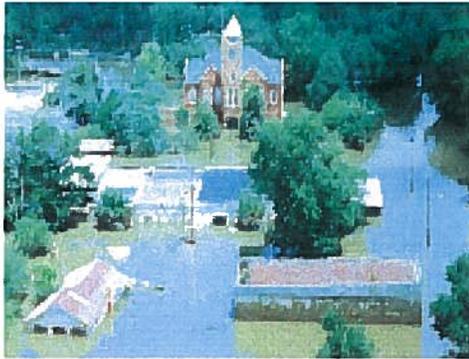


# Value Engineering Study Report

*Project –STP-0134(6)  
P.I. No. – 450540  
Clark Avenue Extension  
Over  
The Flint River  
Dougherty County*



1994



2006



1925



**Value Management Team**



**Design Team**



November 2007



December 6, 2007

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  
Project – STP-0134(6)  
Dougherty County  
P.I. No. – 450540  
Clark Avenue Extension and New Bridge  
PBS&J Project Task Order No. 24

Dear Ms. Myers:

Please find enclosed four (4) hard copies and a CD of our final Value Engineering Report for the Clark Avenue Extension and New Bridge in Dougherty County, as referenced above.

This Value Engineering Study, which was performed during the period November 27 through November 30, 2007, identified **27 Alternative Ideas**, of which **15 are recommended for implementation**. The VE Team also identified **3 Design Suggestion Ideas** which are recommended for the Engineer to consider in his final design. We believe that the **15 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***

***Project – STP-0134(6)***

***P.I. No. – 450540***

***Clark Avenue Extension and New Bridge  
Dougherty County***

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### **Study Results**

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- Function Analysis and Cost–Worth Worksheets
- Pareto Cost Model and Graph
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- Creative Idea Listing and Evaluation Worksheet

## ***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 November 27 – November 30, 2007 in Atlanta, at the office of the Georgia Department of Transportation. The subject of the Value Engineering study was Project – STP-0134(6), Dougherty County, P.I. No. – 450540 Clark Avenue Extension and New Bridge. The concept designs for the project have been prepared by Georgia Department of Transportation. At the time of the workshop, the plans had advanced to the concept design level.

### **PROJECT DESCRIPTION**

Project STP-0134(6) consists of the widening and extension of Clark Avenue from Liberty Expressway westward, crossing the Flint River with a new bridge, and then tying into the central business district at Washington Street. The Clark Avenue extension is needed to provide emergency access across the Flint River and to provide traffic relief for the Oglethorpe Boulevard and Broad Avenue bridges. In 1994, when the Flint River suffered serious flooding, all east-west bridges were closed. Consequently, eastern Dougherty County was separated from emergency medical services of Phoebe-Putnam Hospital which is located on the western side of the Flint River just north of downtown Albany.

The current roadway is a two to three lane roadway with the travel width varying from 36' to 50' including curb and gutter on both sides.

The proposed recommendation will tie into West Society Avenue and will extend Clark Avenue from the Merritt Street intersection west of Church Street then curving northwest and angling across the river. This will avoid any impact to the proposed development along the River's frontage.

The typical section includes four 12' travel lanes with a 16' flush median, 4' bicycle lanes, curb and gutter, and a 5' sidewalk on both sides (10' sidewalk on bridge structure). Design speed is 35 mph. The length of the project is 2.65 miles.

Traffic will be maintained along the existing roadway during construction.

The project estimated construction cost is \$39,406,408. The preliminary ROW acquisition cost is \$4,475,100.

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

## 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 **27 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, **15 Alternative Ideas** and **3 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

STP-0134(6) - P.I. No. 450540 - Clark Avenue Extension

Alternative Number	Description of Alternative	Initial Cost Savings
<b>BRIDGE (BR)</b>		
BR-1	Use a 6' median with a positive barrier	\$55,729
BR-2	Use 11' lanes	See RD-1
BR-3	Use 10' combined pedestrian/bike lane shoulder	\$2,297,766
BR-4	Provide 1-8' bike lane and 1-6' sidewalk	\$2,916,033
BR-5	Use 10' pedestrian/bike lane with a delineator in between	\$2,215,299
BR-6	Construct bike and pedestrian lane/trail at grade with separate bridge	\$5,081,674
BR-7	Construct separate bike/pedestrian bridge	\$2,140,686
BR-8	Reduce 8' median to a 4' raised to a 4' flush striped median	\$1,493,168
BR-12	Use MSE walled abutments and reduce end spans	\$658,756
BR-13	Re-align to the northeast; use embankment in zone "x"	\$4,168,373
BR-14	Re-align roadway along the abandoned railroad northwest of the apartment complex	\$4,868,589
BR-17	Lower bridge profile after crossing the railroad	\$972,702
<b>ROADWAY (RD)</b>		
RD-1	Use 11' lanes	\$1,758,273
RD-2	Use a 12' shoulder	\$93,632
RD-4	Move bike lane and combine with sidewalk to make a multi-use trail	\$186,469
RD-5	Move bike lane to shoulder adjacent to sidewalk	\$215,698
RD-6	Re-align Merritt and Line Streets	Design Suggestion
RD-8	Close access to Village Street	Design Suggestion
RD-9	Consider use of "eyebrows" at Merritt, Maple and Blaylock Streets	Design Suggestion

## ***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

STP-0134(6) - P.I. No. 450540 - Clark Avenue Extension

Alternative Number	Description of Alternative	Initial Cost Savings
<b>BRIDGE (BR)</b>		
BR-1	Use a 6' median with a positive barrier	\$55,729
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BR-4	Provide 1-8' bike lane and 1-6' sidewalk	\$2,916,033
BR-5	Use 10' pedestrian/bike lane with a delineator in between	\$2,215,299
BR-6	Construct bike and pedestrian lane/trail at grade with separate bridge	\$5,081,674
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BR-8	Reduce 8' median to a 4' raised to a 4' flush striped median	\$1,493,168
BR-12	Use MSE walled abutments and reduce end spans	\$658,756
BR-13	Re-align to the northeast; use embankment in zone "x"	\$4,168,373
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RD-6	Re-align Merritt and Line Streets	Design Suggestion
RD-8	Close access to Village Street	Design Suggestion
RD-9	Consider use of "eyebrows" at Merritt, Maple and Blaylock Streets	Design Suggestion

# Value Analysis Design Alternative



PROJECT: <b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:  <b>BR-1</b>
DESCRIPTION: <b>USE A 6' MEDIAN WITH A POSITIVE BARRIER</b>	SHEET NO.: 1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The Alternative suggests reducing the median to 6' in-lieu of the 8' median in the current design.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Use of Type 20 median barrier for positive traffic separation and enhanced safety

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

A 2'-6" Type 20 Median Barrier with a 2' buffer on each side will provide positive separation between opposing traffic and enhance safety.

The out-to-out bridge width in the Alternative will be 80'-6" and provide the same travel lane, bike lane and sidewalk configuration as in the original design.

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 609,593	\$	\$ 609,593
ALTERNATIVE	\$ 553,864	\$	\$ 553,864
SAVINGS	\$ 55,729	\$	\$ 55,729

# Illustrations



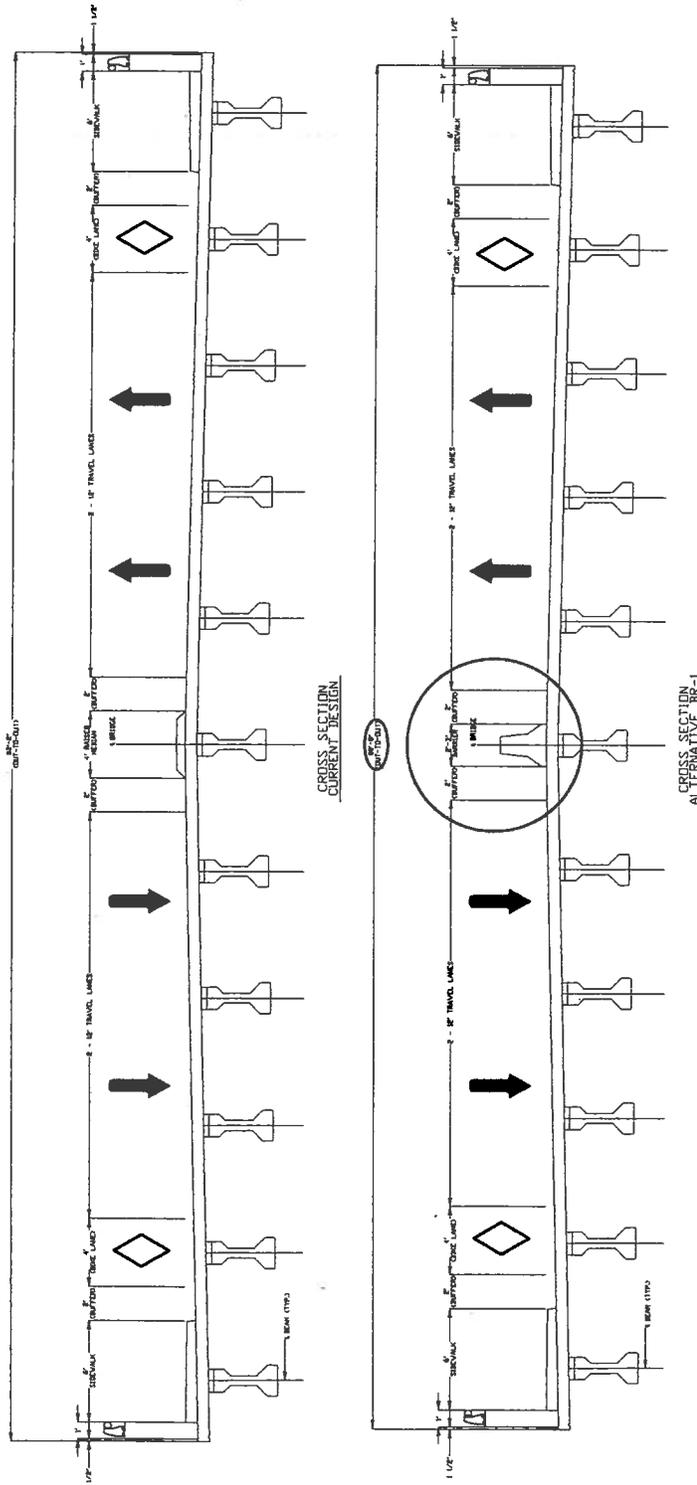
PROJECT: Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

BR-1

DESCRIPTION: USE A 6' MEDIAN WITH A POSITIVE BARRIER

SHEET NO.: 2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-1**

DESCRIPTION: **USE A 6' MEDIAN WITH A POSITIVE BARRIER**

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) Bridge Preliminary Plan & Elevation were not 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 (Assumed):

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

## Alternative BR-1:

This alternative proposes building the bridge 80'-6" wide.

Reduction in width of Deck =  $[(82'-0") - (80'-6")] = 1'-6"$

Total area of decreased bridge surface =  $[3570' \times 1.5'] = 5355 \text{ SF}$

Area of decreased raised median =  $[3570' \times 4'] / 9 = 1586.67 \text{ SY}$

Length of required Type 20 Median Barrier in Alternative = 3570 LF

**{In comparing costs of original design and alternative, \$90 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.**

**Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**BR-3**

DESCRIPTION: USE A 10' COMBINED PEDESTRIAN/BIKE LANE  
 SHOULDER

SHEET NO.: 1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The Alternative suggests removing the Bike Lane from the bridge deck (alongside the travel lane) and combining it onto a wider (10' total) pedestrian sidewalk which will be flush with the bridge deck.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Enhanced safety of bicyclists by relocating Bike Lane away from travel lanes
- Additional 10' shoulder available for parking disabled and emergency vehicles

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

A 10' shoulder will accommodate a 4' Bike Lane and 6' for pedestrians. The relocation of the Bike Lane from alongside the travel lanes to the shoulder will enhance safety of the bicyclists.

The out-to-out bridge width in the Alternative will be 78'-0".

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 2,297,766	\$	\$ 2,297,766
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 2,297,766	\$	\$ 2,297,766

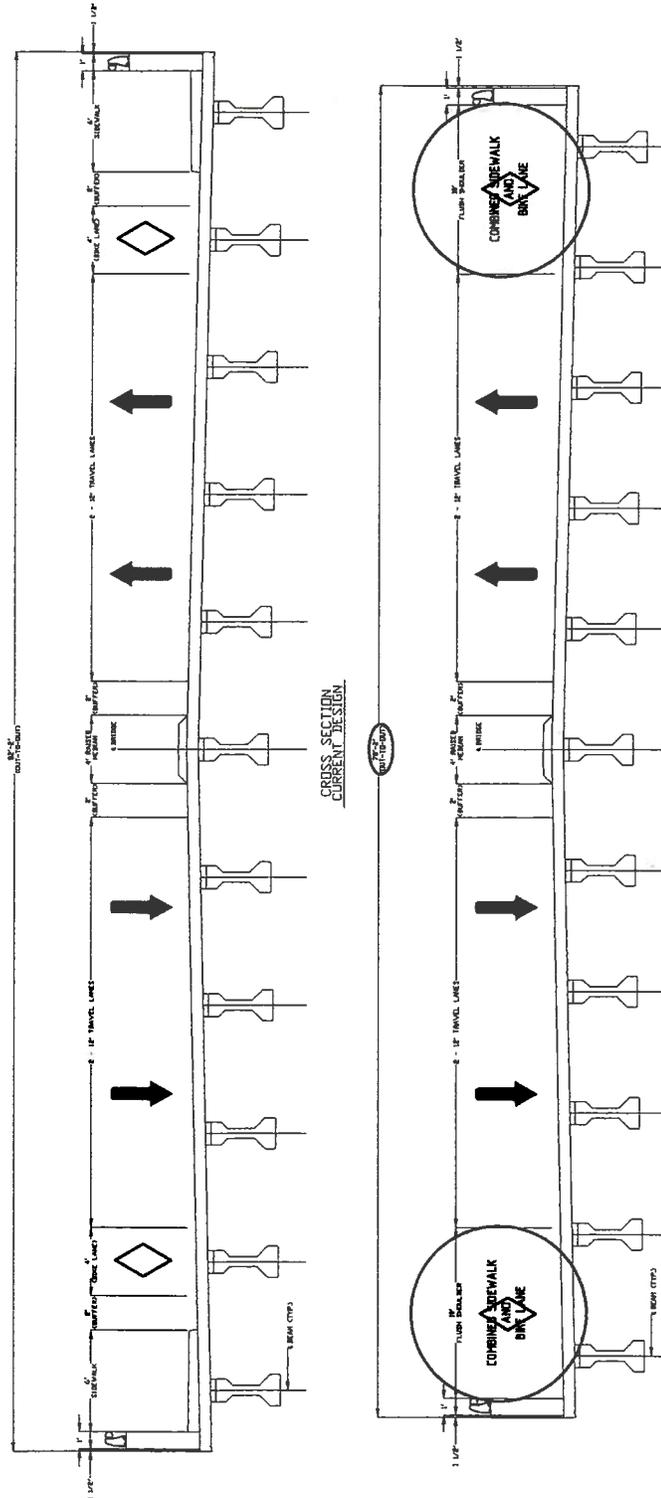
PROJECT: Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**BR-3**

DESCRIPTION: USE A 10' COMBINED PEDESTRIAN/BIKE LANE SHOULDER

SHEET NO.: 2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-3**

DESCRIPTION: **USE A 10' COMBINED PEDESTRIAN/BIKE LANE  
SHOULDER**

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) Bridge Preliminary Plan & Elevation were not 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 (Assumed):**

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

**Alternative BR-3:**

This alternative proposes building the bridge 78'-0" wide.

Reduction in width of Deck =  $[(82'-0") - (78'-0")] = 4'-0"$

Total area of decreased bridge surface =  $[3570' \times 4'] = 21420 \text{ SF}$

Reduction in raised sidewalk =  $2 \times [3570' \times 6'] / 9 = 4760 \text{ SY}$

**{In comparing costs of original design and alternative, \$90 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.**

**Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**BR-4**

DESCRIPTION: **PROVIDE ONE 8' BIKE LANE AND ONE 6' SIDEWALK**

SHEET NO.: 1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The Alternative suggests a 6' sidewalk (on the North side of the bridge) and an 8' two-way bike lane (on the South side of the bridge, each on one side of the bridge only).

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Reduction in Right-of-Way requirements and wetland mitigation

**Risks:**

- Minimal redesign effort
- Opposing bike traffic and vehicular traffic

**Technical Discussion:**

A 6' raised sidewalk can be provided on the North side of the bridge and an 8' two-way bike lane can be provided on the South side of the bridge flush with the deck.

The out-to-out bridge width in the Alternative will be 74'-0".

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 2,916,033	\$	\$ 2,916,033
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 2,916,033	\$	\$ 2,916,033

# Illustrations



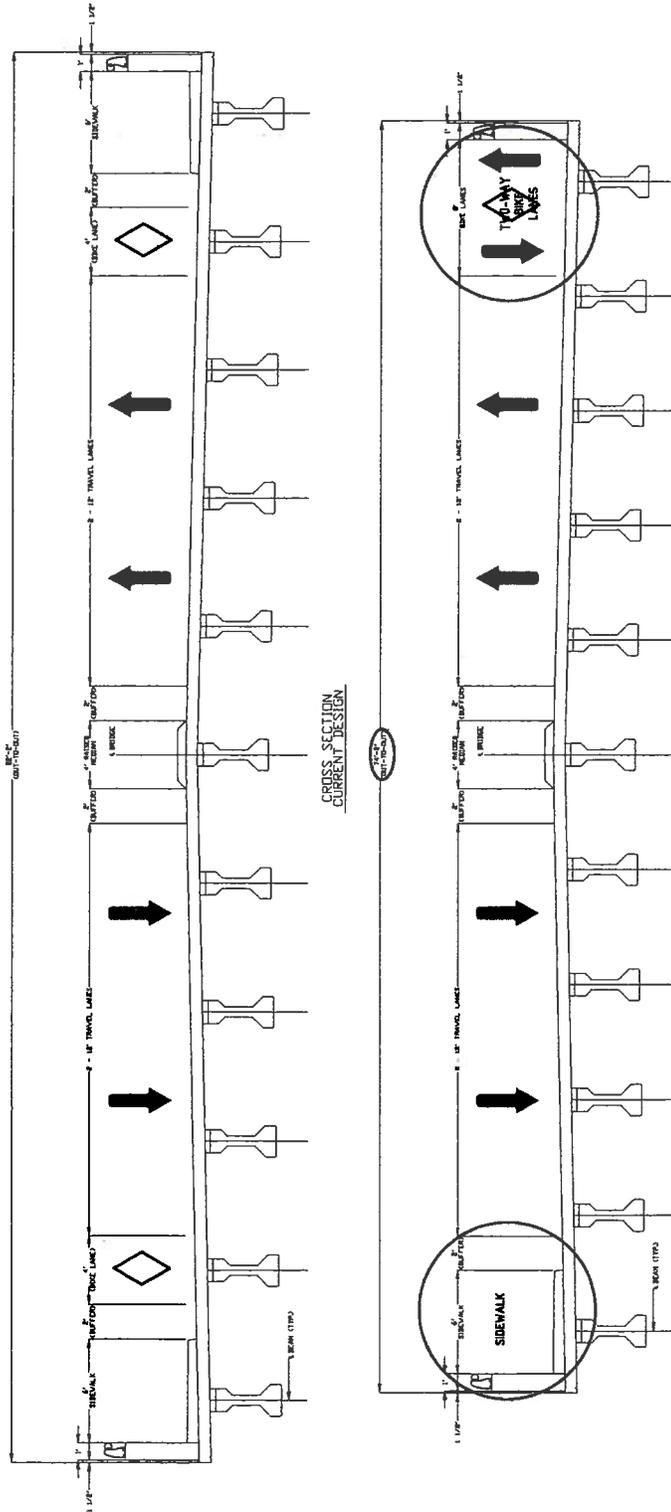
PROJECT: Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**BR-4**

DESCRIPTION: **PROVIDE ONE 8' BIKE LANE AND ONE 6' SIDEWALK**

SHEET NO.: 2 of 4



CROSS SECTION  
CURRENT DESIGN

CROSS SECTION  
ALTERNATIVE BR-4

# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-4**

DESCRIPTION: **PROVIDE ONE 8' BIKE LANE AND ONE 6' SIDEWALK**

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) Bridge Preliminary Plan & Elevation were not 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 (Assumed):**

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

**Alternative BR-4:**

This alternative proposes building the bridge 74'-0" wide.

Reduction in width of Deck =  $[(82'-0'') - (74'-0'')] = 8'-0''$

Total area of decreased bridge surface =  $[3570' \times 4'] = 28560 \text{ SF}$

Reduction in raised sidewalk =  $[3570' \times 6'] / 9 = 2380 \text{ SY}$

**{In comparing costs of original design and alternative, \$90 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.**

**Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:	<b>BR-5</b>
DESCRIPTION:	<b>USE A 10' COMBINED PEDESTRIAN/BIKE LANE SHOULDER WITH DELINEATOR IN BETWEEN</b>	SHEET NO.:	1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The Alternative suggests removing the Bike Lane from the bridge deck (alongside the travel lane) and combining it onto a wider (10' total) pedestrian sidewalk which will be flush with the bridge deck. A delineator may be provided to separate the Bikes from Pedestrians.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Enhanced safety of bicyclists by relocating Bike Lane away from travel lanes

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

A 10' shoulder will accommodate a 4' Bike Lane and 6' for pedestrians. The relocation of the Bike Lane from alongside the travel lanes to the shoulder will enhance safety of the bicyclists. A Type 7 Concrete Doweled Integral Curb may be used to delineate the Bike Path from the Sidewalk.

The out-to-out bridge width in the Alternative will be 78'-0".

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 2,297,766	\$	\$ 2,297,766
ALTERNATIVE	\$ 82467	\$	\$ 82467
SAVINGS	\$ 2,215,299	\$	\$ 2,215,299

# Illustrations



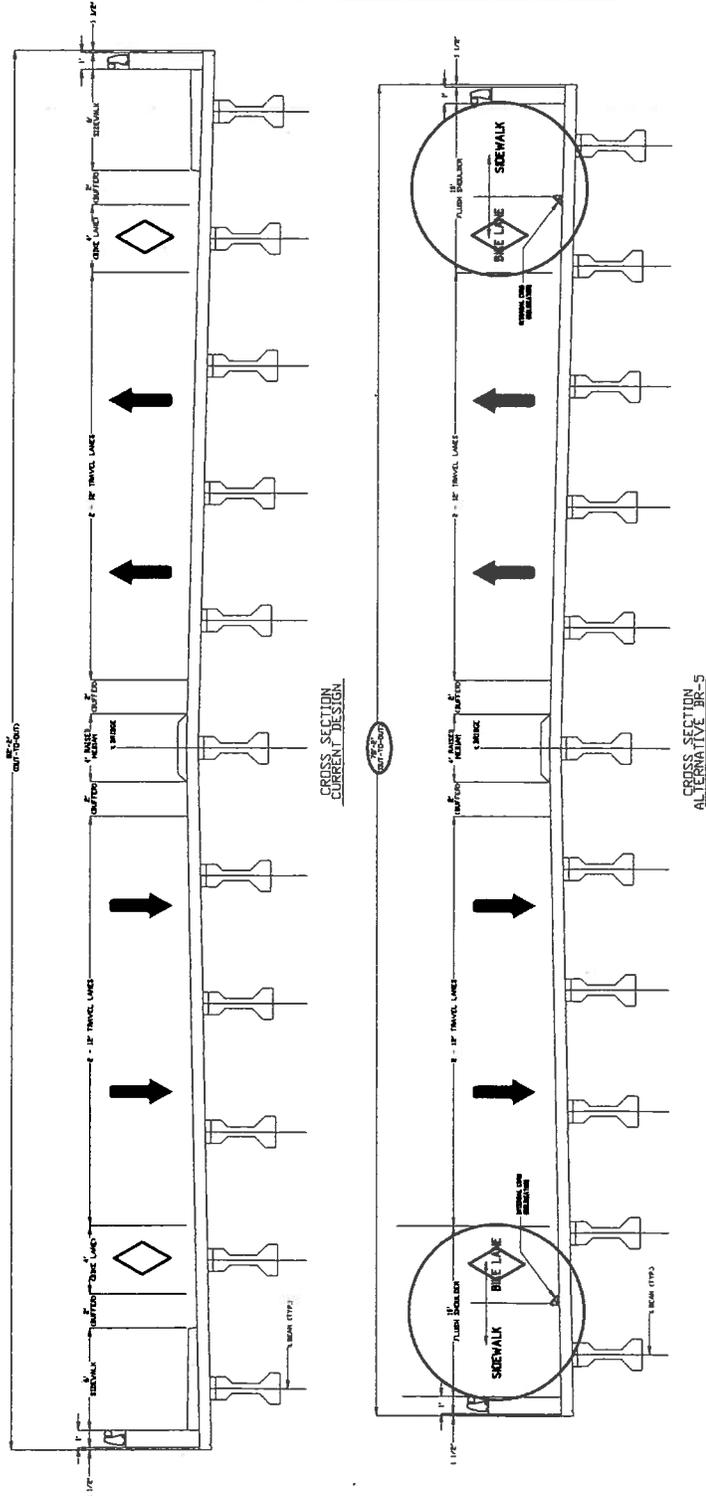
PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-5**

DESCRIPTION: **USE A 10' COMBINED PEDESTRIAN/BIKE LANE  
SHOULDER WITH DELINEATOR IN BETWEEN**

SHEET NO.: **2 of 4**



# Calculations



PROJECT:	<b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:	<b>BR-5</b>
DESCRIPTION:	<b>USE A 10' COMBINED PEDESTRIAN/BIKE LANE SHOULDER WITH DELINEATOR IN BETWEEN</b>	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) Bridge Preliminary Plan & Elevation were not 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 (Assumed):**

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

**Alternative BR-5:**

This alternative proposes building the bridge 78'-0" wide.

Reduction in width of Deck =  $[(82'-0'') - (78'-0'')] = 4'-0''$

Total area of decreased bridge surface =  $[3570' \times 4'] = 21420 \text{ SF}$

Reduction in raised sidewalk =  $2 \times [3570' \times 6'] / 9 = 4760 \text{ SY}$

Required length of Type 7 Concrete Doweled Integral Curb = 3570 LF

**{In comparing costs of original design and alternative, \$90 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.**

**Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**BR-6**

**DESCRIPTION:** CONSTRUCT BIKE & PEDESTRIAN LANE/TRAIL AT  
 GRADE WITH SEPARATE BRIDGE

SHEET NO.: 1 of 6

**Original Design:**

The original design detailed a bridge section utilizing a 4' bike lane and 8' shoulder on each side.

**Alternative:**

The alternative proposes the use of separate pre-manufactured Pedestrian/Bicycle Bridge alongside the existing Bridge in-lieu of providing sidewalks and bike lanes on each side of the main span. The resulting required cross section of the Road Bridge will be less than that in the current design.

**Opportunities:**

- Cost savings by reducing bridge width
- Will provide an opportunity to separate bicycle/pedestrian use from directly adjacent vehicular traffic
- Will provide opportunity for aesthetic solution for bicycle/pedestrian use

**Risks:**

- Re-design effort will require minimal or no additional time as it is currently in the concept phase

**Technical Discussion:**

With a separate structure provided for pedestrians and bicyclists, the required cross section of the main bridge span will be reduced by approximately 20'. This can be achieved by eliminating the 4' bike lane and 8' shoulder on either side effectively reducing the deck width by 20'. An at grade bike and pedestrian trail will be utilized with where permissible.

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	\$ 28,981,260	\$	\$ 28,981,260
ALTERNATIVE	\$ 23,899,586	\$	\$ 23,899,586
SAVINGS	\$ 5,081,674	\$	\$ 5,081,674

PROJECT: **Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

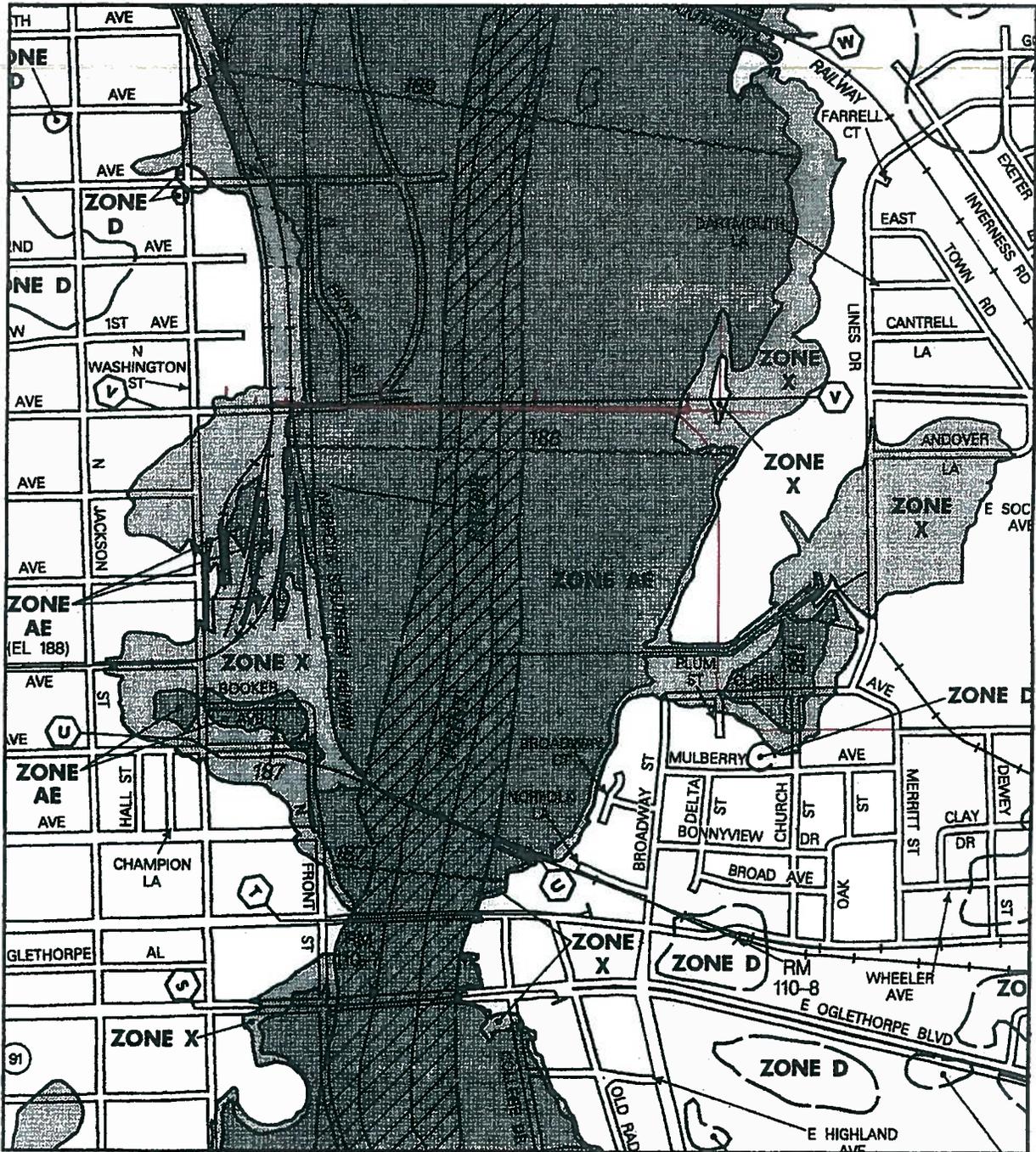
ALTERNATIVE NO.:

**BR-6**

DESCRIPTION: **CONSTRUCT BIKE & PEDESTRIAN LANE/TRAIL AT  
GRADE WITH SEPARATE BRIDGE**

SHEET NO.:

2 of 6



# Illustrations



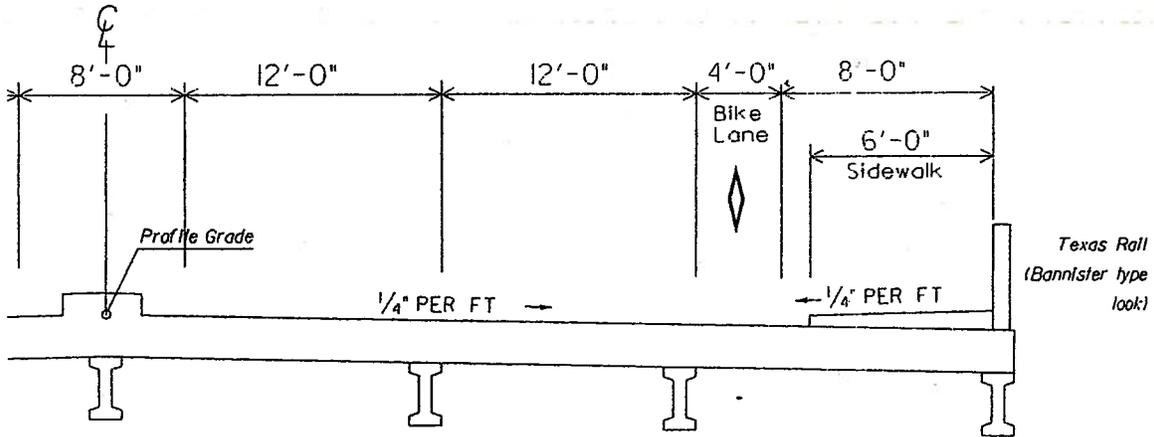
PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

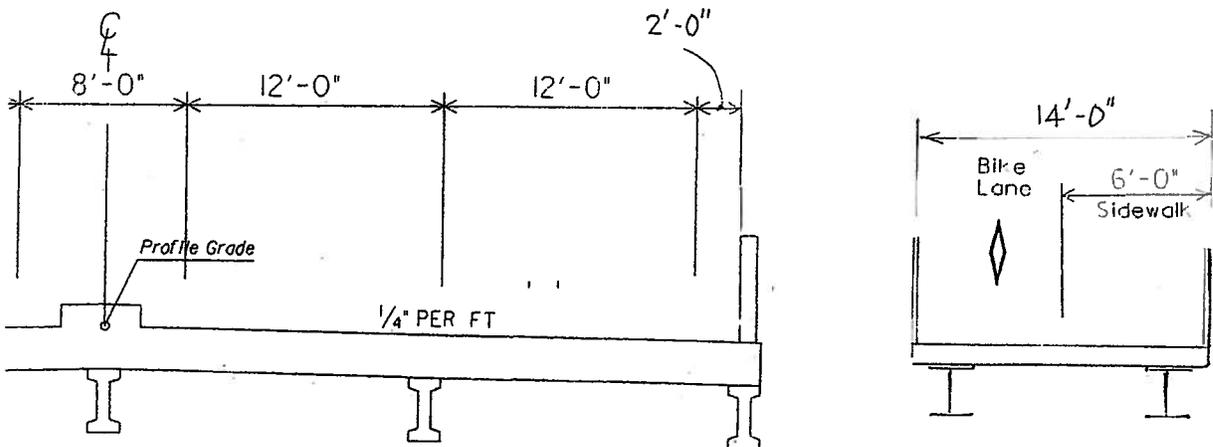
BR-6

DESCRIPTION: CONSTRUCT BIKE & PEDESTRIAN LANE/TRAIL AT  
GRADE WITH SEPARATE BRIDGE

SHEET NO.: 3 of 6



ORIGINAL DESIGN



PROPOSED ALTERNATE

# Illustrations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

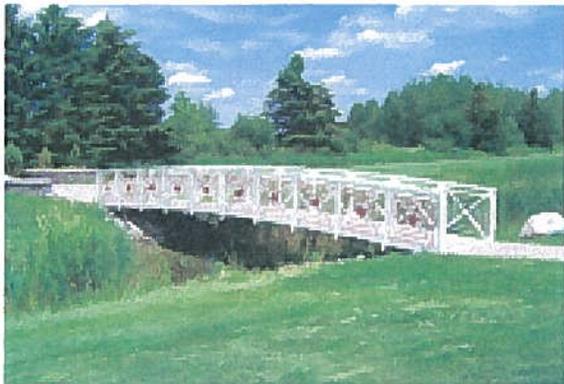
ALTERNATIVE NO.:

**BR-6**

DESCRIPTION: **CONSTRUCT BIKE & PEDESTRIAN LANE/TRAIL AT  
GRADE WITH SEPARATE BRIDGE**

SHEET NO.: **4** of 6

## SAMPLE PEDESTRIAN CUM BICYCLE PATH STRUCTURES



# Calculations



PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

BR-6

DESCRIPTION: CONSTRUCT BIKE & PEDESTRIAN LANE/TRAIL AT  
GRADE WITH SEPARATE BRIDGE

SHEET NO.: 5 of 6

REDUCE BRIDGE WIDTH - BY 20' OVER 3,570' LENGTH

design -  $3,570' \times 82' = 292,740 \text{ SF} @ \$90/\text{SF} = 26,346,600.$   
alternate -  $3,570' \times 62' = 221,340 \text{ SF} @ \$90/\text{SF} = 19,920,600.$   
\$ 6,426,000.

NEW PEDESTRIAN, BIKE PRE-FAB STRUCTURE

APPROX 2,750 LF @ \$650/LF = \$ 1,787,500.

SIDEWALK TRANSITION - ROADWAY TO PED, BIKE BRIDGE

MISC. GRADING/EARTHWORK - LS. \$6,000

4" PAVEMENT @ \$28.82/sy @ 10' wide for 200LF EACH SIDE  
 $400' \times 10' = 4,000 \text{ SF} = 444 \text{ sy} @ \$28.82 = \$12,796$

ASSUME LIGHTING FROM ADJACENT MAIN SPAN.

NOTE: REFERENCE SHEETS BR-12 FOR REVISED LAYOUT



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:	<b>BR-7</b>
DESCRIPTION:	<b>CONSTRUCT SEPARATE BIKE/PEDESTRIAN BRIDGE</b>	SHEET NO.:	<b>1 of 5</b>

**Original Design:**

(The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The alternative proposes the use of separate pre-manufactured Pedestrian Cum Bicycle Bridges alongside the existing Bridge in-lieu of providing sidewalks and bike lanes on the Road Bridge. The resulting required cross section of the Road Bridge will be less than that in the current design.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Enhanced safety of bicyclists by relocating Bike Lane away from travel lanes
- Enhanced aesthetics, environmentally friendly structures

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

The relocation of the Bike Lane and sidewalk from alongside the travel lanes to a separate structure will enhance safety of the bicyclists and pedestrians.

The out-to-out bridge width in the Alternative will be 62’-0”.

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 7,245,786	\$	\$ 7,245,786
ALTERNATIVE	\$ 5,105,100	\$	\$ 5,105,100
SAVINGS	\$ 2,140,686	\$	\$ 2,140,686

# Illustrations



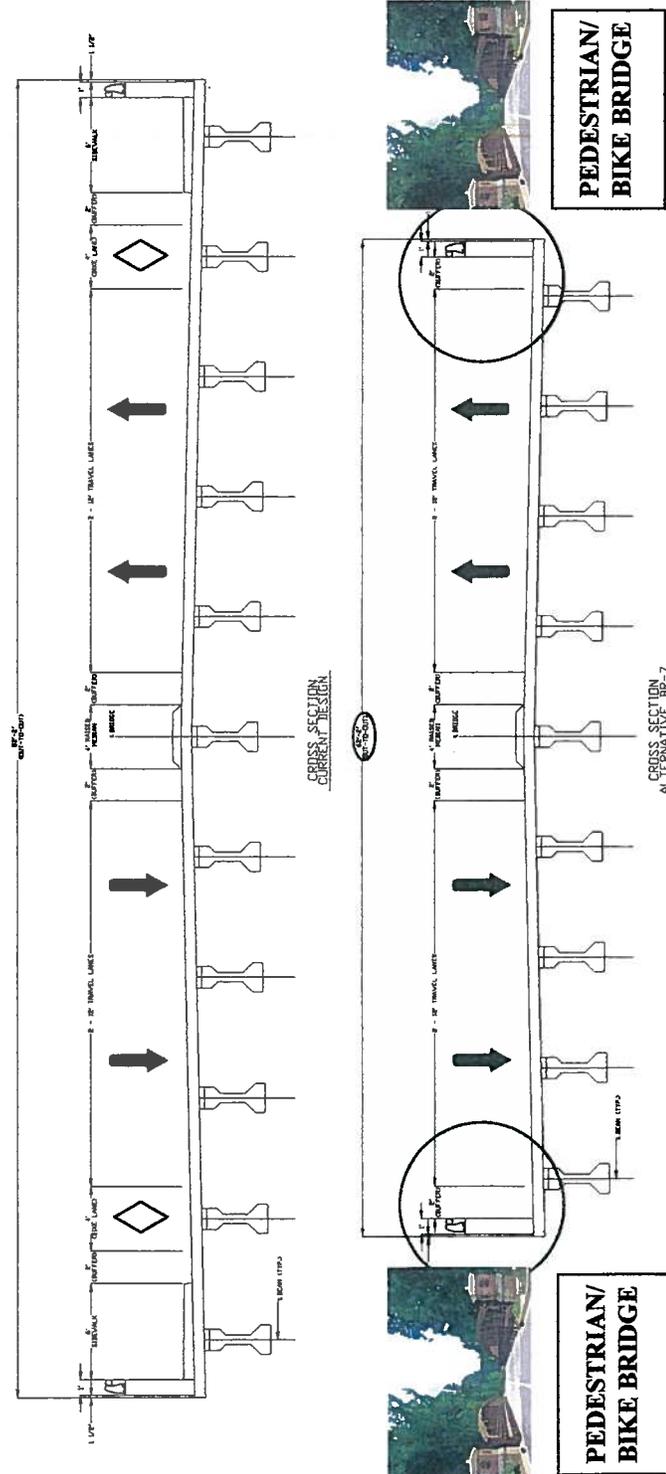
PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-7**

DESCRIPTION: **CONSTRUCT SEPARATE BIKE/PEDESTRIAN BRIDGE**

SHEET NO.: **2 of 5**



# Illustrations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

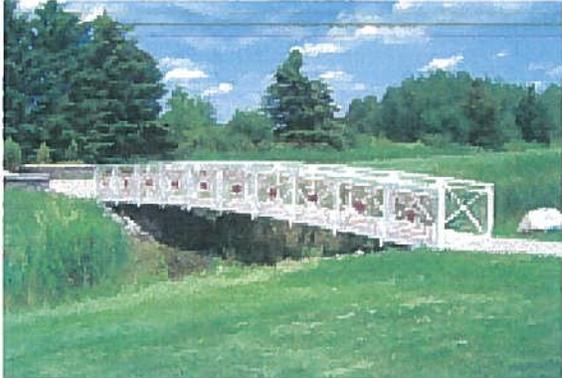
ALTERNATIVE NO.:

**BR-7**

DESCRIPTION: **CONSTRUCT SEPARATE BIKE/PEDESTRIAN BRIDGE**

SHEET NO.: **3** of 5

## SAMPLE PEDESTRIAN CUM BICYCLE PATH STRUCTURES



# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-7**

DESCRIPTION: **CONSTRUCT SEPARATE BIKE/PEDESTRIAN BRIDGE**

SHEET NO.: 4 of 5

## Note:

- 1) The VE team is cognizant of the fact that the project design is in its preliminary phase.
- 2) Bridge Preliminary Plan & Elevation were not 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 (Assumed):

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

## Alternative BR-7:

This alternative proposes building the bridge 62'-0" wide and adding bike/pedestrian pre-fabricated bridge on either side and parallel to the road bridge.

Reduction in width of Deck =  $[(82'-0'') - (62'-0'')] = 20'-0''$

Total area of decreased bridge surface =  $[3570' \times 20'] = 71400 \text{ SF}$

Reduction in raised sidewalk =  $2 \times [3570' \times 6'] / 9 = 4760 \text{ SY}$

Total length of pre-fabricated Bike/Pedestrian Bridges added =  $2 \times 3570' = 7140 \text{ LF}$

**{In comparing costs of original design and alternative, \$90 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.**

**Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.**



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-8**

DESCRIPTION: **REDUCE 8' MEDIAN WITH 4' RAISED TO A 4' FLUSH  
STRIPED MEDIAN**

SHEET NO.: 1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The Alternative suggests providing a 4' flush median in-lieu of the 8' median.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Significant reduction in bridge width may result in savings of Right-of-Way and Mitigation costs

**Risks:**

- Minimal redesign effort

**Technical Discussion:**

A 4' striped flush median in-lieu of an 8' median with 4' raised will be sufficient for traffic separation along the bridge on an arterial with a design speed of 35 mph.

The out-to-out bridge width in the Alternative will be 78'-0" and provide the same travel lane, bike lane and sidewalk configuration as in the original design.

See following sheets for calculations in savings.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,493,168	\$	\$ 1,493,168
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 1,493,168	\$	\$ 1,493,168

# Illustrations



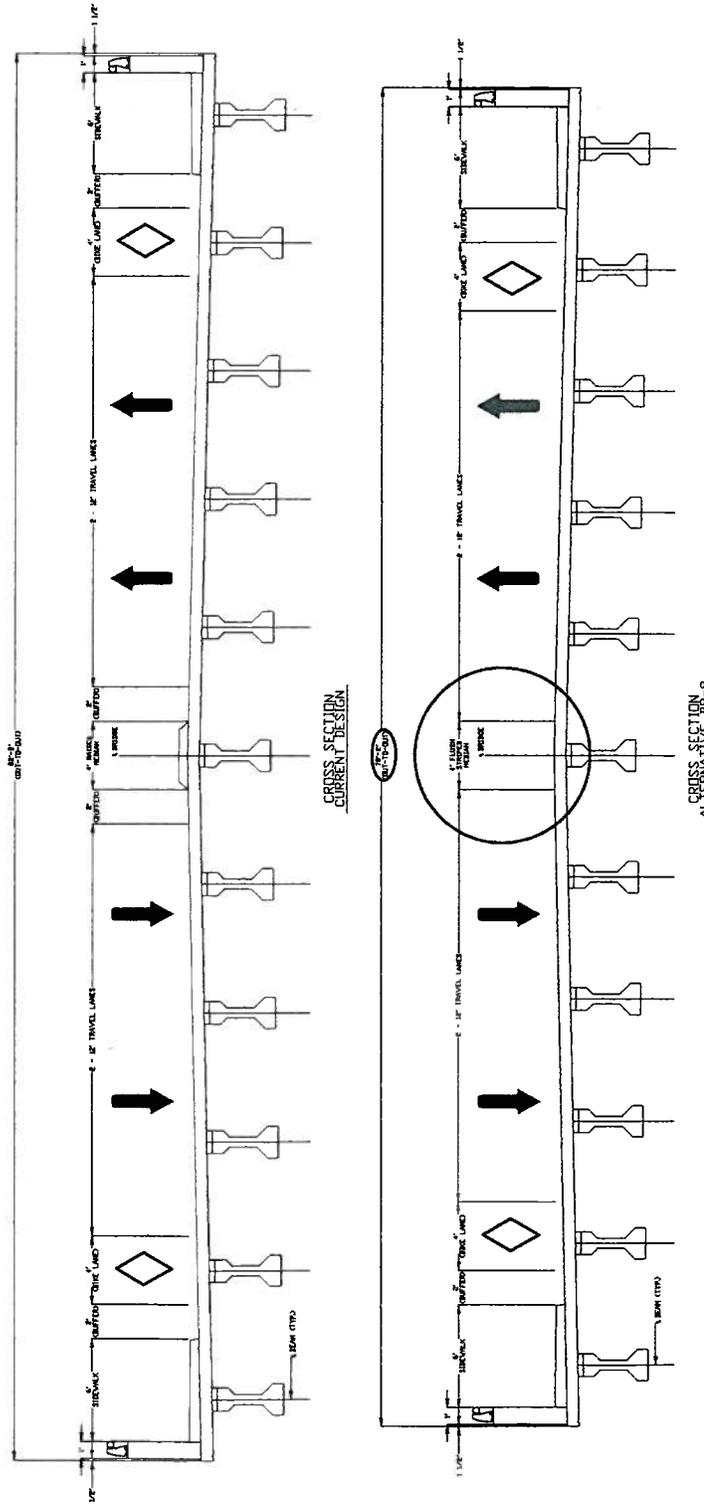
PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-8**

DESCRIPTION: **REDUCE 8' MEDIAN WITH 4' RAISED TO A 4' FLUSH STRIPED MEDIAN**

SHEET NO.: 2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-8**

DESCRIPTION: **REDUCE 8' MEDIAN WITH 4' RAISED TO A 4' FLUSH  
STRIPED MEDIAN**

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) Bridge Preliminary Plan & Elevation were not 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 (Assumed):

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85.

## Alternative BR-8:

This alternative proposes building the bridge 78'-0" wide.

Reduction in width of Deck =  $[(82'-0'') - (78'-0'')] = 4'$

Total area of decreased bridge surface =  $[3570' \times 4] = 14280 \text{ SF}$

Area of decreased raised median =  $[3570' \times 4'] / 9 = 1586.67 \text{ SY}$

{In comparing costs of original design and alternative, \$90 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.

Cost of Bridge Construction assumed to be \$90 per SF. Also, due to the nature of the site (floodplain, wetlands), the actual cost of current design may be higher.



# Value Analysis Design Alternative



PROJECT:	<b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:	<b>BR-12</b>
DESCRIPTION:	<b>USE MSE WALLED ABUTMENTS AND REDUCE END SPANS</b>	SHEET NO.:	1 of 4

**Original Design:** (The VE Team is cognizant of the fact that at the time of the study the preliminary Bridge layout was under development. The study was based on available information and certain assumptions).

The original design calls for the construction of a 3570 ft long bridge (Approx.) from Sta. 154+00 to Sta. 189+85 to connect Society Street to Clark Avenue by spanning the Flint River and its flood plain. The bridge also spans across the Georgia Northern RR tracks at its West end and the Corps of Engineers Canal at the East end. The bridge is 82 ft wide and accommodates 2 – 12 ft lanes in either direction, 6 ft raised sidewalk, 2 ft buffer and 4 ft bike lane on each side, an 8 ft median including a 4 ft raised portion and Texas Railing.

**Alternative:**

The alternative proposes elimination of the end spans and providing walled abutments. The begin and end bridge locations may be optimized while still providing adequate vertical and horizontal clearance for the existing tracks of Georgia Northern RR. Additionally, some intermediate bents may be relocated to optimize span configuration so that shallower beams may be used.

All other geometry remains the same as in the original design.

**Opportunities:**

- Potential savings in construction costs and construction time
- Provides opportunities for better grade and tie-ins to existing streets at the East and West ends

**Risks:**

- Minimal redesign effort
- Will require additional embankment fill

**Technical Discussion:**

Providing MSE Walled abutments will help shorten the overall length of the bridge and better manage approach grading and tie-ins to existing streets at both ends.

Repositioning Bents 2 and 3 (as shown in illustration) will allow for the use of shallower beams that, in turn, will provide better vertical clearance over the RR tracks. Alternatively, using shallower beams will allow for the profile grade to be lowered considerably.

The deck width and lane configuration will be the same as in the original design.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,150,384	\$	\$ 1,150,384
ALTERNATIVE	\$ 491,628	\$	\$ 491,628
SAVINGS	\$ 658,756	\$	\$ 658,756

# Illustrations



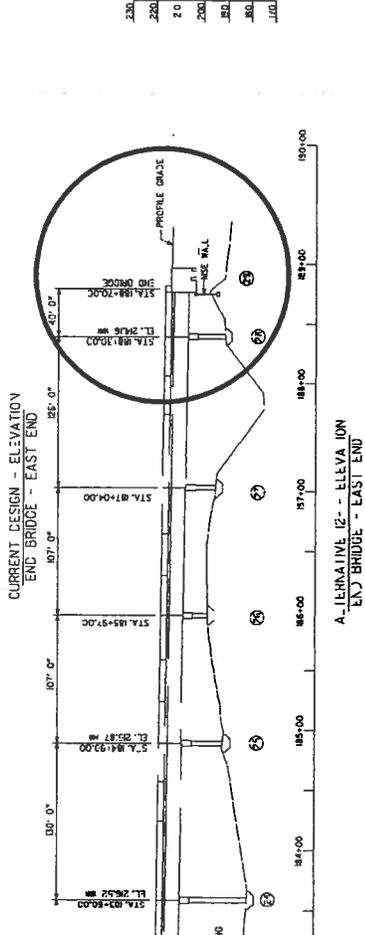
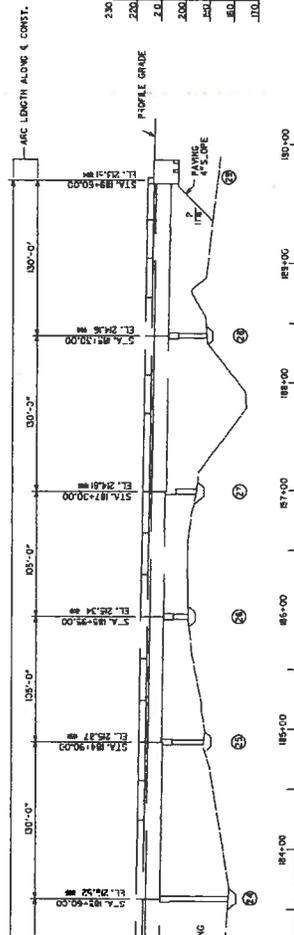
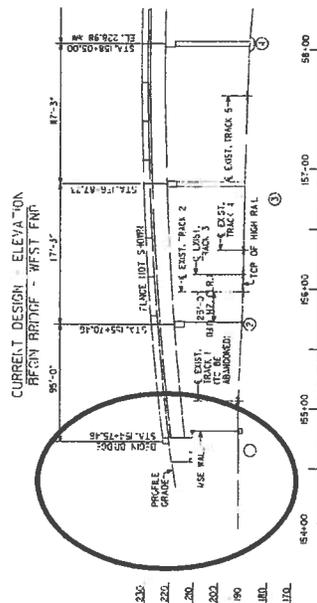
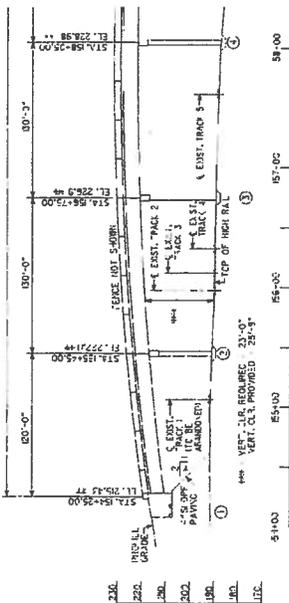
**PROJECT:** Georgia Department of Transportation  
**STP-0134(6) – P.L. No. 450540**  
**Clark Avenue Extension - Dougherty County**

**ALTERNATIVE NO.:**

**BR-12**

**DESCRIPTION:** USE MSE WALLED ABUTMENTS AND REDUCE END SPANS

**SHEET NO.:** 2 of 4



ALTERNATIVE 12 - ELEVATION  
 EX. BRIDGE - EAST END

# Calculations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-12**

DESCRIPTION: **USE MSE WALLED ABUTMENTS AND REDUCE END  
SPANS**

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) Hard copies of the Bridge Preliminary Plan & Elevation were made available towards the end of the VE study. A rough estimate of quantities was made based on the available information.
- 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 (Assumed):

82' wide bridge 3570' long from Sta. 154+15 to Sta. 189+85. (Actual = 3535')

## Alternative BR-12:

This alternative proposes building the bridge of the same width but reducing the end spans and providing MSE Walled abutments. See illustrations for Wall locations.

**Note: A 25' horizontal clearance to the "To be abandoned" track has been provided in the Alternative. Should the track be abandoned and the Right-of-Way be obtained from the RR, the MSE may be shifted further East to obtain further reduction in span length.**

Reduction in length of bridge at West end = Sta. 154+25.00 to Sta. 154+75.46 = 50.46

Reduction in length of bridge at East end = Sta. 188+70.00 to Sta. 189+60.46 = 90.00

Total area of decreased bridge surface =  $[82' \times (90' + 50.46')] = 11517.72$  SF

Area of decreased raised median =  $[(90' + 50.46') \times 4'] / 9 = 62.43$  SY

Area of decreased raised sidewalk =  $2 \times [(90' + 50.46') \times 6'] / 9 = 187.41$  SY

Area of MSE wall at East end abutment (estimate only) =  $0.5 \times [90' + 194'] \times 26' = 3692$  SF

Area of MSE wall at West end abutment (estimate only) =  $0.5 \times [90' + 178'] \times 22' = 2948$  SF

Total area of MSE wall (assume 20' average height) =  $3692 + 2948 = 6640$  CY

Total length of coping (East & West ends) =  $210' + 188' = 398$  LF

Volume of earth for embankment fill =  $4478$  CY +  $6970$  CY =  $11448$  CY

## NOTE:

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

**{In comparing costs of original design and alternative, \$90 per square foot has been assumed for the bridge construction. 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 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).}**



# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-13**

DESCRIPTION: **REALIGN ROADWAY TO THE NORTHEAST AND USE EMBANKMENT  
IN FLOODZONE 'X'**

SHEET NO.: 1 of 4

### Original Design:

The original crosses the Flint River floodplain/floodway at almost a 45° angle.

### Alternative:

The alternative design proposes crossing Flint River floodplain/floodway at a 90° angle.

### Opportunities:

- Reduction in bridge costs
- Reduction in affected floodway
- Reduction in affected floodplain
- Improved hydraulics
- Elimination of a super elevation transition overlap

### Risks:

- Moderate increase in design effort
- Potential to increase wetland impacts

### Technical Discussion:

Modification of the proposed alignment to more closely resemble the original “preferred alternative” in the concept report will yield many positive results.

By crossing the Flint River at a 90° angle and eliminating the skew it will reduce the length of bridge in the floodplain (~2750' versus ~3000'). It will also reduce the length of structure crossing of the floodway by not only eliminating the skew but crossing at an area where the floodway is narrower. This could possibly provide an opportunity to eliminate a bent in the floodway and improve hydraulics.

By realigning the roadway it will provide sufficient distance between horizontal curves to develop transitions to super elevation without any overlap.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 44,422,224	\$	\$ 44,422,224
ALTERNATIVE	\$ 40,253,851	\$	\$ 40,253,851
SAVINGS	\$ 4,168,373	\$	\$ 4,168,373

PROJECT: **Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

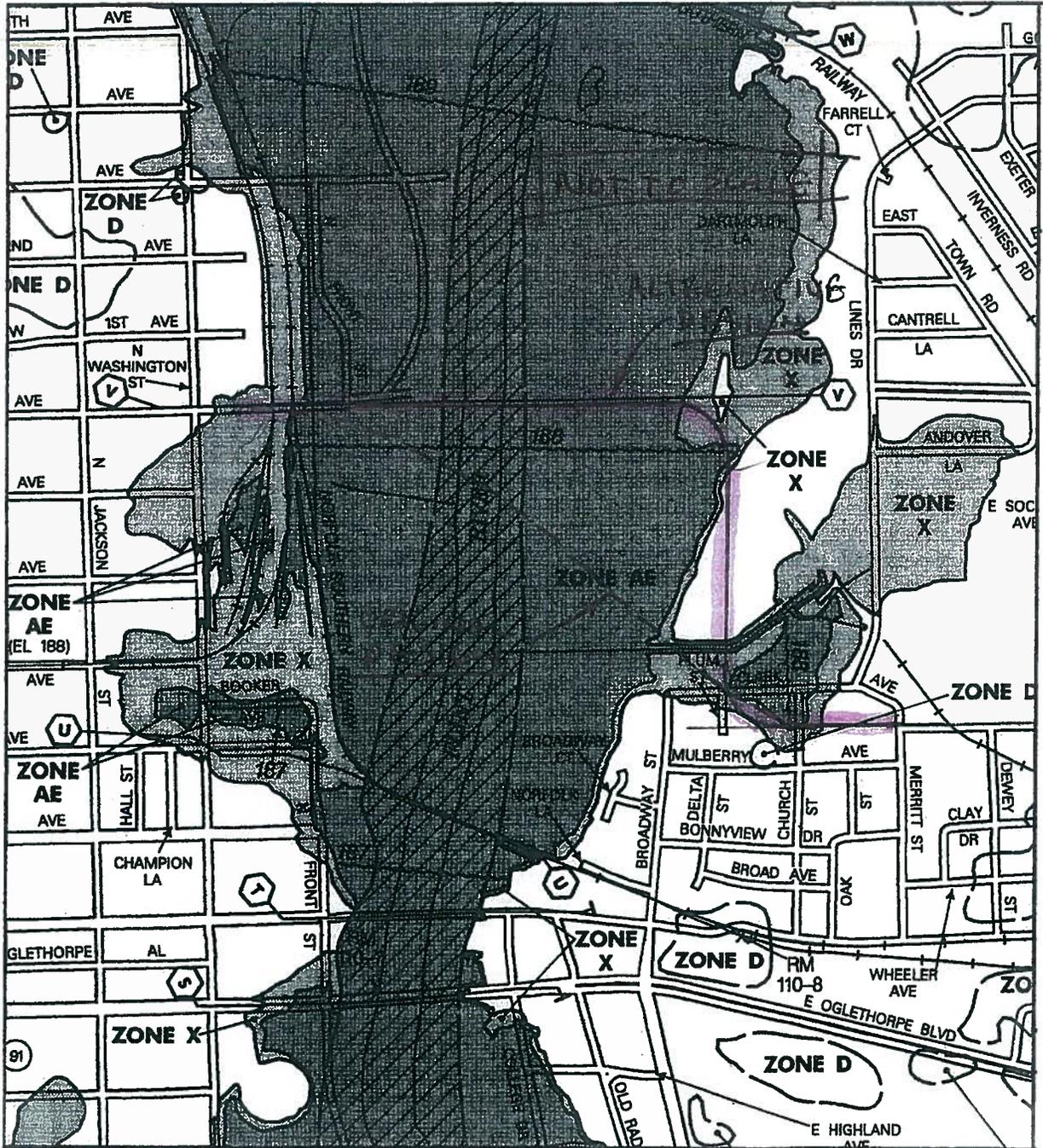
ALTERNATIVE NO.:

**BR-13**

DESCRIPTION: **REALIGN ROADWAY TO THE NORTHEAST AND USE EMBANKMENT  
IN FLOODZONE 'X'**

SHEET NO.:

2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-13**

DESCRIPTION: **REALIGN ROADWAY TO THE NORTHEAST AND USE EMBANKMENT**  
**IN FLOODZONE 'X'**

SHEET NO.: 3 of 4

### Original-Affected Pay Items :

Bridge- (82' x 3,570 lf) = 292,740 sf

12" GAB- 64,252 tons

12.5 mm Superpave- 8,840 tons

19.0 mm Superpave- 11,786 tons

25.0 mm Superpave- 17,680 tons

Right of way- 1,600,200 sf – 36.74 AC - \$9,001,000

Length-From North Washington Street to Merritt Street

Original-From Station 154+00 to Station 205+50

Alternative-From west of N Washington Street due east across the flood plain 2750', due south to north of the USACE's canal 900', 250' across the USACE's canal and 1250' due east to Merritt Street.

Overall- (Alternative)5150' - (Original) 4870' = 280'

Bridge- (Original) 3570' -(Alternative)3000' = 570'

Roadway- (Alternative)2150' - (Original) 1300' = 850'

### Increase in Quantity-

Area of paving: Assume additional 850' lf x 56' = 47,600sf / (9sf/sy) => 5,289 sy

Area of base: Assume additional 850' lf x 64' = 54,400sf / (9sf/sy) => 6,044 sy

Earthwork: Assume average 3.0' fill depth over the width of the backbone for the roadway north of the USACE's canal. (3.0'depth x 108.0'width x 900') / (27cy/cf) => 10,800 cy

Right of way: (200' x 280') => 56,000 sf / (43,560sf/acre) = 1.29 ac

Assume cost of \$20,000/acre

Bridge: (570' x 82') => 46,740 sf

12" GAB- (54,400 sf) x (12"/12")x(135#/cf) / (2000#/ton) => 3672 tons

12.5 mm Superpave- (5,289 sy) x (165#/sy) / (2000#/ton) => 436 tons

19.0 mm Superpave- (5,289 sy) x (220#/sy) / (2000#/ton) => 582 tons

25.0 mm Superpave- (5,289 sy) x (440#/sy) / (2000#/ton) => 1164 tons

Right of way: Net cost 1.29 ac x \$20,000 = \$25,800

Scheduling @ 55% = \$12,900

Court cost @ 60% = \$15,480

Inflation @ 65% = \$16,770

Total = \$70,950 => \$56,000/ac

### Change in Quantity-

Bridge- 292,740 sf - 46,740sf = 246,000 sf

Earthwork- = 10,800 cy

12" GAB- 64,252 tons + 3,672 tons = 67,924 tons

12.5 mm Superpave- 8,840 tons + 436 tons = 9,276 tons

19.0 mm Superpave- 11,786 tons +582 tons = 12,368 tons

25.0 mm Superpave- 17,680 tons - 1164 tons = 18,844 tons

Right of way- \$9,001,000 + \$70,950 = \$9,071,950



# Value Analysis Design Alternative



**PROJECT: Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-14**

**DESCRIPTION: REALIGN ROADWAY ALONG THE ABANDONED RAILROAD  
NORTHWEST OF THE APARTMENT COMPLEX**

SHEET NO.: 1 of 4

**Original Design:**

The original crosses the Flint River floodplain/floodway at almost a 45° angle.

**Alternative:**

The alternative design proposes crossing Flint River floodplain/floodway at a 90° angle and following the abandoned railroad to Clark Avenue.

**Opportunities:**

- Reduction in bridge costs.
- Reduction in affected floodway.
- Reduction in affected floodplain.
- Improved hydraulics.
- Elimination of a super elevation transition overlap.
- Simplify bridge geometry by eliminating curves and superelevation transitions.

**Risks:**

- Moderate increase in design effort.
- Potential to increase wetland impacts.
- Minor impact to USACE’s canal
- Potential 4F property (baseball field).

**Technical Discussion:**

Modification of the proposed alignment to more closely resemble the original “preferred alternative” in the concept report will yield many positive results.

By crossing the Flint River at a 90° angle and eliminating the skew it will reduce the length of bridge in the floodplain (~2750’ versus ~3000’). It will also reduce the length of structure crossing of the floodway by not only eliminating the skew but crossing at an area where the floodway is narrower. This could possibly provide an opportunity to eliminate a bent in the floodway and improve hydraulics.

By realigning the roadway it will provide sufficient distance between horizontal curves to develop transitions to super elevation without any overlap.

The Alternative alignment will impact the baseball field located north of the Church Street/Clark Avenue intersection. This property may be a 4F although it does not appear on any available mapping as a public park.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 44,422,224	\$	\$ 44,422,224
ALTERNATIVE	\$ 39,553,635	\$	\$ 39,553,635
SAVINGS	\$ 4,868,589	\$	\$ 4,868,589

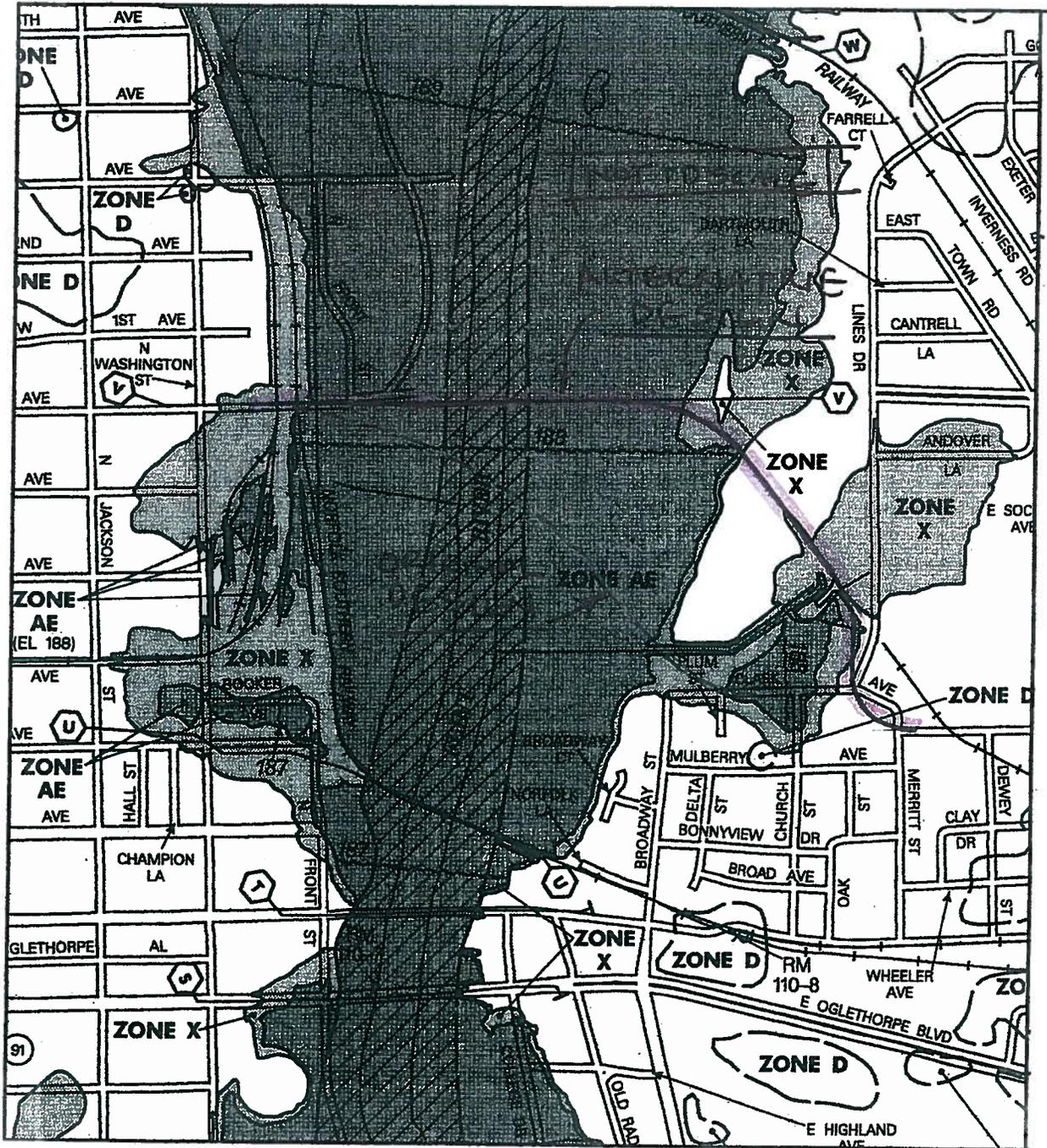
PROJECT: **Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-14**

DESCRIPTION: **REALIGN ROADWAY ALONG THE ABANDONED RAILROAD  
NORTHWEST OF THE APARTMENT COMPLEX**

SHEET NO.: 2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-14**

DESCRIPTION: **REALIGN ROADWAY ALONG THE ABANDONED RAILROAD**  
**NORTHWEST OF THE APARTMENT COMPLEX**

SHEET NO.: 3 of 4

### Original-Affected Pay Items :

Bridge- (82' x 3,570 lf) = 292,740 sf

12" GAB- 64,252 tons

12.5 mm Superpave- 8,840 tons

19.0 mm Superpave- 11,786 tons

25.0 mm Superpave- 17,680 tons

Right of way- 1,600,200 sf – 36.74 AC - \$9,001,000

Length-From North Washington Street to Merritt Street

Original-From Station 154+00 to Station 205+50

Alternative-From west of N Washington Street due east across the flood plain 2750' then east to the abandoned Railroad and south 2550' to Merritt Street.

Overall- (Alternative)5300' - (Original) 4870' = 430'

Bridge- (Original) 3570' -(Alternative)2750' = 720'

Roadway- (Alternative)2550' - (Original) 1300' = 1250'

### Increase in Quantity-

Area of paving: Assume additional 1250' lf x 56' = 70,000sf / (9sf/sy) => 7,778 sy

Area of base: Assume additional 1250' lf x 64' = 80,000 sf / (9sf/sy) => 8,889 sy

Earthwork: Assume average 2.0' fill depth over the width of the roadway backbone. (2.0'depth x 108.0'width x 2550') / (27cy/cf) => 20,400 cy

Right of way: (200' x 430') => 86,000 sf / (43,560sf/acre) = 1.97 ac

Assume cost of \$20,000/acre

Bridge: (720' x 82') => 59,040 sf

12" GAB- (80,000 sf) x (12"/12")x(135#/cf) / (2000#/ton) => 5400 tons

12.5 mm Superpave- (7,778 sy) x (165#/sy) / (2000#/ton) => 642 tons

19.0 mm Superpave- (7,778 sy) x (220#/sy) / (2000#/ton) => 856 tons

25.0 mm Superpave- (7,778 sy) x (440#/sy) / (2000#/ton) => 1711 tons

Right of way: Net cost 1.97 ac x \$20,000 = \$39,400

Scheduling @ 55% = \$21,670

Court cost @ 60% = \$23,640

Inflation @ 65% = \$25,610

Total = \$110,320 => \$56,000/ac

### Change in Quantity-

USACE Drainage Structure extensions- \$250,000 ls

Bridge- 292,740 sf – 59,040sf = 233,700 sf

Earthwork- = 20,400 cy

12" GAB- 64,252 tons + 5400 tons = 69,652 tons

12.5 mm Superpave- 8,840 tons + 642 tons = 9,482 tons

19.0 mm Superpave- 11,786 tons + 856 tons = 12,642 tons

25.0 mm Superpave- 17,680 tons - 1711 tons = 19,391 tons

Right of way- \$9,001,000 + \$110,320 = \$9,111,320



# COST WORKSHEET

PROJECT: **Georgia Department of Transportation** ALTERNATIVE NO.: **BR-14**

**STP-0134(6) – P.I. No.450540 - Clark Avenue Extension - Doughert County**

DESCRIPTION: **REALIGN ROADWAY ALONG THE ABANDONED RAILROAD NW OF THE APARTMENT COMPLEX** 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
12" GAB	TON	64,252	\$ 30.00	\$ 1,927,560	69,652	\$ 30.00	\$ 2,089,560
12.5 mm SUPERPAVE	TON	8,840	\$ 85.00	\$ 751,400	9,482	\$ 85.00	\$ 805,970
19.0 mm SUPERPAVE	TON	11,786	\$ 80.00	\$ 942,880	12,642	\$ 80.00	\$ 1,011,360
25.0 mm SUPERPAVE	TON	17,680	\$ 80.00	\$ 1,414,400	19,391	\$ 80.00	\$ 1,551,280
RIGHT OF WAY	LS	1	\$ 9,001,000.00	\$ 9,001,000	1	\$ 9,110,320.00	\$ 9,110,320
CLEARING AND GRUBBING	AC	0	\$ 5,000.00	\$ -	1.28	\$ 5,000.00	\$ 6,400
IN PLACE FILL	CY	0	\$ 4.90	\$ -	20,400	\$ 4.90	\$ 99,960
BRIDGE	SF	292,740	\$ 90.00	\$ 26,346,600	233,700	\$ 90.00	\$ 21,033,000
DRAINAGE STRUCTURES	LS	1	\$ -	\$ -	1	\$ 250,000.00	\$ 250,000
				\$ -			\$ -
<b>Sub-total</b>				<b>\$ 40,383,840</b>			<b>\$ 35,957,850</b>
<b>Mark-up at</b>	<b>10.00%</b>			<b>\$ 4,038,384</b>			<b>\$ 3,595,785</b>
	<b>TOTAL</b>			<b>\$ 44,422,224</b>			<b>\$ 39,553,635</b>

Estimated Savings: **\$4,868,589**

# Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-17**

DESCRIPTION: **LOWER BRIDGE PROFILE AFTER CROSSING THE RAILROAD**

SHEET NO.: 1 of 4

## Original Design:

The original design utilizes a profile grade between Station 156+70 and Station 202+46.26 that ranges from ~ 17' to as much as ~ 38' above the 100 year flood level (elev. 187.07') and as much as ~ 57' above natural ground.

## Alternative:

The alternative design proposes lowering the profile grade between Station 156+70 and Station 202+46.26 by as much as ~26'.

## Opportunities:

- Reduction in bridge costs
- Reduction in required fill on the east end of the bridge
- Eliminate the sag vertical curve at Station 202+46.26

## Risks:

- Moderate increase in design effort

## Technical Discussion:

After providing the necessary clearance for the NSRR, profile grade elevation of approximately 196' should be sufficient to clear the 100 year flood elevation (a 100 year flood elevation of ~187.07' + 1 of freeboard + an 8' structure depth =>196'). Lowering the bridge should result in a cost savings from both the ease of construction and the cost differential of a low level versus a high level bridge. Even if the bridge is built to clear the 500 year flood (elevation 191.98+ 1 of freeboard + an 8' structure depth =>201') might still be lowered as much as 20'. By modifying the grade you can also eliminate the sag vertical curve at Station 202+46.26. This should improve drainage by eliminating a sag curve which has a K value in excess of the Drainage K Maximum of 167, is at the bottom of a +4500' downgrade and is located in the middle of an intersection.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 972,702	\$	\$ 972,702
ALTERNATIVE	\$ 0	\$	\$ 0
SAVINGS	\$ 972,702		\$ 972,702

# Illustrations



PROJECT: **Georgia Department of Transportation  
STP-0134(6) – P.I. No. 450540  
Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**BR-17**

DESCRIPTION: **LOWER BRIDGE PROFILE AFTER CROSSING THE  
RAILROAD**

SHEET NO.: 2 of 4

The following table is an example profile grade for lowering the roadway in the vicinity of the NSRR and the Flint River.

VPI Station 150+82.94	Elevation-197.21
Approach Grade: -1.8548%	LC=300'
Departure Grade: +5.9466%	K= 38.45

VPI Station 156+70.00	Elevation-230.00
Approach Grade: +5.9466%	LC=400'
Departure Grade: -4.0000%	K= 40.21

VPI Station 165+00.00	Elevation-196.80
Approach Grade: -4.0000%	LC=600'
Departure Grade: +0.2715%	K= 140.47

VPI Station 249+00.00	Elevation-586.20
Approach Grade: : +0.2715%	LC= 0'
Departure Grade: +0.3450%	K= NA

# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**RD-17**

DESCRIPTION: **LOWER BRIDGE PROFILE AFTER CROSSING THE**  
**RAILROAD**

SHEET NO.: 3 of 4

## Original-Affected Pay Items :

### Bridge-

Station ~164+00 to Station 182+00 (82' x 1800 lf) = 147,600 sf

### Embankment-

Station ~189+60 to Station 202+60  $[(108'+148')/2] \times 1300 \text{ lf} \times 5 \text{ ft} / 27 \text{ cf/cy} \Rightarrow 29,852 \text{ cy}$

## Reduction in Quantity-

Assume a reduction in cost of ~\$5.00/sf for the lowered portion-  
 $(147,600 \times \$5.00) = \$738,000$



# Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**RD-1**

DESCRIPTION: USE 11'-0" TRAVEL LANES

SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes 12'-0" travel lanes throughout the project.

**Alternative:**

The alternative design proposes using 11'-0" travel lanes throughout project.

**Opportunities:**

- Reduction in pavement costs.
- Reduction in earthwork costs.
- Reduction in right of way costs.
- Reduction in bridge costs.

**Risks:**

- Moderate increase in design effort.
- Requires an exception to GDOT policy.

**Technical Discussion:**

Reduction of width of travel lanes throughout the project would result in 4' of full build-up widening and bridge width that would not have to be constructed, resulting in significant cost savings. Although 11' lanes would require an exception to GDOT policy, AASHTO's "Policy on Geometric Design of Highways 2004" states that 11'-0" lanes are permissible. It also states that under interrupted-flow operating conditions at low speeds (45 mph or less), narrower lanes are normally adequate and have some advantages. (See Pages 472-473). Due to the low speed (35mph), low % trucks and urban character of the project, 11'-0" lanes should pose no operational issues.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 34,596,535	\$	\$ 34,596,535
ALTERNATIVE	\$ 32,838,262	\$	\$ 32,838,262
SAVINGS	\$ 1,758,273	\$	\$ 1,758,273

# Illustrations



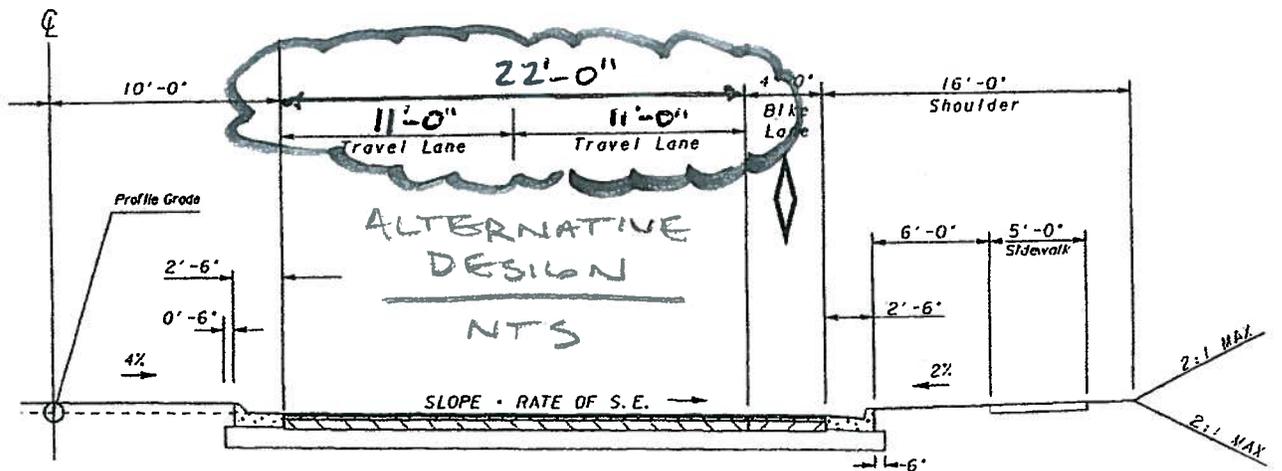
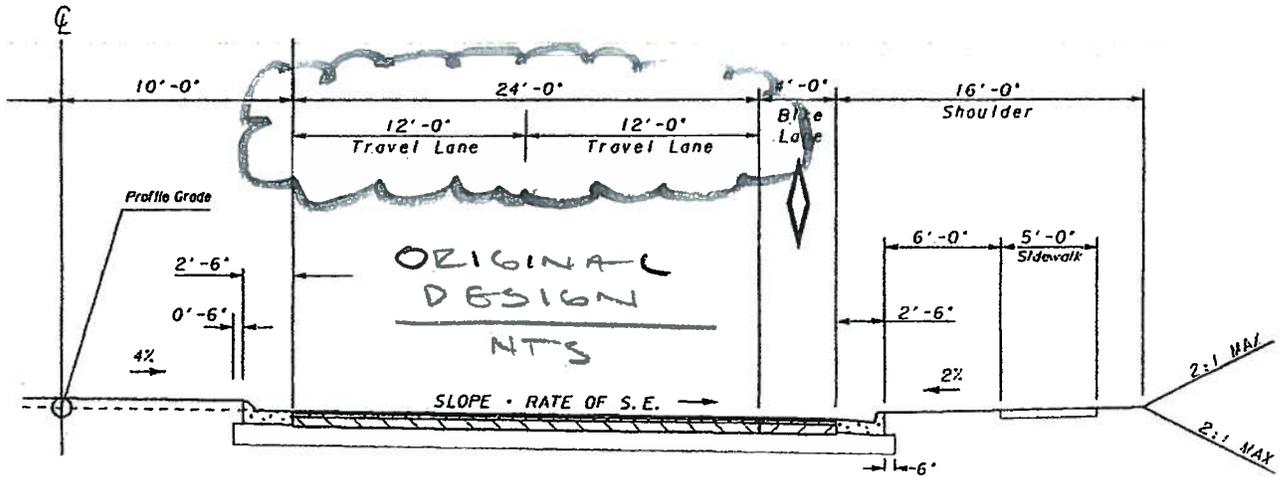
PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.L. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

RD-1

DESCRIPTION: USE 11'-0" TRAVEL LANES

SHEET NO.: 2 of 4



# Calculations



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**RD-1**

DESCRIPTION: **USE 11'-0" TRAVEL LANES**

SHEET NO.: 3 of 4

Original-Affected Pay Items :

Bridge- (82' x 3,570 lf) = 292,740 sf  
12" GAB- 64,252 tons  
12.5 mm Superpave- 8,840 tons  
19.0 mm Superpave- 11,786 tons  
25.0 mm Superpave- 17,680 tons  
Right of way- 1,600,200 sf – 36.74 AC - \$9,001,000

Reduction in Quantity-

Area of paving: Assume additional 10,665 lf x 4' = 42,660sf / (9sf/sy) => 4,740 sy  
Earthwork: Assume average 1.5' depth over the width of the backbone. The project appears to be in a waste situation so assume the saving is for unclassified excavation only.  
(1.5' depth x 4.0' width x 10,665' / (27cy/cf) => 2370 cy  
Right of way: (4' x 10,665') => 42,260 sf / (43,560sf/acre) = 0.97 ac  
Assume cost of \$20,000/acre  
Bridge: (4' x 3,570') => 14,280 sf  
12" GAB- (42,660 sf) x (12"/12") x (135#/cf) / (2000#/ton) => 2880 tons  
12.5 mm Superpave- (4,740 sy) x (165#/sy) / (2000#/ton) => 391 tons  
19.0 mm Superpave- (4,740 sy) x (220#/sy) / (2000#/ton) => 521 tons  
25.0 mm Superpave- (4,740 sy) x (440#/sy) / (2000#/ton) => 1042 tons  
Right of way: Net cost 0.97 ac x \$20,000 = \$19,400  
Scheduling @ 55% = \$10,670  
Court cost @ 60% = \$11,640  
Inflation @ 65% = \$12,610  
Total = \$54,320 => \$56,000/ac

Alternative:

Bridge- 292,740 sf - 14,280 sf = 278,460 sf  
12" GAB- 64,252 tons - 2880 tons = 61,372 tons  
12.5 mm Superpave- 8,840 tons - 391 tons = 8,449 tons  
19.0 mm Superpave- 11,786 tons - 521 tons = 11,265 tons  
25.0 mm Superpave- 17,680 tons - 1042 tons = 16,638 tons  
Right of way- \$9,001,000 - \$54,320 = \$8,946,680



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**RD-2**

**DESCRIPTION:** USE A 12' SHOULDER

SHEET NO.: 1 of 4

**Original Design:**

The original design utilizes a 16' shoulder on each side of the Clark Avenue Extension

**Alternative:**

The proposed alternative would reduce the 16' shoulder to a 12' shoulder

**Opportunities:**

- Possible ROW savings
- Minimal earthwork savings.

**Risks:**

- Sidewalk somewhat closer to travel lanes
- Minimal design effort required

**Technical Discussion:**

The primary savings achieved by reducing the originally designed shoulder from 16' down to 12' on each side of the roadway would be realized through savings in ROW required and the grading and earthwork necessary for the larger shoulder.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 2,263,186	\$	\$ 2,263,186
ALTERNATIVE	\$ 2,169,554	\$	\$ 2,169,554
SAVINGS	\$ 93,632	\$	\$ 93,632

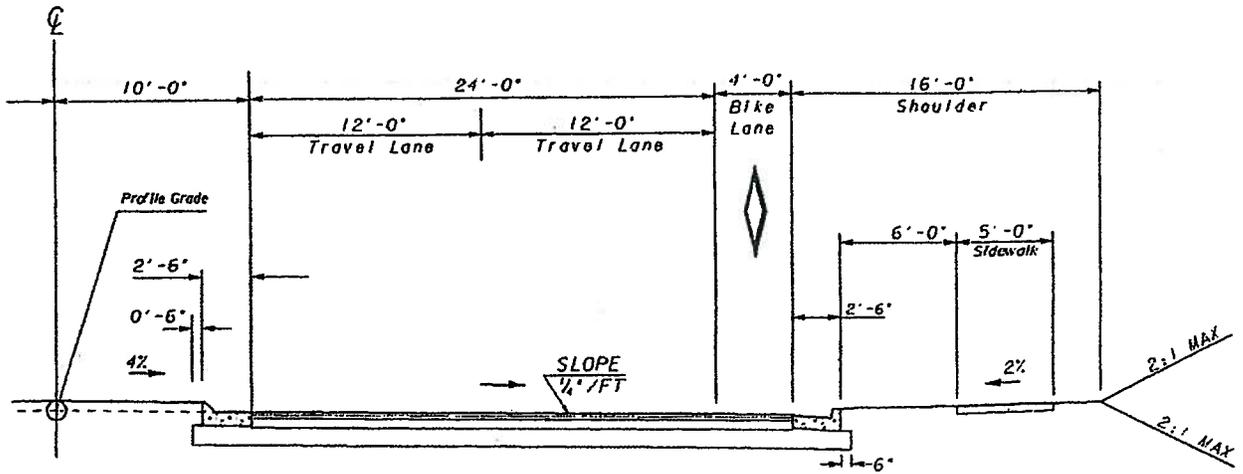
PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.L. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

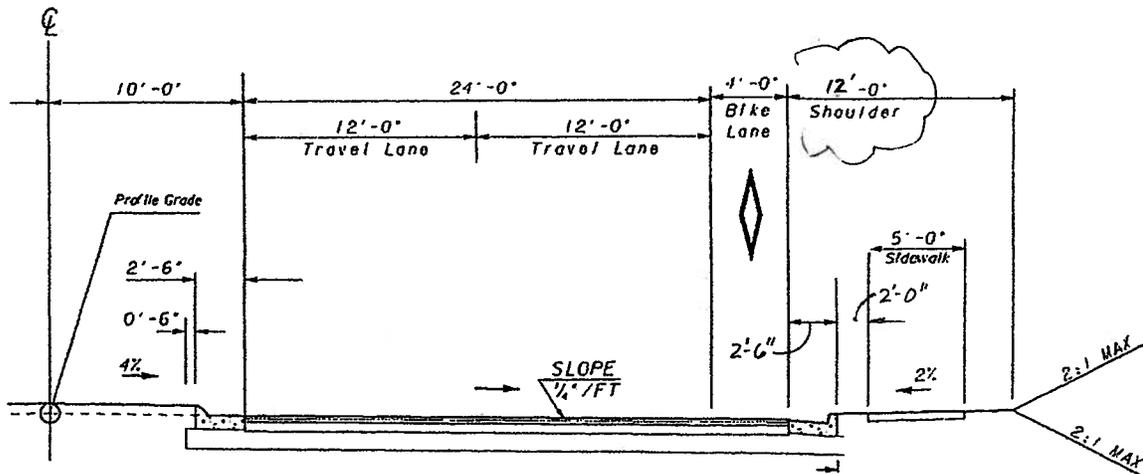
RD-2

DESCRIPTION: USE A 12' SHOULDER

SHEET NO.: 2 of 4



ORIGINAL DESIGN



PROPOSED ALTERNATE

# Calculations



PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

RD-2

DESCRIPTION: USE A 12' SHOULDER

SHEET NO.: 3 of 4

REDUCE SHOULDER WIDTH FROM 16' TO 12' EACH SIDE

REDUCE ROW 4' EA SIDE APPROX STA 190+00 TO STA 273+00 = 8,300 LF

$$2(4.0 \times 8,300 \text{ LF}) = 66,400 \text{ SF} = 1.52 \text{ AC}$$

$$1.52 \text{ AC} \times \$56,000^* = \$85,120.$$

\* USE ROW CALCS  
FROM RD.1

EARTHWORK.

PROFILE AT GRADE THROUGHOUT SO MINIMAL EARTHWORK SAVINGS



# Value Analysis Design Alternative



**PROJECT:** Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

**RD-4**

**DESCRIPTION:** MOVE BIKE LANE AND COMBINE WITH SIDEWALK-  
 MULTI-USE TRAIL

SHEET NO.: 1 of 4

**Original Design:**

The original design called for the 4” Bike Lane to be constructed directly adjacent to the 12’ Travel Lane on each side of the Clark Avenue Extension

**Alternative:**

The proposed alternate incorporates the 4’ Bike Lane and the 5’ sidewalk to create a 10’ multi-use trail

**Opportunities:**

- ROW savings
- Reduced pavement costs
- Allows for biking on the shoulder out of traffic.

**Risks:**

- Minimal design change costs

**Technical Discussion:**

The proposed alternate will move the bike lane up off the roadway surface onto the shoulder adjacent to the sidewalk to create a new 10’ wide multi-use trail. This option will reduce both ROW acquisition costs as well as associated roadway paving costs.

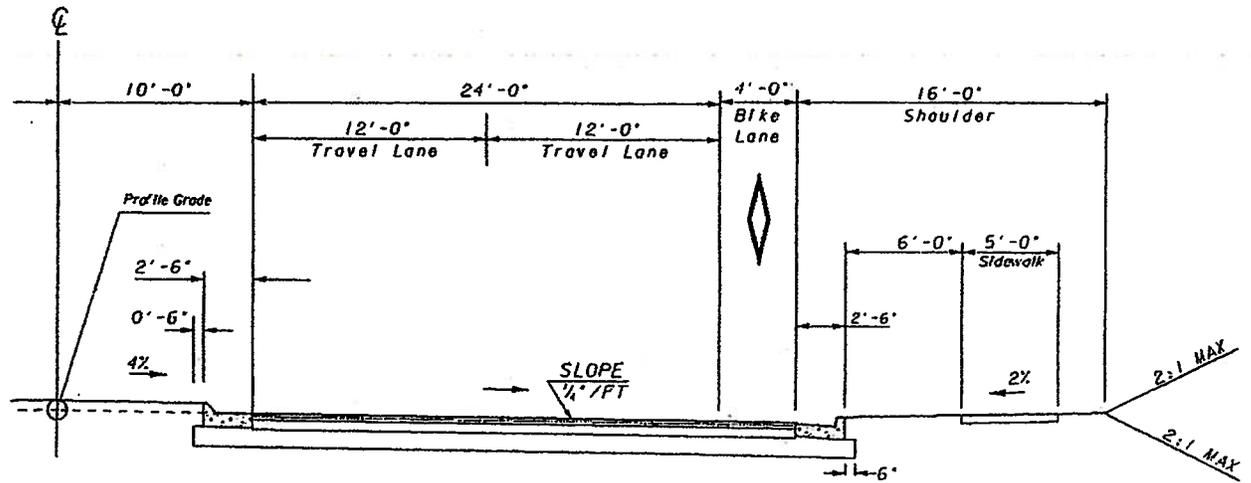
COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 8,189,908	\$	\$ 8,189,908
ALTERNATIVE	\$ 8,003,439	\$	\$ 8,003,439
SAVINGS	\$ 186,469	\$	\$ 186,469

PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

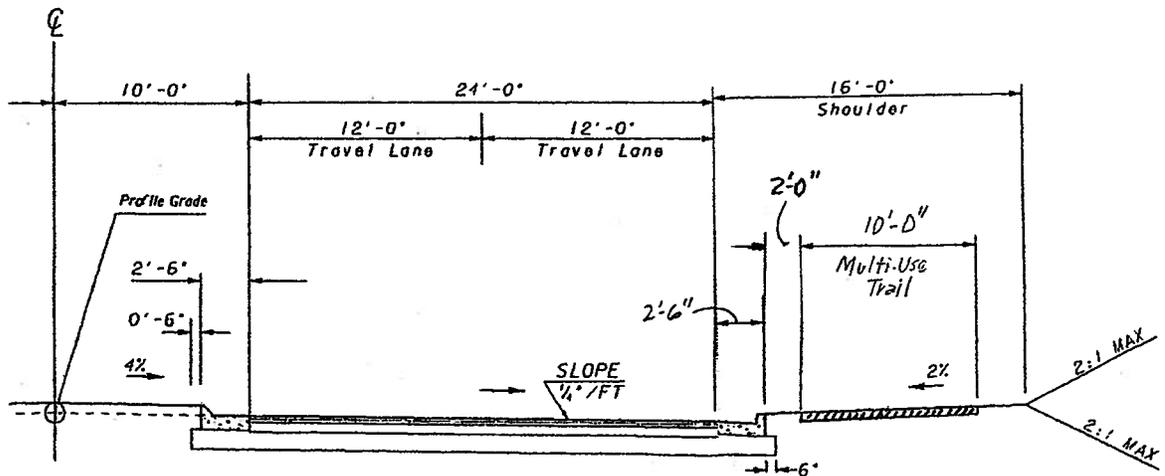
ALTERNATIVE NO.:  
**RD-4**

DESCRIPTION: **MOVE BIKE LANE AND COMBINE WITH SIDEWALK-**  
**MULTI-USE TRAIL**

SHEET NO.: **2 of 4**



ORIGINAL DESIGN



PROPOSED ALTERNATE

# Calculations



PROJECT: Georgia Department of Transportation  
 STP-0134(6) - P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

RD-4

DESCRIPTION: MOVE BIKE LANE AND COMBINE WITH SIDEWALK-  
 MULTI-USE TRAIL

SHEET NO.: 3 of 4

APPROX STA 190+00 to STA 273+00 = 8,300 LF

REDUCED ROW WITH REMOVAL OF BIKE LANE TO SHOULDER - 4' PAVING EA SIDE

$$2(4.0 \times 8,300 \text{ LF}) = 66,400 \text{ SF} = 1.52 \text{ AC}$$

$$1.52 \text{ AC} @ \$56,000/\text{AC} = \$85,120.$$

\* USE ROW CALCS FROM RD-1

PAVING - ELIMINATE 4.0' EA. SIDE

$$2(4.0 \times 8,300 \text{ LF}) = 66,400 \text{ SF} = 7,378 \text{ SY}$$

$$12.5 \text{ MM} \quad 7,378 \text{ SY} @ 125\#/\text{SY} = 461.1 \text{ TON} @ \$85.00/\text{TON} = 39,194.$$

$$19.0 \text{ MM} \quad 7,378 \text{ SY} @ 220\#/\text{SY} = 811.6 \text{ TON} @ \$80.00/\text{TON} = 64,928.$$

$$25.0 \text{ MM} \quad 7,378 \text{ SY} @ 440\#/\text{SY} = 1623.2 \text{ TON} @ \$80.00/\text{TON} = 129,856$$

$$10" \text{ C&G} \quad 7,378 \text{ SY} @ 1050\#/\text{SY} = 3873.4 \text{ TON} @ \$30.00/\text{TON} = 116,202.$$

350,180.

ADDITIONAL PAVE FOR BIKE LANE = SIDEWALK 4" (5' EA SIDE)

$$10 \times 8,310 = 83,070 \text{ SF} = 9,222 \text{ SY}$$

$$9,222 \text{ SY} @ \$28.82/\text{SY} = \$265,778.$$

#  
 85,120  
 (350,180)  
 265,778

# (169,522.) SAVINGS



# Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County	ALTERNATIVE NO.:	RD-5
DESCRIPTION:	MOVE BIKE LANE TO SHOULDER ADJACENT TO SIDEWALK	SHEET NO.:	1 of 4

**Original Design:**

The original design called for the 4” Bike Lane to be constructed directly adjacent to the 12’ Travel Lane on each side of the Clark Avenue Extension.

**Alternative:**

The proposed alternate relocates the 4’ Bike Lane up on the shoulder directly adjacent to the 5’ sidewalk

**Opportunities:**

- ROW savings
- Reduced pavement costs

**Risks:**

- Minimal design change costs

**Technical Discussion:**

The proposed alternate will move the bike lane up off the roadway surface onto the shoulder adjacent to the sidewalk. This option will reduce both ROW acquisition costs as well as associated roadway paving costs.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 8,189,908	\$	\$ 8,189,908
ALTERNATIVE	\$ 7,974,210	\$	\$ 7,974,210
SAVINGS	\$ 215,698	\$	\$ 215,698

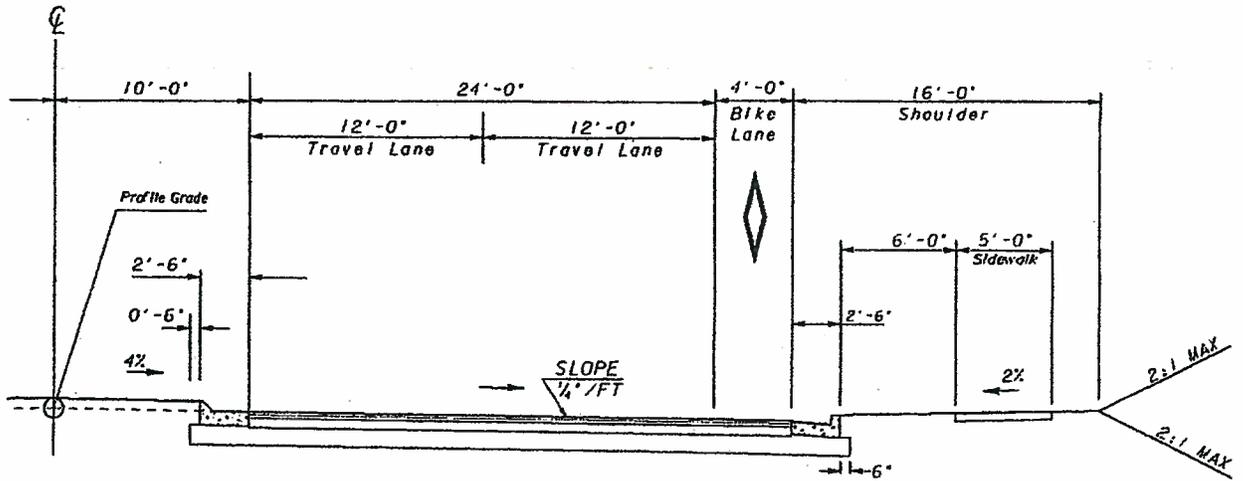
PROJECT: Georgia Department of Transportation  
STP-0134(6) - P.I. No. 450540  
Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

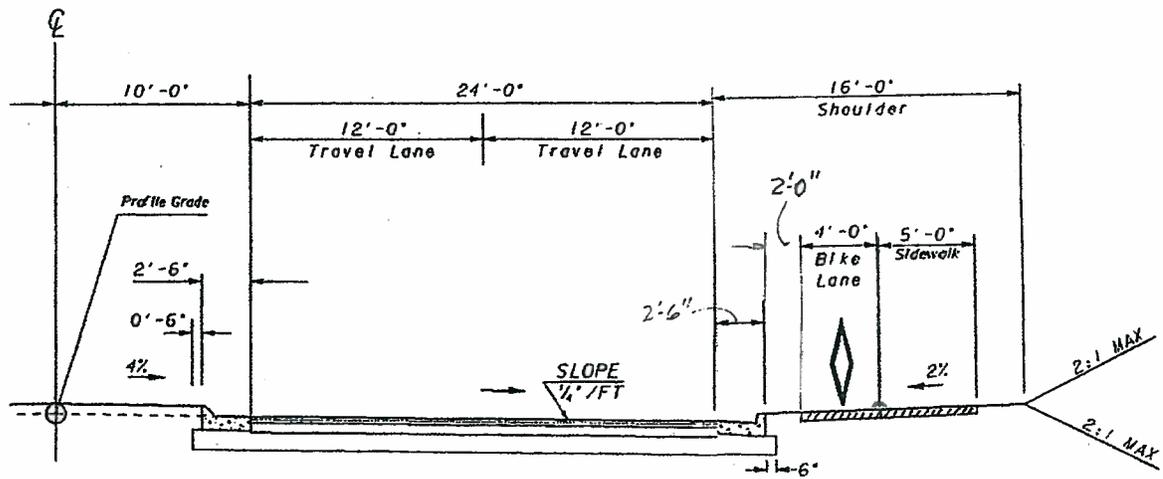
RD-5

DESCRIPTION: MOVE BIKE LANE TO SHOULDER ADJACENT TO  
SIDEWALK

SHEET NO.: 2 of 4



ORIGINAL DESIGN



PROPOSED ALTERNATE

# Calculations



PROJECT: Georgia Department of Transportation  
 STP-0134(6) - P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

ALTERNATIVE NO.:

RD-5

DESCRIPTION: MOVE BIKE LANE TO SHOULDER ADJACENT TO  
 SIDEWALK

SHEET NO.: 3 of 4

APPROX STA 190+00 to STA 273+00 = 8,300 LF

REDUCED ROW 4'-0" ROADWAY PAVING EACH SIDE

$$2(4.0 \times 8,300 \text{ LF}) = 66,400 \text{ SF} = 1.52 \text{ AC}$$

$$1.52 \text{ AC} \times \$56,000/\text{AC} = \$85,120.$$

\* USE ROW CALC FROM RD.1

PAVING eliminate 4'-0" ea side

$$2(4.0 \times 8,300 \text{ LF}) = 66,400 \text{ SF} = 7,378 \text{ SY}$$

12.5 MM	-	7,378 SY @ 125#/SY = 461.1 TN @ \$85.00/TN = \$39,194.
19.0 MM		7,378 SY @ 220#/SY = 811.6 TN @ \$80.00/TN = 64,928.
25.0 MM		7,378 SY @ 440#/SY = 1623.2 TN @ \$80.00/TN = 129,856
10" GAR		7,378 SY @ 1050#/SY = 3873.4 TN @ \$30.00/TN = 116,202.

$$\underline{\$350,180}$$

+ ADDITIONAL PAVE FOR BIKE LANE = SIDEWALK (4")

$$9.0 \times 8,300 \text{ LF} = 74,700 \text{ SF} = 8,300 \text{ SY}$$

$$8,300 \text{ SY} @ \$28.82/\text{SY} = \$239,206.$$

$$\begin{array}{r} \text{So } \therefore \text{ } \$ \\ (85,120) \\ (350,180) \\ 239,206 \end{array}$$

$$\# (196,094) \text{ Savings}$$



# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:

**RD-6**

DESCRIPTION: **REALIGN MERRITT AND LINE STREETS**

SHEET NO.: 1 of 2

## Original Design:

The original design leaves the Merritt Street and Line Street configuration as it now exists with minor improvements.

## Alternative:

An alternative design suggestion would be to realign Merritt Street and Line Street as shown on the next sheet with a new connection for the existing section of Clark Avenue to the west.

## Opportunities:

- May lower ROW needed in this area
- Will permit better traffic flow through this area

## Risks:

- Could possibly impact other construction in the area of relocation

## Technical Discussion:

Although this option may prove to increase costs somewhat, it was felt that for ease of traffic flow through this location it could provide added benefit.



# Value Analysis Design Suggestion



PROJECT	<b>Georgia Department of Transportation STP-0134(6) – P.I. No. 450540 Clark Avenue Extension - Dougherty County</b>	ALTERNATIVE NO.:	<b>RD-8</b>
DESCRIPTION:	<b>CLOSE ACCESS TO VILLAGE STREET</b>	SHEET NO.:	1 of 1

## Original Design:

The Original Design is to provide “right-in right-out” access to Village Street from Clark Avenue.

## Alternative:

The Alternative Design is to close access to Village Street from Clark Avenue.

## Opportunities:

- Eliminate a skewed intersection.
- Eliminate right turn storage on the railroad crossing.
- Improve operations on Clark Avenue by reducing the number of access points.

## Risks:

- Objection by local residents.
- Slightly more circuitous route required by a limited number of residents.

## Technical Discussion:

The current intersection is at a skew of 56° and has a channelized right turn bay across the railroad track. By closing the connection of Village Street you will eliminate both of the undesirable situations. The local neighborhood has sufficient back street circulation so that eliminating this access point should only cause minimal inconvenience. This is particularly true since the traffic exiting this area will be wanting to go further west to access the Merritt Street crossover.

# Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation**  
**STP-0134(6) – P.I. No. 450540**  
**Clark Avenue Extension - Dougherty County**

ALTERNATIVE NO.:  
**RD-9**

DESCRIPTION: **CONSIDER EYBROW PAVEMENT AT MERRITT ST.,  
MAPLE BLAYLOCK ST. AND MAPLE ST.**

SHEET NO.: 1 of 1

## Original Design:

The original design provides no eyebrow pavement at three median openings where u-turns are permitted.

## Alternative:

The alternative design would recommend re-evaluating the named roadway intersections for consideration of including eyebrow pavement.

## Opportunities:

- Improve traffic operations
- Improve traffic safety
- Reduce maintenance costs by protecting pavement with eyebrows

## Risks:

- Increased paving costs
- Minimal design effort
- Additional R.O.W.

## Technical Discussion:

Addition of eyebrow pavement to accommodate u-turns would seem prudent due to the fact this roadway has a narrow median and a number side streets are intended to be accessed via u-turns.

## ***Project Description***

## **PROJECT DESCRIPTION**

Project STP-0134(6) consists of the widening and extension of Clark Avenue from Liberty Expressway westward, crossing the Flint River with a new bridge, and then typing into the central business district at Washington Street. The Clark Avenue extension is needed to provide emergency access across the Flint River and to provide traffic relief for the Oglethorpe Boulevard and Broad Avenue bridges. In 1994, when the Flint River suffered serious flooding, all east-west bridges were closed. Consequently, eastern Dougherty County was separated from emergency medical services of Phoebe-Putnam Hospital which is located on the western side of the Flint River just north of downtown Albany.

The current roadway is a two to three lane roadway with the travel width varying from 36' to 50' including curb and gutter on both sides.

The proposed recommendation will tie into West Society Avenue and will extend Clark Avenue from the Merritt Street intersection west of Church Street then curving northwest and angling across the river. This will avoid any impact to the proposed development along the River's frontage.

The typical section includes four 12' travel lanes with a 16' flush median, 4' bicycle lanes, curb and gutter, and a 5' sidewalk on both sides (10' sidewalk on bridge structure). Design speed is 35 mph. The length of the project is 2.65 miles.

Traffic will be maintained along the existing roadway during construction.

The project estimated construction cost is \$39,406,408. The preliminary ROW acquisition cost is \$4,475,100.

## **REPRESENTATIVE DOCUMENTS**

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

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

Representative documents follow:

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE STP-0134(6), Dougherty County OFFICE Urban Design  
CLARKE AVE EXT FM JEFFERSON @ W.SOCIETY TO CLARKE @ MAPLE  
P.I. # 450540 DATE Sept. 28, 2006

FROM *James B. Buchan*  
James B. Buchan, P.E., State Urban Design Engineer

TO Brian Summers, P.E., Project Review Engineer

SUBJECT REVISION TO PROGRAMMED COSTS

NO REVISION REQUIRED	<input type="text"/>
PROGRAMMED COSTS (according to TPRO):	
• Construction Cost	<input type="text" value="\$36,933,000.00"/>
• Right-of-Way Cost	<input type="text" value="\$9,001,000.00"/>
• Reimbursable Utility Cost	<input type="text"/>
NEW COST ESTIMATES:	
• Construction Cost*	<input type="text" value="\$39,406,408.07"/>
• Right-of-Way Cost	<input type="text"/>
• Reimbursable Utility Cost	<input type="text"/>

\*Costs contain 10% E&C

Reasons why costs changed:  
Annual update

JBB:A

C: Jamie Simpson, Financial Management Administrator  
Genetha Rice-Singleton, Assistant Director of Preconstruction

**Estimate Report for file " P.I. #450540 Clarke Avenue Extension "**

<b>Section Roadway Items</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
153-1300	1	EA	90000.00	FIELD ENGINEERS OFFICE TP 3	90000.00
210-0100	1	LS	850000.00	GRADING COMPLETE -	850000.00
310-1101	64252	TN	30.00	GR AGGR BASE CRS, INCL MATL	1927560.00
402-3121	17680	TN	80.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	1414400.00
402-3190	11786	TN	80.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	942880.00
402-4510	8840	TN	85.00	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL POLYMER-MODIFIED BITUM MATL & H LIME	751400.00
413-1000	4286	GL	2.00	BITUM TACK COAT	8572.00
441-0104	12203	SY	28.82	CONC SIDEWALK, 4 IN	351690.46
441-0748	27550	SY	29.78	CONCRETE MEDIAN, 6 IN	820439.00
441-4030	200	SY	43.42	CONC VALLEY GUTTER, 8 IN	8684.00
441-6725	21965	LF	12.20	CONC CURB & GUTTER, 12 IN X 30 IN, TP 2	267973.00
441-6730	21850	LF	16.30	CONC CURB & GUTTER, 12 IN X 30 IN, TP 7	356155.00
641-1100	120	LF	40.00	GUARDRAIL, TP T	4800.00
641-1200	3485	LF	35.00	GUARDRAIL, TP W	121975.00
641-5001	2	EA	650.00	GUARDRAIL ANCHORAGE, TP 1	1300.00
641-5012	2	EA	2100.00	GUARDRAIL ANCHORAGE, TP 12	4200.00
<b>Section Sub Total:</b>					<b>\$7,922,028.46</b>

<b>Section Drainage</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
xxx-xxxx	3	Per Mile	250000.00	Drainage	750000.00
<b>Section Sub Total:</b>					<b>\$750,000.00</b>

<b>Section Erosion Control</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
xxx-xxxx	3	Lump Sum	750000.00	Erosion Control	2250000.00
<b>Section Sub Total:</b>					<b>\$2,250,000.00</b>

<b>Section Traffic Control</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
xxx-xxxx	1	Lump Sum	3300000.00	Traffic Control	3300000.00
<b>Section Sub Total:</b>					<b>\$3,300,000.00</b>

<b>Section Grassing/Landscaping</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
xxx-xxxx	1	Lump Sum	500000.00	Grassing/Landscaping	500000.00
<b>Section Sub Total:</b>					<b>\$500,000.00</b>

<b>Section Signs, Striping, Signals &amp; Lighting</b>					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
647-1000	1	LS	50000.00	TRAFFIC SIGNAL INSTALLATION NO - 1	50000.00
647-1000	1	LS	50000.00	TRAFFIC SIGNAL INSTALLATION NO - 2	50000.00
647-1000	1	LS	50000.00	TRAFFIC SIGNAL INSTALLATION NO - 3	50000.00
xxx-xxxx	1	Lump Sum	700000.00	Lighting	700000.00
xxx-xxxx	1	Lump Sum	25000.00	Striping	25000.00
xxx-xxxx	1	Lump Sum	11000.00	Roadside Signs	11000.00
<b>Section Sub Total:</b>					<b>\$886,000.00</b>

<b>Section Major Structures</b>					
<b>Item Number</b>	<b>Quantity</b>	<b>Units</b>	<b>Unit Price</b>	<b>Item Description</b>	<b>Cost</b>
433-1100	454	SY	113.72	REINF CONC APPROACH SLAB, INCL CURB	51628.88
xxx-xxxx	268858	SF	75.00	Bridge - #1	20164350.00
<b>Section Sub Total:</b>					<b>\$20,215,978.88</b>

**Total Estimated Cost: \$35,824,007.34**

**Subtotal Construction Cost \$35,824,007.34**

E&C Rate 10.0 % \$3,582,400.73

Inflation Rate 0.0 % @ 0.0 Years \$0.00

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**Total Construction Cost \$39,406,408.07**

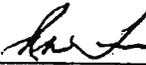
Right Of Way \$4,475,100.00

ReImb. Utilities \$2,337,500.00

---

**Grand Total Project Cost \$46,219,008.07**

# Preliminary Right of Way Cost Estimate

  
**David P. Meshberger**  
 Right of Way Administrator  
 By Rick Ford

**Date:** March 20, 2000  
**Project:** STP-0134 (6) Dougherty  
**Existing/Required R/W:** Varies/Varies  
**Project Termini:** Clark Avenue Extension from Washington Street to Liberty Expressway  
**Project Description:** Clark Avenue Common Section Including The West Society Avenue Bridge Alternate

**P.L. Number:** 450540  
**No. Parcels:** 78

**Land:**

Retail Commercial					
320,040 s.f. @ \$	0.75 / s.f.	=	\$	240,030	
Secondary Commercial					
160,020 s.f. @ \$	0.55 / s.f.	=	\$	88,011	
Small Tract Residential					
960,120 s.f. @ \$	0.11 / s.f.	=	\$	105,613	
Residential Tracts					
160,020 s.f. @ \$	0.20 / s.f.	=	\$	<u>32,004</u>	
					\$ 465,658

**Improvements:**

23 houses, 8 commercial, barns, fencing, signs, landscape & misc

\$ 1,335,000

**Relocation:**

23 residential	\$ 575,000	
8 commercial	<u>\$ 160,000</u>	
		\$ 735,000

**Damages:**

Proximity	14 parcels	\$ 185,000	
Cost To Cure-Parking Loss	3 parcels	<u>\$ 85,000</u>	
			\$ <u>270,000</u>

\$ 2,805,658

Net Cost		\$	2,805,658
Adm/Court Cost	45 %	\$	1,262,546
Inflation Factor	10 %	\$	<u>406,820</u>
		\$	4,475,025

**Total Cost**                      \$                      **4,475,100**



DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

PALLADI \_\_\_\_\_  
BY HAN \_\_\_\_\_  
ALEXANDER *Samuel* \_\_\_\_\_  
OTHER \_\_\_\_\_  
GROUPS \_\_\_\_\_  
FILE \_\_\_\_\_

FILE STP-0134 (6) Dougherty County  
P.I. #450540

OFFICE Tifton

DATE September 5, 2000

FROM *(Signature)* Donnie Murphy, District Utilities Engineer

TO Dudley Ellis, P.E. State Utilities Engineer  
Attn: Jeff Baker

SUBJECT UTILITY COST ESTIMATE

A field review of utilities located on the above referenced project has been conducted without a design concept. Listed below is a breakdown of reimbursable and non-reimbursable cost.

Bellsouth Non-Reimbursable	=	\$ 500,000.00
GA Power Company (Distribution) Non-Reimbursable	=	\$ 12,000.00
GA Power Company (Transmission) Non-Reimbursable	=	\$ 385,000.00
Reimbursable	=	\$ 83,000.00
Albany Water, Gas & Light Non-Reimbursable	=	\$1,120,500.00
AT&T Cable Services Non-Reimbursable	=	\$ 20,000.00
City of Albany Non-Reimbursable	=	\$ 300,000.00
TOTAL-Non-Reimbursable	=	\$2,337,500.00
Reimbursable	=	\$ 83,000.00



PALLADI \_\_\_\_\_  
BUCHAN \_\_\_\_\_  
ALEXANDER *Marrell*  
OTHER \_\_\_\_\_  
GENERAL FILES \_\_\_\_\_  
GROUPS \_\_\_\_\_  
FILE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ORIGINAL TO

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENT CORRESPONDENCE**

**FILE** STP-0134(6) Dougherty County  
P. I. No. 450540  
**OFFICE** Preconstruction  
**DATE** September 26, 2000  
**FROM** C. Wayne Hutto, Assistant Director of Preconstruction  
**TO** SEE DISTRIBUTION  
**SUBJECT** PROJECT CONCEPT REPORT APPROVAL

Attached for your files is the approval for subject project.

CWH/cj

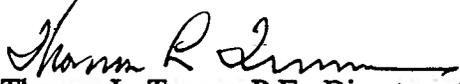
Attachment

**DISTRIBUTION:**

- Tom Turner
- David Mulling
- Harvey Keeper
- Jerry Hobbs
- Herman Griffin
- Michael Henry
- Marion Waters
- Marta Rosen
- Paul Liles
- Jimmy Chambers (ATTN: Ted Cashin)
- David Crim
- Joe Palladi

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA****INTERDEPARTMENT CORRESPONDENCE**

**FILE** STP-0134(6) Dougherty County **OFFICE** Preconstruction  
P.I. No. 450540  
**DATE** September 13, 2000

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

**TO** J. Tom Coleman, Jr., Commissioner

**SUBJECT PROJECT CONCEPT REPORT**

This project is the extension of Clark Avenue from Liberty Expressway westward, crossing the Flint River with a new bridge, then tying into the Central Business District at Washington Street. The Clark Avenue Extension is needed to provide emergency access across the Flint River and to provide traffic relief for the Oglethorpe Boulevard and Broad Avenue bridges. In 1994, the Flint River in the City of Albany experienced severe flooding. During this flood all east-west bridge crossings in Albany were closed, including the Broad Avenue and Oglethorpe Boulevard bridges. A serious consequence of this flooding was that eastern Dougherty County was separated from the emergency medical services of Phoebe-Putney Hospital, which is located west of the Flint River just north of downtown Albany. The proposed project will provide emergency access across the Flint River and the flood plains. Clark Avenue is currently a two to three lane roadway with the travel width varying from 36' to 50', including curb and gutter on both sides and a posted speed limit varying from 30 MPH to 45 MPH. The base year traffic (2004) is 12,400 VPD and the design year traffic (2024) is 22,600 VPD.

The recommended alternative (C4-2) will tie into West Society Avenue and will extend Clark Avenue from the Merritt Street intersection west of Church Street, then curving northwest and angling across the river. This alignment will provide connection to the Phoebe Putney Hospital area and the west side of Albany without impacting the proposed development along the river's frontage. The proposed typical section includes four, 12' lanes with a 16' flush median, 4' bicycle lanes, curb and gutter, and a 5' sidewalk on both sides (10' sidewalk on bridge structure). Traffic will be maintained along the existing roadway during construction.

Alternatives considered during concept development are as follows:

1. C1-1 Tying into Pine Avenue - Alignment 1
2. C1-2 Tying into Pine Avenue - Alignment 2
3. C2 Tying into Flint Avenue
- \*4. C3-1 Tying into Roosevelt Avenue - Alignment 1
5. C3-2 Tying into Roosevelt Avenue - Alignment 2

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

OFFICE OF URBAN DESIGN  
PROJECT CONCEPT REPORT SIGN-OFF FORM

Clark Avenue Extension from Liberty Expressway to  
Washington Street and new bridge

STP-0134(6)  
Dougherty County  
P.I. 450540

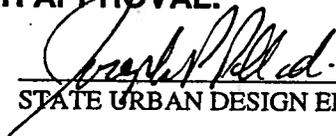
U.S. Route Number: N/A  
State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

RECOMMENDATION FOR APPROVAL:

8/15/00  
DATE

  
STATE URBAN DESIGN ENGINEER

DATE

STATE TRANSPORTATION PROGRAMMING ENGINEER

DATE

STATE ENVIRONMENTAL / LOCATION ENGINEER

DATE

STATE TRAFFIC OPERATIONS ENGINEER

DATE

DISTRICT ENGINEER

DATE

PROJECT REVIEW ENGINEER

DATE

BRIDGE DESIGN ENGINEER

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

DATE

STATE TRANSPORTATION PLANNING ADMINISTRATOR

J. Tom Coleman, Jr.

Page 2

STP-0134(6) Dougherty

September 13, 2000

\*6. C4-1 Tying into West Society Avenue - Alignment 1

\*7. C4-2 Tying into West Society Avenue - Alignment 2

8. C5 Tying into Seventh Avenue

9. C6 No Build

\* Alternatives C3-1, C4-1, and C4-2 will be taken through the environmental process to ascertain which is more feasible based on a variety of factors including cost effectiveness, historical and wetland issues, and urban structures affected.

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

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>PROG DATE</u>	<u>LET DATE</u>
Construction (includes E&C and inflation)	\$60,401,000	\$8,000,000	2002	03-09
Right-of-Way & Utilities*	Local	Local		

\*City of Albany signed LGPA on 8-20-99 for right-of-way, utilities, and 20% of sidewalk costs.

The proposed Clark Avenue Extension will provide a less flood prone bridge crossing the Flint River, serving the need for emergency medical service between eastern and western Albany. This project is in the STIP. I recommend this project concept be approved and alternative C4-2 be implemented.

TLT:JDQ/cj

Attachment

CONCUR

  
Frank L. Danchetz, P.E., Chief Engineer

APPROVE

  
J. Tom Coleman, Jr., Commissioner

**Clark Avenue Extension from Liberty Expressway to Washington St.**  
**STP-0134 (6) P.I. 450540**

Project STP-0134(6) consists of the widening and extension of Clark Avenue from Liberty Expressway westward, crossing the Flint River with a new bridge, then tying into the central business district at Washington Street. Clark Avenue improvements include widening from Liberty Expressway to Merritt Street from two lanes to four lanes and then extending the four lanes to Washington Street. The roadway would be an urban roadway, which would include 13' lanes, curb and gutter, sidewalk, bicycle lanes and a 16' flush median with the possibility of a future raised median.

The nine alternate alignments proposed for Clark Avenue are:

- |    |             |  |
|----|-------------|--|
| 1. | <b>C1-1</b> | Tying into Pine Avenue – alignment 1         |
| 2. | <b>C1-2</b> | Tying into Pine Avenue – alignment 2         |
| 3. | <b>C-2</b>  | Tying into Flint Avenue                      |
| 4. | <b>C3-1</b> | Tying into Roosevelt Avenue – alignment 1    |
| 5. | <b>C3-2</b> | Tying into Roosevelt Avenue – alignment 2    |
| 6. | <b>C4-1</b> | Tying into West Society Avenue – alignment 1 |
| 7. | <b>C4-2</b> | Tying into West Society Avenue – alignment 2 |
| 8. | <b>C5</b>   | Tying into Seventh Avenue                    |
| 9. | <b>C6</b>   | No Build                                     |

### Tying into Pine Avenue

**C1-1** Alignment one into Pine Avenue involves extending Clark Avenue from the Clark Avenue / Merritt Street intersection straight across the Flint River to a reverse curve. The curved section must span the railroad with a minimum of 30 feet of clearance. The proposed alignment ties into Pine Avenue at its furthestmost eastern end.

**C1-2** Alignment two into Pine Avenue involves extending Clark Avenue from the Clark Avenue / Merritt Street intersection and angles southward to curve across the river to another curve that merges into Pine Avenue at its furthestmost eastern end.

**Comment:** The Pine Avenue alignments would have a negative impact on the proposed River Center, which is the cornerstone of the riverfront development. It would also conflict with the Pine Avenue Trailhead, which is a proposed pedestrian plaza at the eastern terminus of Pine Avenue adjacent to the Flint River.

### Tying into Flint Avenue

**C2** The alignment into Flint Avenue involves extending Clark Avenue from the Clark Avenue / Merritt Street intersection west at a slight curve over Church

Street, then straight over Broadway Street and the Flint River to merge into the easternmost terminus of Flint Avenue.

**Comment:** The Flint alignment is not feasible due to its negative impact on the proposed River Center plan.

### **Tying into Roosevelt Avenue**

**C3-1 Alignment one** into Roosevelt Avenue involves extending Clark Avenue from the Merritt Street intersection west across Church Street and curving northwest towards the river, curving again to cross the river. Once across the river the alignment goes into a reverse curve and ties into Roosevelt Avenue.

**Comment:** This alignment misses the historical train depot, while still providing access to the proposed Riverside Center.

**C3-2 Alignment two** into Roosevelt Avenue involves extending Clark Avenue from the Merritt Street intersection curving northwest over Church Street, then curving west across the river to connect to Roosevelt Avenue.

**Comment:** This alignment is not feasible because it goes over the historical train depot located at the end of Roosevelt Avenue.

### **Tying into West Society Avenue**

**C4-1 Alignment one** into West Society Avenue involves extending Clark Avenue from the Merritt Street intersection west to Church Street, then curving northward over the Clark Avenue existing road and angling to a curve. This turns traffic westward and merges straight into West Society Avenue.

**Comment:** The West Society Avenue alignment was logical in that it would provide a good connection to the Phoebe Putney hospital area and the west side of Albany.

**C4-2 Alignment two** into West Society Avenue involves extending Clark Avenue from the Merritt Street intersection west to Church Street, then curving northwest and angling across the river. This turns traffic westward and merges straight into West Society Avenue.

**Comment:** The West Society Avenue alignment was logical in that it would provide a good connection to the Phoebe Putney hospital area and the west side of Albany.

### **Tying into Seventh Avenue**

**C-5** The alignment into Seventh Street involves extending Clark Avenue from the Merritt Street intersection west to Church Street, then curving northward over the Clark Avenue existing road and going straight north. This merges into a curve heading west to connect into Seventh Avenue.

**Comment:** The Seventh Avenue alignment is undesirable because it would disperse traffic at a great distance away from the area that it was intended to serve. It also would not relieve the traffic on Broad Avenue and Oglethorpe Boulevard bridges.

### **No Build**

**Comment:** The No Build option is undesirable because of the traffic forecasts in the area that would overload the existing facilities.

After the Public Information Meeting held in October 1999, two alternates were marked as desirable according to the comments received verbally and via a written survey sheet. They were **C3-1 Roosevelt Avenue alternate** and **C4-1 West Society Avenue alternate**.

After the Concept Team Meeting on April 19, 2000 **Alternate C4-2 West Society Avenue alternate** was identified as a possibility by John Tiernan of Bridge Design. This alternate is more easily modeled by current bridge software and a better design hydraulically.

Alternates C3-1, C4-1 and C4-2 will be taken through the environmental process to ascertain which is more feasible based on a variety of factors including cost effectiveness, historical and wetland issues, and urban structures effected.

## PROJECT CONCEPT REPORT

Clark Avenue Extension from Liberty Expressway to Washington Street & New Bridge

**DATE:** 8/8/00

**PROJECT NUMBER:** STP-0134(6)

**COUNTY:** Dougherty

**DESCRIPTION:** Road Widening and new location with a new bridge. Roosevelt Avenue Alternate (C3-1) ties to Washington Street at Roosevelt Avenue. West Society Avenue Alternates 1 (C4-1) and 2 (C4-2) tie to Washington Street at West Society Avenue.

**LENGTH:** 3.24 miles (Roosevelt Alt. C3-1) 3.62 miles (West Society Alt. C4-1) 2.59 miles (West Society Alt. C4-2)

**P.I. NO.:** 450540

**U.S. ROUTE NO.:** N/A

**STATE RT. NO.:** N/A

**LOCATION:** Clark Avenue from SR 3 / Liberty Expressway to Washington Street

### TRAFFIC

#### CURRENT

**YEAR:** 2004    **AADT:** 12,400

#### PDP CLASSIFICATION

Major

#### PROJECTED

**YEAR:** 2024    **AADT:** 22,600

#### FUNCTIONAL CLASSIFICATION

Existing: Urban Local Street / Urban Principal Arterial  
Proposed: Urban Principal Arterial

FULL OVERSIGHT ( )      EXEMPT ( X )      N/A ( )

#### EXISTING DESIGN

**TYPICAL SECTION:** Varying 2 to 3 travel lanes with a travel width varying from 36' to 50'; curb and gutter on both sides.

#### POSTED SPEED

30 to 45 m.p.h.

#### MIN. EXISTING RADIUS OF CURVE

none

#### MAX. EXISTING GRADE

5%

#### EXISTING MAJOR STRUCTURES

**FEATURES INTERSECTED:** None

**S.RTG.:** N/A

**LENGTH:** N/A

**WIDTH:** N/A

#### ACCIDENT HISTORY

The following is a summary of the accident data available for Clark Avenue.

	1995	1996
<b>Total Accidents</b>	64	49
<b>Total Injuries</b>	47	41
<b>Total Fatalities</b>	0	0
<b>Accident Rate</b>	1469	1132
<b>Injury Rate</b>	1079	947
<b>Fatality Rate</b>	0	0
<b>State Accident Rate</b>	661	671
<b>State Injury Rate</b>	319	316
<b>State Fatality Rate</b>	156	150

The accident rates and injury rates are higher than the statewide averages and indicate a need for improvements to the roadway.

All rates are per 100 million vehicles.

## PROPOSED DESIGN

**PROPOSED TYPICAL SECTION:** Four 12' travel lanes (two in each direction) and a 16' flush median for easy conversion to a raised median if accident rates rise to an unacceptable level; 4' bike lanes in each direction; curb and gutter and sidewalks on both sides within the 12' shoulders. Typical sections attached.

**PROPOSED RIGHT-OF-WAY WIDTH:** 96' total

**DESIGN SPEED:** 35 m.p.h.

**MAX. DEGREE OF CURVE:** Allowable: 11.5 Proposed: 7.4 (Roosevelt Alt. C3-1)  
8.7 (West Society Alt. C4-1)  
0.5 (West Society Alt. C4-2)

**MAX. GRADE:** Allowable: 7% Proposed: 7%

**TYPE ACCESS:** By local permit

**TRAFFIC CONTROL DURING CONSTRUCTION:** Maintain existing traffic during construction.

## PROPOSED STRUCTURES

One bridge spanning the Flint River and adjacent 500 year floodplains

## DESIGN EXCEPTIONS REQUIRED FOR CONTROLLING CRITERIA

	UNDETERMINED	YES	NO
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)
BRIDGES STRUCTURAL CAPACITY	( )	( )	(X)

**NUMBER OF PARCELS:** 146 (Roosevelt Alt.) 136 (West Society Alt.)

**DISPLACEMENTS:** 8 (Roosevelt Alt. C3-1) 7 (West Society Alt. C4-1 & C4-2)

## COORDINATION AND SCHEDULING

**CONCEPT TEAM MEETING DATE:** April 19, 2000

**CONFORMS TO TIP / STIP?** Yes

**MEETS LOGICAL TERMINI REQUIREMENTS?** Yes

**P.A.R. MEETING:** After an evaluation of the alternatives was done, it was determined that a P.A.R. would not be needed (see attached letter)

**LEVEL OF ENVIRONMENTAL ANALYSIS:** Environmental Assessment

**PUBLIC INVOLVEMENT:** Public Hearing

**PERMITS REQUIRED (COE 404, WATER, QUALITY, TVA):** COE 404 (Individual)

**TIME SAVINGS PROCEDURE APPROPRIATE:** No

### SCHEDULING CONSIDERATIONS:

**TIME TO COMPLETE ENVIRONMENTAL: (MONTHS)** 18

**TIME TO COMPLETE PRELIMINARY RD/RW PLANS: (MONTHS)** 11

**TIME TO COMPLETE 404 PERMIT: (MONTHS)** 18

**TIME TO COMPLETE FINAL CONSTRUCTION PLANS: (MONTHS)** 12

**TIME TO BUY RIGHT-OF-WAY: (MONTHS)** 30

**LOCAL GOVERNMENT COMMITMENTS:** Albany has signed a LGPA for right-of-way, utilities and 20% of sidewalk costs

### OTHER PROJECTS IN THE AREA:

SR 3 / Liberty Pkwy @ Clark Avenue SB exit ramp	NH-006-2(56)	p.i. 422560
Riverside Dr. / CS 836 from Oakridge Dr. to Philema Rd.	STP-0101(4)	p.i. 450500
Flint River Greenway Multi-use Trail	STP-000E(166)	p.i. 471430

**PROBABLE LOCATION OF UST'S:** 2 confirmed sites, 3 possible sites

**PROBABLE LOCATION OF HAZARDOUS WASTE:** unknown

#### **OTHER ALTERNATES CONSIDERED:**

- 1 No-build**
- 2. Tying into Pine Avenue – alignment 1**  
Would have a negative impact on the proposed River Center, which is the cornerstone of the riverfront development. It would also conflict with the Pine Avenue Trailhead, which is a proposed pedestrian plaza at the eastern terminus of Pine Avenue adjacent to the Flint River.
- 3. Tying into Pine Avenue – alignment 2**  
Would have a negative impact on the proposed River Center, which is the cornerstone of the riverfront development. It would also conflict with the Pine Avenue Trailhead, which is a proposed pedestrian plaza at the eastern terminus of Pine Avenue adjacent to the Flint River.
- 4. Tying into Flint Avenue**  
The Flint alignment is not feasible due to its negative impact on the proposed River Center plan.
- 5. Tying into Seventh Street**  
The Seventh Avenue alignment is undesirable because it would disperse traffic at a great distance away from the area that it was intended to serve. It also would not relieve the traffic on Broad Avenue and Oglethorpe Boulevard bridges.
- 6. Tying into Roosevelt over the train depot**  
This alignment is not feasible because it goes over the historical train depot located at the end of Roosevelt Avenue.

#### **COMMENTS:**

**The local government expressed that the two most desirable alternates at the time of the Public Information Meeting were alternates C3-1 and C4-1. Please refer to the attached letter from Albany and Dougherty County Planning and Development Services. During the concept team meeting a third alternate was determined to be most feasible and was designated to be C4-2.**

**The recommended alternate, pending all environmental and historical factors, is West Society Alternate C4-2**

**ATTACHMENTS:** Need and Purpose Statement, Cost Estimates, Sketch Map, Typical Sections, Concept Team Meeting minutes, P.A.R. analysis letter, Albany and Dougherty County Planning and Development Services letter

**Need and Purpose**  
**Clark Avenue Extension from**  
**Liberty Expressway to Washington Street**  
**STP-0134(6) Dougherty County**  
**P.I. No. 450540**

The Clark Avenue Extension is needed to provide emergency access across the Flint River and to provide traffic relief for the Oglethorpe Boulevard and Broad Avenue bridges. The Clark Avenue Extension is included in Albany's Long-Range Transportation Plan and the Transportation Improvement Program.

The Dougherty Area Regional Transportation Study (DARTS) has considered an extension of Clark Avenue over the Flint River connecting to one of several east-west streets in central Albany from Pine Avenue in downtown Albany to as far north as Seventh Avenue. The other proposed east-west connections include Flint Avenue, Roosevelt Avenue, and Society Avenue. The purpose of considering these alternate crossings was to provide capacity in order to relieve the Broad Avenue and Oglethorpe Boulevard bridges to the south. In 1994, after this proposal, the Flint River in the City of Albany experienced severe flooding. During this flooding all east-west bridge crossings in Albany were closed, including the Broad Avenue and Oglethorpe Boulevard bridges. A serious consequence of this flooding was that eastern Dougherty County was separated from the emergency medical services of Phoebe-Putney Hospital, which is located west of the Flint River just north of Downtown Albany. DARTS consequently revised the concept for the Clark Avenue extension. The revision called for a bridge that would provide emergency access across the Flint River and the floodplains.

Existing Average Annual Daily Traffic (AADT) is 14,240 vehicles per day (vpd) on the Broad Avenue Bridge and 29,650 on the Oglethorpe Boulevard Bridge. Without the Clark Avenue Extension but with the widening of Oglethorpe Boulevard, the DARTS travel demand model estimates that the AADT will be 10,460 vpd on Broad Avenue and 49,320 vpd on Oglethorpe Boulevard by the year 2025. With the Clark Avenue Bridge, the existing bridges will be relieved of between 6% (if connected to Seventh Avenue) and 30% (if connected to Pine Avenue) of the estimated traffic increase. The further north the Clark Avenue Bridge ties in, the less impact it has on the traffic on the existing bridges. If the Clark Avenue Bridge is constructed combined AADT on Broad Avenue and Oglethorpe Boulevard will be 42,150 vpd. If the Clark Avenue Bridge is not constructed the combined AADT on Broad Avenue and Oglethorpe Boulevard will be 59,780 vpd. Construction of the Clark Avenue Bridge will reduce traffic on the Broad Avenue and Oglethorpe Boulevard bridges by 17,630 vpd.

Nearby Transportation Enhancement Activity projects include the streetscaping project in historic downtown Albany (P.I. 470914, STP-000E (91)), the Pine Avenue Trailhead (P.I. 470430, STP-000E(166)) and the Albany Bicycle/Pedestrian Trail (P.I. 470916, STP-000E (90)). The Pine Avenue Trailhead and the Albany Bicycle/Pedestrian Trail projects are major considerations in planning the Clark Avenue Extension. The Pine Avenue Trailhead is a proposed pedestrian plaza at the eastern

terminus of Pine Avenue adjacent to the Flint River. The Albany Bicycle/Pedestrian Trail project will construct bicycle/pedestrian trails along the western side of the Flint River from Veteran's Plaza, near the Albany Civic Center to Philema Road, near Lakeshore Drive. The City of Albany hopes to connect its bicycle/pedestrian trail system to eastern Albany using the new Clark Avenue Bridge. The City is also considering converting the Broad Avenue Bridge from its current three-lane operation to two traffic lanes and one bicycle/pedestrian lane.

The addition of the Clark Avenue Extension will provide a less flood prone bridge crossing the Flint River, serving the need for emergency medical service between eastern and western Albany. The project also provides relief to traffic demands on the Broad Avenue and Oglethorpe Boulevard bridges. An additional benefit of the project is that it will allow the City of Albany to retain one of its historic bridges while complementing Albany's planned bicycle/pedestrian trail system.

**PRELIMINARY COST ESTIMATE**  
 URBAN DESIGN OFFICE  
 ROOSEVELT AVENUE ALTERNATE C3-1

**DATE:** 5/25/00                      **PREPARED BY:** Albert Shelby  
**PROJECT NO.:** STP-0134(6)              **FILE NAME:** Roosevelt Prelim. Cost Est.  
**P.I. NO.:** 450540                      **MILEAGE:** 3.24 miles

**PROJECT DESCRIPTION/CONCEPT:** Clark Avenue Extension from SR 3/Liberty Expressway to Washington Street with 4 lanes, a flush median, bicycle lanes and a bridge that spans the Flint River

**EXISTING ROADWAY:** Clark Avenue - varying 2 to 3 lanes with curb and gutter on both sides.

**TRAFFIC:**              **CURRENT ADT**              **PROJECTED ADT**  
                                  12,400 (2004)              22,600 (2024)

- PROGRAMMING PROCESS
- CONCEPT DEVELOPMENT
- DURING PROJECT DEVELOPMENT

**PROJECT COSTS:**

<b>A. RIGHT OF WAY</b>		lump sum			\$3,370,300
				<b>SUBTOTAL</b>	<b>\$3,370,300</b>
<b>B. UTILITIES (Reimbursable)</b>		lump sum			
				<b>SUBTOTAL</b>	<b>\$0</b>
<b>C. CLEARING AND GRUBBING</b>	18	acres	@	\$9,400	\$173,703
				<b>SUBTOTAL</b>	<b>\$173,703</b>
<b>D. EARTHWORK</b>					
Unclassified Excavation	39673	cu yd	@	\$4	\$158,691
				<b>SUBTOTAL</b>	<b>\$158,691</b>
<b>E. BASE AND PAVING</b>					
<u>Asphalt Paving</u>					
12.5 mm Superpave	6721	tons	@	\$45	\$302,425
19 mm Superpave	8961	tons	@	\$39	\$344,988
25 mm Superpave	13441	tons	@	\$37	\$497,321
Bituminous Tack Coat	3258	gallons	@	\$1	\$4,692
Leveling		tons	@	\$41	
<u>Aggregate Base</u>					
Graded Aggregate Base 10"	44577	tons	@	\$12	\$527,351
				<b>SUBTOTAL</b>	<b>\$1,676,777</b>
<b>F. DRAINAGE</b>					
<u>Drainage Lump Sum</u>					
Cost per Mile	2	miles	@	\$250,000	\$495,909
				<b>SUBTOTAL</b>	<b>\$495,909</b>

Roosevelt Alternate - C3-1  
Preliminary Cost Estimate

Cost Estimate

**G. CONCRETE WORK**

Curb and Gutter (Type 2)	20947	lin. ft.	@	\$11	\$233,561
4" Sidewalk	11637	sy	@	\$19	\$222,040
Concrete Parapet, Spcl Design	13239	lin. ft.	@	\$75	\$992,903
				<b>SUBTOTAL</b>	<b>\$1,448,505</b>

**H. TRAFFIC CONTROL**

				lump sum	\$88,555
				<b>SUBTOTAL</b>	<b>\$88,555</b>

**I. EROSION CONTROL**

				lump sum	\$35,422
				<b>SUBTOTAL</b>	<b>\$35,422</b>

**J. GUARDRAIL**

W-Beam Rail	5983	lin ft	@	\$11	\$63,541
T-Beam Rail	120	lin ft	@	\$28	\$3,344
Type 1 Anchors	2	each	@	\$426	\$852
Type 12 Anchors	2	each	@	\$1,574	\$3,149
				<b>SUBTOTAL</b>	<b>\$70,886</b>

**K. SIGNS, STRIPPING, SIGNALS, LIGHTING**

Striping				lump sum	\$20,233
Roadside Signs				lump sum	\$11,564
Traffic Signals	2	each	@	\$50,000	\$100,000
Lighting				lump sum	\$556,295
				<b>SUBTOTAL</b>	<b>\$688,092</b>

**L. GRASSING/LANDSCAPING**

				lump sum	\$3,543
				<b>SUBTOTAL</b>	<b>\$3,543</b>

**M. MICELLANEOUS**

Field Engineers Office Tp. 2	1	each	@	\$28,000	\$28,000
Fencing		lin ft	@	\$19	\$0
Right-of-Way Markers		each	@	\$66	\$0
				<b>SUBTOTAL</b>	<b>\$28,000</b>

**N. MAJOR STRUCTURES**

Bridges	688413	sq. ft.	@	\$50	\$34,420,649
Walls			@		\$0
				<b>SUBTOTAL</b>	<b>\$34,420,649</b>

**ESTIMATE SUMMARY**

A. Right of Way	\$3,370,300
B. Reimbursable Utilities	\$0

**CONSTRUCTION COST SUMMARY**

C. Clearing and Grubbing	\$173,703
D. Earthwork	\$158,691
E. Base and Paving	\$1,676,777
F. Drainage	\$495,909
G. Concrete Work	\$1,448,505
H. Traffic Control	\$88,555
I. Erosion Control	\$35,422
J. Guardrail	\$70,886
K. Signs, Striping, Signals, Lighting	\$688,092
L. Grassing / Landscaping	\$3,543
M. Miscellaneous	\$28,000

**SUBTOTAL CONSTRUCTION**      **\$4,868,082**

N.      Major Structures      \$34,420,649

**SUBTOTAL**      **\$39,288,731**

5      years of inflation at      4      %      \$10,854,752

10 % E & C      \$501,435

**TOTAL CONSTRUCTION ESTIMATE:**      **\$50,644,918**

**PRELIMINARY COST ESTIMATE**  
URBAN DESIGN OFFICE  
**WEST SOCIETY ALTERNATE C4-1**

**DATE:** 5/25/00                      **PREPARED BY:** Albert Shelby  
**PROJECT NO.:** STP-0134(6)              **FILE NAME:** West Society Prelim Cost Est.  
**P.I. NO.:** 450540                      **MILEAGE:** 3.62 miles  
**PROJECT DESCRIPTION/CONCEPT:** Clark Avenue Extension from SR 3/Liberty Expressway to Washington Street with 4 lanes, a flush median, bicycle lanes and a bridge that spans the Flint River

**EXISTING ROADWAY:** Clark Avenue - varying 2 to 3 lanes with curb and gutter on both sides.

**TRAFFIC:**              **CURRENT ADT**              **PROJECTED ADT**  
                                 12,400 (2004)              22,600 (2024)

- PROGRAMMING PROCESS
- CONCEPT DEVELOPMENT
- DURING PROJECT DEVELOPMENT

**PROJECT COSTS:**

<b>A. RIGHT OF WAY</b>				lump sum		\$4,475,100
					<b>SUBTOTAL</b>	<b>\$4,475,100</b>
<b>B. UTILITIES (Reimbursable)</b>				lump sum		\$0
					<b>SUBTOTAL</b>	<b>\$0</b>
<b>C. CLEARING AND GRUBBING</b>	18	acres	@		\$9,400	\$170,242
					<b>SUBTOTAL</b>	<b>\$170,242</b>
<b>D. EARTHWORK</b>						
Unclassified Excavation	39026	cu yd	@		\$4	\$156,105
					<b>SUBTOTAL</b>	<b>\$156,105</b>
<b>E. BASE AND PAVING</b>						
<u>Asphalt Paving</u>						
12.5 mm Superpave	6611	tons	@		\$45	\$297,498
19 mm Superpave	8815	tons	@		\$39	\$339,368
25 mm Superpave	13222	tons	@		\$37	\$489,219
Bituminous Tack Coat	3205	gallons	@		\$1	\$4,616
Leveling		tons	@		\$41	
<u>Aggregate Base</u>						
Graded Aggregate Base 10"	43851	tons	@		\$12	\$518,759
					<b>SUBTOTAL</b>	<b>\$1,649,460</b>
<b>F. DRAINAGE</b>						
<u>Drainage Lump Sum</u>						
Cost per Mile	2	miles	@		\$250,000	\$487,829
					<b>SUBTOTAL</b>	<b>\$487,829</b>

**G. CONCRETE WORK**

Curb and Gutter (Type 2)	20606	lin. ft.	@	\$11	\$229,756
4" Sidewalk	11448	sy	@	\$19	\$218,423
Concrete Parapet, Spcl Design	17602	lin. ft.	@	\$75	\$1,320,128
				<b>SUBTOTAL</b>	<b>\$1,768,307</b>

**H. TRAFFIC CONTROL**

lump sum \$87,113

**SUBTOTAL \$87,113**

**I. EROSION CONTROL**

lump sum \$34,845

**SUBTOTAL \$34,845**

**J. GUARDRAIL**

W-Beam Rail	5642	lin ft	@	\$11	\$59,917
T-Beam Rail	120	lin ft	@	\$28	\$3,344
Type 1 Anchors	2	each	@	\$426	\$852
Type 12 Anchors	2	each	@	\$1,574	\$3,149
				<b>SUBTOTAL</b>	<b>\$67,262</b>

**K. SIGNS, STRIPPING, SIGNALS, LIGHTING**

Striping				lump sum	\$22,613
Roadside Signs				lump sum	\$12,924
Traffic Signals	2	each	@	\$50,000	\$100,000
Lighting				lump sum	\$665,787
				<b>SUBTOTAL</b>	<b>\$801,324</b>

**L. GRASSING/LANDSCAPING**

lump sum \$3,485

**SUBTOTAL \$3,485**

**M. MICELLANEOUS**

Field Engineers Office Tp. 2	1	each	@	\$28,000	\$28,000
Fencing		lin ft	@	\$19	\$0
Right-of-Way Markers		each	@	\$66	\$0
				<b>SUBTOTAL</b>	<b>\$28,000</b>

**N. MAJOR STRUCTURES**

Bridges	915289	sq. ft.	@	\$50	\$45,764,451
Walls			@		\$0
				<b>SUBTOTAL</b>	<b>\$45,764,451</b>

**ESTIMATE SUMMARY**

A. Right of Way	\$4,475,100
B. Reimbursable Utilities	\$0

**CONSTRUCTION COST SUMMARY**

C. Clearing and Grubbing	\$170,242
D. Earthwork	\$156,105
E. Base and Paving	\$1,649,460
F. Drainage	\$487,829
G. Concrete Work	\$1,768,307
H. Traffic Control	\$87,113
I. Erosion Control	\$34,845
J. Guardrail	\$67,262
K. Signs, Striping, Signals, Lighting	\$801,324
L. Grassing / Landscaping	\$3,485
M. Miscellaneous	\$28,000

**SUBTOTAL CONSTRUCTION \$5,253,972**

N. Major Structures \$45,764,451

**SUBTOTAL \$51,018,424**

5 years of inflation at 4 % \$14,095,450

10 % E & C \$651,139

**TOTAL CONSTRUCTION ESTIMATE: \$65,765,012**

**PRELIMINARY COST ESTIMATE**  
**URBAN DESIGN OFFICE**  
**WEST SOCIETY ALTERNATE C4-2**

**DATE:** 5/25/00                      **PREPARED BY:** Albert Shelby  
**PROJECT NO.:** STP-0134(6)              **FILE NAME:** West Society2 Prelim Cost Est.  
**P.I. NO.:** 450540                      **MILEAGE:** 2.59 miles  
**PROJECT DESCRIPTION/CONCEPT:** Clark Avenue Extension from SR 3/Liberty Expressway to Washington Street with 4 lanes, a flush median, bicycle lanes and a bridge that spans the Flint River

**EXISTING ROADWAY:** Clark Avenue - varying 2 to 3 lanes with curb and gutter on both sides.

**TRAFFIC:**              **CURRENT ADT**              **PROJECTED ADT**  
                                 12,400 (2004)              22,600 (2024)

- PROGRAMMING PROCESS
- CONCEPT DEVELOPMENT
- DURING PROJECT DEVELOPMENT

**PROJECT COSTS:**

<b>A. RIGHT OF WAY</b>						
				Jump sum		\$4,475,100
					<b>SUBTOTAL</b>	<b>\$4,475,100</b>
<b>B. UTILITIES (Reimbursable)</b>				Jump sum		\$0
					<b>SUBTOTAL</b>	<b>\$0</b>
<b>C. CLEARING AND GRUBBING</b>	17	acres	@	\$9,400		\$159,015
					<b>SUBTOTAL</b>	<b>\$159,015</b>
<b>D. EARTHWORK</b>						
Unclassified Excavation	36930	cu yd	@	\$4		\$147,719
					<b>SUBTOTAL</b>	<b>\$147,719</b>
<b>E. BASE AND PAVING</b>						
<u>Asphalt Paving</u>						
12.5 mm Superpave	6256	tons	@	\$45		\$281,516
19 mm Superpave	8341	tons	@	\$39		\$321,137
25 mm Superpave	12512	tons	@	\$37		\$462,937
Bituminous Tack Coat	3033	gallons	@	\$1		\$4,368
Leveling		tons	@	\$41		
<u>Aggregate Base</u>						
Graded Aggregate Base 10"	41495	tons	@	\$12		\$490,891
					<b>SUBTOTAL</b>	<b>\$1,560,848</b>
<b>F. DRAINAGE</b>						
<u>Drainage Lump Sum</u>						
Cost per Mile	2	miles	@	\$250,000		\$461,622
					<b>SUBTOTAL</b>	<b>\$461,622</b>

West Society Alternate - C4-2  
Preliminary Cost Estimate

Cost Estimate

G. CONCRETE WORK

Curb and Gutter (Type 2)	19499	lin. ft.	@	\$11	\$217,413
4" Sidewalk	10833	sy	@	\$19	\$206,689
Concrete Parapet, Spcl Design	15705	lin. ft.	@	\$75	\$1,177,900

**SUBTOTAL \$1,602,001**

H. TRAFFIC CONTROL lump sum \$82,433

**SUBTOTAL \$82,433**

I. EROSION CONTROL lump sum \$32,973

**SUBTOTAL \$32,973**

J. GUARDRAIL

W-Beam Rail	4535	lin ft	@	\$11	\$48,160
T-Beam Rail	120	lin ft	@	\$28	\$3,344
Type 1 Anchors	2	each	@	\$426	\$852
Type 12 Anchors	2	each	@	\$1,574	\$3,149

**SUBTOTAL \$55,506**

K. SIGNS, STRIPPING, SIGNALS, LIGHTING

Striping				lump sum	\$16,164
Roadside Signs				lump sum	\$9,238
Traffic Signals	2	each	@	\$50,000	\$100,000
Lighting				lump sum	\$665,787

**SUBTOTAL \$791,190**

L. GRASSING/LANDSCAPING lump sum \$3,298

**SUBTOTAL \$3,298**

M. MICELLANEOUS

Field Engineers Office Tp. 2	1	each	@	\$28,000	\$28,000
Fencing		lin ft	@	\$19	\$0
Right-of-Way Markers		each	@	\$66	\$0

**SUBTOTAL \$28,000**

N. MAJOR STRUCTURES

Bridges	816677	sq. ft.	@	\$50	\$40,833,855
Walls			@		\$0

**SUBTOTAL \$40,833,855**

**ESTIMATE SUMMARY**

A. Right of Way	\$4,475,100
B. Reimbursable Utilities	\$0

**CONSTRUCTION COST SUMMARY**

C. Clearing and Grubbing	\$159,015
D. Earthwork	\$147,719
E. Base and Paving	\$1,560,848
F. Drainage	\$461,622
G. Concrete Work	\$1,602,001
H. Traffic Control	\$82,433
I. Erosion Control	\$32,973
J. Guardrail	\$55,506
K. Signs, Striping, Signals, Lighting	\$791,190
L. Grassing / Landscaping	\$3,298
M. Miscellaneous	\$28,000

**SUBTOTAL CONSTRUCTION** \$4,924,604

N. Major Structures \$40,833,855

**SUBTOTAL** \$45,758,459

5 years of inflation at 4 % \$12,642,219

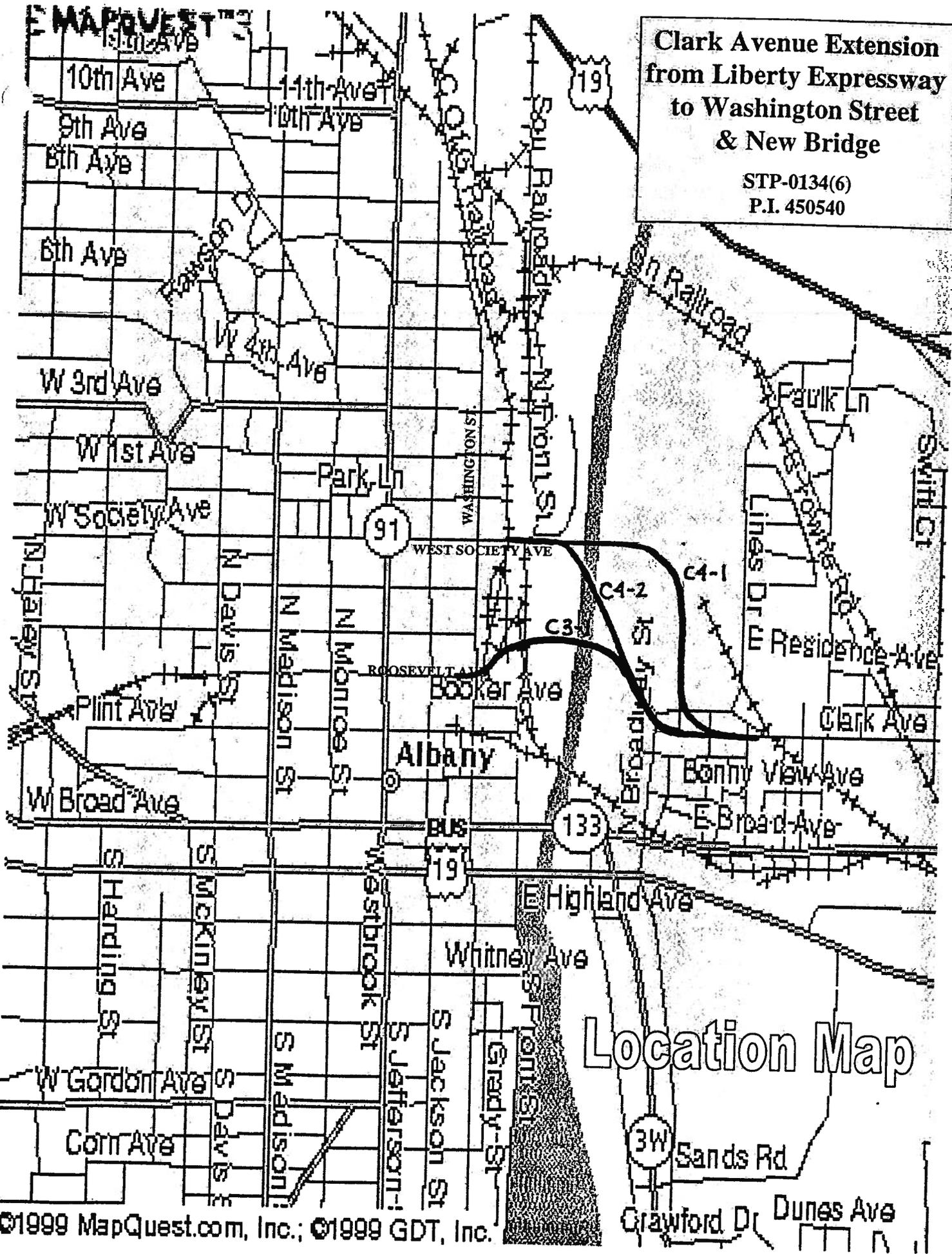
10 % E & C ~~\$584,007~~

*5,491,000 - 10%.*

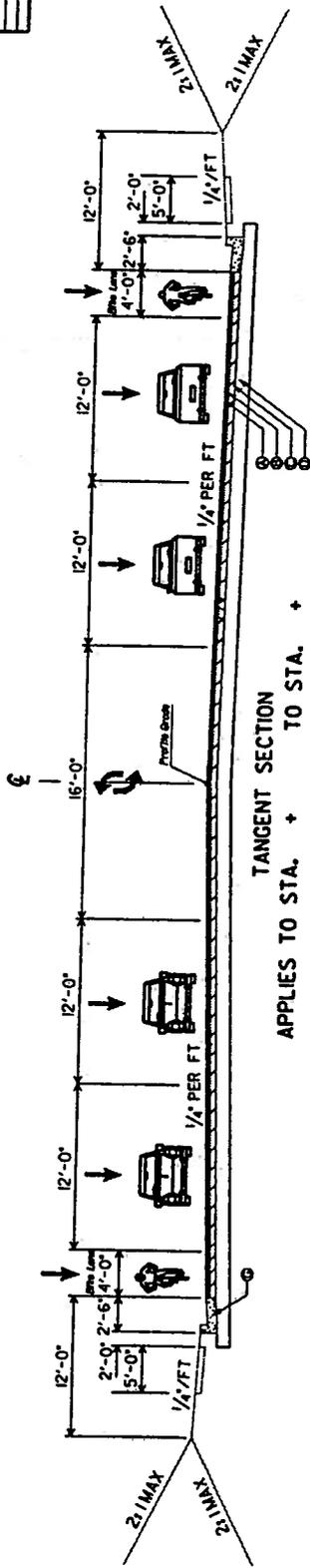
**TOTAL CONSTRUCTION ESTIMATE:** \$58,984,684

**Clark Avenue Extension  
from Liberty Expressway  
to Washington Street  
& New Bridge**

STP-0134(6)  
P.I. 450540



STATE	PROJECT NUMBER	SCALE
GA.	STP-0134(6)	1/8" = 1'-0"
	DATE	
	DESIGNED BY	
	CHECKED BY	
	APPROVED BY	

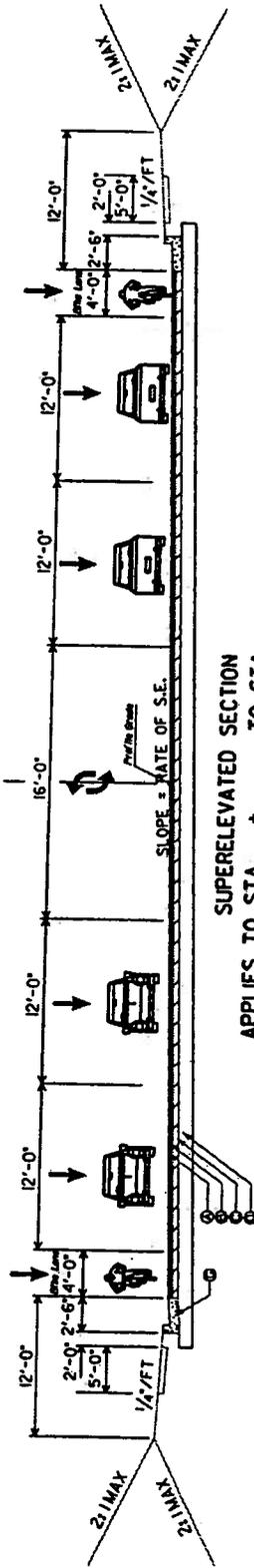


TANGENT SECTION

APPLIES TO STA. + TO STA. +

TYPICAL SECTION NO. 1

5 -LANE WITH BIKE LANES



SUPERELEVATED SECTION

APPLIES TO STA. + TO STA. +

TYPICAL SECTION NO. 2

5 -LANE WITH BIKE LANES

STATES OF GEORGIA  
DEPARTMENT OF TRANSPORTATION  
OFFICE OF URBAN DESIGN

STP-0134(6)  
TYPICAL SECTIONS  
CLARK AVENUE EXTENSION



MEETING/CONFERENCE RECORD OF ATTENDEES

PURPOSE: Clark Avenue Extension CONCEPT TEAM MEETING

LOCATION: Urban Design Conference Room

DATE: April 19, 2000 HOUR: 1:00

MODERATOR: \_\_\_\_\_

	<u>NAME</u>	<u>ORGANIZATION</u>	<u>TELEPHONE NO.</u>
1.	Tim Smith	GDOT-TRAFFIC OPS	404-635-8126
2.	JAN C HILLIARD	GDOT-URBAN DESIGN	4-656-5445
3.	Ken Estes	GDOT Traffic Ops	4-635-8127
4.	Katie Mullins	GDOT Programming	4-656-5445-703
5.	David Crim	GDOT Dist 4	912 386 3280
6.	JOE W. SAEFFELD	GDOT DIST 4	912-386-3300
7.	Don R. Gaskins	GDOT Dist 4	912-386-3045
8.	Joe Wheeler	GDOT-Urban Design	404-656-5445
9.	Joe Palladi	GDOT-Urban Design	4-656-5446
10.	Albert Shelby	GDOT-Urban Design	4-656-5445
11.	ROBERT HOLMES	GDOT-URBAN DESIGN	4-656-5445
12.	John P. Tierman	GDOT-BRIDGE DESIGN	4-656-5284
13.	Susan Beck	GDOT-Bridge Design	4-656-5285
14.	Ben Buchan	GDOT-Urban Design	4-656-5454
15.	W. P. LANGDALE	BOARD MEMBER	912-7450
16.	BOB ALEXANDER	CITY OF ALBANY	912 431-2170
17.	David Mullins	GDOT-Eng. Serv.	404-656-6846
18.	MATTHEW FOWLER	GDOT-PLANNING	404-657-6913
19.	Richard Williams	GDOT-ENV	404 699-4409
20.	_____	_____	_____

REMARKS: \_\_\_\_\_

**MINUTES OF THE  
CONCEPT TEAM MEETING  
PROJECT STP-0134(6) DOUGHERTY COUNTY  
P. I. NUMBER 450540  
APRIL 19, 2000**

The meeting was held as scheduled by Joe Palladi in correspondence dated March 28, 2000. The meeting was held in room 352 of the GDOT General Office in Atlanta beginning at 1:00 P. M.

Jan Hilliard opened the meeting and welcomed the attendees. She asked the attendees to introduce themselves and explain their role in the project.

Albert Shelby explained the project as shown on the concept display. The following items were presented:

- Clark Avenue is classified as an urban local street between Merritt Street and Blaylock Avenue. From Blaylock Avenue to the Liberty Expressway, it is classified as a principal arterial.
- The existing typical section is 2-3 lanes with urban shoulders
- The proposed typical section is four lanes (two in each direction) with a two way left turn lane. Also included are bike lanes (both directions), urban shoulders, and sidewalks (both sides).
- The existing Clark Avenue will be widened from the beginning of the project to Merritt Street. Beginning at Merritt Street, the project will be on new location and will tie to either Roosevelt Avenue or West Society Avenue.
- The estimated cost is \$20,200,000 for the Roosevelt Avenue alternate and \$23,300,000 for the West Society Avenue.
- The speed design is 35 mph.
- Access is by local permit.
- The proposed bridge over the Flint River is to span the 500 year flood plain. It is also desirable for the profile of the bridge to be above the 500 year flood elevation.
- Utility companies with existing facilities on the project were identified.

- Reference was made to a display that showed several alternate alignments that had been presented at an earlier Public Information Meeting. These alignments and the reasons for their rejection were explained as follows:

- 1) ***Tying into Pine Avenue –2 alignments*** - Both alignments would have a negative impact on the proposed River Center that is the cornerstone of the riverfront development. They would also conflict with the proposed Pine Avenue Trailhead. This is a pedestrian plaza at the eastern terminus of Pine Avenue adjacent to the Flint River.
- 2) ***Tying into Flint Avenue*** – This alignment is not feasible due to its negative impact on the proposed River Center.
- 3) ***Tying into Seventh Street*** – This alignment is undesirable because it would disperse traffic away from the downtown area that it was intended to serve. This alternate also would not provide any relief to the Broad Avenue and Oglethorpe Boulevard bridges.
- 4) ***Tying into Roosevelt Avenue over the train depot*** – This alignment is not feasible because it goes over the historical train depot (Throneteeska).
- 5) ***No build*** – This alternate would not fulfill the need and purpose of the project.

- Traffic is to be maintained during construction.
- The level of environmental analysis is expected to be an environmental assessment and a PAR meeting. Environmental concerns include historical sites, UST's, and wetlands.
- Other projects in the area were referenced.

Joe Palladi noted that there was no way for people to cross the Flint River during the last flood and that this project would provide emergency access to the hospitals located on the west side of the river.

Jan Hilliard referenced a previous meeting with planners from the City of Albany and the Albany Tomorrow group. Those two bodies had stated their desire to provide a river center development in downtown Albany near Flint Avenue.

Jan asked each individual office for comments/questions as follows:

- ***Engineering Services*** – no comment
- ***Programming*** – no comment

- **Traffic Operations** – Ken Estes asked questions as follows:  
**When will a decision be made as to the alternate used?**  
 Joe Palladi responded that the decision will come through the environmental and PAR process.  
**What typical section will be used?**  
 A five lane section will be recommended in the concept report.  
**What is the typical section of Clark Avenue where it ties on the east end?**  
 Part of Clark Avenue is five lanes and part of it is four lanes with a median.  
**If a five lane section is used, will the intersections with overlapping left turns function properly?**  
 Joe Palladi acknowledged that some adjustments to the side streets will need to be made.
- **Dougherty County Engineering** – Bob Alexander noted that they want Radium Springs Road to connect to Clark Avenue. He also said that using the Roosevelt Avenue alignment would require re-alignment of the railroad and installation of gates, lights, and bells at the crossing. Using the West Society Avenue alignment would provide another exit for the stadium. He added that the city had expressed a slight preference for the Roosevelt Avenue alignment.
- **District 4** – Joe Sheffield asked what would be done about the railroad if the Roosevelt Avenue alignment is used. The proposal is that the Roosevelt Avenue alignment would span the railroad. It was acknowledged that it would be desirable if the railroad agreed to close some of the tracks. Joe noted that the proposed road would have a steep grade if the Roosevelt Avenue alternate is used. This would present a challenge in providing access to the historical properties along this alignment. Joe also requested that a more detailed project location map be included in the final concept report.
- **Environment/Location** – Rich Williams noted that their concerns were with the wetlands and the 404 permitting process.
- **Bridge Design hydraulics** – Susan Beck commented that both locations were bad for a crossing and that she recommended the no build alternate. She expressed concern for the regulatory floodway. She was unsure of the effect that fill would have on the hydraulics of the area. She added that the software that is currently utilized in Bridge Design cannot properly analyze this situation and that they would probably have to hire a consultant. She suggested that consideration be given to an alignment that ties into West Society Avenue, crosses the river at a skew and then ties to the Roosevelt Avenue alternate on the eastern side of the river. She noted that they

ordinarily base their designs on 100 year storms. In response to Susan's suggested alignment, Ben Buchan asked "What are the chances of going straight across the river from where Clark Avenue presently ends?" It was agreed that there was no chance of this happening due to the impact that this would have on the river center and Thronateeksa area.

- **Bridge Design structures** – John Tieman said that he was confused about the location of the wetlands as shown on the concept display. Albert Shelby stated that they were drawn correctly based on the information that he had been provided. Joe Sheffield expressed concern about being able to get to the bridge if the approaches were flooded. John Tieman noted that the floodway could be changed but the local government would be required to get every property owner affected to agree to the change. John also noted that the skew for the Roosevelt Avenue alternate is terrible for crossing the railroad.
- **Urban Design** – Ben Buchan said that the concept report should clearly state the year storm for which the project is being designed. He noted the traffic that the project brings to the other river crossings and questioned whether this is a benefit or a need. Ben also questioned the dual functional classification for the road and stated that there should only be one classification. Joe Palladi added that it should be classified as an urban arterial. Ben commented that the design traffic by alternate should be clarified. Albert Shelby stated that the actual design traffic volumes do not vary for the Roosevelt Avenue and West Society Avenue alternates. Ben also noted that the Need and Purpose statement states that the existing traffic on Broad Street is given as 14240 vehicles per day and that it will decrease to 10000 vehicles per day if the project is not built. Ben questioned the accuracy of this statement.
- **State Transportation Board** – Billy Langdale did not have any comments but did inquire about the schedule. Don Gaskins replied that the project is scheduled for a FY 2004 letting. Joe Palladi restated that the bridge is useless if the approaches are inundated. He cited a need for a gentle grade, as opposed to relatively steep grades, so that the bridge could be more accessible to pedestrians and bicyclists. Joe added that it might be necessary to research another alternate (including profile information) before the concept report is submitted. Mr. Langdale mentioned the Jim Allen company. This company has used private funds to build several bridge projects in Alabama. Mr. Langdale explained the team approach that the company uses to determine the location of their bridges. Joe Palladi added that he was familiar with the company and also noted that their bridges are toll facilities.

Joe Palladi said that the Urban Design office would issue a concept report with a recommendation so that the environmental process could begin. He warned that if a suitable location for the river crossing could not be found, then there would be no road project. He said that the PAR should be held as soon as possible. If necessary, a revised concept based on the PAR recommendations can be issued.

Joe Palladi stressed that the project is important to the City of Albany and also to the Lieutenant Governor.

Joe Sheffield asked about the existing sections for Roosevelt Avenue and West Society Avenue. Bob Alexander answered that Roosevelt Avenue has a railroad in the middle of the street and has 120 feet of right of way. West Society has 80 feet of right of way with 36 feet of pavement that includes 2 lanes and parking.

Joe Palladi noted that Roosevelt Avenue has an advantage because of the receiving width of the existing section. Albert Shelby added that this alignment ties directly into Gillionville Road thus providing a good east-west access.

Albert Shelby asked if the team had reached a consensus about using a five-lane section. Joe Palladi stated that a raised median would be preferable but added that the Department has built other projects that include four 13-foot wide lanes and a 16-foot wide flush median. If the accident rates rise to unacceptable levels, the road can easily be converted to four 12-foot lanes with a 20-foot raised median. Ken Estes replied that this approach was reasonable. Joe Palladi said that this section would be recommended in the concept report.

The meeting was adjourned at 1:45 P. M.

Respectfully submitted,



DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

PALLADI \_\_\_\_\_  
BUCHAN Jew  
ALEXANDER \_\_\_\_\_  
OTHER \_\_\_\_\_  
GROUPS \_\_\_\_\_  
FILE \_\_\_\_\_

FILE P.I. #450540

OFFICE Environment/Location

DATE July 14, 2000

HDK  
FROM Harvey D. Keeper, State Environment/Location Administrator

TO Joe Palladi, P.E., State Urban Design Engineer  
attn: Joe Wheeler

SUBJECT Project STP-0134(6), Dougherty County, Clarke Avenue Extension

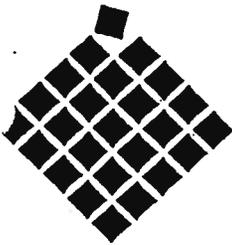
As requested, this office has reviewed the three alternatives in order to determine if a Practical Alternative Report (PAR) analysis was needed for the subject project. The three alternatives were field reconnoitered in order to determine the impacts to wetlands and other non-wetland waters of the U.S. Based on the results of the field surveys, the only alternative that would require a PAR is Alternate #1, West Society Avenue Tie-in C4-1, due to the 900 foot longitudinal encroachment.

However, this office has been notified that this alternative is not being considered. Alternates #2 and #3, Roosevelt Avenue Tie-in C3-1 and West Society Avenue Tie-in C4-2, respectively, would not require a PAR due to no or minimal impacts. The second alternative would however require a permit since the project would have minimal wetland impacts. The third alternative, the Department's preferred alternative, would not require a 404 permit, as currently proposed, since there are not impacts to any waters of the U.S.

If you have any questions or need additional information regarding this matter, please feel free to contact John Hutton at (404) 699-4429 or Lisa Westberry at (404) 699-4433.

HDK/lmw

cc: Tom Turner



# PLANNING & DEVELOPMENT SERVICES

*Serving the Citizens of Albany and Dougherty County*

1111 PINE AVENUE/P.O. BOX 447 ALBANY, GEORGIA 31702-0447

PHONE: 912-438-3900 FAX: 912-438-3965

BILLYAN \_\_\_\_\_  
 ROSS J.W. \_\_\_\_\_  
 WHITEHURST \_\_\_\_\_  
 GROUPS \_\_\_\_\_  
 FILE \_\_\_\_\_  
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Joseph P. Palladi, P.E.  
 State Urban Design Engineer, Georgia Department of Transportation  
 #2 Capitol Square, S.W.  
 Atlanta, Georgia 30334-1002

Dear Mr. Palladi:

As per the Department of Transportation's request for the review of the proposed alignments that will be presented in a Public Information Meeting (PIM), the two alignments that are the most desirable and the most feasible are the north, curved Roosevelt tie-in and the straight Society tie-in.

The bicycle lanes and the various road diagrams are still being researched and Merle Grimes is making the recommendations. If you have any questions please call Merle Grimes at (303) 571-5787.

Sincerely,

Tracy Hester  
 APADS Interim Director

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

OFFICE OF URBAN DESIGN  
PROJECT CONCEPT REPORT SIGN-OFF FORM

Clark Avenue Extension from Liberty Expressway to  
Washington Street and new bridge

STP-0134(6)  
Dougherty County  
P.I. 450540

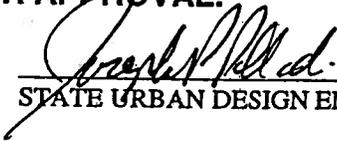
U.S. Route Number: N/A  
State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

RECOMMENDATION FOR APPROVAL:

8/15/00  
DATE

  
STATE URBAN DESIGN ENGINEER

\_\_\_\_\_  
DATE

\_\_\_\_\_  
STATE TRANSPORTATION PROGRAMMING ENGINEER

\_\_\_\_\_  
DATE

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STATE ENVIRONMENTAL / LOCATION ENGINEER

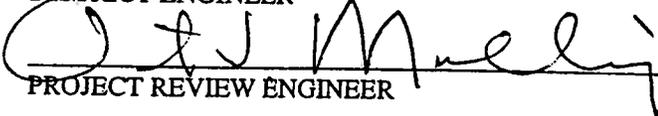
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STATE TRAFFIC OPERATIONS ENGINEER

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DISTRICT ENGINEER

8/16/00  
DATE

  
PROJECT REVIEW ENGINEER

\_\_\_\_\_  
DATE

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BRIDGE DESIGN ENGINEER

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

\_\_\_\_\_  
DATE

\_\_\_\_\_  
STATE TRANSPORTATION PLANNING ADMINISTRATOR

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

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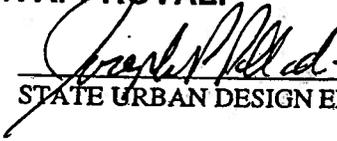
U.S. Route Number: N/A  
State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

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STATE URBAN DESIGN ENGINEER

DATE

STATE TRANSPORTATION PROGRAMMING ENGINEER

DATE

STATE ENVIRONMENTAL / LOCATION ENGINEER

DATE

STATE TRAFFIC OPERATIONS ENGINEER

DATE

DISTRICT ENGINEER

DATE

PROJECT REVIEW ENGINEER

8/17/00  
DATE

  
BRIDGE DESIGN ENGINEER

*alternate C4-2  
is least desirable  
from a bridge standpoint.*

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DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

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STP-0134(6)  
Dougherty County  
P.I. 450540

U.S. Route Number: N/A  
State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

RECOMMENDATION FOR APPROVAL:

8/15/00  
DATE

*Joseph P. McLeod*  
STATE URBAN DESIGN ENGINEER

\_\_\_\_\_  
DATE

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STATE TRANSPORTATION PROGRAMMING ENGINEER

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DATE

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STATE ENVIRONMENTAL / LOCATION ENGINEER

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DATE

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STATE TRAFFIC OPERATIONS ENGINEER

8-24-00  
DATE

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DISTRICT ENGINEER

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DATE

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PROJECT REVIEW ENGINEER

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DATE

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BRIDGE DESIGN ENGINEER

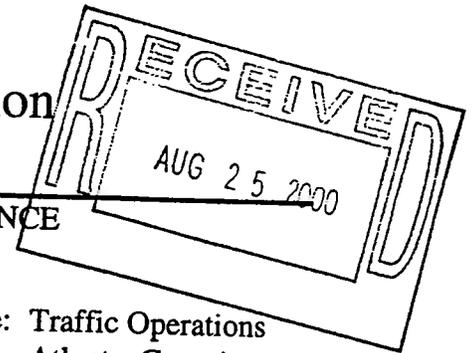
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DATE

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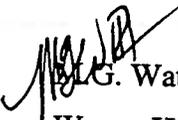
Department of Transportation  
State of Georgia

INTERDEPARTMENTAL CORRESPONDENCE



File: STP-0134(6)/Dougherty County  
P.I. No. 450540

Office: Traffic Operations  
Atlanta, Georgia  
Date: August 18, 2000

From:  G. Waters, III, P.E., State Traffic Operations Engineer  
To: Wayne Hutto, Assistant Director of Preconstruction

Subject: Project Concept Report Review

We have reviewed the concept report on the above project for the widening and improvements to Clark Avenue, including a new bridge spanning the Flint River.

The accepted alternate would tie into West Society Avenue, and involves extending Clark Avenue from the Merritt Street intersection west to Church Street, then curving northwest and angling across the river. This alignment will provide connection to the *Phoebe Putney Hospital* area and the west side of Albany, without interfering with proposed development along the river's frontage.

Clarke Avenue, is currently a two to three lane roadway with the travel width varying from 36 to 50 feet, including curb and gutter on both sides and a posted speed limit varying from 30 to 45mph. The accident and injury rates, for the 1995 and 1996 inventoried years, were higher than the statewide average for a facility of this type. The 2004 AADT is expected at 12,400vpd, rising to 22,600vpd by the 2024 design year.

The proposed typical section includes four 12 foot travel lanes with a 16 foot flush median, 4 foot bicycle lanes, curb and gutter, and a 5 foot sidewalk on both sides. Originally, the proposal was to include 13 foot travel lanes and a 16 foot flush median, with the intention of providing a 20 foot raised median, if future needs were warranted.

We recommend including a typical section with 13 foot travel lanes, for the inclusion of the preferred 20 foot wide raised median.

We believe this concept will improve safety and traffic operations along this section of roadway.

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

OFFICE OF URBAN DESIGN  
PROJECT CONCEPT REPORT SIGN-OFF FORM

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STP-0134(6)  
Dougherty County  
P.I. 450540

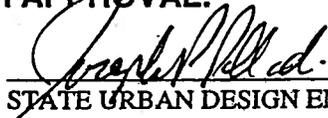
U.S. Route Number: N/A  
State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

RECOMMENDATION FOR APPROVAL:

8/15/00  
DATE

  
STATE URBAN DESIGN ENGINEER

DATE

STATE TRANSPORTATION PROGRAMMING ENGINEER

DATE

STATE ENVIRONMENTAL LOCATION ENGINEER

8/23/2000  
DATE

  
STATE TRAFFIC OPERATIONS ENGINEER

DATE

DISTRICT ENGINEER

DATE

PROJECT REVIEW ENGINEER

DATE

BRIDGE DESIGN ENGINEER

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State Route Number: N/A

Date of Report: August 8, 2000  
Project Manager: Joe Wheeler

(See attached location map)

RECOMMENDATION FOR APPROVAL:

8/15/00  
DATE

*Joseph P. McLeod*  
STATE URBAN DESIGN ENGINEER

\_\_\_\_\_  
DATE

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STATE TRANSPORTATION PROGRAMMING ENGINEER

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STATE ENVIRONMENTAL / LOCATION ENGINEER

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8/22/00  
DATE

*Merita T. Rosen*  
STATE TRANSPORTATION PLANNING ADMINISTRATOR

# ***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 Nov. 27 – Nov. 30, 2007 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.	Highway Design Engineer
Ron Hale, P.E.	Highway Construction Specialist
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**
  - **Project Basic Functions**
    - **Construct Additional Traffic Lanes**
    - **Construction Additional Turn Lanes**
    - **Provide Separation of Traffic**
    - **Provide “U” Turn Lanes**
    - **Provide Traffic Controls**
- **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  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

SHEET NO.: 1 of 3

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Increase	Traffic Capacity	B	46,219	42,000	C/W = 1.10
		Facilitate	Access	B			
		Enhance	Safety	S			
2	ROW	Accommodate	Widening	B	4,475	3,000	C/W = 1.49
		Facilitate	Utilities	RS			
		Accommodate	Amenities	S			
3	BRIDGE & APPROACH SLAB	Cross	River	B	20,216	15,000	C/W = 1.35
		Increase	Access-ability	S			
4	TRAFFIC CONTROL	Facilitate	Safe Construction	S	3300	3300	C/W = 1.0
		Enhance	Safety	RS			
5	ASPHALT PAVING	Create	Lanes	B	3,117	3,000	C/W = 1.04
		Increase	Capacity	B			
		Enhance	Safety	RS			
		Connect	Points	B			

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)









# DESIGNER PRESENTATION MEETING PARTICIPANTS



Georgia Department of Transportation		November 27, 2007	
STP-0134(6) - P.I. 450540 - Dougherty County			
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE
Ron Wishon	 GDOT - Engineering Services	<a href="mailto:ron.wishon@dot.state.ga.us">ron.wishon@dot.state.ga.us</a>	404-651-7470
James Magnus	 GDOT - Construction		404-656-5306
Amber Perkins	 OEL	<a href="mailto:amber.perkins@dot.state.ga.us">amber.perkins@dot.state.ga.us</a>	404-699-3473
Albert Shelby	 GDOT - Urban Design	<a href="mailto:albert.shelby@dot.state.ga.us">albert.shelby@dot.state.ga.us</a>	404-656-5440
Amos Jenkins	 GDOT-Urban Design	<a href="mailto:amos.jenkins@dot.state.ga.us">amos.jenkins@dot.state.ga.us</a>	404-656-6540
Kristy Langdon	 GDOT-Traffic Ops	<a href="mailto:kristy.langdon@dot.state.ga.us">kristy.langdon@dot.state.ga.us</a>	404-635-8150
Nabil Raad		<a href="mailto:m.nabil.raad@dot.state.ga.us">m.nabil.raad@dot.state.ga.us</a>	404-635-8126
Darrell Richardson	 GDOT-Urban Design	<a href="mailto:darrell.richardson@dot.state.ga.us">darrell.richardson@dot.state.ga.us</a>	404-657-1872
Irene Bellinfente	 GDOT-Bridge Office		404-656-5197
Ben Buchan	 GDOT-Urban Design	<a href="mailto:ben.buchan@dot.state.ga.us">ben.buchan@dot.state.ga.us</a>	404-656-5436
Les Thomas	 PBS&J	<a href="mailto:lmthomas@pbsi.com">lmthomas@pbsi.com</a>	678-677-6420
Luke Clarke	 PBS&J - Highway/Roadway Design	<a href="mailto:lwclarke@pbsi.com">lwclarke@pbsi.com</a>	205-969-3776
Ron Hale	 PBS&J	<a href="mailto:rhale@pbsi.com">rhale@pbsi.com</a>	770-933-0280
Ramesh Kalvakaalva	 Civil Services, Inc.	<a href="mailto:rameshk@civilservicesinc.com">rameshk@civilservicesinc.com</a>	404-685-8001
Craig Thomas	 PBS&J	<a href="mailto:csthomas@pbsi.com">csthomas@pbsi.com</a>	678-677-6420
Randy S. Thomas	 PBS&J	<a href="mailto:rsthomas@pbsi.com">rsthomas@pbsi.com</a>	678-677-6420

**VE TEAM PRESENTATION  
MEETING PARTICIPANTS**



Georgia Department of Transportation		November 30, 2007		
STP-0134(0) - P.I. No. 450540 - Dougherty County				
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE	
Lisa Myers	 GDOT - Engineering Services	<a href="mailto:lisa.myers@dot.state.ga.us">lisa.myers@dot.state.ga.us</a>	404-651-7468	
Brian Summers	 GDOT - Engineering Services	<a href="mailto:brian.summers@dot.state.ga.us">brian.summers@dot.state.ga.us</a>		
Peter Eze	 GDOT - Urban Design	<a href="mailto:peter.eze@dot.state.ga.us">peter.eze@dot.state.ga.us</a>	404-656-5436	
Amos Jenkins	 GDOT-Urban Design	<a href="mailto:amos.jenkins@dot.state.ga.us">amos.jenkins@dot.state.ga.us</a>	404-656-6540	
Darrell Richardson	 GDOT-Urban Design	<a href="mailto:darrell.richardson@dot.state.ga.us">darrell.richardson@dot.state.ga.us</a>	404-657-1872	
Irene Beinfente	 GDOT-Bridge Office		404-656-5197	
Ben Buchan	 GDOT-Urban Design	<a href="mailto:ben.buchan@dot.state.ga.us">ben.buchan@dot.state.ga.us</a>	404-656-5436	
Les Thomas	 PBS&J	<a href="mailto:lmthomas@pbsj.com">lmthomas@pbsj.com</a>	678-677-6420	
Luke Clarke	 PBS&J	<a href="mailto:lucclarke@pbsj.com">lucclarke@pbsj.com</a>	205-969-3776	
Ron Hale	 PBS&J	<a href="mailto:rdhale@pbsj.com">rdhale@pbsj.com</a>	770-933-0280	
Ramesh Kalvakaalva	 CSI	<a href="mailto:rameshk@civilservicesinc.com">rameshk@civilservicesinc.com</a>	404-685-8001	
Craig Thomas	 PBS&J	<a href="mailto:csthomas@pbsj.com">csthomas@pbsj.com</a>	678-677-6420	
Randy S. Thomas	 PBS&J	<a href="mailto:rsthomas@pbsj.com">rsthomas@pbsj.com</a>	678-677-6420	

# CREATIVE IDEA LISTING & EVALUATION



PROJECT: Georgia Department of Transportation  
 STP-0134(6) – P.I. No. 450540  
 Clark Avenue Extension - Dougherty County

SHEET NO.: 1 of 2

NO.	IDEA DESCRIPTION	RATING
	<b>BRIDGE (BR)</b>	
BR-1	Use a 6' median with a positive barrier	4
BR-2	Use 11' lanes	4
BR-3	Use a 10' multi-use shoulder	3
BR-4	Provide 1-8' bike land a 1-6' sidewalk	4
BR-5	Use 10' pedestrian/bike lane with a delineator in between	5
BR-6	Construct bike and pedestrian lane/trail at grade with separate bridge	4
BR-7	Construct separate bike/pedestrian bridge	4
BR-8	Reduce 8' median with a 4' raised to a 4' flush striped median	4
BR-9	Construct a 2-lane bridge	1
BR-10	Construct 2 lanes with a provision for e or 4 lanes in the future	1
BR-11	Cross perpendicular directly onto Society Avenue	1
BR-12	Move west end of bridge 80' to the east; use MSE wall	5
BR-13	Re-align to the northeast; use embankment in zone "x"	5
BR-14	Re-align along abandoned railroad to northwest of apartment complex	2
BR-15	Re-align along Village Street	2
BR-16	Use MSE Walls	2
BR-17	Lower bridge profile after crossing railroad	5
BR-18	If the existing track shown to be removed is to occur; then adjust bridge start point and profile	ABD

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

