + 32.38 + 17.63 = 175.04 LF

Area of required Modular Block Walls to the North (assume uniform height of 15' to top of parapet, ie, 12'-4" to top of wall) in place of Gravity Walls = 167.01 LF X 12.33' H = 2059.23 SF

Length of Concrete Side Barrier on North Wall = 167.01 LF

Total area of Modular Block Wall = 2442.25 + 2059.23 = 4501.48 SF

Total Length of Concrete Side Barrier = 175.04 + 167.01 = 342.05 LF

### **NOTE:**

**Cost of Modular Wall Construction assumed to be \$15 per SF (as quoted by Keystone manufacturer).**

**A more detailed cost analysis may be performed when the design progresses sufficiently to be able to itemize major components and obtain more accurate quantities. A detailed analysis may show greater cost savings than that shown in this report.**



# COST WORKSHEET

**PROJECT:** Georgia Department of Transportation  
 CSNHS-0007-00(421) – P.I. No. 0007421  
 I-95 and SR 251 Interchange - McIntosh County

**ALTERNATIVE NO.:**  
**WL-2**

**DESCRIPTION:** USE MODULAR BLOCK WALLS IN-LIEU OF GRAVITY 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
Gravity Walls (P1)	CY	35	\$ 383.34	\$ 13,416.90	0	\$ 383.34	\$ -
Gravity Walls (P2)	CY	201.52	\$ 805.00	\$ 162,223.60	0	\$ 805.00	\$ -
Gravity Walls (P3)	CY	191.68	\$ 407.75	\$ 78,157.52	0	\$ 407.75	\$ -
Modular Block Wall	SF	0	\$ 15.00	\$ -	4501.48	\$ 15.00	\$ 67,522.20
Conc. Barrier Mounted on Wall	LF	0	\$ 150.00	\$ -	342.05	\$ 150.00	\$ 51,307.50
<b>Note: Handrail Costs are the same for both Original Design and Alternative</b>							
<b>Sub-total</b>				\$ 253,798			\$ 118,830
<b>Mark-up at 10.00%</b>				\$ 25,380			\$ 11,883
<b>TOTAL</b>				<b>\$ 279,178</b>			<b>\$ 130,713</b>

**Estimated Savings:** **\$148,465**

# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. 0007421  
I-95 and SR 251 Interchange**

ALTERNATIVE NO.:

**WL-3**

DESCRIPTION: **USE TREE PITS IN-LIEU OF GRAVITY WALL FOR TREE  
PROTECTION**

SHEET NO.: 1 of 2

## Original Design:

The original roadway design drawings call for cast-in-place concrete barrier walls per GDOT Special Design Standards to the North and South of SR 251 and just West of the relocated Mall entrance. The purpose of the wall to the South of SR 251 is to protect the Oak trees within the footprint of the roadway embankment while the wall to the North of SR 251 reduces the encroachment into a parking lot.

## Alternative:

The alternative suggests the use of Tree Pits to protect the Oak Trees in-lieu of constructing a 265.37' long gravity wall.

The alternative will maintain the original design geometry of the roadway.

## Opportunities:

- Cost savings
- Reduced construction time
- Improved aesthetics

## Risks:

- Minimal redesign effort

## Technical Discussion:

Research has shown the availability of many tree protection systems that allow for construction of infrastructure (roadway and embankments) alongside trees. The following page lists one such system.

By utilizing a similar tree protection system, the need for a gravity wall is obviate. The roadway embankment can be extended around the tree pits without damaging the roots of the tree.

PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**WL-3**

DESCRIPTION: **USE TREE PITS IN-LIEU OF GRAVITY WALL FOR TREE  
PROTECTION**

SHEET NO.: **2 of 2**

**PRIMARY USE:** Preserve trees during site development activities.  
**ADDITIONAL USES:**

## CONSTRUCTION TECHNIQUES FOR BUILDING AROUND TREES

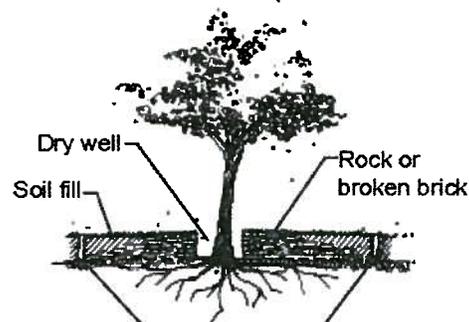
**What is it?** Tree preservation techniques for use during construction projects intended to assist the designer and developer with preserving trees and integrating land development activities with existing trees.

**Purpose** To help save valuable trees on a landscape that is to be developed is the major purpose of this BMP.

Radiating pipes for supply of oxygen and nutrients



**Location of Radiating Pipes when Filling Around Existing Trees  
Perspective View**



**Tree Well Section View**

### Limitations

Never remove more than one-third of a tree's root system. When you remove roots, remove a proportional part of the tree's limb structure so the remaining roots will be able to support the remaining biomass without being stressed. When a tree becomes stressed, disease and pest damage is likely. When cutting soil around a tree it is likely that you will lower the water table and deny the tree soil moisture. It will probably be necessary to install a drip or microspray irrigation system to supply moisture to the damaged root system. Drip irrigate the tree each week there is no rainfall.

### Materials

Perforated pipes, broken but clean brick pieces (no mortar on the brick), washed gravel, solid pipe for air vents, drip tubing, drip irrigation emitters or microspray heads.

### Installation

When raising the soil level around a tree the root system must be allowed to still get moisture and nutrients. A tree well will keep soil away from the tree trunk. Radiate perforated pipes at the existing grade level from the tree well to beyond the dripline of the tree about one-third of the tree radius, and cover the pipes with broken brick or washed gravel. Place filter fabric on top of the porous material and pipes to prevent fill soil from clogging the open pore spaces and suffocate the tree. Then, fill with top soil to the proposed fill level.

Source: Home Landscapes, Planting, Design and Management; E.C. Martin, Jr., and Pete Melby; Timber Press.

# Value Analysis Design Alternative



PROJECT: <b>Georgia Department of Transportation CSNHS-0007-00(421) – P.I. No. 0007421 I-95 and SR 251 Interchange – McIntosh County</b>	ALTERNATIVE NO.:  <b>RD-1</b>
DESCRIPTION: <b>USE ASPHALTIC CONCRETE IN LIEU OF CONCRETE</b>	SHEET NO.: <b>1 of 3</b>

**Original Design:**

The original design proposes to use concrete pavement throughout most of the project including the entrance and exist ramps onto I-95.

**Alternative:**

The alternative design is to use asphaltic concrete in-lieu of concrete.

**Opportunities:**

- Significantly reduces construction cost
- Allows the use of one type of contractor
- Reduces construction time

**Risks:**

- No apparent risks
- Minor construction plans change required

**Technical Discussion:**

The project includes new entrance and exit ramps onto O-95. Typically, where the exit ramps go “downhill”, requiring heavy braking, the concrete pavement would be appropriate. However, in this case the proposed exit ramps are “uphill” requiring only minor braking; therefore movement of the asphalt should not be reasonably expected. Also, the design truck traffic is quite low – 3.5 to 4% as is the ADT for the design year of 2036 which is shown to be 13,250 VPD. Using asphaltic concrete should expedite and simplify the construction.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,740,000	\$	\$ 3,740,000
ALTERNATIVE	\$ 1,346,400	\$	\$ 1,346,400
SAVINGS	\$ 2,393,600	\$	\$ 2,393,600

# Illustrations

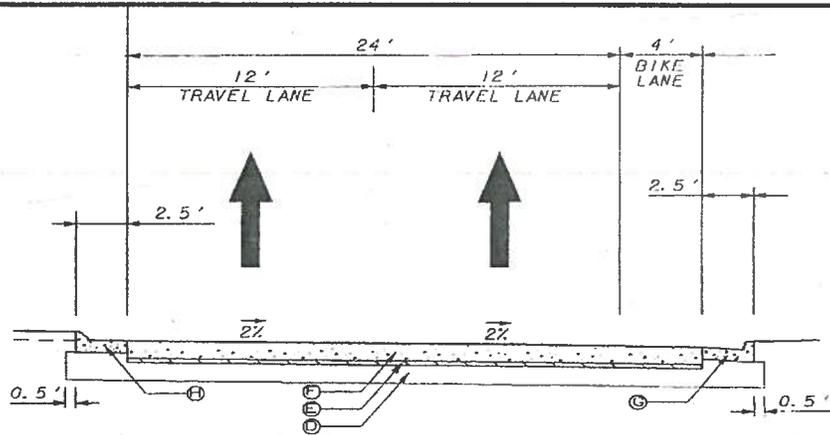


PROJECT: Georgia Department of Transportation  
 CSNHS-0007-00(421) – P.I. No. 0007421  
 I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:  
**RD-1**

DESCRIPTION: USE ASPHALTIC CONCRETE IN-LIEU OF CONCRETE

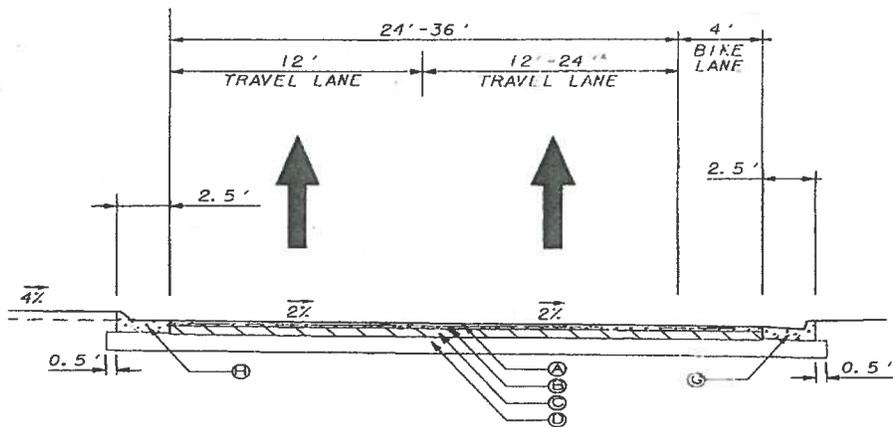
SHEET NO.: 2 of 3



**REQUIRED PAVEMENT**

- Ⓐ ASPHALTIC CONCRETE 9.5 mm TYPE 11 SUPERPAVE, 135\*/SY
- Ⓑ ASPHALTIC CONCRETE 19 mm SUPERPAVE, 220\*/SY
- Ⓓ GRADED AGGREGATE BASE, 12"
- Ⓔ ASPHALTIC CONCRETE 19 mm SUPERPAVE, 330\*/SY
- Ⓕ CONT REINF CONCRETE PVMT, CL HES CONC, 11"

**Original Design**



**REQUIRED PAVEMENT**

- Ⓐ ASPHALTIC CONCRETE 9.5 mm TYPE 11 SUPERPAVE, 135\*/SY
- Ⓑ ASPHALTIC CONCRETE 19 mm SUPERPAVE, 220\*/SY
- Ⓒ ASPHALTIC CONCRETE 25 mm SUPERPAVE, 440\*/SY
- Ⓓ GRADED AGGREGATE BASE, 12"
- Ⓔ CONC. CURB & GUTTER 8" X 30" GA. STD. 9032B, TYP 2
- Ⓕ CONC. CURB & GUTTER, 8" X 30" GA. STD. 9032B, TYP 7
- Ⓖ CONC. SIDEWALK, 4 IN

**Alternative Design**



# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 CSNHS-0007-00(421) – P.I. No. 0007421  
 I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:  
**RD-4**

DESCRIPTION: **RELOCATE NEW MALL ENTRANCE**

SHEET NO.: 1 of 3

**Original Design:**

The original design proposes acquire an existing restaurant and to construct a new entrance to the existing mall between its existing entrances; and to close its existing main entrance.

**Alternative:**

The alternative design is to improve the existing westerly entrance to the mall; not to take the existing restaurant; and to leave a “right-out” at the existing main entrance onto SR 251.

**Opportunities:**

- Significantly reduces construction right-of-way acquisition costs
- Eliminates Safety conflict with existing Truck stop
- Provides significantly greater turning storage
- Reduces construction time.

**Risks:**

- Requires minor re-design
- 

**Technical Discussion:**

The present design constructs a new entrance to the existing mall to move its entrance westerly to provide additional turning storage into the mall as well as onto I-95. However, at its present location, it requires the taking of an existing restaurant and results in entering SR 251 directly opposite the exit of the existing truck stop. This situation could result in a significant conflict between truckers leaving the truck stop and merging with the exiting mall traffic as well a traffic entering the mall. By moving the new mall entrance further to the west, to its existing location, the conflict between crossing traffic should be lessened and if it is practical to provide a right-out at the malls present location, most all conflict would be negated, and potentially, a signal may not be necessary. It appears reasonable to presume that the basic savings for this would be the cost of the right-of-way as the construction costs for the new entrances would be approximately the same.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 7,012,500	\$	\$ 7,012,500
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 7,012,500	\$	\$ 7,012,500

# Illustrations

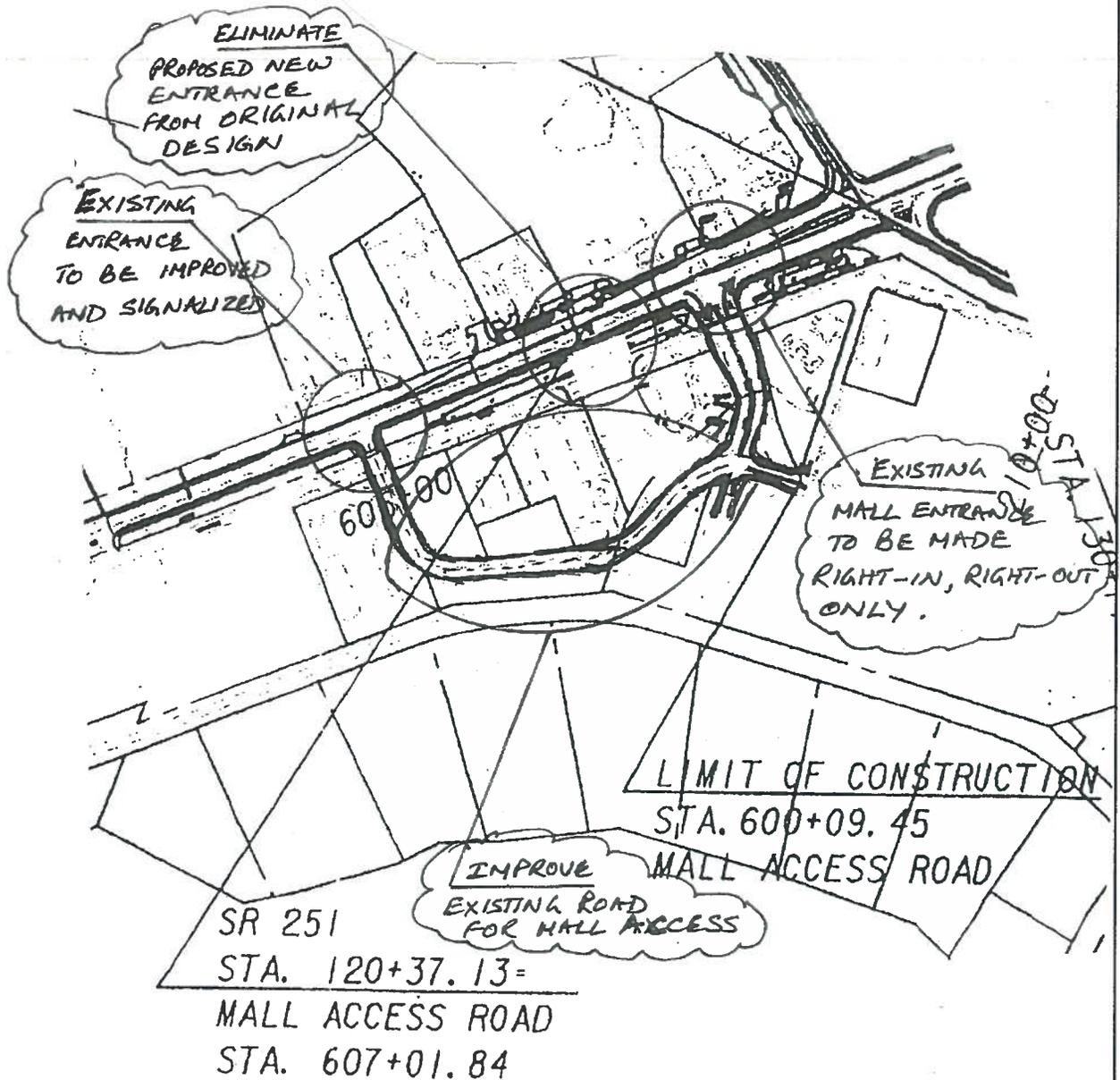


PROJECT: Georgia Department of Transportation  
CSNHS-0007-00(421) - P.I. No. 0007421  
I-95 and SR 251 Interchange - McIntosh County

ALTERNATIVE NO.:  
RD-4

DESCRIPTION: RELOCATE NEW MALL ENTRANCE

SHEET NO.: 2 of 3





# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**RD-7**

DESCRIPTION: **USE A RAISED MEDIAN SECTION EAST OF I-95**

SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes a 14' flush two-way left turn lane.

**Alternative:**

The alternative design proposes using a 20' raised median.

**Opportunities:**

- Reduced paving cost.
- Improved safety and operations.
- More consistency of the typical section

**Risks:**

- Minimal design effort
- Local opposition
- Increased curb and gutter cost.

**Technical Discussion:**

The designer proposes building a 5 lane roadway with a typical section that is 80' face of curb to face of curb. This dimension is the same as the typical section with a 20' raised median. The additional 6' is accommodated by increasing the bike lanes 7'-0". A bike lane of 7'-0" is wide enough to potentially encourage automobiles to use this as a lane creating a safety hazard for bicyclists and other automobiles. The section of roadway between the raised median currently proposed is largely residential or undeveloped and access should not be an issue. Future development of this property could pose future access management issues. Construction of a raised median section will reduce costs with little negative impacts.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 431,196	\$	\$ 431,196
ALTERNATIVE	\$ 303,155	\$	\$ 303,155
SAVINGS	\$ 128,041	\$	\$ 128,041

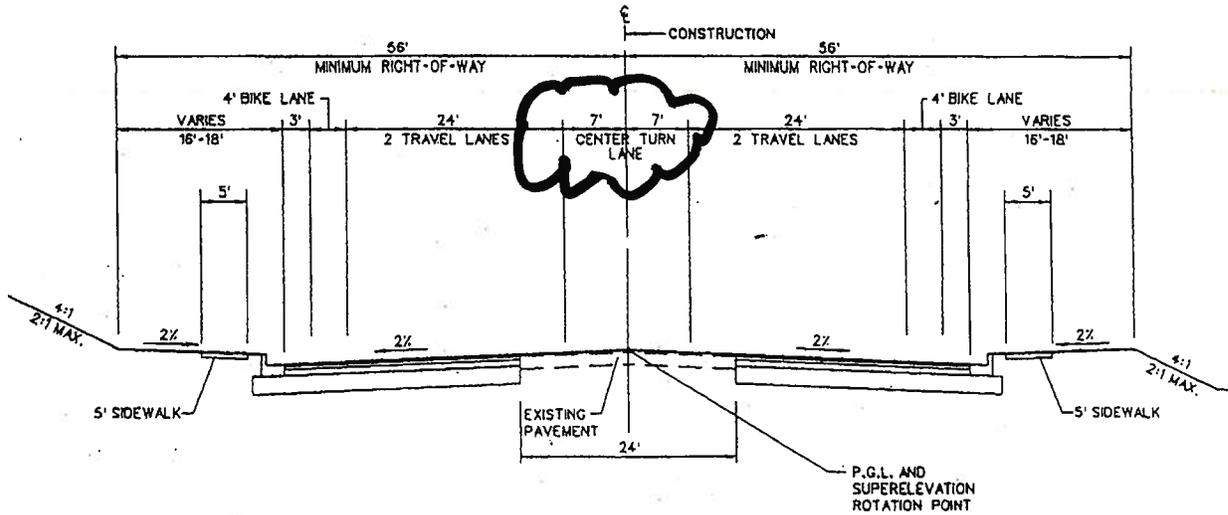
PROJECT: Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:

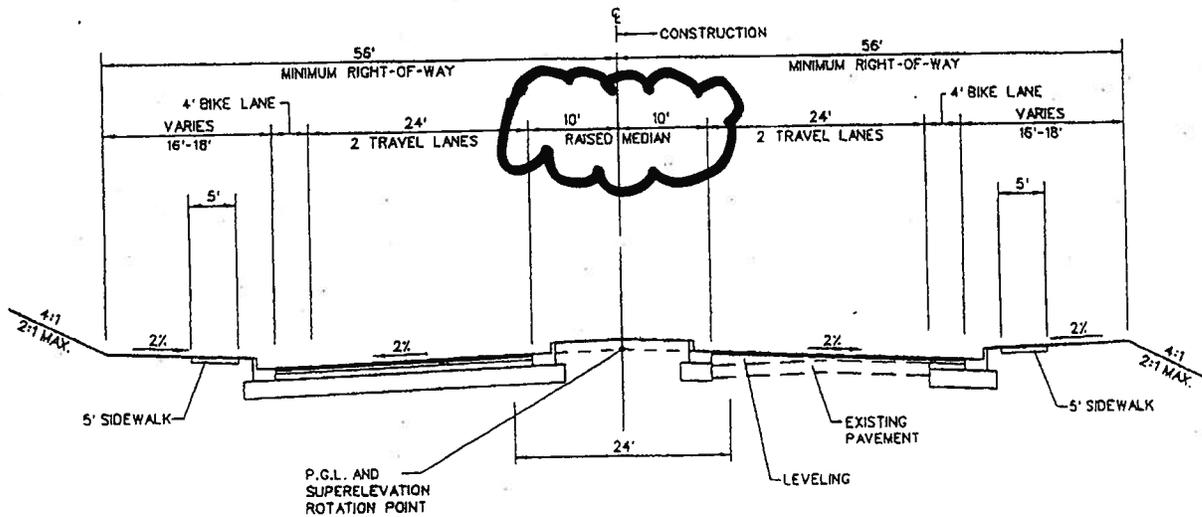
RD-7

DESCRIPTION: USE A RAISED MEDIAN SECTION EAST OF I-95

SHEET NO.: 2 of 4



ORIGINAL DESIGN  
NTS



ALTERNATIVE DESIGN  
NTS

# Calculations



PROJECT **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**RD-7**

DESCRIPTION: **USE A RAISED MEDIAN SECTION EAST OF I-95**

SHEET NO.: 3 of 4

## Length of Roadway Section:

Station 30+00 to Station 103+00 => 7,300' Rural  
Station 103+00 to Station 120+00 => 1,700' Urban

## Reduction in Quantity-

### Area of Base:

Bike Lane- 4,880 lf x 3' x 2 ea = 29,280sf  
Median- 3,880 lf x 8' = 31,040sf (Assume 1000 lf of left turn lane to remain)  
Total- = 60,320sf / (9sf/sy) = 6702 sy

### Area of paving:

Bike Lane- 4,880 lf x 3' x 2 ea = 29,280sf  
Median- 3,880 lf x 14' = 54,320sf (Assume 1000 lf of left turn lane to remain)  
Total- = 83,600sf / (9sf/sy) = 9289 sy

12" GAB- => 6,702 sy  
9.5 mm Superpave- (9289 sy) x (165#/sy) / (2000#/ton) => 766 tons  
19.0 mm Superpave- (9289 sy) x (220#/sy) / (2000#/ton) => 1,022 tons  
25.0 mm Superpave- (9289 sy) x (440#/sy) / (2000#/ton) => 2,044 tons

## Additional Quantities-

Earthwork: Assume average 1.5' depth over the width of the backbone. The project appears to be in a waste situation so assume the cost is for fill placement only.

(1.5' depth x 83,600sf) / (27cy/cf) => 4644 cy

Curb and Gutter: 4880 lf less median openings => 4500 lf x 2each = 9000 lf

Inlets: 8 each

RCP: 100 lf/ inlet x 8 ea = 800 lf

Grassing: From area of paving 83600 sf / (43560 sf/ac) = 1.92 ac



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation CSNHS-0007-00(421) – P.I. No. 0007421 I-95 and SR 251 Interchange – McIntosh County</b>	ALTERNATIVE NO.:	<b>RD-9</b>
DESCRIPTION:	<b>USE 12' SHOULDERS IN ALL URBAN SECTIONS</b>	SHEET NO.:	<b>1 of 4</b>

**Original Design:**

The original design utilizes both 12' and 16' shoulders for urban typical sections.

**Alternative:**

The alternative design proposes using 12' shoulders for all urban sections.

**Opportunities:**

- Reduced right-of-way
- Reduced earthwork

**Risks:**

- Moderate design effort

**Technical Discussion:**

The urban curb and gutter section was utilized in the commercially developed areas to limit the amount of required right-of way. By utilizing a narrower shoulder section the designer can further reduce the amount of the more costly commercial right-of-way takings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 687,744	\$	\$ 687,744
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 687,744	\$	\$ 687,744

# Illustrations



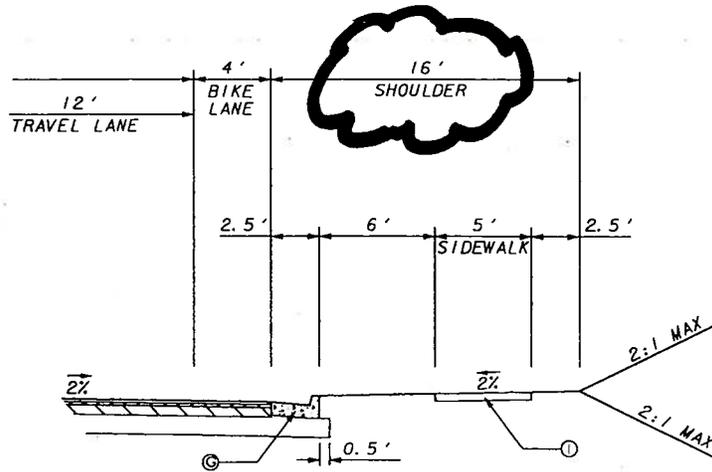
PROJECT: Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:

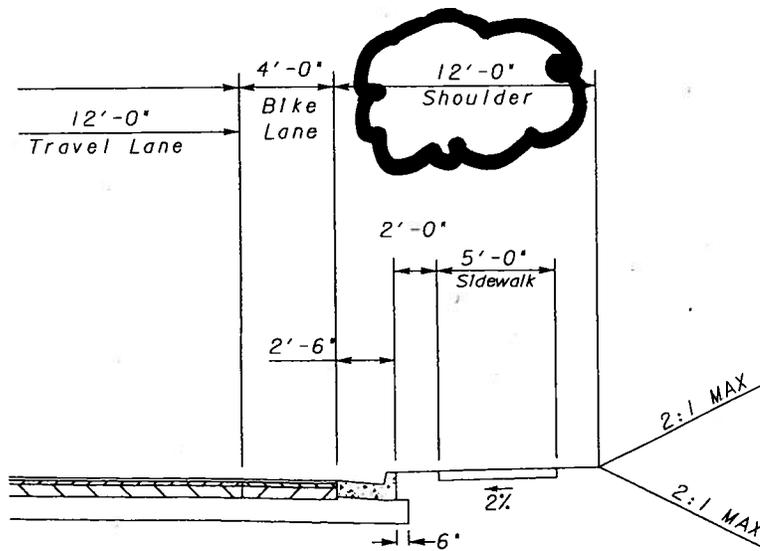
RD-9

DESCRIPTION: USE 12' SHOULDERS IN ALL URBAN SECTIONS

SHEET NO.: 2 of 4



ORIGINAL DESIGN



ALTERNATIVE DESIGN

# Calculations



PROJECT **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**RD-9**

DESCRIPTION: **USE 12' SHOULDERS IN ALL URBAN SECTIONS**

SHEET NO.: 3 of 4

## Road way with 16' shoulders:

Station 107+95 to Station 127+40 => 1945'

Station 137+55 to Station 148+35 => 3025'

Total- = 3025'

## Right-of-Way:

Commercial: Reduction (3025 lf x 2 ea x 4'wide) = 24,200 sf

Net Cost 24,200 sf x \$10.00/sf = \$ 242,000

Scheduling 55% = \$ 133,100

Administrative 60% = \$ 145,200

Inflation 40% = \$ 96,800

Total = \$ 617,100

## Clearing and Grubbing:

(3025 lf x 2 ea x 4'wide) / (43560sf/ac) = 0.56 ac

## Earthwork:

Assume an average depth of 1.5 feet.

Volume (3025 lf x 2 ea x 4'wide x 1.5 ft) / (27cf/cy) => 1344 cy



# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. 0007421**  
**I-95 and SR 251 Interchange**

ALTERNATIVE NO.:  
**RD-11**

DESCRIPTION: **MODIFY CONTROL RADII ON ENTRANCE RAMPS**

SHEET NO.: 1 of 2

## Original Design:

The original design has a radius return that is aligned with the outside pavement edge.

## Alternative:

Align the pavement edge with the control radius to reduce the additional pavement and narrow the throat of the entrance ramp.

## Opportunities:

- Reduce pavement area
- Reduce the throat of entrance ramp
- Reduce distance from the stop bar to the traffic signal

## Risks:

- Minimal design effort.

## Technical Discussion:

By modifying the geometry it has to positive operational effects. It moves the stop bar closer to the signal and it reduces the amount of “uncontrolled” pavement at the ramp throat. By having a ramp throat that is excessively wide(38’) it will encourage and/or allow unpermitted dual left turns, illegal parking or other improper turning movements.

# Illustrations



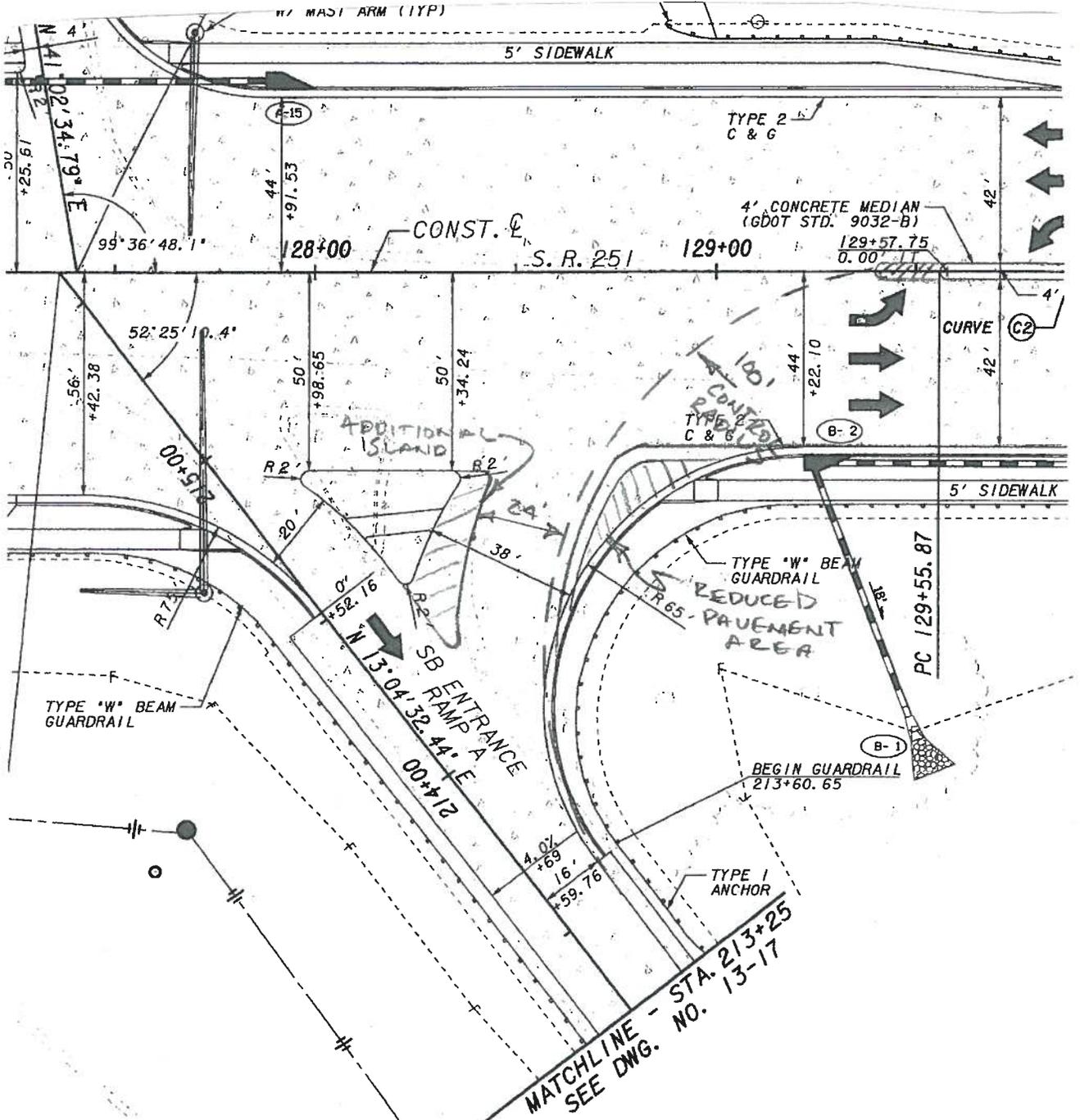
PROJECT: Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County

ALTERNATIVE NO.:

RD-11

DESCRIPTION: MODIFY CONTROL RADII ON ENTRANCE RAMPS

SHEET NO.: 2 of 2



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:  
**RD-12**

DESCRIPTION: **REDUCE GAB THICKNESS FOR CONCRETE PAVEMENT** SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes 12 inches of GAB under all concrete pavement

**Alternative:**

The alternative design proposes using 6 inches of GAB under all concrete pavement

**Opportunities:**

- Reduced paving cost

**Risks:**

- Minimal design effort

**Technical Discussion:**

It was inferred from statements in the pavement design that a “generic” design section for Interstate Ramp was utilized. Due to the low overall traffic volumes and low percentage of truck traffic for this interchange 6 inches of GAB and 330# of AC interlayer in lieu of 12 inches of GAB and 330# of AC interlayer may be more reasonable

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 364,922	\$	\$ 364,922
ALTERNATIVE	\$ 207,625	\$	\$ 207,625
SAVINGS	\$ 157,297	\$	\$ 157,297

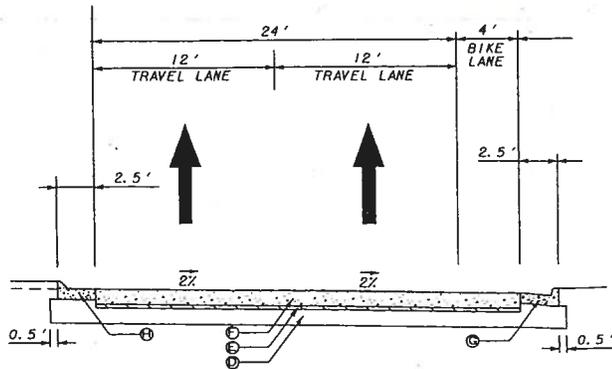
PROJECT: **Georgia Department of Transportation  
CSNHS-0007-00(421) – P.I. No. 0007421  
I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**RD-12**

DESCRIPTION: **REDUCE GAB THICKNESS FOR CONCRETE PAVEMENT**

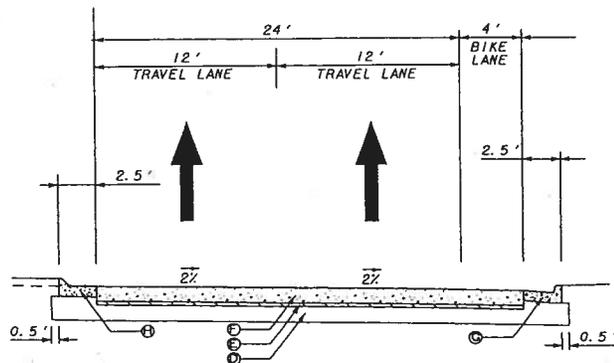
SHEET NO.: 2 of 4



**REQUIRED PAVEMENT**

- Ⓐ ASPHALTIC CONCRETE 9.5 mm TYPE 11 SUPERPAVE, 135\*/SY
- Ⓑ ASPHALTIC CONCRETE 19 mm SUPERPAVE, 220\*/SY
- Ⓓ GRADED AGGREGATE BASE, 6"
- Ⓒ ASPHALTIC CONCRETE 9.5 mm SUPERPAVE, 330\*/SY
- Ⓔ CONT REINF CONCRETE PVMT, CL HES CONC, 11"

ALTERNATIVE DESIGN



**REQUIRED PAVEMENT**

- Ⓐ ASPHALTIC CONCRETE 9.5 mm TYPE 11 SUPERPAVE, 135\*/SY
- Ⓑ ASPHALTIC CONCRETE 19 mm SUPERPAVE, 220\*/SY
- Ⓓ GRADED AGGREGATE BASE, 12"
- Ⓒ ASPHALTIC CONCRETE 9.5 mm SUPERPAVE, 330\*/SY
- Ⓔ CONT REINF CONCRETE PVMT, CL HES CONC, 11"

ORIGINAL DESIGN

# Calculations



PROJECT **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**I-95 and SR 251 Interchange – McIntosh County**

ALTERNATIVE NO.:

**RD-12**

DESCRIPTION: **REDUCE GAB THICKNESS FOR CONCRETE PAVEMENT**

SHEET NO.:

3 of 4

GAB quantity should be the same as the concrete paving quantity in the preliminary estimate => 15,100 sy



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP-2387(4) – P.I. No. 542070  
SR 251 – McIntosh County**

ALTERNATIVE NO.:

**RD-21**

DESCRIPTION: **DELETE THE BIKE LANES**

SHEET NO.: 1 of 4

### Original Design:

The original design calls for the construction to include four (4') and seven (7') wide Bike Lanes adjacent to the travel lanes. The seven foot wide bike lanes are on that portion of the SR 251 widening between the raised medians at the US 17 and I-95 intersections.

### Alternative:

The alternative would delete the bike lanes. Currently, there is no known requirement for bike lanes at this location.

### Opportunities:

- Elimination of the bike lanes will significantly reduce the project costs.
- Increase safety for bikers and automobiles
- Reduce right-of-way requirements
- May expedite project acceptance

### Risks:

- No provision for bicyclists, may not be acceptable to the local governing authorities
- Minor delay, if any, to revise construction drawings

### Technical Discussion:

The proposed design provides a 4' and 7' bike lane in each direction for bicyclists adjacent to trucks, trailers, and automobiles moving at 45 mph. Discussions during the designers' presentation indicated that there was not a "requirement" for the bike lanes, but that since there are bike lanes existing on US 17, a terminus of the project, the thought was to provide a route for them to the existing outlet mall on the west side of I-95. Other possible usage could be by folks riding their bikes from the trailer park to the mall. The current design for the bike lanes between I-95 and US 17 has been oversized (from 4' to 7') to accommodate the future changing of the proposed 5 lane to a 4 lane with raised median. It may be reasonable to decide at this time whether to construct a 5 lane or a 4 lane raised median section, and to not spend the money to oversize something which may not occur.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 750,354	\$	\$ 750,354
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 750,354	\$	\$ 750,354

# Illustrations



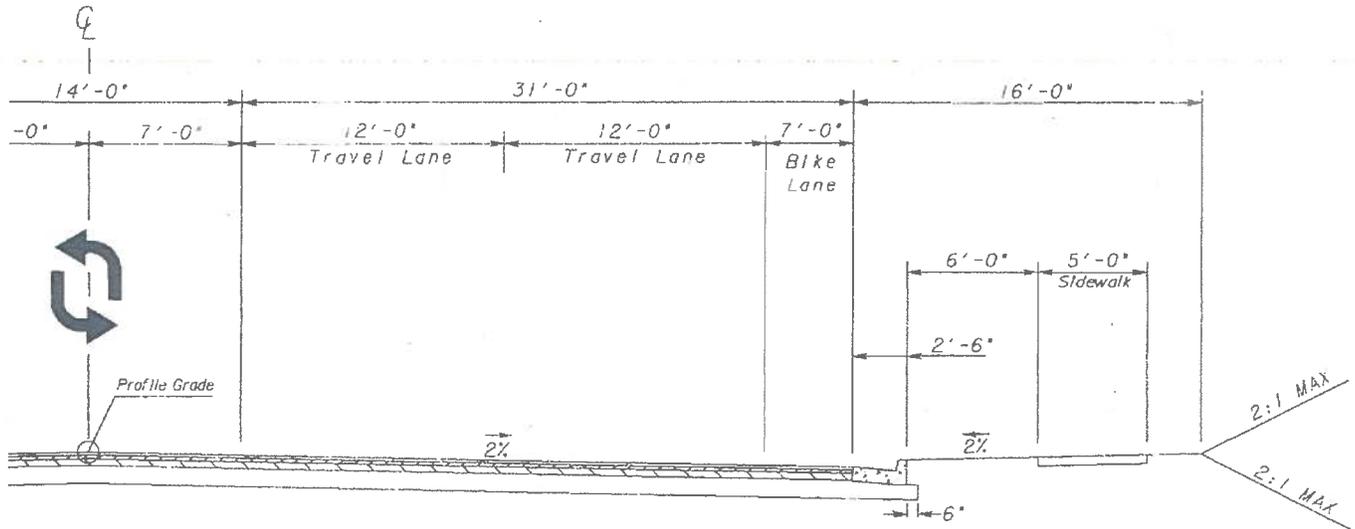
PROJECT: Georgia Department of Transportation  
STP-2387(4) – P.I. No. 542070  
SR 251 – McIntosh County

ALTERNATIVE NO.:

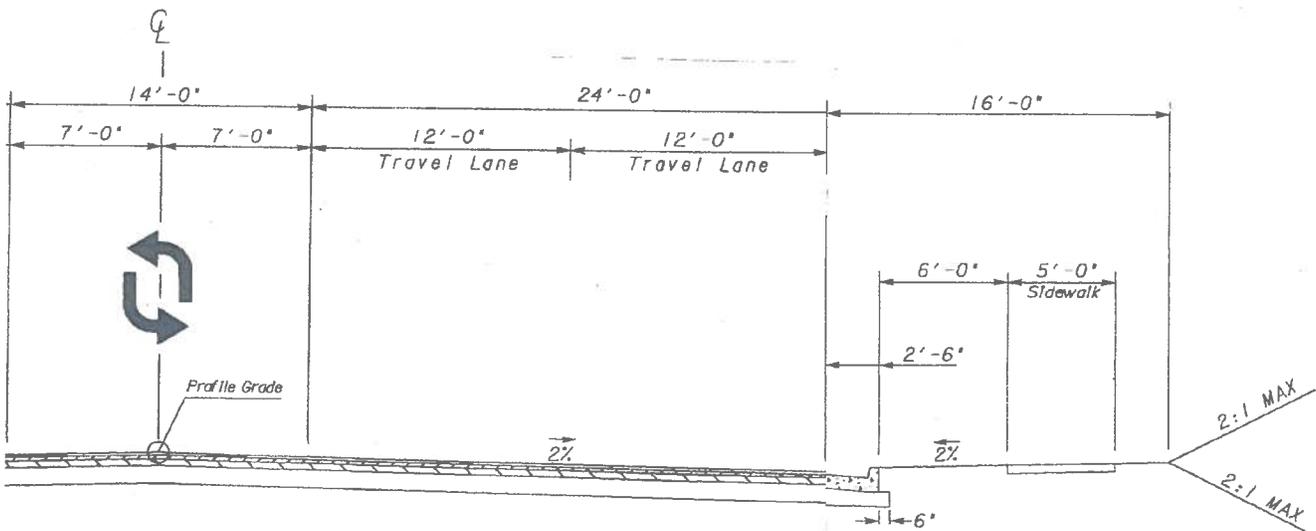
RD-21

DESCRIPTION: **DELETE BIKE LANES**

SHEET NO.: 2 of 4



Original Design



Alternative Design w/o bike lane

# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP - 2387 (4) - P.I. 542070**  
**SR 251 - McIntosh County**

ALTERNATIVE NO.:

**RD-21**

DESCRIPTION: **DELETE BIKE LANES**

SHEET NO.: 3 of 4

There are 4' bike lanes in each direction from Sta. 103+00 through the beginning of the NHS project to Sta. 130+57.41 the beginning of the bridge.

Therefore:  $130+57.41 \text{ less } 103+00 = 2,757.41 \text{ lf} \times 2 = 5,514.82 \text{ lf} \times 4' = 22,059 \text{ sf} = 2,451 \text{ sy}$  of bike lanes;

On the bridges, from Sta. 130+57.41 to 134+65.41 = 408 lf x 2 = 816 lf x 4' = 3264 sf = 362 sy of bike lanes;

From Sta. 134+65.41 to Sta. 150+00 = 1,534.59 x 2 = 3,069.18 lf x 4' = 12,276 sf = 1,364 sy of bike lanes

From Sta. 150+00 to the end at 189+00 = 3,900' x 2 = 7,800 lf x 7' = 54,600 sf = 6,066 of bike lanes;

12" GAB-  $(9 \text{ sf}) \times (12"/12") \times (135\#/cf) / (2000\#/ton) \Rightarrow 0.6075 \text{ tons} @ \$22.00/ton = \$13.36/sy$

12.5 mm Superpave-  $(1 \text{ sy}) \times (165\#/sy) / (2000\#/ton) \Rightarrow 0.0825 \text{ tons} @ \$66.26/ton = \$ 5.46/ sy$

19.0 mm Superpave-  $(1 \text{ sy}) \times (220\#/sy) / (2000\#/ton) \Rightarrow 0.11 \text{ tons} @ \$ 69.44/ton = \$ 7.63/sy$

25.0 mm Superpave-  $(1 \text{ sy}) \times (440\#/sy) / (2000\#/ton) \Rightarrow 0.22 \text{ tons} @ \$63.47/ton = \$ 13.96/sy$   
= \$36.05 per sy or \$4.00 sf.

See next sheet for cost calculations.



# Value Analysis Design Alternative



PROJECT: <b>Georgia Department of Transportation STP – 2387 (4) – P.I. 542070 SR 251 - McIntosh County</b>	ALTERNATIVE NO.:  <b>RD-22</b>
DESCRIPTION: <b>USE DEPRESSED MEDIAN SECTION WEST OF I-95</b>	SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes a 14' flush two-way left turn lane.

**Alternative:**

The alternative design proposes using a 20' raised median in the curb and gutter section and a 32' depressed median in the ditch section.

**Opportunities:**

- Reduced paving cost
- Improved safety and operations
- The typical section would be more consistent with the roadway function and adjacent development

**Risks:**

- Moderate design effort

**Technical Discussion:**

The designer proposes building a 5 lane roadway. The section of roadway west of the raised median currently proposed is largely residential or undeveloped and access should not be an issue. Future development of this property could pose future access management issues. Construction of a divided median section will reduce costs with little negative impacts while having a positive effect on safety and operations.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 703,897	\$	\$ 703,897
ALTERNATIVE	\$ 698,317	\$	\$ 698,317
SAVINGS	\$ 5,580	\$	\$ 5,580

# Illustrations

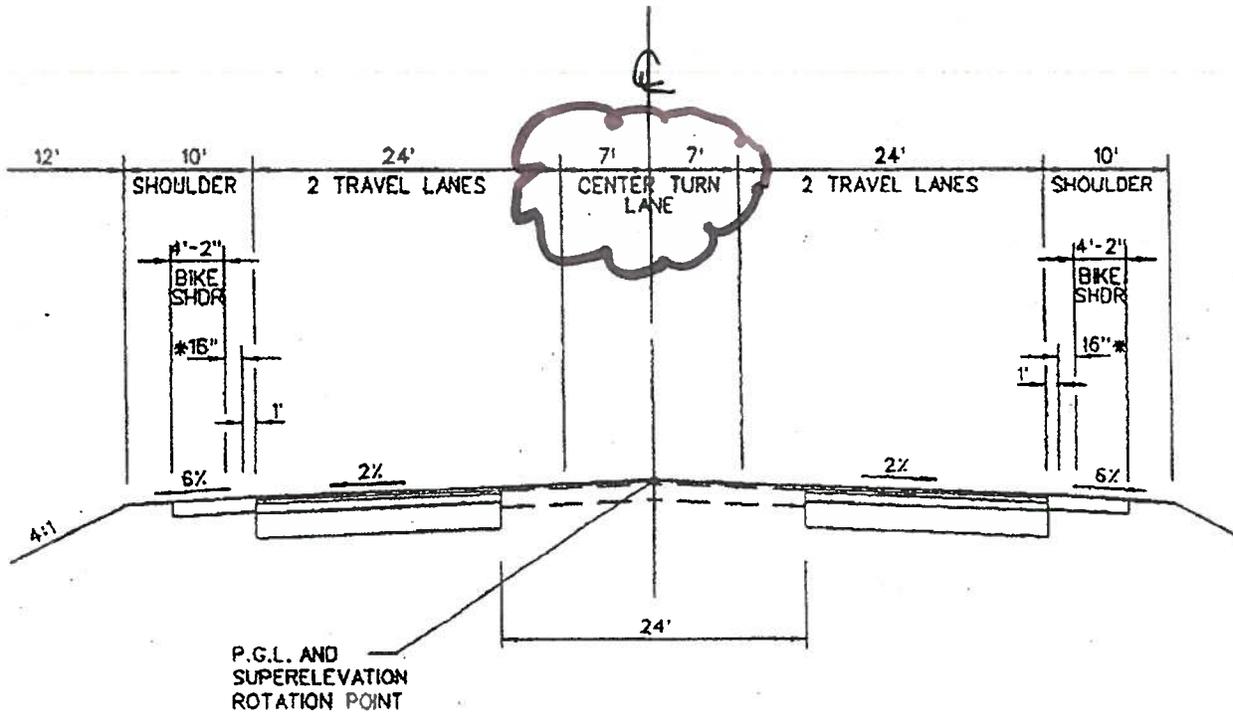
PROJECT: **Georgia Department of Transportation**  
**STP - 2387(4) - P.I. 542070**  
**SR 251 - McIntosh County**

ALTERNATIVE NO.:

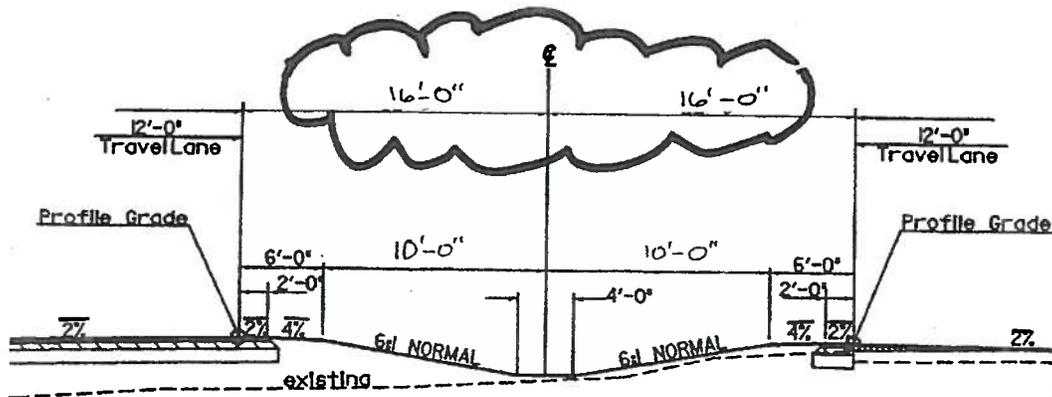
**RD-22**

DESCRIPTION: **USE DIVIDED MEDIAN SECTION WEST OF I-95**

SHEET NO.: 2 of 4



ORIGINAL DESIGN  
NTS



ALTERNATIVE DESIGN  
NTS





# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 STP-2387(4) – P.I. No. 542070  
 SR 251 & I-95 Interchange – McIntosh County

ALTERNATIVE NO.:  
**RD-23**

DESCRIPTION: **USE MULTI-USE TRAILS**

SHEET NO.: 1 of 4

**Original Design:**

The original design calls for the construction to include bike lanes adjacent to the travel lanes.

**Alternative:**

The alternative design proposes to locate the bike lanes adjacent to the sidewalks. The trail would be divided with bikes on one portion and pedestrians on the remaining portions.

**Opportunities:**

- Maintain functional requirements while significantly reducing the project costs
- Improved safety and operations
- Reduced right-of-way requirements
- May expedite project acceptance

**Risks:**

- Minor Redesign effort

**Technical Discussion:**

The proposed design would locate the bicyclists adjacent to trucks, trailers and automobiles. By removing them from the travel lanes, the safety would be increased. There are only a minor number of driveways that would have to be navigated by the cyclists.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 521,992	\$	\$ 521,992
ALTERNATIVE	\$ 280,319	\$	\$ 280,319
SAVINGS	\$ 241,674	\$	\$ 241,674

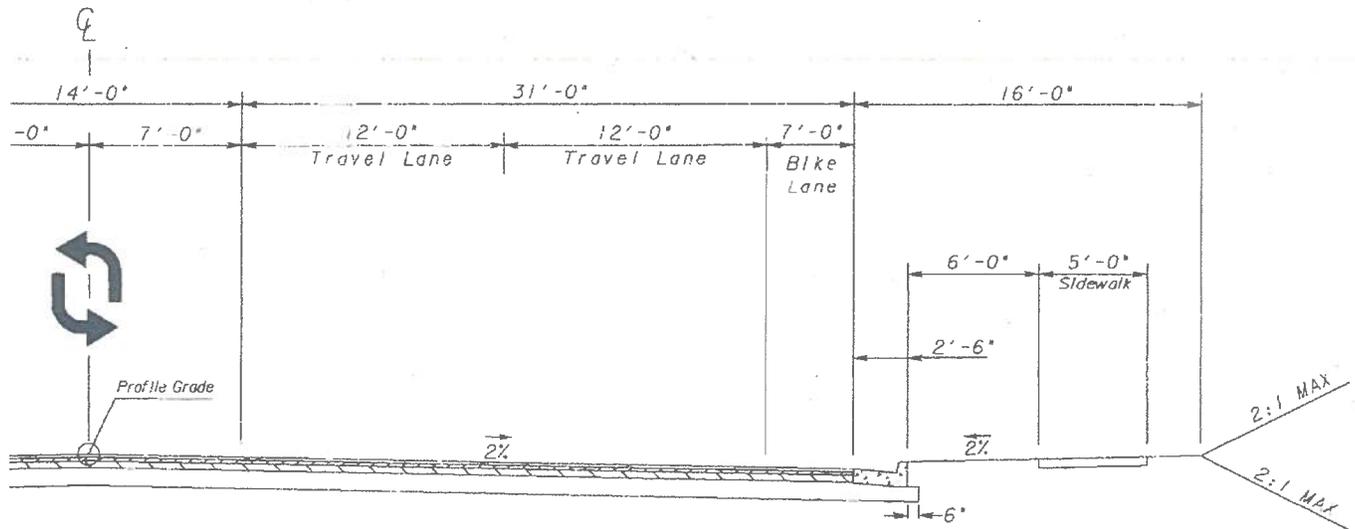
PROJECT: Georgia Department of Transportation  
STP-2387(4) – P.I. No. 542070  
SR 251 – McIntosh County

ALTERNATIVE NO.:

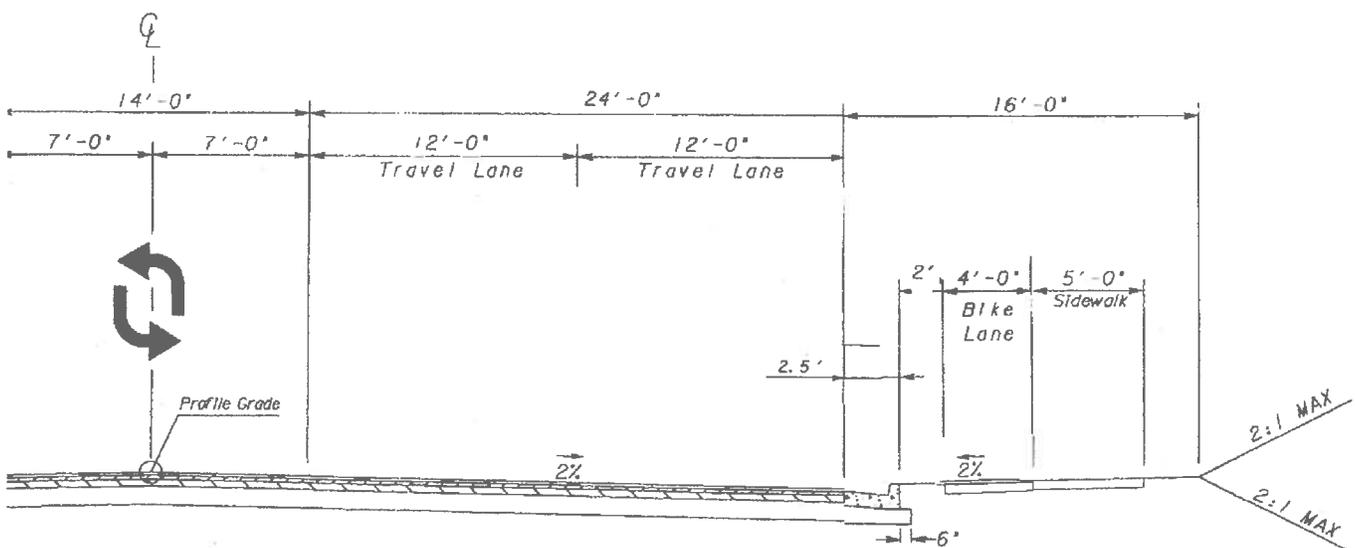
RD-23

DESCRIPTION: **USE MULTI-USE TRAILS**

SHEET NO.: 2 of 4



Original Design



Alternative Design with bike lane and Sidewalk

# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP - 2387 (4) - P.I. 542070**  
**SR 251 - McIntosh County**

ALTERNATIVE NO.:

**RD-23**

DESCRIPTION: **USE MULTI-USE TRAILS**

SHEET NO.: 3 of 4

There are 4' bike lanes in each direction from Sta. 103+00 through the beginning of the NHS project to Sta. 130+57.41 the beginning of the bridge. The alternative is to remove the bike lanes from the roadway deleting the 4' to 7' widths and providing 4' of 4" concrete behind the curve.

Therefore:  $130+57.41 \text{ less } 103+00 = 2,757.41 \text{ lf} \times 2 = 5,514.82 \text{ lf} \times 4' = 22,059 \text{ sf}$  of bike lanes;

On the bridges, from Sta. 130+57.41 to 134+65.41 = 408 lf  $\times 2 = 816 \text{ lf} \times 4' = 3264 \text{ sf}$  of bridge bike lanes;

From Sta. 134+65.41 to Sta. 150+00 = 1,534.59  $\times 2 = 3,069.18 \text{ lf} \times 4' = 12,276 \text{ sf}$  of bike lanes

From Sta. 150+00 to the end at 189+00 = 3,900'  $\times 2 = 7,800 \text{ lf} \times 7' = 54,600 \text{ sf}$  of bike lanes;

Therefore the total SF of asphalt pavement bike lanes = 88,935 sf or 9,881 sy

12" GAB-  $\Rightarrow 9,881 \text{ sy}$   
9.5 mm Superpave-  $(9,881 \text{ sy}) \times (165\#/sy) / (2000\#/ton) \Rightarrow 815 \text{ tons}$   
19.0 mm Superpave-  $(9,881 \text{ sy}) \times (220\#/sy) / (2000\#/ton) \Rightarrow 1086 \text{ tons}$   
25.0 mm Superpave-  $(9,881 \text{ sy}) \times (440\#/sy) / (2000\#/ton) \Rightarrow 2,173 \text{ tons}$

4" concrete bike lane =  $22,059 + 12,276 + 31,200 \text{ sf} = 7,281 \text{ sy}$  of 4" concrete.

See next sheet for cost calculations.



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation**  
**STP-2387(4) – P.I. No. 542070**  
**SR 251 – McIntosh County**

ALTERNATIVE NO.:

**RD-24**

DESCRIPTION: **USE 12' SHOULDERS IN ALL URBAN SECTIONS**

SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes both 12' and 16' shoulders for urban typical sections.

**Alternative:**

The alternative design proposes using 12' shoulders for all urban sections.

**Opportunities:**

- Reduced right-of-way
- Reduced earthwork

**Risks:**

- Moderate design effort

**Technical Discussion:**

The urban curb and gutter section was utilized in the commercially developed areas to limit the amount of required right-of way. By utilizing a narrower shoulder section the designer can further reduce the amount of the more costly commercial right-of-way takings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,465,408	\$	\$ 1,465,408
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 1,465,408	\$	\$ 1,465,408

# Illustrations



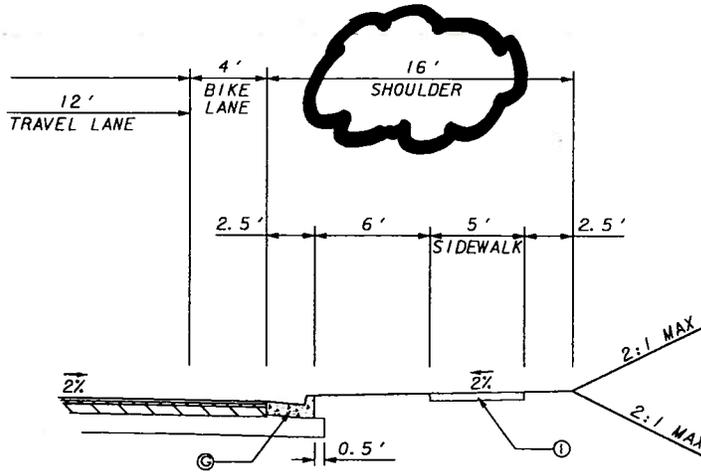
PROJECT: Georgia Department of Transportation  
STP-2387(4) – P.L. No. 542070  
SR 251 – McIntosh County

ALTERNATIVE NO.:

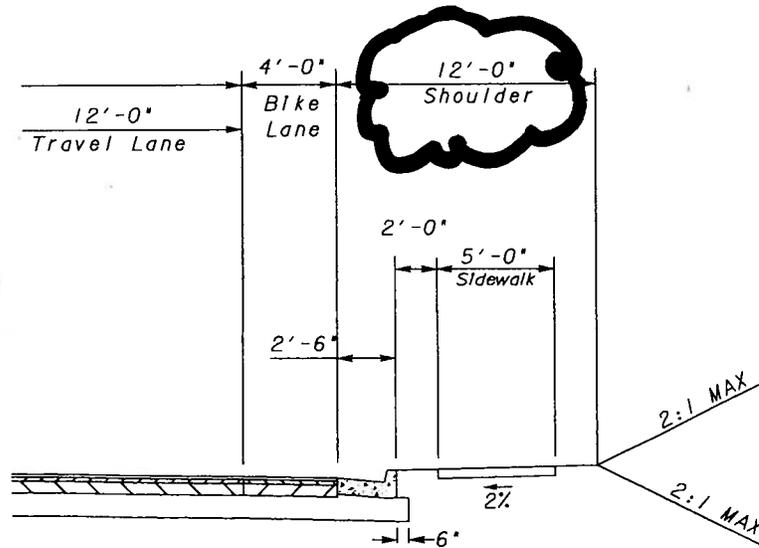
RD-24

DESCRIPTION: USE 12' SHOULDERS IN ALL URBAN SECTIONS

SHEET NO.: 2 of 4



ORIGINAL DESIGN



ALTERNATIVE DESIGN

# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP - 2387 (4) - P.I. 542070**  
**I-95 and SR 251 Interchange McIntosh County**

ALTERNATIVE NO.:

**RD-24**

DESCRIPTION: **USE 12' SHOULDERS IN ALL URBAN SECTIONS**

SHEET NO.: 3 of 4

## Road way with 16' shoulders:

Station 103+00 to Station 117+75 => 1475'

Station 148+35 to Station 196+00 => 4765'

Station 800+50 to Station 805+95 => 545'

Total- = 6785'

## Right-of-Way:

Commercial: Reduction (6785 lf x 2 ea x 4' wide) = 54,280 sf

Net Cost 54,280 sf x \$10.00/sf = \$ 542,800

Scheduling 55% = \$ 298,540

Administrative 60% = \$ 325,680

Inflation 40% = \$ 217,120

Total = \$ 1,380,140

## Clearing and Grubbing:

(6785 lf x 2 ea x 4' wide) / (43560sf/ac) = 1.25 ac

## Earthwork:

Assume an average depth of 1.5 feet.

Volume (6785 lf x 2 ea x 4' wide x 1.5 ft) / (27cf/cy) => 3015 cy



# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 STP-2387(4) – P.I. No. 542070  
 SR 251 – McIntosh County

ALTERNATIVE NO.:

**RD-26**

DESCRIPTION: **USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF  
 BOX CULVERT AT HORSE CREEK**

SHEET NO.: 1 of 4

**Original Design:**

The original roadway design drawings call for the extension to the North and South (80' and 40' respectively) of the existing 70' long Triple 7'X8' Box Culvert. The extensions will be CIP Triple Box Culverts of similar dimensions to that of the existing structure.

**Alternative:**

The alternative proposes the use of a single cell pre-cast culvert such as CONSPAN in-lieu of CIP Triple Box Culvert extensions.

The alternative maintains the original design geometry.

**Opportunities:**

- Cost savings
- Reduced construction time, ease of construction
- Improved hydraulics

**Risks:**

- Minimal redesign effort
- Staged construction will be required
- Design of pre-cast system performed by manufacturer

**Technical Discussion:**

CONSPAN pre-cast culverts are a proven construction option of choice to many agencies (DOT's and Municipalities). The ability of the system to provide larger spans and the ease of construction can be beneficial to the situation in this project where wetland mitigation and stream bed remediation may be concern.

While maintaining the existing 70' of Triple 7'X8' Box Culvert in place, the required extensions to the North and South can be constructed using the CONSPAN system. Or, the existing culvert may also be removed and replaced with CONSPAN. **This Alternative recommends the replacement of the existing structure and providing 190' of CONSPAN.**

See the next sheet for the calculation of the savings noted below.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 393,733	\$	\$ 393,733
ALTERNATIVE	\$ 261,250	\$	\$ 261,250
SAVINGS	\$ 132,483	\$	\$ 132,483

# Illustrations



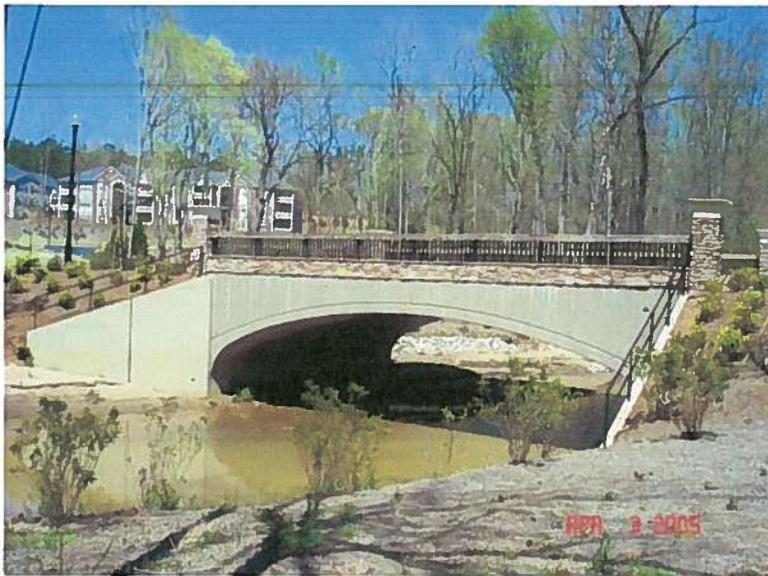
PROJECT: **Georgia Department of Transportation  
STP-2387(4) – P.I. No. 542070  
SR 251 – McIntosh County**

ALTERNATIVE NO.:

**RD-26**

DESCRIPTION: **USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF BOX  
CULVERT AT HORSE CREEK**

SHEET NO.: **2** of 4



**CONSPAN PRECAST CULVERTS  
ROADWAY APPLICATIONS**

**SOURCE: [WWW.CON-SPAN.COM](http://WWW.CON-SPAN.COM)**



# Calculations



PROJECT: **Georgia Department of Transportation  
STP – 2387 (4) – P.I. 542070  
I-95 and SR 251 Interchange McIntosh County**

ALTERNATIVE NO.:

**RD-26**

DESCRIPTION: **USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF BOX  
CULVERT AT HORSE CREEK**

SHEET NO.: 3 of 4

## Current Design (Cast-in-Place Concrete Box Culvert Extension)

The quantities for the extension of the existing Box Culvert at Horse Creek based on GDOT Standard 2326 for a 7'X7' Triple Box Culvert (nearest approximation - conservative) is as follows:

Class B Concrete @2.840 CY per LN FT of Barrel =  $(80' + 40') \times 2.840 = 340.80$  CY

## Alternative (CONSPAN Pre-cast Culvert including replacement of existing culvert)

From Roadway design drawings, total length of culvert (including extension to the North of 80' and South of 40') = 190'

Approximate clear span (assumed) required for single span CONSPAN culvert = 24'

**Cost per LF of CONSPAN as provided verbally by BRIDGETEK = \$1,250 per LF**

**Reduction in streambed remediation is an additional cost saving that can be realized using CONSPAN not included in this analysis.**

### **NOTE:**

**Reduction from current design = savings for alternative.**

**Cost for wingwalls and other attachments are assumed to be the same (conservative).**

**Cost of Pre-cast culvert as provided by CONSPAN / BRIDGETEK.**

**Due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**

**A more detailed cost analysis may be performed when the design progresses sufficiently to be able to itemize major components and obtain more accurate quantities. A detailed analysis may show greater cost savings than that shown in this report.**



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## ***Project Description***

## **PROJECT DESCRIPTION**

Project STP-2387(4), SR 251, is classified as a rural major collector and is one of the two east-to-west State Routes in McIntosh County. Consequently, SR 251 is also one of the two east-west hurricane evacuation routes in McIntosh County.

Currently, within a half mile of the SR 251 at I-95 interchange there are multiple businesses that cater to travelers: service stations, convenience stores, truck stops, restaurants, hotels, and a major regional outlet mall containing approximately 100 retail stores (located in the southwest quadrant of the SR 251 and I-95 interchange). Less than a mile west of the interchange is the McIntosh County Industrial Park. Due primarily to these developments, the total number of vehicles per day on SR 251 have increased significantly.

The length of the project is 3.03 miles, with additional 0.9 mile subsection known as proposed GDOT Project CSNHS-0007-00(421) to widen and reconstruct the SR 251 over I-95. At the eastern terminus, SR 251 terminates at U.S. 17, a major north-south route through Darien, which is McIntosh County's largest city and the county seat. On the western terminus, SR 251 will transition back to two lanes near the intersection of King Swamp Road, which is the first intersection west of the Industrial Park. King Swamp Road provides east-west access across I-95, via an existing grade separation, and terminates on the east at U.S. 17.

Project CSNHS-0007-00(421), represents the complete reconstruction of the SR 251/I-95 Interchange including ramps, the bridge over I-95, and the bridge approaches on SR 251.

For Project STP-2387(4) the estimated construction cost is \$12,571,234. The preliminary ROW acquisition cost is \$16,328,850.

For Project CSNHS-0007-00(421) the estimated construction cost is \$15,408,075. The preliminary ROW acquisition cost is \$17,402,725.

## **REPRESENTATIVE DOCUMENTS**

- Project Concept Report
- Construction Cost Estimates
- Right of Way Cost Estimates
- Typical Sections
- Construction Drawings
- Traffic Analysis

The VE Team utilized the supplied project materials noted above and the current GDOT standard drawings, details and specifications.

Representative documents follow:

## Need & Purpose Statement

### State Route 251 McIntosh County STP-2387(4) P.I. # 542070

State Route 251 is classified as a rural major collector and is one of the two east-to-west State Routes in McIntosh County. Consequently, State Route 251 is also one of the two east-west hurricane evacuation routes in McIntosh County.

Currently, within a half mile of the State Route 251 at I-95 interchange there are multiple businesses that cater to travelers: service stations, convenience stores, truck stops, restaurants, hotels, and a major regional outlet mall containing approximately 100 retail stores (located in the southwest quadrant of the State Route 251 and I-95 interchange). Less than a mile west of the interchange is the McIntosh County Industrial Park.

Due primarily to these developments, the total number of vehicles per day on State Route 251 between the outlet mall and U.S. 17 is approximately 7,800 vehicles in the year 2006 (average annual daily traffic or "AADT"). Traffic volumes on State Route 251 west of the outlet mall is currently somewhat lower, however it is significant and expected to increase with ongoing development. Traffic volume on State Route 251 between the outlet mall and King Swamp Road is 3,200 AADT (in the year 2006). Currently located on State Route 251 less than a mile west of the I-95 interchange is the McIntosh County Industrial Park which has 94 acres zoned light industrial with paved roads, an updated water & sewer system and utilities in place. Future expansion of the Industrial Park has recently been announced; it will add 400 adjacent acres and be bounded by I-95, King Swamp Road, and State Route 251.

Traffic along State Route 251 east of the outlet mall is estimated to reach 9,500 AADT by the year 2016. Future traffic projections west of the outlet mall is estimated to reach 3,900 AADT by the year 2016, however it is strongly worth noting that this does **not** include additional future traffic expected from the recently-announced expansion of the Industrial Park. The year 2016 year traffic volumes translate into a *Level-of-Service "C"* east of the outlet mall and *Level-of-Service "B"* west of the outlet mall. *Level-of-Service "A", "B", or "C"* are considered acceptable traffic conditions.

By the year 2036, traffic on State Route 251 east of the outlet mall between the outlet mall and U.S. 17 is projected to reach 13,300 AADT, which is a *Level-of-Service "D"*. West of the outlet mall between the outlet mall and King Swamp Road, traffic in the year 2036 is projected to reach 5,700 AADT, which is a *Level-of-Service "B"*. *Level-of-Service "A", "B", or "C"* are considered acceptable traffic conditions. Again, it is important to mention that the year 2036 traffic volumes and Level-of-Service analyses are for an average day and do not reflect seasonal traffic (such as holiday or spring break traffic) or increased traffic due to the recently-announced Industrial Park expansion.

The most recently-available accident data (for the years 2004, 2005, and 2006) was analyzed on State Route 251 both east and west of I-95. The table below compares the calculated accident rates on State Route 251 to the comparable statewide accident rates. For example, in 2004, the statewide injury rate for rural major collectors was 94 accidents *per 100 million vehicle miles of travel (100MVMT)*; the injury rates on State Route 251 from King Swamp Road to I-95 was 211 accidents per 100MVMT and from I-95 to U.S. 17 was 316 accidents per 100MVMT. This indicates that the injury rates in 2004 on these two segments of State Route 251 were above the statewide average.

	2004			2005			2006		
	Accid. Rate <sup>1</sup> / State Average <sup>2</sup>	Injury Rate <sup>1</sup> / State Average <sup>2</sup>	Fatality Rate <sup>1</sup> / State Average <sup>2</sup>	Accid. Rate <sup>1</sup> / State Average <sup>2</sup>	Injury Rate <sup>1</sup> / State Average <sup>2</sup>	Fatality Rate <sup>1</sup> / State Average <sup>2</sup>	Accid. Rate <sup>1</sup> / State Average <sup>2</sup>	Injury Rate <sup>1</sup> / State Average <sup>2</sup>	Fatality Rate <sup>1</sup> / State Average <sup>2</sup>
SR251 West of I-95	169/273	<b>211/94</b> (above average)	0/3.24	50/197	0/74	0/3.23	52/203	0/73	0/3.56
SR251 East of I-95	<b>316/273</b> (above average)	<b>316/94</b> (above average)	0/3.24	102/197	<b>136/74</b> (above average)	0/3.23	110/203	0/73	0/3.56

<sup>1</sup> Accident rate per 100 Million Vehicle Miles Traveled

<sup>2</sup> Statewide rates for similar facility (Rural Major Collector)

GDOT has proposed project #542070 to widen and reconstruct State Route 251 between County Road 16/ King Swamp Road and U.S. 17 (north of Darien) from the current two-lane highway to a five lane facility (four lanes of travel with a center turning lane). The length of the project is 3.03 miles; related to this project is a 0.9 mile subsection known as proposed GDOT Project #0007421 to widen and reconstruct the State Route 251 bridge over I-95.

The termini for the proposed widening project are logical. At the eastern terminus, State Route 251 terminates at U.S. 17, a major north-south route through Darien, McIntosh County's largest city and the county seat. Consequently, the widening and reconstruction of State Route 251 will provide the City of Darien with four-lane access to I-95. At the western terminus, State Route 251 will transition back to two lanes near the intersection of King Swamp Road, which is the first intersection west of the Industrial Park. King Swamp Road provides east-west access across I-95, via an existing grade separation, and terminates on the east at U.S. 17 near where the new 500+ enrollment McIntosh County High School is located.

Based on the above, there is a need to widen State Route 251 between King Swamp Road and U.S. 17 to five through lanes of travel due to the unacceptable level-of-service the highway is projected to be operating at in the future. The purpose of widening State Route 251 is to increase the capacity of the highway, provide a safer highway for motorists, and to reduce travel time delays. Additionally, the widening of State Route 251 will assist the coastal citizens of the State of Georgia during an emergency situation that may require evacuating the area due to inclement weather such as a hurricane, heavy rains and/or flooding.

# Department of Transportation State of Georgia

-----  
Interdepartmental Correspondence

**FILE** R/W Cost Estimate **OFFICE** Atlanta  
**DATE** August 25, 2006

**FROM** Phil Copeland, Right of Way Administrator

**TO** Gerald M. Ross, P.E., State Road and Airport Design Engineer

**ATTN:** Jack Grant

**SUBJECT** **Preliminary Right of Way Cost Estimate**  
**Project: STP-2387(4) & NHS-0007-00(421)McIntosh**  
**PI. No.: 542070 & 0007421**  
**Description: Widening and Reconstruction of SR 251**

As per your request, attached is a copy of the approved Revised Preliminary Right of Way Cost Estimate on the above referenced project.

Please note the area of Required R/W was furnished with your request.  
**Please include total Required R/W areas for the entire corridor in all future requests.**

If you have any questions, please contact Jerry Milligan at the Chamblee Right of Way Office at (770) 986-1541.

PC:GAM

Attachments

c: Brian Summers, Engineering Services  
Wilhelmina Mueller, R/W  
Windy Bickers, Financial Management  
File

# Preliminary Right of Way Cost Estimate

Date: September 15, 2006

Project: NHS-0007-00 (421) McIntosh

Existing/Required R/W: VARIES/VARIES

P. I. # 0007421

No. Parcels: 22

Project Termini: North of interchange @ I-95 and S.R. 251 at station # 120+00 and extends South to station # 147+00 along SR 251.

Project Description Widening and reconstruction of SR 251

**Land:**

Commercial		
101,156 Sq. Ft. @ \$10.00/Per SQ. FT.		\$1,011,560.00
Industrial		
N/A		
Residential		
N/A		
Agricultural		
N/A		
Permanent Easement		
75,149 SQ.FT. @ \$5.00/PerSQ. FT.		\$375,745.00

\$1,387,305.00

Improvements: 3 businesses , curbing , paving , signs , fencing  
And site improvements

\$2,750,000.00

Relocation: 3 Commercial @ \$25,000/Parcel

\$75,000.00

**Damages:**

Proximity : 8 parcels	\$420,000.00
Consequential 6 parcels	\$ 165,000.00
Cost To Cure 5 parcels	\$ 215,000.00

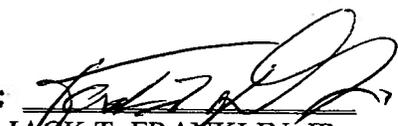
\$800,000.00

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NET COST \$5,012,305.00

Net Cost		\$5,012,305.00
Scheduling Contingency 55 %		\$2,756,768.00
Adm/Court Cost 60 %		\$4,661,444.00
Inflation Factor 40 %		\$4,972,207.00
		\$17,402,724.00
ROUNDED		\$17,402,725.00

TOTAL COST: \$17,402,725.00

Prepared By :   
JACK T. FRANKLIN, JR.

Approved : \_\_\_\_\_  
GDOT R/W.

**LAND SALES**

**DATE: 9-15-06**

**PROJECT NHS-0007-00 (421)**

**COUNTY: McIntosh P.I.# 0007421**

**COMMERCIAL**

<u>HIGHEST/BEST USE</u>	<u>SIZE/SQ.FT.</u>	<u>VALUE/SQ.FT.</u>	<u>TOTAL VALUE</u>
Commercial	29,620	\$11.65/SQ.FT.	\$345,000.00
Commercial	37,026	\$9.85/SQ.FT.	\$364,700.00
Commercial	41,380	\$8.00/SQ.FT.	\$331,000.00

# Preliminary Right of Way Cost Estimate

Date: September 15, 2006

Project: STP-2387 (4) McIntosh Co.

P. I # 542070

Existing/Required R/W: VARIES/VARIES

No. Parcels: 75

Project Termini: C.R. 16 Extending south along S.R. 251 to intersection of U.S. 17/S.R. 25

Project Description Widening and reconstruction of SR 251

**Land:**

Commercial		
200,794 Sq. Ft. @ \$10.00/Per SQ. FT.		\$2,007,940.00
Industrial		
N/A		
Residential		
4.25 Acres @ \$20,000/Acre		\$85,000.00
Agricultural		
N/A		
Permanent Easement		
139,864 SQ.FT. @ \$5.00/PerSQ. FT.		\$699,320.00
		<b>\$2,792,260.00</b>

Improvements: 1 business, 1 mobile home, curbing , paving , signs , fencing  
And site improvements **\$1,075,000.00**

Relocation: 1 Commercial @ \$25,000/Parcel  
1 Residential @ \$20,000/Parcel **\$45,000.00**

**Damages:**

Proximity : 5 parcels	\$165,500.00	
Consequential 4 parcels	\$90,250.00	
Cost To Cure 11 parcels	\$535,000.00	
		<b>\$790,750.00</b>

**NET COST \$4,703,010.00**

Net Cost		\$4,703,010.00
Scheduling Contingency 55 %		\$2,586,655.00
Adm/Court Cost 60 %		\$4,373,799.00
Inflation Factor 40 %		<del>\$4,665,385.00</del>
		<b>\$16,328,849.00</b>
<b>ROUNDED</b>		<b>\$16,328,850.00</b>

TOTAL COST: \$ 16,328,850.00

Prepared By :

  
JACK T. FRANKLIN, JR.

Approved :

\_\_\_\_\_  
GDOT RAW.

## LAND SALES

DATE: 9-15-06

PROJECT STP-2387 (4)

COUNTY: McIntosh P.I.# 542070

### COMMERCIAL

<u>HIGHEST/BEST USE</u>	<u>SIZE/SQ.FT.</u>	<u>VALUE/SQ.FT.</u>	<u>TOTAL VALUE</u>
Commercial	29,620	\$11.65/SQ.FT.	\$345,000.00
Commercial	37,026	\$9.85/SQ.FT.	\$364,700.00
Commercial	41,380	\$8.00/SQ.FT.	\$331,000.00

### RESIDENTIAL

<u>HIGHEST/BEST USE</u>	<u>SIZE/ACRE</u>	<u>VALUE/ACRE</u>	<u>TOTAL VALUE</u>
Residential	.61	\$17,000.00	\$10,370.00
Residential	.85	\$20,000.00	\$17,000.00
Residential	1.15	\$23,500.00	\$27,025.00

D.O.T. 66

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

**FILE** P. I. No. 542070-/0007421, McIntosh County **OFFICE** Preconstruction  
STP-2387(4)/CSNHS-0007-00(421)  
SR 251 Widening and Reconstruction **DATE** April 5, 2007

**FROM** *Cybil Kuntz*  
Genetha Rice-Singleton, Assistant Director of Preconstruction

**TO** SEE DISTRIBUTION

**SUBJECT APPROVED REVISED PROJECT CONCEPT REPORT**

Attached for your files is the approval for subject project.

GRS/cj

Attachment

**DISTRIBUTION:**

Brian Summers  
Harvey Keepler  
Ken Thompson  
Jamie Simpson  
Michael Henry  
Keith Golden  
Angela Alexander (file copy)  
Babs Abubakar  
Brent Story  
Glenn Durrence  
BOARD MEMBER  
FHWA

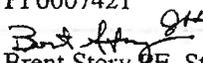
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DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

FILE: STP 2387(4), McIntosh County  
PI 542070  
CSNHS-0007-00(421), McIntosh County  
PI 0007421

OFFICE: Road Design  
DATE: October 24, 2006

FROM:  Brent Story PE, State Road Design Engineer

TO: Genetha Rice-Singleton, Assistant Director of Preconstruction

SUBJECT: **Revised Project Concept Report**

Attached is the original copy of the Revised Concept Report for your further handling for approval in accordance with the Plan Development Process (PDP) for project STP 2387(4). Project STP 2387(4) represents the widening of SR 251 beginning at a point south of the SR 251 intersection with King Swamp Road and ending at US 17/SR 25 just north of the Darien City limits. The current approved concept report for this project, July 13, 2004, includes an exception for the widening of SR 251 through the SR 251/ I-95 interchange. This exception includes the reconstruction of the bridge over I-95 and the interchange ramps. Project CSNHS-0007-00(421) was programmed in 2005 which represents the complete reconstruction of the I-95/ SR 251 Interchange including the ramps, the bridge over I-95 and the bridge approaches on SR 251. This project will be developed as a project that can be constructed concurrently or in advance of the SR 251 widening project.

The purpose of this revised concept report is to replace the project exception noted as NH-IM-95-1(120) in the concept report for project STP-2387(4) with the newly programmed project CSNHS-0007-00(421). Also the revised concept report will provide an updated cost estimate for each project, revised design features and a revised project location map.

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

DATE 12/19/06

  
Cynthia J. Alexander  
State Transportation Planning Administrator

# REVISED PROJECT CONCEPT REPORT

**Project:** STP- 2387(4) PI 542070, McIntosh County - Widening of SR 251  
CSNHS-0007-00(421) PI 0007421, McIntosh County - Reconstruction of the  
I-95/SR 251 Interchange.

**Need and Purpose:** No Change required (*See attached approved concept report for STP-2387(4) May 28, 2004*).

**Project location:** The above projects are located on SR 251 beginning at a point south of the SR 251/King Swamp Road intersection and continuing southeasterly across I-95 and ending at the intersection of US 17/SR 25 just north of the Darien City limits.

**Description of the approved concept:** (*See attached approved concept report dated for STP- 2387(4) May 28, 2004*).

**PDP Classification:** Major   X   Minor \_\_\_\_\_

**Federal Oversight:**

STP-2387(4) Full Oversight ( ), Exempt (X), State Funded ( ), Other ( )  
CSNHS 0007-00(421) Full Oversight (X), Exempt ( ), State Funded ( ), Other ( )

**Functional Classification:** Rural Major Collector

**U. S. Route Number(s):** N/A **State Route Number(s):** S.R. 251

**Traffic (AADT) as shown in the approved concept:**

**Current Year:** 12760 vpd (2007) **Design Year:** 27960 vpd (2027)

**Proposed features to be revised:** Identify the 0.9 mile exception from the project description of project STP-2387(4) as project CSNHS-0007-00(421) which represents the reconstruction of the SR 251/I-95 interchange. Revise the current concept report cover sheet, project location map, project description, and design features. A new cost estimate will be provided for CSNHS-0007-00(421) and an updated cost estimate will be provided for STP-2387(4).

**Describe the revised feature(s) to be approved:** The current approved concept for project STP-2387(4) includes an exception for the widening of SR 251 through the SR 251/ I-95 interchange. The project description indicates that the SR 251/I-95 interchange reconstruction project (exception) would be included in NH-IM-95-1(120) which represents the phase I widening of I-95 to six lanes. Project CSNHS-0007-00(421) was subsequently programmed in 2005 and represents the complete reconstruction of the SR 251/I-95 Interchange including the ramps, the bridge over I-95, and the bridge approaches on SR 251. This project will be developed as a project that can be constructed concurrent with the SR 251 widening project or in advance of that project. Therefore, the exception to project STP-2387(4) will be project CSNHS-0007-00(421).

**Updated Traffic Data:**

**Current Year:** Same as above **Design Year:** Same as above

**Existing Design Features:**

- Major Structures:  
(Add) 339'x 28' two lane bridge over I-95 (CSNHS-0007-00(421))

**Proposed Design Features:**

- Structures  
(Replace) existing bridge over I-95 with a new bridge (364'x108.83') which will accommodate two through lanes and one left turn lane in each direction. CSNHS-0007-00(421)
- Proposed typical section(s): CSNHS-0007-00(421)

Mile log 12.20 to 12.40

- Temporary Tie-in to existing two-lane roadway.

Mile log 12.40 to 12.90

- Four-lane Urban: 4 - 12' lanes, 20' raised median, outside curb and gutter, two 4' bike lanes, and 5' sidewalks along both sides.

Mile log 12.90 to 13.20

- Temporary Tie-in to existing two-lane roadway.
- Proposed Design Speed Mainline: 45 mph
- Proposed Maximum grade Mainline: 3.47% Maximum grade allowable: 6%(45 mph),
- Proposed Maximum grade Side Street: N/A Maximum grade allowable: 8%
- Proposed Maximum grade driveway: N/A
- Proposed Maximum degree of curve: 1° 54' Maximum degree allowable: (45 mph)  
9° 45'
- Right of way
  - Width: Varies 130' - 200'
  - Easements: Temporary ( x ), Permanent ( x ), Utility ( ), Other ( ).
  - Type of access control: Full ( ), Partial ( x ), By Permit ( x ), Other ( ).
  - Number of parcels: 24 Number of displacements:
    - Business: 1
    - Residences: 0
    - Mobile homes: 0

**Programmed/Schedule:**

**STP-2387(4)**

P.E. 2000

R/W: 2010

Construction: 2011

**CSNHS-0007-00(421)**

P.E. 2000

R/W: 2008

Construction: 2009

**Revised cost estimates:**

**STP-2387(4):**

1. Construction cost (Does not including inflation and E&C): \$11,428,395.77
2. Right of Way: \$16,328,850.00
3. Utilities - reimbursable: \$355,000.00
4. Utilities - non-reimbursable: \$2,202,000.00

CSNHS-0007-00(421)

1. Construction cost (Does not including inflation and E&C): \$14,007,340.81
2. Right of way: \$17,402,725.00
3. Utilities - reimbursable: \$840,000.00
4. Utilities - non-reimbursable: \$831,000.00
5. Lighting: \$619,310.00

Are the projects located in a Non-attainment area?             Yes      X   No

**Comments:**

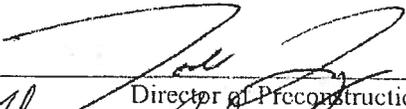
- o In original concept report dated July 13, 2004, revise the first comment to read: "All ramps at the I-95 and SR 251 Interchange will be upgraded to current department standards, lengthened to provide adequate acceleration and deceleration lengths and designed to accommodate the widening of I-95. This work will be accomplished with project CSNHS-0007-00(421) PI 0007421 and will include the new multilane bridge and approaches over I-95."

**Recommendation:** Recommend that the proposed revisions to the concept be approved for implementation.

**Attachments:**

1. (Revised) Concept Report Cover Sheet
1. (Revised) Project Location Map
2. Original Concept Report for STP-2387(4)
3. (Revised) Cost Estimates
4. Other supporting documents.

Concur:

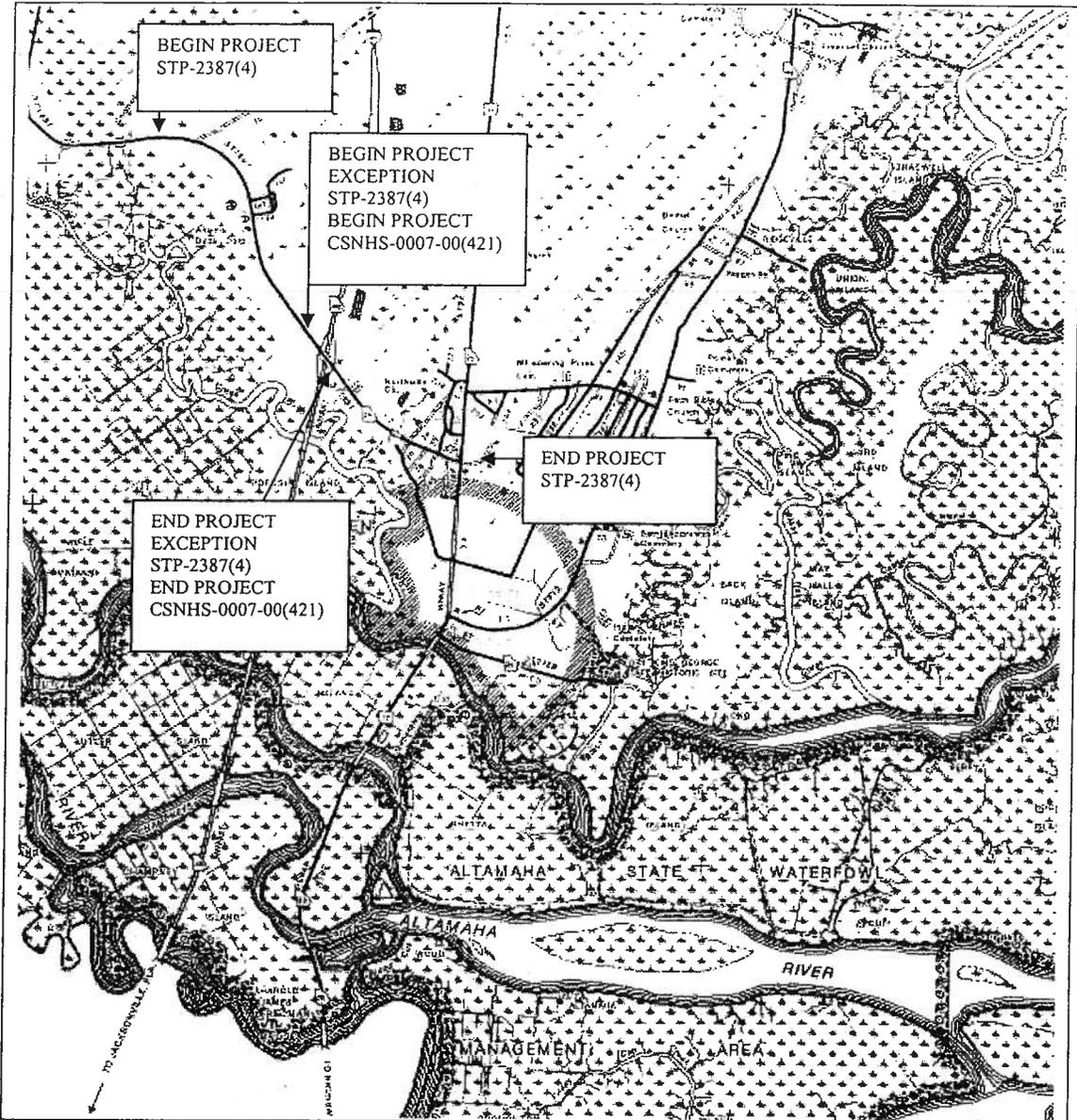
  
\_\_\_\_\_  
Director of Preconstruction

Approve:

  
\_\_\_\_\_  
fsl, Division Administrator, FHWA

Approve:

  
\_\_\_\_\_  
Chief Engineer



**Project Location Map**  
**Project No. STP-2387(4)**  
**Project No. CSNHS-0007-00(421)**

## STP-2387(4)

PI 542070

McIntosh County

### Section TRAFFIC SIGNAL ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
639-4004	4	EA	4462.50	STRAIN POLE, TP IV	17850.00
647-1000	1	LS	100000.00	TRAFFIC SIGNAL INSTALLATION NO - 1	100000.00
<b>Section Sub Total:</b>					<b>\$117,850.00</b>

### Section ROADWAY ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	1040000.00	TRAFFIC CONTROL - STP-2387(4)	1040000.00
150-5010	8	EA	13890.25	TRAFFIC CONTROL, PORTABLE IMPACT ATTENUATOR	111122.00
153-1300	1	EA	125000.00	FIELD ENGINEERS OFFICE TP 3	125000.00
207-0203	140	CY	37.38	FOUND BK FILL MATL, TP II	5233.20
210-0100	1	LS	1900000.00	GRADING COMPLETE - STP-2387(4)	1900000.00
310-1101	61384	TN	15.44	GR AGGR BASE CRS, INCL MATL	947768.96
318-3000	200	TN	15.86	AGGR SURF CRS	3172.00
402-1812	500	TN	90.00	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	45000.00
402-3121	27664	TN	95.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	2628080.00
402-3130	12264	TN	98.00	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	1201872.00
402-3190	10358	TN	95.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	984010.00
413-1000	11657	GL	2.00	BITUM TACK COAT	23314.00
441-0014	200	SY	25.79	DRIVEWAY CONCRETE, 4 IN TK	5158.00
441-0016	600	SY	31.36	DRIVEWAY CONCRETE, 6 IN TK	18816.00
441-0104	1050	SY	35.00	CONC SIDEWALK, 4 IN	36750.00
441-0748	500	SY	45.00	CONCRETE MEDIAN, 6 IN	22500.00
441-4030	780	SY	43.42	CONC VALLEY GUTTER, 8 IN	33867.60
441-5003	150	LF	14.20	CONCRETE HEADER CURB, 8 IN, TP 3	2130.00
441-6222	21400	LF	30.00	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	642000.00
500-3800	335	CY	718.54	CLASS A CONCRETE, INCL REINF STEEL	240710.90
550-1180	9720	LF	31.29	STORM DRAIN PIPE, 18 IN, H 1-10	304138.80
550-1240	1880	LF	37.62	STORM DRAIN PIPE, 24 IN, H 1-10	70725.60
550-1300	560	LF	49.84	STORM DRAIN PIPE, 30 IN, H 1-10	27910.40
550-1360	110	LF	61.14	STORM DRAIN PIPE, 36 IN, H 1-10	6725.40
550-1480	390	LF	106.39	STORM DRAIN PIPE, 48 IN, H 1-10	41492.10
550-1540	160	LF	155.05	STORM DRAIN PIPE, 54 IN, H 1-10	24808.00
550-2180	1400	LF	24.76	SIDE DRAIN PIPE, 18 IN, H 1-10	34664.00
550-3318	42	EA	694.19	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	29155.98
550-4218	2	EA	475.83	FLARED END SECTION 18 IN, STORM DRAIN	951.66
550-4224	4	EA	518.41	FLARED END SECTION 24 IN, STORM DRAIN	2073.64
550-4236	2	EA	996.13	FLARED END SECTION 36 IN, STORM DRAIN	1992.26
573-2006	1000	LF	11.58	UNDDR PIPE INCL DRAINAGE AGGR, 6 IN	11580.00
576-1018	1770	LF	26.37	SLOPE DRAIN PIPE, 18 IN	46674.90
603-1012	340	SY	16.00	STN PLAIN RIP RAP, 12 IN	5440.00

603-7000	340	SY	3.91	PLASTIC FILTER FABRIC	1329.40
620-0100	2000	LF	45.00	TEMPORARY BARRIER, METHOD NO. 1	90000.00
632-0003	4	EA	9953.58	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	39814.32
641-1100	100	LF	30.14	GUARDRAIL, TP T	3014.00
641-1200	1000	LF	12.94	GUARDRAIL, TP W	12940.00
641-5001	8	EA	459.66	GUARDRAIL ANCHORAGE, TP 1	3677.28
641-5012	8	EA	1525.25	GUARDRAIL ANCHORAGE, TP 12	12202.00
643-8200	1000	LF	1.81	BARRIER FENCE (ORANGE), 4 FT	1810.00
668-1100	76	EA	1821.80	CATCH BASIN, GP 1	138456.80
668-4300	3	EA	1842.45	STORM SEWER MANHOLE, TP 1	5527.35
668-5000	4	EA	1705.02	JUNCTION BOX	6820.08
<b>Section Sub Total:</b>					<b>\$10,940,428.63</b>

### Section TEMPORARY EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	7	AC	481.71	TEMPORARY GRASSING	3371.97
163-0300	6	EA	1153.15	CONSTRUCTION EXIT	6918.90
163-0503	5	EA	478.63	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	2393.15
163-0520	800	LF	12.50	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	10000.00
163-0530	2000	LF	2.45	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	4900.00
163-0550	76	EA	195.98	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	14894.48
165-0010	7500	LF	0.92	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	6900.00
165-0030	5000	LF	1.20	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	6000.00
165-0070	1000	LF	1.30	MAINTENANCE OF BALED STRAW EROSION CHECK	1300.00
165-0087	5	EA	166.79	MAINTENANCE OF SILT CONTROL GATE, TP 3	833.95
165-0101	6	EA	378.80	MAINTENANCE OF CONSTRUCTION EXIT	2272.80
165-0105	50	EA	81.00	MAINTENANCE OF INLET SEDIMENT TRAP	4050.00
167-1000	2	EA	1872.85	WATER QUALITY MONITORING AND SAMPLING	3745.70
167-1500	30	MO	806.93	WATER QUALITY INSPECTIONS	24207.90
171-0010	15000	LF	1.83	TEMPORARY SILT FENCE, TYPE A	27450.00
171-0030	10000	LF	3.14	TEMPORARY SILT FENCE, TYPE C	31400.00
<b>Section Sub Total:</b>					<b>\$150,638.85</b>

### Section SIGNING & MARKING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	200	SF	13.33	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2666.00
636-1029	256	SF	19.91	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	5096.96
636-1041	368	SF	26.71	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	9829.28
636-2070	372	LF	6.53	GALV STEEL POSTS, TP 7	2429.16
636-2080	1204	LF	8.60	GALV STEEL POSTS, TP 8	10354.40
636-2090	288	LF	6.30	GALV STEEL POSTS, TP 9	1814.40
636-3010	10	EA	295.10	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	2951.00
652-0091	33	EA	38.15	PAVEMENT MARKING, SYMBOL, TP 1	1258.95
652-0094	33	EA	40.86	PAVEMENT MARKING, SYMBOL, TP 4	1348.38
652-0120	78	EA	46.78	PAVEMENT MARKING, ARROW, TP 2	3648.84
652-0210	8	EA	76.24	PAVEMENT MARKING, WORD, TP 1	609.92

652-5301	15100	LF	0.17	SOLID TRAF STRIPE, 6 IN, WHITE	2567.00
652-5451	1900	LF	0.14	SOLID TRAFFIC STRIPE, 5 IN, WHITE	266.00
652-6301	2050	GLF	0.17	SKIP TRAF STRIPE, 6 IN, WHITE	348.50
652-6501	2050	GLF	0.14	SKIP TRAFFIC STRIPE, 5 IN, WHITE	287.00
653-1501	29300	LF	0.28	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	8204.00
653-1502	35000	LF	0.28	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	9800.00
653-1704	450	LF	3.45	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	1552.50
653-1804	7600	LF	1.65	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	12540.00
653-3501	30500	GLF	0.17	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	5185.00
653-3502	25700	GLF	0.22	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, YELLOW	5654.00
653-6004	450	SY	2.46	THERMOPLASTIC TRAF STRIPING, WHITE	1107.00
653-6006	1160	SY	2.74	THERMOPLASTIC TRAF STRIPING, YELLOW	3178.40
654-1001	340	EA	3.57	RAISED PVMT MARKERS TP 1	1213.80
654-1003	520	EA	3.27	RAISED PVMT MARKERS TP 3	1700.40
<b>Section Sub Total:</b>					<b>\$95,610.89</b>

#### Section PERMANENT EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0240	200	TN	202.96	MULCH	40592.00
603-2180	1000	SY	31.29	STN DUMPED RIP RAP, TP 3, 12 IN	31290.00
603-7000	1000	SY	3.91	PLASTIC FILTER FABRIC	3910.00
700-6910	14	AC	775.54	PERMANENT GRASSING	10857.56
700-7000	63	TN	57.15	AGRICULTURAL LIME	3600.45
700-7010	53	GL	18.63	LIQUID LIME	987.39
700-8000	10	TN	252.40	FERTILIZER MIXED GRADE	2524.00
700-8100	1100	LB	1.46	FERTILIZER NITROGEN CONTENT	1606.00
716-2000	25000	SY	1.14	EROSION CONTROL MATS, SLOPES	28500.00
<b>Section Sub Total:</b>					<b>\$123,867.40</b>

**Total Estimated Cost: \$11,428,395.77**

## CSNHS-0007-00(421)

PI 0007421  
McIntosh County

### Section ROADWAY ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	1273394.00	TRAFFIC CONTROL - CSNHS-0007-00(421)	1273394.00
150-5010	8	EA	13890.25	TRAFFIC CONTROL, PORTABLE IMPACT ATTENUATOR	111122.00
150-9011	200	HR	46.19	TRAFFIC CONTROL - WORKZONE LAW ENFORCEMENT (CONTRACTOR BIDS)	9238.00
153-1300	1	EA	125000.00	FIELD ENGINEERS OFFICE TP 3	125000.00
207-0203	140	CY	37.38	FOUND BK FILL MATL, TP II	5233.20
210-0100	1	LS	1500000.00	GRADING COMPLETE - CSNHS-0007-00(421)	1500000.00
310-1101	50400	TN	15.44	GR AGGR BASE CRS, INCL MATL	778176.00
318-3000	200	TN	15.86	AGGR SURF CRS	3172.00
400-3604	750	TN	98.00	ASPH CONC 12.5 MM SMA, GP 2 ONLY, INCL POLYMER-MODIFIED BITUM MATL & H LIME	73500.00
402-1812	500	TN	90.00	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	45000.00
402-3121	17800	TN	95.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1691000.00
402-3130	4450	TN	98.00	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	436100.00
402-3190	9500	TN	95.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	902500.00
413-1000	48500	GL	2.00	BITUM TACK COAT	97000.00
433-1200	715	SY	131.86	REINF CONC APPROACH SLAB, INCL SLOPED EDGE	94279.90
439-0056	15100	SY	100.00	PLAIN PC CONC PVMT, CL HES CONC, 12 INCH THK	1510000.00
441-0104	3300	SY	35.00	CONC SIDEWALK, 4 IN	115500.00
441-0204	4300	SY	26.77	PLAIN CONC DITCH PAVING, 4 IN	115111.00
441-0748	400	SY	45.00	CONCRETE MEDIAN, 6 IN	18000.00
441-6222	10600	LF	19.00	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	201400.00
446-1100	6000	LF	5.31	PVMT REINF FABRIC STRIPS, TP 2, 18 INCH WIDTH	31860.00
446-2118	280	LF	1.60	HIGH STRENGTH PVMT REINF FABRIC - 18 IN, WIDE	448.00
500-3200	11	CY	298.99	CLASS B CONCRETE	3288.89
500-9999	50	CY	148.15	CLASS B CONC, BASE OR PVMT WIDENING	7407.50
550-1180	3000	LF	31.29	STORM DRAIN PIPE, 18 IN, H 1-10	93870.00
550-1240	800	LF	37.62	STORM DRAIN PIPE, 24 IN, H 1-10	30096.00
550-1300	400	LF	49.84	STORM DRAIN PIPE, 30 IN, H 1-10	19936.00
550-1360	300	LF	61.14	STORM DRAIN PIPE, 36 IN, H 1-10	18342.00
550-1420	300	LF	77.51	STORM DRAIN PIPE, 42 IN, H 1-10	23253.00
550-2180	500	LF	24.76	SIDE DRAIN PIPE, 18 IN, H 1-10	12380.00
550-3318	16	EA	694.19	SAFETY END SECTION 18 IN, STORM DRAIN, 4:1 SLOPE	11107.04
550-4218	7	EA	475.83	FLARED END SECTION 18 IN, STORM DRAIN	3330.81
550-4224	3	EA	518.41	FLARED END SECTION 24 IN, STORM DRAIN	1555.23
573-2006	1000	LF	11.58	UNDDR PIPE INCL DRAINAGE AGGR, 6 IN	11580.00
576-1018	1770	LF	26.37	SLOPE DRAIN PIPE, 18 IN	46674.90
603-1012	340	SY	16.00	STN PLAIN RIP RAP, 12 IN	5440.00

603-7000	340	SY	3.91	PLASTIC FILTER FABRIC	1329.40
620-0100	2000	LF	45.00	TEMPORARY BARRIER, METHOD NO. 1	90000.00
632-0003	4	EA	9953.58	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	39814.32
641-1100	100	LF	30.14	GUARDRAIL, TP T	3014.00
641-1200	3700	LF	12.94	GUARDRAIL, TP W	47878.00
641-5001	10	EA	459.66	GUARDRAIL ANCHORAGE, TP 1	4596.60
641-5012	14	EA	1525.25	GUARDRAIL ANCHORAGE, TP 12	21353.50
643-5000	6000	LF	7.06	SPECIAL DESIGN GAME FENCE	42360.00
643-8040	4	EA	400.00	GATE, WOVEN WIRE - 8 FEET WIDE	1600.00
668-1100	42	EA	1821.80	CATCH BASIN, GP 1	76515.60
668-4300	5	EA	1842.45	STORM SEWER MANHOLE, TP 1	9212.25
668-5000	5	EA	1705.02	JUNCTION BOX	8525.10
<b>Section Sub Total:</b>					<b>\$9,771,494.24</b>

### Section TEMPORARY EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0232	7	AC	481.71	TEMPORARY GRASSING	3371.97
163-0300	6	EA	1153.15	CONSTRUCTION EXIT	6918.90
163-0503	5	EA	478.63	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	2393.15
163-0520	800	LF	12.50	CONSTRUCT AND REMOVE TEMPORARY PIPE SLOPE DRAIN	10000.00
163-0530	2000	LF	2.45	CONSTRUCT AND REMOVE BALED STRAW EROSION CHECK	4900.00
163-0550	42	EA	195.98	CONSTRUCT AND REMOVE INLET SEDIMENT TRAP	8231.16
165-0010	3000	LF	0.92	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	2760.00
165-0030	5000	LF	1.20	MAINTENANCE OF TEMPORARY SILT FENCE, TP C	6000.00
165-0070	1000	LF	1.30	MAINTENANCE OF BALED STRAW EROSION CHECK	1300.00
165-0087	5	EA	166.79	MAINTENANCE OF SILT CONTROL GATE, TP 3	833.95
165-0101	6	EA	378.80	MAINTENANCE OF CONSTRUCTION EXIT	2272.80
165-0105	50	EA	81.00	MAINTENANCE OF INLET SEDIMENT TRAP	4050.00
167-1000	2	EA	1872.85	WATER QUALITY MONITORING AND SAMPLING	3745.70
167-1500	30	MO	806.93	WATER QUALITY INSPECTIONS	24207.90
171-0010	6000	LF	1.83	TEMPORARY SILT FENCE, TYPE A	10980.00
171-0030	10000	LF	3.14	TEMPORARY SILT FENCE, TYPE C	31400.00
<b>Section Sub Total:</b>					<b>\$123,365.53</b>

### Section SIGNING & MARKING

Item Number	Quantity	Units	Unit Price	Item Description	Cost
636-1020	200	SF	13.33	HIGHWAY SIGNS, TP 1 MATL, REFL SHEETING, TP 3	2666.00
636-1029	256	SF	19.91	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	5096.96
636-1041	368	SF	26.71	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 9	9829.28
636-2070	372	LF	6.53	GALV STEEL POSTS, TP 7	2429.16
636-2080	1204	LF	8.60	GALV STEEL POSTS, TP 8	10354.40
636-2090	288	LF	6.30	GALV STEEL POSTS, TP 9	1814.40
636-3010	10	EA	295.10	GROUND-MOUNTED BREAKAWAY SIGN SUPPORT	2951.00
652-0110	7	EA	38.59	PAVEMENT MARKING, ARROW, TP 1	270.13
652-0120	47	EA	46.78	PAVEMENT MARKING, ARROW, TP 2	2198.66
652-5301	4600	LF	0.17	SOLID TRAF STRIPE, 6 IN, WHITE	782.00

653-1501	10000	LF	0.28	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	2800.00
653-1704	200	LF	3.45	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	690.00
653-1804	3000	LF	1.65	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	4950.00
653-3501	10000	GLF	0.17	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	1700.00
653-3804	2030	GLF	0.58	THERMOPLASTIC SKIP TRAF STRIPE, 8 IN, WHITE	1177.40
653-6004	2500	SY	2.46	THERMOPLASTIC TRAF STRIPING, WHITE	6150.00
653-6006	2600	SY	2.74	THERMOPLASTIC TRAF STRIPING, YELLOW	7124.00
654-1003	2015	EA	3.27	RAISED PVMT MARKERS TP 3	6589.05
657-1054	6120	LF	3.32	PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, WHITE, TP PB	20318.40
657-6054	4440	LF	3.56	PREFORMED PLASTIC SOLID PVMT MKG, 5 IN, YELLOW, TP PB	15806.40
657-9122	6440	LF	4.56	WET REFLECTIVE PREFORMED SOLID PAVEMENT MARKINGS, 10 INCH WIDE, WHITE	29366.40
<b>Section Sub Total:</b>					<b>\$135,063.64</b>

#### Section PERMANENT EROSION CONTROL

Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0240	200	TN	202.96	MULCH	40592.00
603-2180	1000	SY	31.29	STN DUMPED RIP RAP, TP 3, 12 IN	31290.00
603-7000	1000	SY	3.91	PLASTIC FILTER FABRIC	3910.00
700-6910	14	AC	775.54	PERMANENT GRASSING	10857.56
700-7000	63	TN	57.15	AGRICULTURAL LIME	3600.45
700-7010	53	GL	18.63	LIQUID LIME	987.39
700-8000	10	TN	252.40	FERTILIZER MIXED GRADE	2524.00
700-8100	1100	LB	1.46	FERTILIZER NITROGEN CONTENT	1606.00
716-2000	25000	SY	1.14	EROSION CONTROL MATS, SLOPES	28500.00
<b>Section Sub Total:</b>					<b>\$123,867.40</b>

#### Section BRIDGE ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
000-0000	1	Lump Sum	3200000.00	PROPOSED BRIDGE	3200000.00
540-1101	1	LS	200000.00	REMOVAL OF EXISTING BR, STA NO -	200000.00
<b>Section Sub Total:</b>					<b>\$3,400,000.00</b>

#### Section WALL ITEMS

Item Number	Quantity	Units	Unit Price	Item Description	Cost
000-0000	2500	SF	40.00	PROPOSED WALL	100000.00
<b>Section Sub Total:</b>					<b>\$100,000.00</b>

**Section TRAFFIC SIGNAL ITEMS**

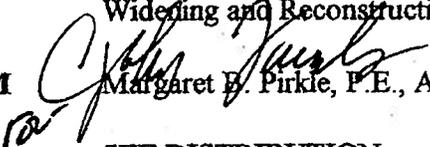
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
639-4004	12	EA	4462.50	STRAIN POLE, TP IV	53550.00
647-1000	1	LS	100000.00	TRAFFIC SIGNAL INSTALLATION NO - 1	100000.00
647-1000	1	LS	100000.00	TRAFFIC SIGNAL INSTALLATION NO - 2	100000.00
647-1000	1	LS	100000.00	TRAFFIC SIGNAL INSTALLATION NO - 3	100000.00

**Section Sub Total: \$353,550.00****Total Estimated Cost: \$14,007,340.81**

D.O.T. 66

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

**FILE** STP-2387(4) McIntosh County **OFFICE** Preconstruction  
P. I. No. 542070  
Widening and Reconstruction of SR 251 **DATE** July 13, 2004  
**FROM**  Margaret B. Pirkle, P.E., Assistant Director of Preconstruction  
**TO** SEE DISTRIBUTION

**SUBJECT** PROJECT CONCEPT REPORT APPROVAL

Attached for your files is the approval for subject project.

MBP/cj

Attachment

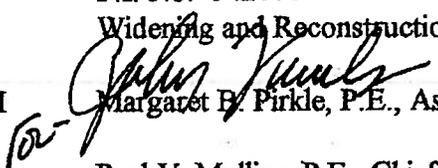
**DISTRIBUTION:**

David Mulling  
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Gerald Ross  
Gary Priester  
BOARD MEMBER

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENT CORRESPONDENCE**

**FILE** STP-2387(4) McIntosh County **OFFICE** Preconstruction  
P.I. No. 542070  
Widening and Reconstruction of SR 251 **DATE** June 9, 2004

**FROM**  Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

**TO** Paul V. Mullins, P.E., Chief Engineer

**SUBJECT PROJECT CONCEPT REPORT**

This project is the widening and reconstruction of SR 251 between CR 16/King Swamp Road and US 17/SR 25, north of Darien, for a total of 3.30 miles. The existing two lane roadway is classified as a rural major collector and, in conjunction with SR 57, is the main east to west route through McIntosh County. State Route 251 within the project limits also provides the most direct route from Darien to access I-95, which provides access to coastal hurricane evacuation routes from the area. Accident and injury rates on SR 251 for the years 1995 - 1997, are well above the statewide average. Accident rates in the project corridor range from 2.8 to 3.9 times greater than statewide averages, while injury rates range from 3.3 to 9.0 times greater in the project corridor compared to statewide rates. Fatality rates on SR 251 were also well above statewide rates for 1997. The projected 2007 traffic volume for this corridor is estimated at 12,760 VPD, increasing to over 27,960 VPD by the design year 2027. Without improvements, this corridor will operate at a level of service "E."

The proposed construction will provide a five-lane rural section from CR 16/King Swamp Road to Plantation Drive. A four-lane divided urban section will be constructed from Plantation Drive to east of I-95/SR 405. The four-lane divided urban section will transition to a five-lane urban section east of I-95/SR 405 and continue east to the intersection at US 17/SR 25. The five-lane section will include the additional pavement width needed to accommodate a 20' raised median in the future. The project will include intersection improvements at US 17/SR 25 that will require widening a portion of US 17/SR 25 to two lanes in each direction plus turn lanes. A 0.9 mile exception is included within the limits of this project which will include the I-95 interchange reconstruction. This work will be part of the I-95/SR 405 widening project [NH-IM-95-1(120)] and is scheduled to be completed before or concurrent with this project.

Environmental concerns include requiring a COE 404 Permit; an Environmental Assessment will be prepared; a public hearing open house will be held; time saving procedures are not appropriate.

Paul V. Mullins  
Page 2

STP-2387(4) McIntosh  
June 9, 2004

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>FUNDING</u>	<u>PROG DATE</u>
Construction (includes E&C and inflation)	\$8,997,000	\$8,885,000	Q25	2011
Right-of-Way	\$1,917,000	\$1,917,000	Q25	
Utilities*	\$ 827,000	----		

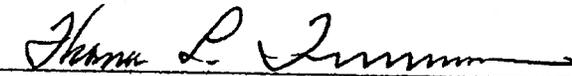
\*LGPA to be sent.

I recommend this project concept be approved and a traffic signal be included at the intersection of SR 25 and SR 251. (Attached is the signal warrant analysis prepared by District 5.)

MBP:JDQ/cj

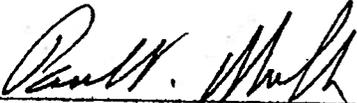
Attachment

CONCUR



Thomas L. Turner, P.E., Director of Preconstruction

APPROVE



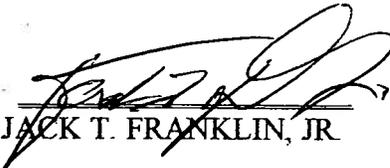
Paul V. Mullins, P.E., Chief Engineer

PROJECT NO. STP-2387(4)  
PI 542070

Parcel #	Property Owner Name	Req'd R/W sf	Req'd R/W acres	Perm. Easmt' sf
1	RTOC LIMITED PARTNERSHIP	4735	0.1087	0
2	WILLIAM DOWNEY	2887	0.0663	0
3	DONNY & LINDA ROBERSON	5554	0.1275	0
4	LINDA ROBERSON	1011	0.0232	0
5	ROBERSON LUMBER	3180	0.0730	0
6	LAVERNE GARDNER	544	0.0125	0
7	LAVERNE GARDNER	2667	0.0612	0
8	NATHAN ANDREW & DEBRA H. JOHNSON	7073	0.1624	0
9	THE STATE OF GEORGIA	9727	0.2233	0
10	THE STATE OF GEORGIA	296	0.0068	0
11	McINTOSH INDUSTRIAL DEV. AUTHORITY 40A-03	3595	0.0825	0
12	McINTOSH INDUSTRIAL DEV. AUTHORITY 40A-01	3043	0.0699	0
13	McINTOSH INDUSTRIAL DEV. AUTHORITY 40A-07.01	3234	0.0742	0
14	McINTOSH INDUSTRIAL DEV. AUTHORITY 40A-07	6317	0.1450	0
15	WATER SITE	5818	0.1336	0
16	ASSOC. COUNTY COMMISSIONERS OF GEORGIA	19962	0.4583	1256
17	UNION CAMP CORP.	1390	0.0319	0
18	UNION CAMP CORP.	3729	0.0856	0
19	UNION CAMP CORP.	35606	0.8174	27520
20	MAGNOLIA BLUFF, INC.	6921	0.1589	55449
21	DHARINI HOTEL INC.	2925	0.0671	4226
22	KIRANKUMAR B. & HEMLATA K. PATEL	2072	0.0476	2355
23	VASU SHREE	3174	0.0729	2838
24-44	PROJECT NO. CSNHS-0007-00(421)			
45	A.S. POPEELL, JR.	7589	0.1742	9576
46	A.S. POPEELL, JR.	16043	0.3683	18244
47	PACK	23488	0.5392	16931
48	LEROY BROWN	452	0.0104	751
49	SUSIE B. BENNETT	0	0.0000	171
50	JEFFREY MUNGIN	0	0.0000	51
51	MARY WATSON	397	0.0091	950
52	ANNIE M. BRENNON	0	0.0000	1283
53	BUTLER	5720	0.1313	3262
54	GEORGE L. & BETTY B. SONGER	1751	0.0402	1166
55	D3-59	1086	0.0249	863
56	D3-58	2141	0.0492	1220
57	LOURDES DE ARMAS	912	0.0209	1770
58	RAYMOND A. & THOMAS WILLINGHAM	5335	0.1225	2404
59	GLYNN-BRUNSWICK MEMORIAL HOSPITAL AUTHORITY	9188	0.2109	3618
60	LINDA D. ROBERSON	11	0.0003	3251
61	BARWICK	0	0.0000	1611

Parcel #	Property Owner Name	Req'd R/W	Req'd R/W	Perm. Easmt'
62	ED H. & DONNA L. BLACKBURN	190	0.0044	943
63	W.T. SKIPPER	3598	0.0826	1811
64	JOHN PACK	7557	0.1735	3993
65	GRANT G. PETERSON, III & CINDY L. PETERSON	769	0.0177	2938
66	JOHN PACK	15642	0.3591	5400
67	H.O. YOUNG (take)	2921	0.0671	1398
68	COASTAL GEORGIA AREA COMMUNITY ACTION AUTHORITY, INC.	1706	0.0392	549
68A	GRANT G. PETERSON, III & CINDY L. PETERSON	8419	0.1933	3593
69	ODGEN	715	0.0164	870
70	COLEN M. OGDEN	364	0.0084	642
71	COLEN M. OGDEN	291	0.0067	1350
72	PAULA R. DELOACH	0	0.0000	773
73	RENETTA JACOBS	527	0.0121	2267
74	NELL D. FISCHETTE	736	0.0169	730
75	NELL D. FISCHETTE	1522	0.0349	1036
76	BARBARA LUCHEITTI & LOIS TRUHLAR	856	0.0197	545
77	ARCHIE HOWELL	2303	0.0529	1227
78	GORDAN SHUMAN	17	0.0004	709
79	UNKNOWN	1437	0.0330	1636
80	ARCHIE & POLLY M. HOWELL	13909	0.3193	3338
81	ROSA MAE O'NEAL	49	0.0011	198
82	REBECCA O'NEAL	463	0.0106	1112
83	FANNIE GILBERT	26	0.0006	608
84	DEVELOPMENT CLUB	53	0.0012	341
85	CITY OF DARIEN	157	0.0036	170
86	A-C DEVELOPMENT CLUB, LLC	6878	0.1579	3924
87	BILLIE S. HACK ET AL.	363	0.0083	270
88	CIRCLE K PROPERTIES, INC.	3373	0.0774	2154
89	LEASED AREA	42	0.0010	90
90	PROCTOR	609	0.0140	454
91	SUNCOAST PROPERTIES, INC.	423	0.0097	314
92	JACK'S MINIT MARKET	1810	0.0416	1430
93	PARCEL 3	488	0.0112	483
94	GEORGE	1587	0.0364	3985
95	J.E. BRITT	2422	0.0556	5349
96	UNKNOWN	0	0.0000	1210
	Total	291795	6.6987	218606

NOTE: EASMT IN AREA OF PROPOSED OUTLET MALL DRIVE WHERE THE PRIVATE & ACCESS EASEMENTS WERE INCLUDED UNDER PARCEL 20

Prepared By :   
JACK T. FRANKLIN, JR.

Approved : \_\_\_\_\_  
GDOT R/W.

## LAND SALES

DATE: 9-15-06

PROJECT NHS-0007-00 (421)

COUNTY: McIntosh P.I.# 0007421

### COMMERCIAL

<u>HIGHEST/BEST USE</u>	<u>SIZE/SQ.FT.</u>	<u>VALUE/SQ.FT.</u>	<u>TOTAL VALUE</u>
Commercial	29,620	\$11.65/SQ.FT.	\$345,000.00
Commercial	37,026	\$9.85/SQ.FT.	\$364,700.00
Commercial	41,380	\$8.00/SQ.FT.	\$331,000.00

# Preliminary Right of Way Cost Estimate

Date: September 15, 2006

Project: STP-2387 (4) McIntosh Co.

Existing/Required R/W: VARIES/VARIES

Project Termini: C.R. 16 Extending south along S.R. 251 to intersection of U.S. 17/S.R. 25

P. I. # 542070

No. Parcels: 75

Project Description Widening and reconstruction of SR 251

## Land:

Commercial		
200,794 Sq. Ft. @ \$10.00/Per SQ. FT.		\$2,007,940.00
Industrial		
N/A		
Residential		
4.25 Acres @ \$20,000/Acre		\$85,000.00
Agricultural		
N/A		
Permanent Easement		
139,864 SQ.FT. @ \$5.00/PerSQ. FT.		\$699,320.00
		<b>\$2,792,260.00</b>

Improvements: 1 business, 1 mobile home, curbing , paving , signs , fencing  
And site improvements **\$1,075,000.00**

Relocation: 1 Commercial @ \$25,000/Parcel  
1 Residential @ \$20,000/Parcel **\$45,000.00**

## Damages:

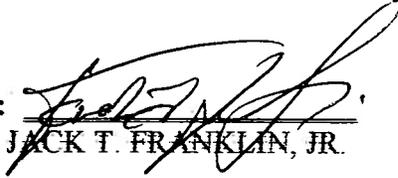
Proximity : 5 parcels	\$165,500.00	
Consequential 4 parcels	\$90,250.00	
Cost To Cure 11 parcels	\$535,000.00	
		<b>\$790,750.00</b>

**NET COST \$4,703,010.00**

Net Cost		\$4,703,010.00
Scheduling Contingency 55 %		\$2,586,655.00
Adm/Court Cost 60 %		\$4,373,799.00
Inflation Factor 40 %		\$4,665,385.00
		<b>\$16,328,849.00</b>
<b>ROUNDED</b>		<b>\$16,328,850.00</b>

TOTAL COST: \$ 16,328,850.00

Prepared By :

  
JACK T. FRANKLIN, JR.

Approved :

\_\_\_\_\_  
GDOT R/W.

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-2387 (4) McIntosh Co.  
P.I. No. 542070

OFFICE Road Design

DATE May 26, 2004

FROM

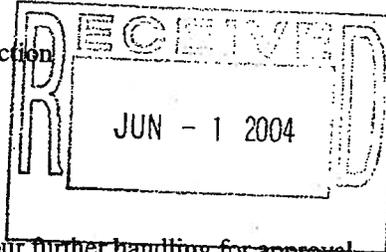
*Gerald M. Ross mgt*  
Gerald M. Ross, P.E., State Road & Airport Design Engineer

TO

Margaret B. Pirkle, P.E., Assistant Director of Preconstruction

SUBJECT

PROJECT CONCEPT REPORT



Attached is the original copy of the Concept Report for your further handling for approval in accordance with the Plan Development Process (PDP).

If there any questions, please contact Jim Simpson at 404-657-9192.

GMR:JSS:ss

Attachment

cc: Thomas L. Turner  
Joe Palladi, w/attachment  
Jamie Simpson, w/attachment  
Harvey Keepler, w/attachment  
Gary Priester, w/attachment  
David Mulling, w/attachment  
Phillip Allen, w/attachment  
Paul Liles, w/attachment

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

PROJECT CONCEPT REPORT

Office of Road and Airport Design

SR 251 from CR 16/King Swamp Road to US 17/SR 25

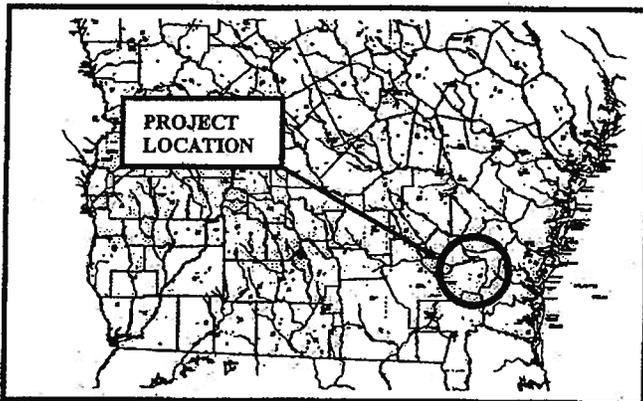
Project Number: STP-2387(4)

County: McIntosh

P. I. Number: 542070

Federal Route Number: None

State Route Number: SR 251



Recommendation for approval:

DATE 5/26/04

James S. Appling  
Project Manager

DATE 5/28/04

David MR  
Office Head/District Engineer

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

DATE \_\_\_\_\_  
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\_\_\_\_\_  
State Transportation Planning Administrator  
\_\_\_\_\_  
State Transportation Programming Engineer  
\_\_\_\_\_  
State Environmental/Location Engineer  
\_\_\_\_\_  
State Traffic Safety and Design Engineer  
\_\_\_\_\_  
District Engineer  
\_\_\_\_\_  
Project Review Engineer  
\_\_\_\_\_  
State Bridge and Structural Design Engineer

- Major interchanges or intersections along the project: I-95/SR 405 Interchange, US 17/SR 25
- Existing length of roadway segment and the beginning mile logs for each county segment: 3.3 miles; mile log 10.18 - 13.48

**Proposed Design Features:**

- Proposed typical section(s):
  - Mile log 10.18 to 11.68
    - Five-lane Rural: 4 - 12' lanes, 14' center turn lane, 6.5' bike shoulder. Sidewalks, which would be located behind the ditch on a rural section, shall be considered as the plan development process moves forward into preliminary plans.
  - Mile log 11.68 to 12.58
    - Four-lane Urban: 4 - 12' lanes, 20' raised median, outside curb and gutter, two 4' bike lanes, and 5' sidewalks along both sides.
  - Mile log 12.58 to 13.48
    - Five-lane Urban: 4 - 12' lanes, 14' center turn lane, outside curb and gutter, two 4' bike lanes, with an additional 3' width each side to accommodate future raised median, and 5' sidewalks along both sides.
- Proposed Design Speed Mainline: 55 mph (rural section)/45 mph (urban section)
- Proposed Maximum grade Mainline: 3% Maximum grade allowable: 6%(55 mph), 7%(45 mph)
- Proposed Maximum grade Side Street: N/A Maximum grade allowable: 8%
- Proposed Maximum grade driveway: N/A
- Proposed Maximum degree of curve: 2° 00' Maximum degree allowable: 5° 23' (55 mph), 8° 41' (45 mph)
- Right of way
  - Width: Varies 195' - 112'
  - Easements: Temporary ( ), Permanent ( ), Utility ( ), Other ( ).
  - Type of access control: Full ( ), Partial ( ), By Permit ( X ), Other ( ).
  - Number of parcels: 75 Number of displacements:
    - Business: 2
    - Residences: 0
    - Mobile homes: 0
    - Other: 0
- Structures:
  - Extend existing reinforced concrete bridge culvert - Triple 7'x7', 130' long
- Major intersections and interchanges: I-95/SR 405 Interchange, US 17/SR 25
- Traffic control during construction:
  - Traffic to be maintained on existing roadways during construction

- Design Exceptions to 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)

- Design Variances: None anticipated.
- Environmental concerns: Possible U.S. Army Corps of Engineers Permit (type to be determined.)
- Level of environmental analysis:
  - 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: Georgia Power Company Transmission and Distribution, City of Darien Water and Sewer, Darien Telephone, Atlanta Gas Light, Worth Enterprises - CATV

**Project responsibilities:**

- Design: Georgia DOT
- Right of Way Acquisition: Georgia DOT
- Relocation of Utilities: Local government
- Letting to contract: Georgia DOT
- Supervision of construction: Georgia DOT
- Providing material pits: Contractor
- Providing detours: N/A

**Coordination**

- Initial Concept Team meeting date: September 13, 2001
- Concept meeting date: September 5, 2002
- P. A. R. meetings, dates and results: None required.
- FEMA, USCG, and/or TVA: None to date.
- Public involvement: A public information meeting was held on January 7, 2003, public hearing to be held at future date.
- Local government comments: PMA – has not been determined.
- Other projects in the area: I-95/SR 405 widening – Project Nos. NH-IM-95-1(120) & NH-IM-95-1(121) McIntosh County
- Other coordination to date: None to date.

**PRELIMINARY COST ESTIMATE**

PROJECT NUMBER: STP-2387(4)

COUNTY: McIntosh

DATE: March 2004

ESTIMATED LETTING DATE:

PREPARED BY: B. Helsel

PROJECT LENGTH: 3.3 Miles

( ) PROGRAMMING PROCESS (X) CONCEPT DEVELOPMENT ( ) DURING PROJECT DEV.

PROJECT COST	
6. SPECIAL FEATURES	
SUBTOTAL: C-6	\$ -
<b>SUMMARY</b>	
A. RIGHT-OF-WAY	\$ 1,916,600
B. REIMBURSABLE UTILITIES	\$ 827,000
C. CONSTRUCTION	
1. MAJOR STRUCTURES	\$ 92,400
2. GRADING AND DRAINAGE	\$ 2,182,546
3. BASE AND PAVING	\$ 3,216,415
4. LUMP ITEMS	\$ 922,896
5. MISCELLANEOUS	\$ 650,650
6. SPECIAL FEATURES	\$ -
SUBTOTAL CONSTRUCTION COST	\$ 7,064,907
E. & C. (10%)	\$ 706,491
INFLATION (5% PER YEAR)	\$ 1,113,606
NUMBER OF YEARS           3	
TOTAL CONSTRUCTION COST	\$ 8,885,004
<b>GRAND TOTAL PROJECT COST</b>	<b>\$ 11,628,604</b>

## **Need & Purpose Statement**

**State Route 251  
McIntosh County  
STP-2387(4)  
P.I. # 542070**

The proposed project would widen and reconstruct the existing two-lane SR 251 between CR 16/King Swamp Road and US 17/SR 25 (north of Darien). From CR 16/King Swamp Road to Plantation Drive the roadway would be widened to a five-lane rural section. From Plantation Drive to east of I-95/SR 405 the existing roadway would be widened to a four-lane divided urban section, which will then transition to a five-lane urban section to the intersection of US 17/SR 25. The five-lane section will include the additional pavement width needed to accommodate a 20-foot raised median in the future. The total length of the proposed project is approximately 3.3 miles. The project will include intersection improvements at US 17/SR 25 that will require widening a portion of US 17/SR 25 to two lanes in each direction plus turn lanes. In addition, the existing bridge on SR 251 over I-95 would be replaced, under separate project currently identified as NH-IM-95-1(120), P.I. Number 511110, in order to accommodate the required horizontal and vertical clearances for the widening of I-95. SR 251 is classified as a rural major collector and, in conjunction with SR 57, is a main east-to-west route through McIntosh County. SR 251 in the project area also provides the most direct route for individuals from Darien to access I-95, which provides access to coastal hurricane evacuation routes from the area.

The project to widen SR 251 was first proposed to be added to the Department's Construction Work Program (CWP) in August 1995. The project was submitted by the District as a State Highway Improvement Plan (SHIP) project. Subsequently, the project was added to the CWP in March 1996. From 1990 to 1994, traffic volumes on SR 251 east of I-95 fluctuated between 3,000 and 3,600 AADT (Average Annual Daily Traffic). West of I-95 traffic volumes were somewhat lower, fluctuating between 2,200 and 2,800 AADT. However, in 1995, traffic volumes began to steadily increase as the I-95/SR 251 interchange (Exit #10) began to develop commercially. The AADT for 2007 (build year) is predicted to reach 12,760, and is predicted to reach 27,960 by 2027 (design year) based on growth in the area.

Currently, the project corridor is heavily developed with commercial and industrial facilities including service station/convenience stores, truck stops, nationally known fast food restaurants, hotels and motels, auto repair/wrecker service, a video store, a night club, and an outlet mall containing approximately 100 retail stores. As a result of ongoing development in the project corridor, traffic volumes between 1992 and 2002 east of I-95 have increased steadily at approximately a 6% per year rate. Bikeable shoulders and sidewalks would be extended from US 17/SR 25 to the mall, which would provide

# Department of Transportation State of Georgia

-----  
Interdepartmental Correspondence

**FILE** R/W Cost Estimate **OFFICE** Atlanta  
**DATE** August 25, 2006

**FROM** Phil Copeland, Right of Way Administrator

**TO** Gerald M. Ross, P.E., State Road and Airport Design Engineer  
ATTN: Jack Grant

**SUBJECT** **Preliminary Right of Way Cost Estimate**  
**Project: STP-2387(4) & NHS-0007-00(421)McIntosh**  
**PI. No.: 542070 & 0007421**  
**Description: Widening and Reconstruction of SR 251**

As per your request, attached is a copy of the approved Revised Preliminary Right of Way Cost Estimate on the above referenced project.

Please note the area of Required R/W was furnished with your request. **Please include total Required R/W areas for the entire corridor in all future requests.**

If you have any questions, please contact Jerry Milligan at the Chamblee Right of Way Office at (770) 986-1541.

PC:GAM

Attachments

c: Brian Summers, Engineering Services  
Wilhelmina Mueller, R/W  
Windy Bickers, Financial Management  
File

# Preliminary Right of Way Cost Estimate

Date: September 15, 2006

Project: NHS-0007-00 (421) McIntosh

P. I. # 0007421

Existing/Required R/W: VARIES/VARIES

No. Parcels: 22

Project Termini: North of interchange @ I-95 and S.R. 251 at station # 120+00 and extends South to station # 147+00 along SR 251.

Project Description Widening and reconstruction of SR 251

**Land:**

Commercial		
101,156 Sq. Ft. @ \$10.00/Per SQ. FT.		\$1,011,560.00
Industrial		
N/A		
Residential		
N/A		
Agricultural		
N/A		
Permanent Easement		
75,149 SQ.FT. @ \$5.00/PerSQ. FT.		\$375,745.00
		\$1,387,305.00

**Improvements:** 3 businesses , curbing , paving , signs , fencing  
And site improvements \$2,750,000.00

**Relocation:** 3 Commercial @ \$25,000/Parcel \$75,000.00

**Damages:**

Proximity : 8 parcels	\$420,000.00
Consequential 6 parcels	\$ 165,000.00
Cost To Cure 5 parcels	\$ 215,000.00

\$800,000.00

**NET COST \$5,012,305.00**

Net Cost		\$5,012,305.00
Scheduling Contingency 55 %		\$2,756,768.00
Adm/Court Cost 60 %		\$4,661,444.00
Inflation Factor 40 %		\$4,972,207.00
		\$17,402,724.00
<b>ROUNDED</b>		\$17,402,725.00

TOTAL COST: \$17,402,725.00

## LAND SALES

DATE: 9-15-06

PROJECT STP-2387 (4)

COUNTY: McIntosh P.I.# 542070

### COMMERCIAL

<u>HIGHEST/BEST USE</u>	<u>SIZE/SQ.FT.</u>	<u>VALUE/SQ.FT.</u>	<u>TOTAL VALUE</u>
Commercial	29,620	\$11.65/SQ.FT.	\$345,000.00
Commercial	37,026	\$9.85/SQ.FT.	\$364,700.00
Commercial	41,380	\$8.00/SQ.FT.	\$331,000.00

### RESIDENTIAL

<u>HIGHEST/BEST USE</u>	<u>SIZE/ACRE</u>	<u>VALUE/ACRE</u>	<u>TOTAL VALUE</u>
Residential	.61	\$17,000.00	\$10,370.00
Residential	.85	\$20,000.00	\$17,000.00
Residential	1.15	\$23,500.00	\$27,025.00

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENTAL CORRESPONDENCE

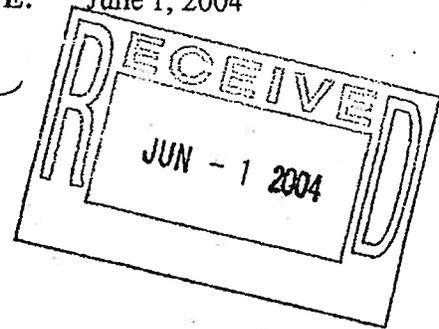
**FILE:** STP-2387(4) McIntosh  
P.I. No. 542070  
S.R. 251 widening/reconstruction

**OFFICE:** Engineering Services

**DATE:** June 1, 2004

**FROM:** David Mulling, Project Review Engineer *REW*  
**TO:** Meg Pirkle, Assistant Director of Preconstruction

**SUBJECT:** CONCEPT REPORT



We have reviewed the concept report submitted May 28, 2004 by the letter from Gerald Ross dated May 26, 2004, and have no additional comments.

The costs for this project are:

Construction	\$7,064,907
Inflation	\$1,113,606
E&C	\$817,851
Reimbursable Utilities	\$827,000(LGPA anticipated)
Right of Way	\$1,916,600

REW

c: Gerald Ross, Attn.: Jim Simpson

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

PROJECT CONCEPT REPORT

Office of Road and Airport Design

SR 251 from CR 16/King Swamp Road to US 17/SR 25

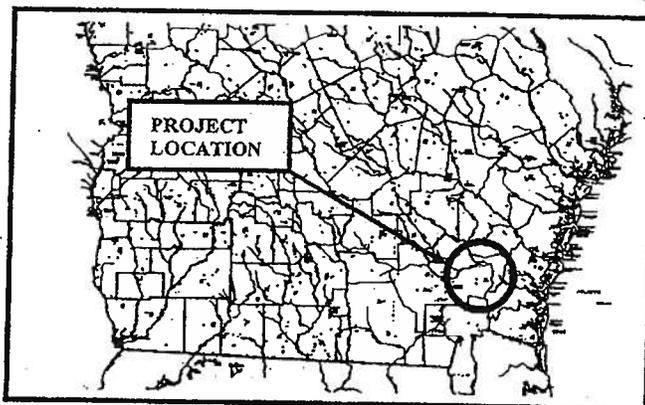
Project Number: STP-2387(4)

County: McIntosh

P. I. Number: 542070

Federal Route Number: None

State Route Number: SR 251



Recommendation for approval:

DATE 5/26/04

DATE 5/28/04

James S. Spring  
Project Manager

David M. B.  
Office Head/District Engineer

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

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE \_\_\_\_\_

DATE 6-1-04

DATE \_\_\_\_\_

\_\_\_\_\_  
State Transportation Planning Administrator

\_\_\_\_\_  
State Transportation Programming Engineer

\_\_\_\_\_  
State Environmental/Location Engineer

\_\_\_\_\_  
State Traffic Safety and Design Engineer

\_\_\_\_\_  
District Engineer  
David J. Mullins *REW*  
Project Review Engineer

\_\_\_\_\_  
State Bridge and Structural Design Engineer

## SCORING RESULTS AS PER MOG 2440-2

<b>Project Number:</b> STP-2387(4)		<b>County:</b> McIntosh		<b>PI No.:</b> 542070	
<b>Report Date:</b> May 28, 2004		<b>Concept By:</b> DOT Office: Road Design			
<input checked="" type="checkbox"/> Concept Stage		Consultant: Jordan Jones & Goulding			
<b>Project Type:</b> Choose One From Each Column		<input checked="" type="checkbox"/> Major <input type="checkbox"/> Minor	<input type="checkbox"/> Urban <input checked="" type="checkbox"/> Rural	<input type="checkbox"/> ATMS <input type="checkbox"/> Bridge Replacement <input type="checkbox"/> Building <input type="checkbox"/> Interchange Reconstruction <input type="checkbox"/> Intersection Improvement <input type="checkbox"/> Interstate <input type="checkbox"/> New Location <input checked="" type="checkbox"/> Widening & Reconstruction <input type="checkbox"/> Miscellaneous	
FOCUS AREAS	SCORE	RESULTS			
Presentation	100				
Judgement	100				
Environmental	100				
Right of Way	100				
Utility	100				
Constructability	100				
Schedule	100				



Project Concept Report - Page 3  
Project Number: STP-2387(4)  
P. I. Number: 542070  
County: McIntosh

**Need and Purpose:** See attached Need & Purpose Statement.

**Description of the proposed project:**

This project is located in McIntosh County, beginning just south of the intersection of SR 251 with CR 16/King Swamp Road and ending at US 17 / SR 25 just north of the Darien city limits. The project consists of widening the existing two-lane road to a five-lane rural section from CR 16/King Swamp Road to Plantation Drive. A four-lane divided urban section will be constructed from Plantation Drive to east of I-95/SR 405. The four-lane divided urban section will transition to a five-lane urban section east of I-95/SR 405 and will continue east to the intersection at US 17/SR 25. The five-lane section will include the additional pavement width needed to accommodate a 20' raised median in the future. The project will include intersection improvements at US 17/SR 25 that will require widening a portion of US 17/SR 25 to two lanes in each direction plus turn lanes. A 0.9 mile exception is included within the limits of this project which will include the I-95 interchange reconstruction. The exception project is currently identified as project NH-IM-95-1(120). The total gross length of project STP-2387(4) is approximately 3.3 miles.

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

**PDP Classification:** Major, Existing Location

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

**Functional Classification:** Rural Major Collector

**U. S. Route Number(s):** None

**State Route Number(s):** SR 251

**Traffic (AADT):**

Current Year (2007): 12,760

Design Year (2027): 27,960

**Existing design features:**

- Typical Section:
  - Two 12' lanes
  - Graded shoulders vary from 5' to 10'
- Posted speed: 55/45 mph Maximum degree of curvature: 2° 30'
- Maximum grade: 3.0%
- Width of right of way: Varies 195'-100'
- Major structures:
  - Reinforced concrete bridge culvert – Triple 7'x7', 66' long

### Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 12 Months
- Time to complete preliminary construction plans: 12 Months
- Time to complete right of way plans: 8 Months
- Time to complete the Section 404 Permit: 12 Months
- Time to complete final construction plans: 12 Months
- Time to complete to purchase right of way: 18-24 Months

### Other alternates considered:

- **No Build:** This alternative does not meet the capacity and operational needs of the project.

### Comments:

- All ramps at the I-95 and SR 251 interchange will be upgraded to current department standards, lengthened to provide adequate acceleration and deceleration lengths, and designed to accommodate the widening of I-95. This work will be a part of the I-95/SR 405 widening project (Project No. NH-IM-95-1(120)) and is scheduled to be completed before or concurrent with this project.
- Reconstruction of the roadway will be necessary in some locations where an urban typical section is proposed in order meet AASHTO minimum grade requirements for drainage of curbed roadways.
- Historic markers for Old River Road and Fort Barrington are located within proposed project construction in the southwest quadrant of the intersection of SR 251 and US 17. These markers will have to be reset as part of the project.
- During further plan development sidewalks should be studied and incorporated from the southern terminus of proposed roadway improvements on US 17. Sidewalks will need to be extended south for approximately 430' in order to provide connection to existing sidewalks.

### Attachments:

1. Need and Purpose Statement
2. Cost Estimates:
  - a. Construction including E&C(10) and Inflation, \$8,885,004
  - b. Right of Way, \$1,916,600
  - c. Utilities, \$827,000
3. Typical sections
4. Accident summaries
5. Traffic Diagrams
6. Capacity analysis
7. Minutes of Initial Concept Team meeting
8. Minutes of Concept meeting

**PRELIMINARY COST ESTIMATE**

PROJECT NUMBER: STP-2387(4)

COUNTY: McIntosh

DATE: March 2004

ESTIMATED LETTING DATE:

PREPARED BY: B. Helsel

PROJECT LENGTH: 3.3 Miles

( ) PROGRAMMING PROCESS (X) CONCEPT DEVELOPMENT ( ) DURING PROJECT DEV.

PROJECT COST			
<b>A. RIGHT-OF-WAY:</b>			
1. PROPERTY (LAND & EASEMENT)			\$ 507,000
2. DISPLACEMENTS; RES: 0, BUS: 2, M.H.: 0			\$ 45,000
3. OTHER COST (ADM./COST, INFLATION)			\$ 1,364,600
SUBTOTAL: A			\$ 1,916,600
<b>B. REIMBURSABLE UTILITIES:</b>			
1. RAILROAD			\$ -
2. TRANSMISSION LINES			\$ 807,000
3. SERVICES			\$ 20,000
SUBTOTAL: B			\$ 827,000
<b>C. CONSTRUCTION:</b>			
1. MAJOR STRUCTURES			
a. BRIDGES			
Grade Separations ( 0 )			\$ -
Stream Crossings ( 0 )			\$ -
SUBTOTAL: C-1.a			\$ -
b. OTHER			
Walls			\$ -
Box Culverts			\$ -
Bridge Culverts ( 1 )			\$ 92,400
SUBTOTAL: C-1.b			\$ 92,400
SUBTOTAL: C-1			\$ 92,400
2. GRADING AND DRAINAGE:			
a. EARTHWORK			
In Place Embankment	210,000	CY @ \$3.99	\$ 837,900
b. DRAINAGE			
1) Cross Drain Pipe			\$ 328,470
2) Curb and Gutter			\$ 440,716
3) Longitudinal System (incl. catch basins)			\$ 575,460
SUBTOTAL: C-2.b			\$ 1,344,646
SUBTOTAL: C-2			\$ 2,182,546

**PRELIMINARY COST ESTIMATE**

PROJECT NUMBER: STP-2387(4)

COUNTY: McIntosh

DATE: March 2004

ESTIMATED LETTING DATE:

PREPARED BY: B. Helsel

PROJECT LENGTH: 3.3 Miles

( ) PROGRAMMING PROCESS (X) CONCEPT DEVELOPMENT ( ) DURING PROJECT DEV.

PROJECT COST			
<b>3. BASE AND PAVING:</b>			
a. AGGREGATE BASE	66,332	- Tons @ \$17.03	\$ 1,129,627
b. ASPHALT PAVING (Mainline & Cross-Roads):			
Drainage - Type D	-	- Tons @ \$50.8	\$ -
Surface - SMA	-	- Tons @ \$54.93	\$ -
Surface - Superpave	11,464	- Tons @ \$42.56	\$ 487,899
Binder - SMA	-	- Tons @ \$56.9	\$ -
Binder - Superpave	12,163	- Tons @ \$38.43	\$ 467,393
Base - Superpave	22,053	- Tons @ \$34.63	\$ 763,680
Pavement Reinf. Fabric Strips	21,170	- Lane Ft @ \$2.84	\$ 60,122
SUBTOTAL: C-3.b			\$ 1,779,094
c. CONCRETE PAVING	-	- SY @ \$33.57	\$ -
d. OTHER (Leveling, Tack Coat, Milling)			\$ 307,694
SUBTOTAL: C-3			\$ 3,216,415
<b>4. LUMP ITEMS</b>			
a. GRASSING			\$ 137,077
b. CLEARING AND GRUBBING			\$ 154,949
c. LANDSCAPING			\$ -
d. EROSION CONTROL			\$ 361,326
e. TRAFFIC CONTROL			\$ 269,544
SUBTOTAL: C-4			\$ 922,896
<b>5. MISCELLANEOUS:</b>			
a. LIGHTING			\$ -
b. SIGNING - MARKING - SIGNALIZATION			\$ 242,747
c. GUARDRAIL			
Single-Faced			\$ 9,744
Double-Faced			\$ -
Anchors			\$ 7,245
SUBTOTAL: C-5.c			\$ 16,989
d. SIDEWALK			\$ 325,454
e. MEDIAN / SIDE BARRIER	-	- LF @ \$32.03	\$ -
f. MOVABLE BARRIER SECTION			
g. ACCESS FENCE			\$ -
h. BRIDGE JACKING			
i. APPROACH SLABS			\$ -
j. REMOVAL			
Concrete Paving			\$ -
Bridges			\$ -
SUBTOTAL: C-5.j			\$ -
k. ATMS Conduit	-	- LF @ \$37.78	\$ -
l. OTHER			\$ 65,460
SUBTOTAL: C-5			\$ 650,650

bike and pedestrian access to this facility from the City of Darien. Traffic west of I-95 on SR 251 is not as heavy as traffic east of I-95. Traffic on SR 251 west the I-95 development also increased steadily at a rate of 5% from 1992 to 2002 . The section along SR 251 west of I-95 is heavily influenced by the amount of traffic generated by the McIntosh Industrial Park to the west of I-95 on SR 251. It is estimated that this park will be 50% complete by 2007 and 100% built out by 2027. Plans to expand the industrial park are currently underway. The County is hoping to attract some large-scale development projects including large distribution warehouses to the Industrial Park. Utilizing the Highway Capacity Manual to determine the Level-of-Service (LOS) in 2007, SR 251 east of I-95 will be operating at a LOS D and west of I-95, at a LOS C. By 2027 both sections would be operating at LOS E.

The most recent acceptable data for accident, injury, and fatality rates (3 consecutive years) is from the years 1995-97. Accident and injury rates on SR 251 have been well above the statewide average for all of these years. Accident rates in the project corridor range from roughly 2.8 to 3.9 times greater than statewide averages, while injury rates range from 3.3 to 9 times greater in the project corridor compared to statewide rates. Fatality rates on SR 251 were also well above statewide rates for 1997 (6.4 times greater), but were below statewide averages for the years 1995 and 1996. Table 1 (below) indicates the number of accidents, injuries and fatalities and corresponding rates on SR 251 for the years 1995, 1996, and 1997. Predicted increases in traffic due to continued planned development along this corridor can be expected to add to the above-average accident, injury and fatality rates in the project corridor without the proposed improvements.

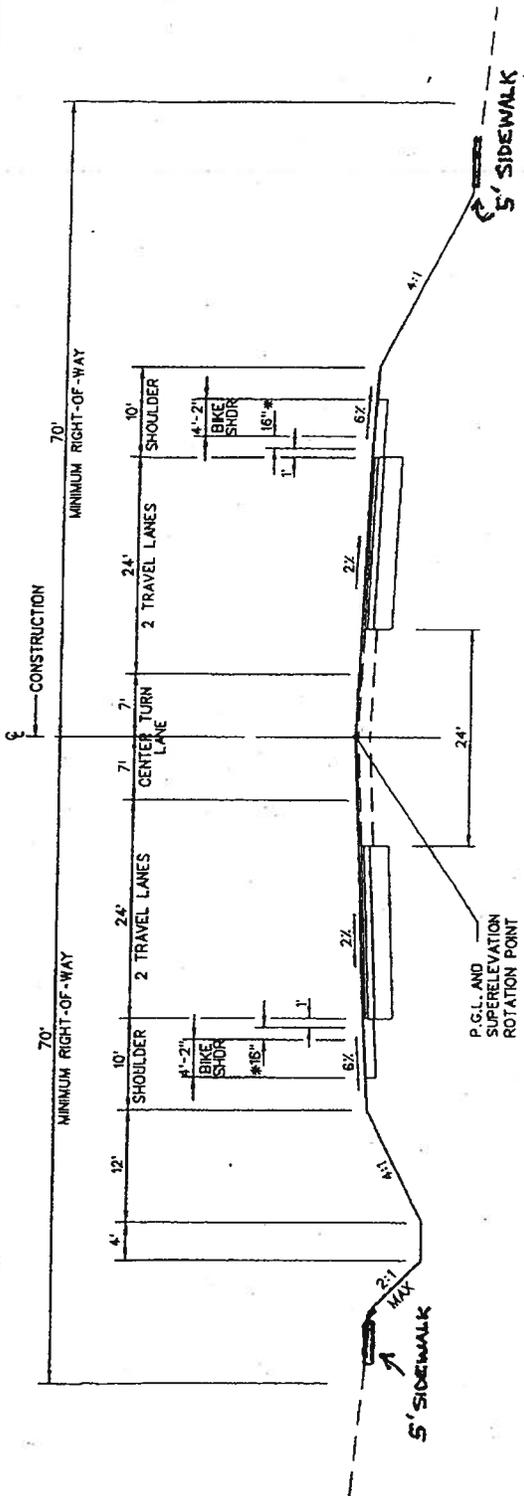
**Table 1: Accidents / Accident Rates\* on SR 251, McIntosh County**

<u>YEAR</u>	<u>Number of Accidents</u>	<u>Accident Rate Project / Statewide Average</u>	<u>Number of Injuries</u>	<u>Injury Rate Project / Statewide Average</u>	<u>Number of Fatalities</u>	<u>Fatality Rate Project / Statewide Average</u>
1995	24	566 / 193	17	401 / 122	0	0.00 / 3.40
1996	32	792 / 201	44	1099 / 122	0	0.00 / 3.67
1997	24	555 / 194	20	462 / 112	1	23.11 / 3.62

*\*Accident Rates are expressed as the number of accidents per 100 million vehicle miles traveled*

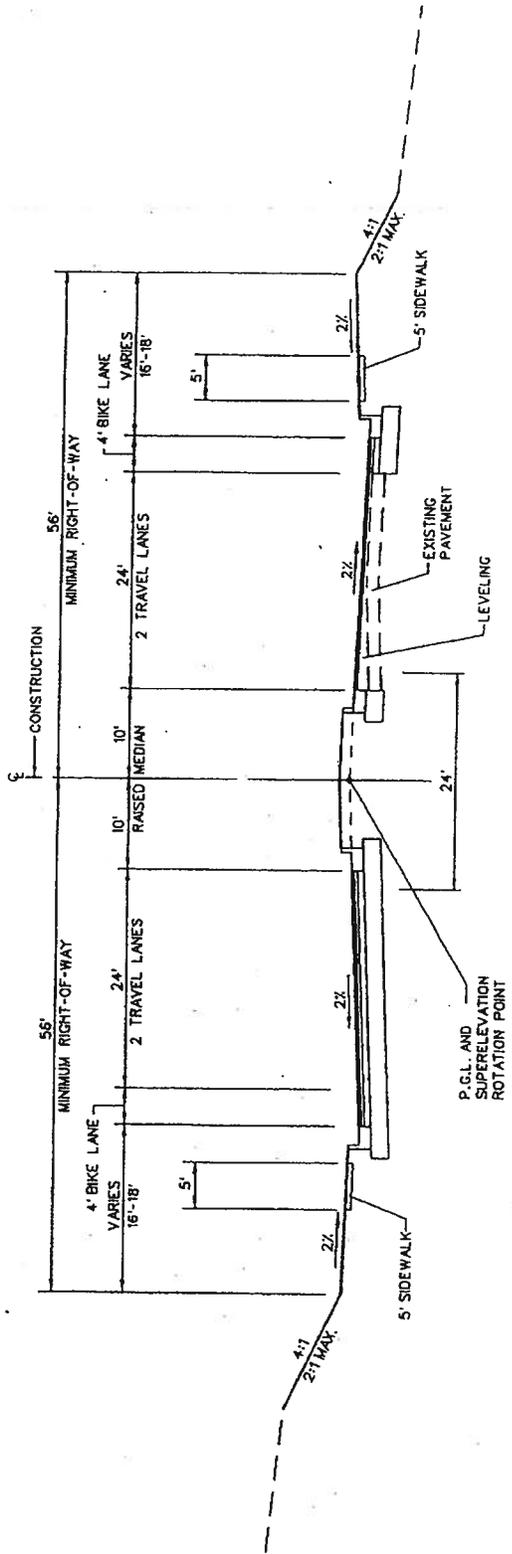
The termini for the proposed widening project are logical. At the southeastern terminus (where SR 251 intersects US 17), US 17 is a four-lane facility south of the intersection of SR 251. Consequently, the widening and reconstruction of SR 251 will provide the City of Darien with improved access to I-95. At the northwest terminus, traffic volumes drop significantly north of the industrial park. The proposed project would transition to a five-lane rural section that would extend to CR 16/King Swamp Road, which is the next roadway intersection north of the industrial park.

Based on the above, there is a need to widen SR 251 between CR 16/King Swamp Road and US 17/SR 25 due to the unacceptable projected LOS within the project corridor and above-average accident, injury, and fatality rates. The purpose of widening SR 251 is to increase the capacity of the highway, provide a safer highway for motorists, reduce travel time delays, and to provide the roadway infrastructure necessary to support ongoing and planned development in the corridor. Additionally, the widening of SR 251 would provide the coastal residents in this area with a more suitable evacuation route during an emergency situation such as a hurricane, heavy rains and/or flooding. An additional benefit includes the extension of sidewalks and bikeable shoulders from US 17/SR 25 at the southern terminus to provide pedestrian and bicycle accessibility between the commercial node at the I-95/SR 251 interchange and the City of Darien.

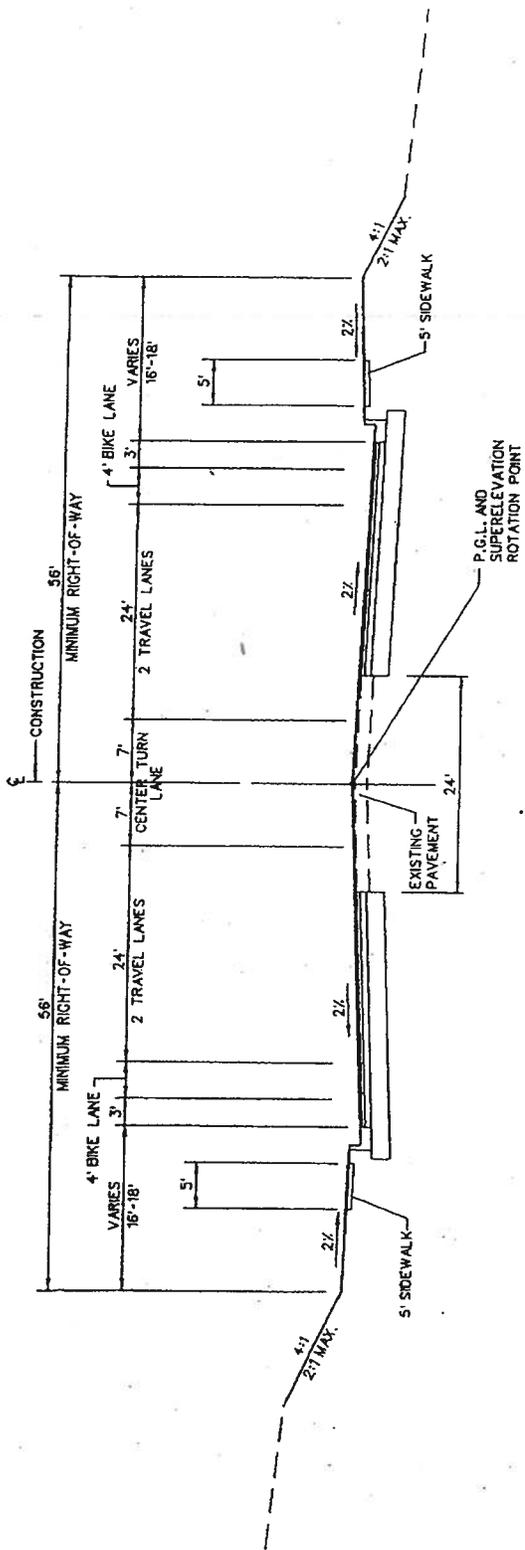


\* NOTE: 16" MILLED RUMBLE STRIPE

**TYPICAL ROADWAY SECTION - RURAL**  
**S.R. 251**  
**WITH BIKE SHOULDER**



**TYPICAL ROADWAY SECTION - URBAN**  
**S.R. 251**  
**WITH RAISED MEDIAN**



TYPICAL ROADWAY SECTION - URBAN

S.R. 251  
 WITH CENTER TURN LANE

SR 251 from CR 16/King Swamp Road to US 17/SR25

Project Number: STP-2387(4)

County: McIntosh

P. I. Number: 542070

<b>ACCIDENT HISTORY</b>						
<b>McIntosh County</b>						
<u>YEAR</u>	<u>Number of Accidents</u>	<u>Accident Rate</u>	<u>Number of Injuries</u>	<u>Injury Rate</u>	<u>Number of Fatalities</u>	<u>Fatality Rate</u>
1995	24	566 (193)	17	401 (122)	0	0.00 (3.40)
1996	32	792 (201)	44	1099 (122)	0	0.00 (3.67)
1997	24	555 (194)	20	462 (112)	1	23.11 (3.62)

MCINTOSH INDUSTRIAL BLVD

1215 1215  
(3200) (3200)

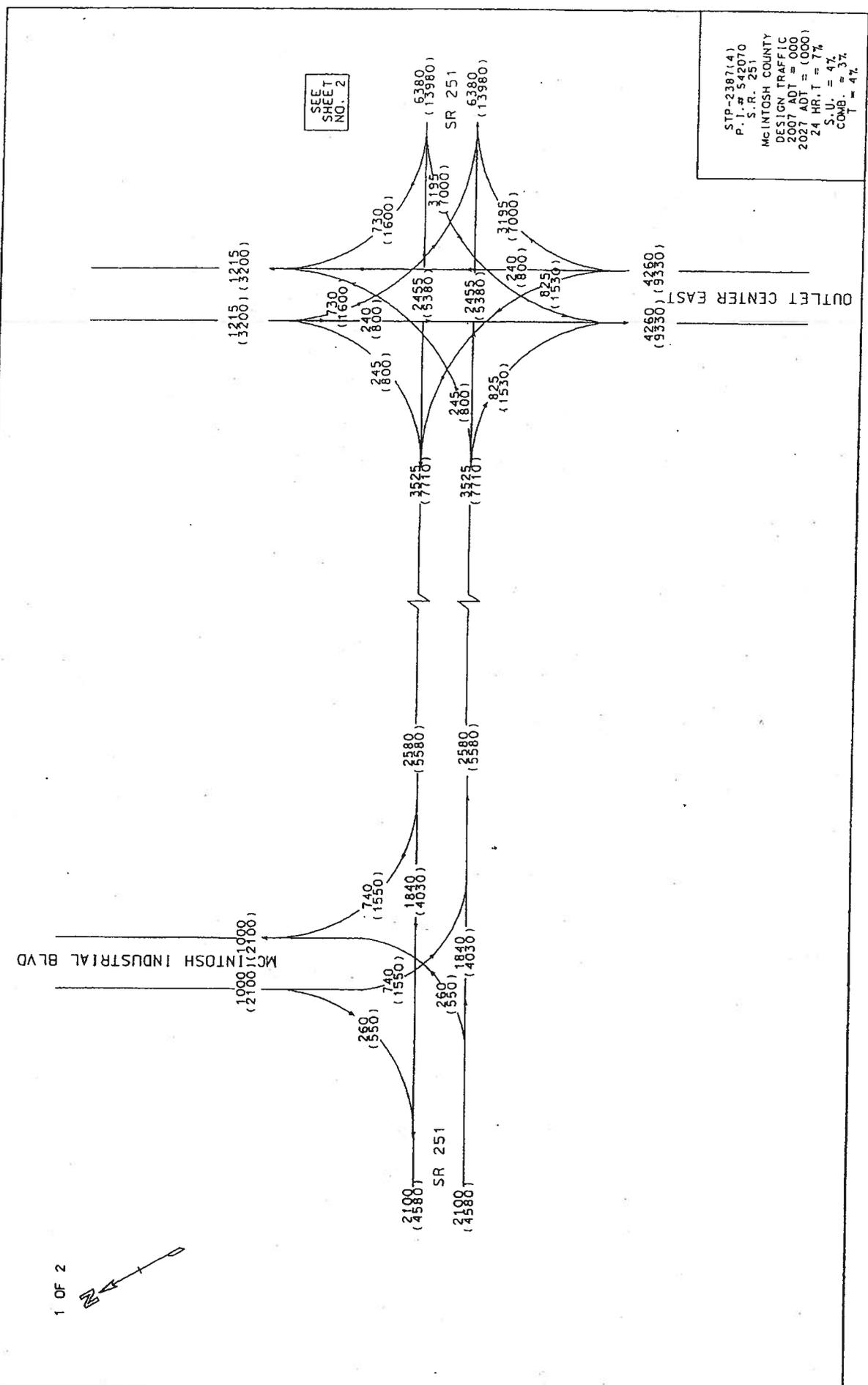
SEE SHEET NO. 2

4260 4260  
(9350) (9350)

OUTLET CENTER EAST

STP-2387(4)  
P. I. # 542070  
S. R. 251  
MCINTOSH COUNTY  
DESIGN TRAFFIC  
2007 ADT = 000  
2027 ADT = (000)  
24 HR. T = 7%  
S.U. = 4%  
COMB. = 3%  
T = 4%

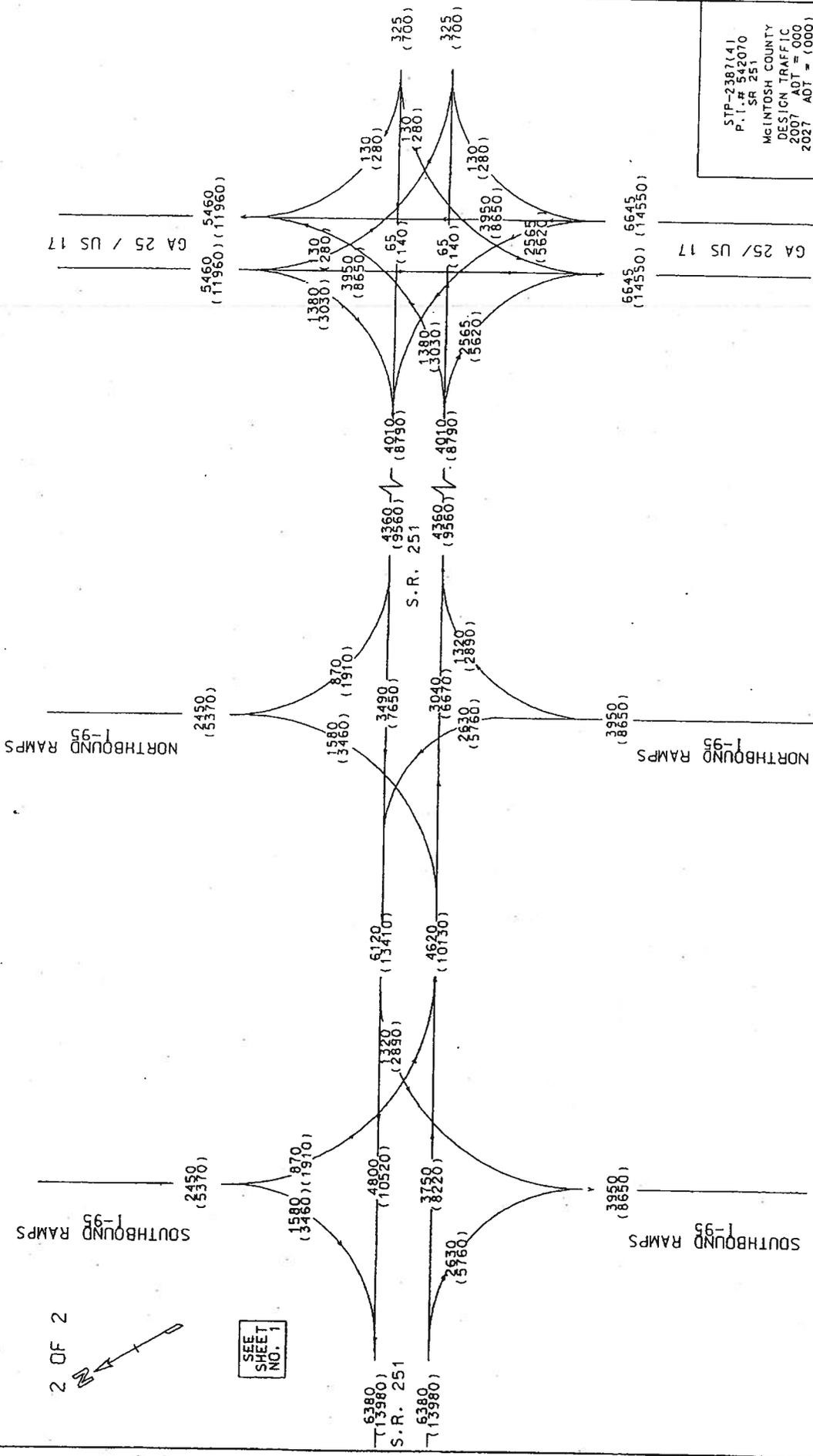
1 OF 2



2 OF 2



SEE SHEET NO. 1



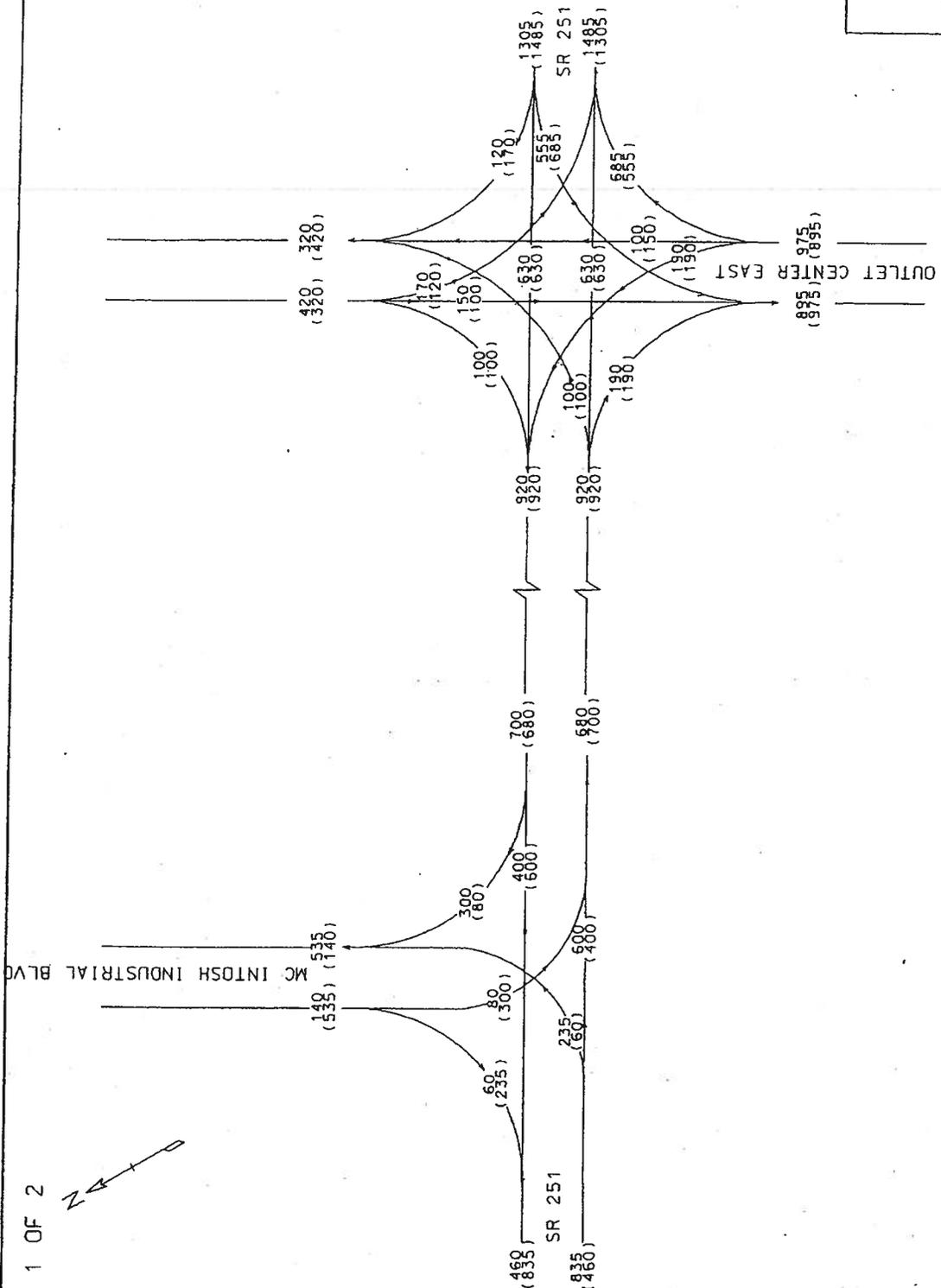
STP-2387(41)  
 P. I. # 542070  
 SR 251  
 MONTGOMERY COUNTY  
 DESIGN TRAFFIC  
 2007 ADT = 000  
 2027 ADT = (000)  
 24 HR. T = 7%  
 S. U. = 4%  
 COMB. = 3%  
 T = 4%



1 OF 2

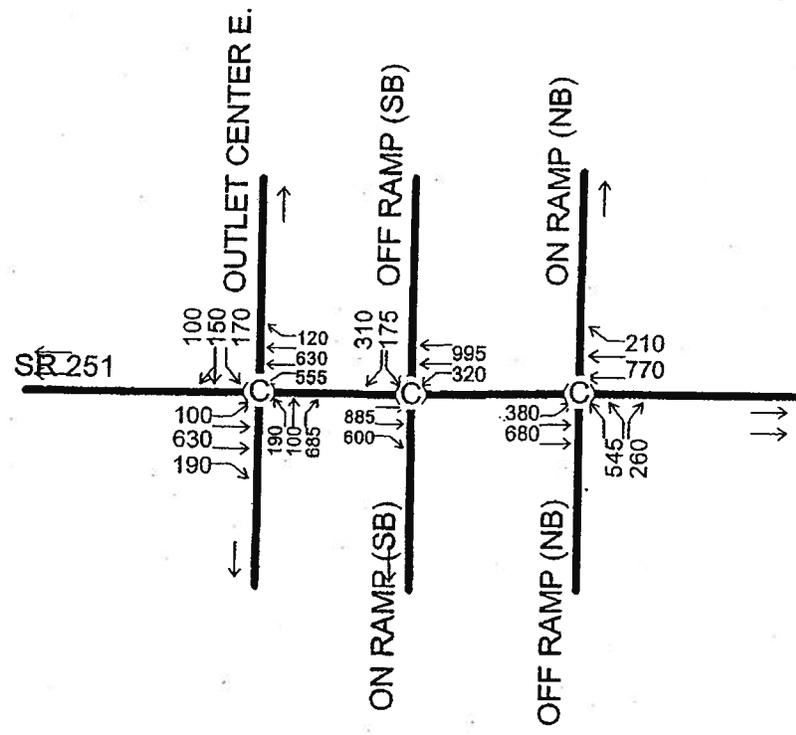


MC INTOSH INDUSTRIAL BLVD



SHEET NO. 2

STP-2387(4)  
 P.I. # 542070  
 SR 251  
 MCINTOSH COUNTY  
 DESIGN TRAFFIC  
 2027 AM DHV = 000  
 2027 PM DHV = (000)  
 24 HR. T = 7%  
 S.U. = 4%  
 COMB. = 3%  
 T = 4%



Lanes, Volumes, Timings  
1: SR 251 & OUTLET CENTER E.

Design Year 2027  
AM Peak



Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Peak Flow (vph)	1000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		300	400		300	150		150	150		150
Storage Lanes	1		1	1		1			1	1		1
Total Lost Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Leading Detector (ft)	50	50	50	50	50	50	50	50	50	50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Trailing Speed (mph)	15		9	15		15	15		15	15		15
Satd. Flow (prot)	1687	3374	1509	1687	3374	1509	1687	1776	1509	1687	1669	0
Permitted	0.450			0.173			0.393			0.638		
Satd. Flow (perm)	710	3374	1509	263	3374	1509	707	1776	1509	1160	1669	0
Right Turn on Red			No			No			Yes			Yes
Satd. Flow (RTOR)									26			33
Link Speed (mph)		45			40			40		40		40
Link Distance (ft)		1146			746			970				1072
Travel Time (s)		17.7			11.5			22.0				27.7
Volume (vph)	100	630	190	555	630	120	190	100	685	170	150	100
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Lane Group Flow (vph)	105	663	200	584	663	126	200	105	721	179	263	0
Turn Type	prot		Perm	prot		Perm	Perm		prot	Perm		
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2		2	6		6	8		8	4		
Total Split (s)	9.0	27.0	27.0	42.0	60.0	60.0	31.0	31.0	42.0	31.0	31.0	0.0
Act Split Green (s)	22.6	26.6	26.6	66.0	57.0	57.0	28.0	28.0	67.0	28.0	28.0	0.0
Actuated g/C Ratio	0.33	0.27	0.27	0.66	0.57	0.57	0.28	0.28	0.67	0.28	0.28	0.28
V/C Ratio	0.36	0.74	0.50	0.84	0.84	0.15	1.01	0.21	0.70	0.35	0.54	0.54
Uniform Delay, d1	12.7	33.5	31.0	20.4	11.5	10.1	36.0	27.5	9.6	30.6	26.3	
Delay	19.0	36.6	33.1	19.3	14.6	12.6	57.0	28.0	9.7	31.7	27.1	
LOS	B	D	C	B	B	B	F	C	A	C	C	
Approach Delay		33.6			16.4			20.5			23.0	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)	23	211	112	620	415	89	140	51	220	70	124	21
Queue Length 95th (ft)	43	#286	187	m415	m166	m62	#276	95	346	169	205	
Initial Queue Length (ft)		1066			1366			590			692	
50th Up Block Time (%)												
50th Up Block Time (s)												
Turn Bay Length (ft)	200		300	400		300	150		150	150		

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## ***Value Engineering Process***

# ***VALUE ENGINEERING PROCESS***

## **Introduction**

This report summarizes the analysis and conclusions by the PBS&J Value Engineering team as they performed a VE Study during the period of January 22 – January 25, 2008 in Atlanta, Georgia, for the Georgia Department of Transportation.

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

Les M. Thomas, P.E., CVS-Life	Certified Value Specialist
Luke Clarke, P.E., AVS	Highway Design Engineer
Ron Hale, P.E.	Highway Construction Specialist
Ramesh Kalvakaalva, P.E., AVS	Bridge Design Engineer
Randy S. Thomas, AVS	Assistant Team Leader
Craig S. Thomas, AVS	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) design team and staff. This briefing included discussions of the design intent behind the project, the cost concerns, 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 suppose to do?”, and “How is it suppose 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.

- The important functions of the project were identified as follows:
  - **Project Objective/Goals**
    - **Improve Level of Service**
    - **Increase Capacity**
    - **Separate Traffic**
    - **Provide for future growth**
    - **Enhance safety**
  - **Project Basic Functions**
    - **Construct Additional Traffic Lanes**
    - **Construction Additional Turn Lanes**
    - **Provide Separation of Traffic**
    - **Provide “U” Turn Lanes**
    - **Provide Traffic Controls**
    - **Provide I-95 widening**
- **Speculation Phase** - The VE team performed a brainstorming session to identify ideas that might help meet the project objectives:
  - Improve Level of Service
  - Improve Safety
  - Increase Capacity
  - Reduce construction and life cycle costs
  - Reduce the time of construction

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
  - Maintainability
  - Ability to Implement the Idea
  - General Acceptability of the Alternatives
  - Constructability

Based on these measurement sticks, 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. 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.

The following **Function – Worth - Cost Analysis**, was utilized to focus the team and stimulate brainstorming; a copy of the **Attendance Sheets** is also attached so that the reader can be informed about who participated in the Study proceedings.



# FUNCTION ANALYSIS AND COST-WORTH

PROJECT: Georgia Department of Transportation  
 CSNHS-0007-00(421) - P.I. No. 0007421  
 SR 251 and I-95 Interchange - McIntosh County

SHEET NO.:

1 of 3

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Increase	Traffic Capacity	B	15,408	14,000	C/W = 1.1
		Facilitate	Access	B			
		Enhance	Safety	S			
2	ROW	Accommodate	Widening	B	17,403	15,403	CW=1.12
		Facilitate	Utilities	RS			
		Accommodate	Amenities	S			
3	BRIDGE	Span	Interstate	B	3,400	3,000	C/W=1.13
		Separate	Traffic	S			
4	ASPHALT PAVING	Create	Lanes	B	3,245	2,800	C/W = 1.15
		Increase	Capacity	B			
		Enhance	Safety	RS			
		Connect	Points	B			
5	CONCRETE PAVEMENT	Support	Traffic	B	1,760	1,500	C/W=1.17

Function defined as: Action Verb  
 Measurable Noun

Kind: B = Basic  
 S = Secondary  
 RS = Required Secondary  
 HO = Higher Order  
 LO = Lower Order

Cost/Worth Ratio =  
 (Total Cost + Basic Worth)



# FUNCTION ANALYSIS AND COST-WORTH

PROJECT Georgia Department of Transportation  
 CSNHS-0007-00(421) - P.I. No. 0007421  
 SR 251 and I-95 Interchange - McIntosh County

SHEET NO.: 2 of 3

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
6	GRADING	Support	Road	S	1,505	1,200	C/W=1.25
		Avoid	Flooding	RS			
		Connect	Points	B			
7	TRAFFIC CONTROL	Facilitate	Safe Construction	S	1,394	1,394	C/W = 1.0
		Enhance	Safety	RS			
8	AGGREGATE BASE	Support	Wearing Course	B	781	781	C/W=1.0
9	DRAINAGE (DR)	Convey	Storm Water	B	373	373	C/W = 1.0
		Facilitate	Utilities	S			
		Enhance	Safety	RS			
10	TRAFFIC SIGNAL ITEMS	Enhance	Safety	S	354	354	C/W=1.0
		Control	Traffic	B			
11	SIGNING & MARKING	Enhance	Directions	S	265	265	C/W = 1.0
		Channelize	Traffic	S			

Function defined as: Action Verb  
 Measurable Noun

Kind: B = Basic  
 S = Secondary  
 RS = Required Secondary

HO = Higher Order  
 LO = Lower Order

Cost/Worth Ratio =  
 (Total Cost + Basic Worth)





# FUNCTION ANALYSIS AND COST-WORTH

PROJECT: Georgia Department of Transportation  
 STP- 2387(4) - P.I. No. 542070  
 Widening of SR 251 - McIntosh County

SHEET NO.: 1 of 3

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Increase	Traffic Capacity	B	12,571	10,500	C/W = 1.19
		Facilitate	Access	B			
		Enhance	Safety	S			
2	ROW	Accommodate	Widening	B	16,329	14,300	CW=1.14
		Facilitate	Utilities	RS			
		Accommodate	Amenities	S			
3	ASPHALT PAVING	Create	Lanes	B	4,882	4,000	C/W = 1.2
		Increase	Capacity	B			
		Enhance	Safety	RS			
		Connect	Points	B			
4	GRADING	Support	Road	S	1,905	1,700	C/W=1.12
		Avoid	Flooding	RS			
		Connect	Points	B			

Function defined as: Action Verb  
 Measurable Noun

Kind: B = Basic HO = Higher Order  
 S = Secondary LO = Lower Order  
 RS = Required Secondary

Cost/Worth Ratio =  
 (Total Cost ÷ Basic Worth)



# FUNCTION ANALYSIS AND COST-WORTH

PROJECT: Georgia Department of Transportation  
 STP- 2387 (4) P.I. No. 542070  
 Widening of SR 251 - McIntosh County

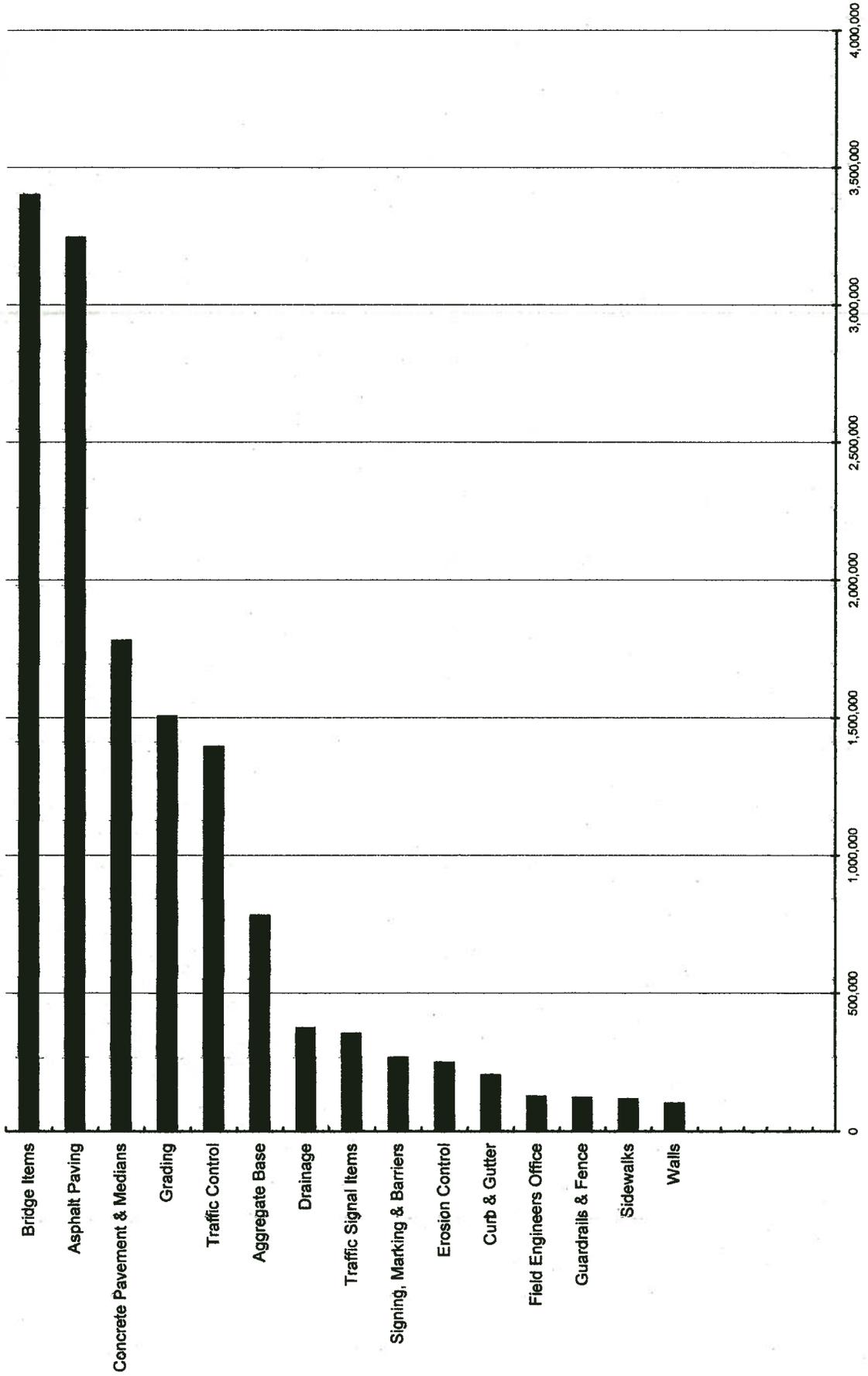
SHEET NO.: 2 of 3

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
5	TRAFFIC CONTROL	Facilitate	Safe Construction	S	1,151	1,151	C/W = 1.0
6	AGGREGATE BASE	Enhance	Safety	RS			
7	CURB & GUTTER	Support	Wearing Course	B	951	951	C/W=1.0
8	DRAINAGE (DR)	Convey	Stormwater	RS	919	919	C/W=1.0
9	EROSION CONTROL	Convey	Storm Water	B	760	760	C/W = 1.0
		Facilitate	Utilities	S			
		Enhance	Safety	RS			
		Protect	Environment	S	273	273	C/W=1.0
		Prevent	Erosion	S			
		Route	Stormwater	S			
10	SIGNING & MARKING	Enhance	Directions	S	225	225	C/W = 1.0
		Channelize	Traffic	S			
11	FIELD OFFICE	Oversee	Work	S	125	125	C/W=1.0
		Enhance	Safety	RS			

Function defined as: Action Verb Measurable Noun  
 Kind: B = Basic S = Secondary RS = Required Secondary  
 HO = Higher Order LO = Lower Order  
 Cost/Worth Ratio = (Total Cost ÷ Basic Worth)

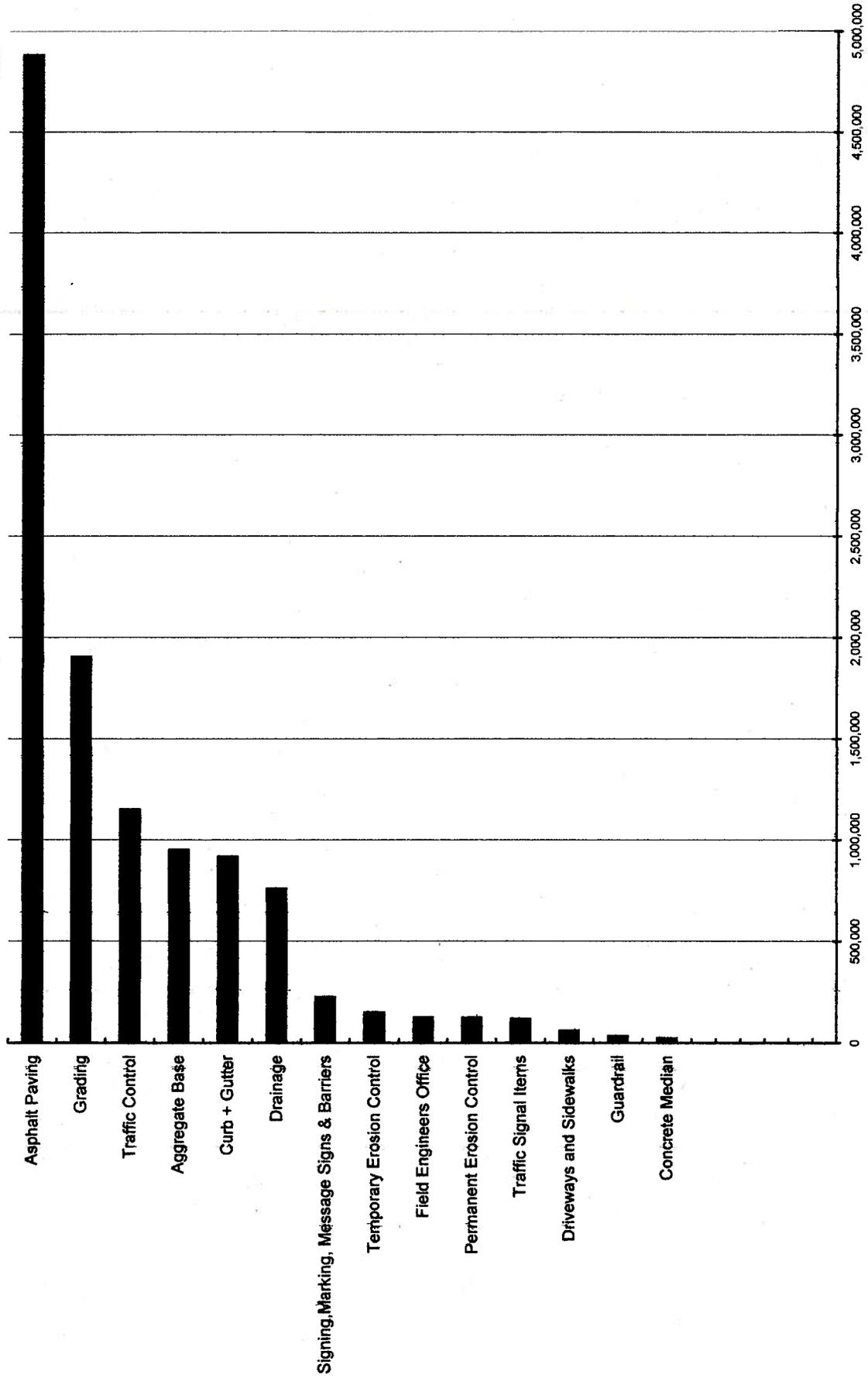








STP 2387 (4) - P.I. 542070  
 McIntosh County





# DESIGNER PRESENTATION MEETING PARTICIPANTS

January 22, 2008

**Georgia Department of Transportation  
STP - 2387(4) & CSNHS-0007-00(421) - P.I. No. 542070 & 0007421 - County: McIntosh**

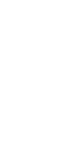
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**VE TEAM PRESENTATION  
MEETING PARTICIPANTS**

January 25, 2008

Georgia Department of Transportation  
STP - 2387 (4) & CSNHS -0007-00(421) - P.I. No. 542070 & 0007421 - County: McIntosh

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# CREATIVE IDEA LISTING & EVALUATION



PROJECT: **Georgia Department of Transportation**  
**CSNHS-0007-00(421) – P.I. No. 0007421**  
**SR 251 and I-95 Interchange McIntosh County**

SHEET NO.: **1 of 2**

NO.	IDEA DESCRIPTION	RATING
<b>BRIDGE (BR)</b>		
BR-1	Use a 10' flush shoulder for bike and pedestrian traffic	4
BR - 2	Use a 8' flush shoulder	1
BR - 3	Use a 14' center turn lane with no separation	4
BR - 4	Reduce distance to end points to 20' and use pier protection and guardrails	4
BR - 5	Use MSE walled abutment	4
BR - 6	Use box girder	1
BR - 7	Use steel beams	1
BR - 8	Lower bridge	1
BR - 9	Reduce end spans to 40'	4
BR - 10	Straighten bridge	1
BR - 11	Delete bike lane (included with RD-21 and RD-23)	ABD
BR - 12	Delete sidewalks	2
BR - 13	Increase grade of roadway	1
<b>WALLS (WL)</b>		
WL - 1	Use MSE walls	2
WL - 2	Use modular block walls in lieu of gravity walls	4
WL - 3	Use tree pits in-lieu of gravity wall for tree protection	DS
WL - 4	Delete dedicated turn lane and wall	1
WL - 5	Modify median, shift road north; delete wall; delete bike lane; re-route sidewalk	1

Rating: 1→2 = Generally not acceptable;      3 = Little Opportunity for Positive Change;      4→5 = Most likely to be Developed;  
 DS = Design Suggestion;      ABD = Already Being Done



