

Value Engineering Study Report

*Projects – STP – 9108(4)(5)
P.I. Nos.. –751770 & 751775*

Widening of Battle Creek Road – Mt. Zion Blvd.

Clayton County



Value Management Team



Design Team



**Kimley – Horn
& Assoc., Inc.**

November 2007



December 14, 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
Projects – STP -9108 (4) (5)
Clayton County
P.I. Nos. – 751770 & 751775
Widening of Battle Creek Road – Mt. Zion Blvd.
PBS&J Project Task Order No. 25

Dear Ms. Myers:

Please find enclosed four (4) hard copies and a CD of our final Value Engineering Report for the Widening of Battle Creek Road – Mt. Zion Blvd. as referenced above.

This Value Engineering Study, which was performed during the period December 3 through December 6, 2007, identified **17 Alternative Ideas**, of which **12 are recommended for implementation**. The VE Team also identified **5 Design Suggestion Ideas** which are recommended for the Engineer to consider in his final design. We believe that the **12 Alternative Ideas** recommended may have a significant positive affect on the project.

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

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

Yours truly,
PBS&J

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

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

Value Engineering Study Report

Projects – STP 9108(4)(5)

P.I. Nos. – 751770 & 751775

***Widening of Battle Creek Road – Mt. Zion Blvd
Clayton County***

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

This report summarizes the analysis and conclusions by the PBS&J Value Engineering workshop team as they performed a VE study during the period of December 3 – December 6, 2007 in Atlanta, at the office of the Georgia Department of Transportation. The subject of the Value Engineering study was Project – STP-9108(4)(5), Clayton County, P.I. Nos. – 751770 & 751775. The concept designs for the project have been prepared by Kimley-Horn and Associates. At the time of the workshop, the plans had advanced to the concept design level.

PROJECT DESCRIPTION

Project STP-9108(4) consists of the widening and reconstruction of Battle Creek Road /CR 1342 and Mt. Zion Boulevard/CR 28. The project begins on Battle Creek Road beginning at Southlake Parkway and ending at Mt. Zion Boulevard and Somerton Drive. Total length of the project is 3.48 miles

Proposed improvements will increase the level of service by providing additional travel lanes, and additional turn lanes at major intersections. The project will also improve vertical sight distance. Proposed improvements will allow each intersection to operate at LOS “D” or better. Other proposed improvements include widening from the existing two and four lane facilities to four 12’ lanes with a 20” raised median and urban shoulders consisting of 2.5’ curb and gutter, 6’ grassed strip and 5’ sidewalks.

For Project STP-9108(4) the estimated construction cost is 22,946,564. The preliminary ROW acquisition cost is \$11,939,071.

Project STP-9108(5) consists of the widening and reconstruction of Battle Creek Road/CR1342 from Valley Hill Road to Southlake parkway for a total of 2.11 miles. Proposed improvements are the same as for STP-9108(4).

For Project STP-9108(5) the estimated construction cost is \$14,289,139. The preliminary ROW acquisition cost is \$8,969,849.

Clayton County is a heavily developed area with a need for improved east-west connectivity. This project will serve this need. Both roads are urban collectors.

These projects are 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 *17 Alternative Ideas* that appeared to hold potential for reducing the construction cost, improving the end product and/or reducing the difficulty and time of project construction.

After the evaluation phase was completed, *12 Alternative Ideas* and *5 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

Battle Creek Road - Mt. Zion Blvd - STP 9108(4)(5) P.I. Nos. 751770 & 751775

Alternative Number	Description of Alternative	Initial Cost Savings
	ROADWAY (RD)	
RD-1	Use 11' lanes throughout project	\$1,105,458
RD -2	Review profile grade to reduce borrow	\$264,000
RD- 4	Use 12' shoulders	\$301,400
RD-5	Re-align Battle Creek Road and Mt Zion Blvd tie-in	DS
RD- 6	Limit side road improvements	\$79,211
RD- 10	Construct an operational -- a 6 lane section at I-75 interchange	DS
RD- 16	Modify median opening at Sta. 192+00	DS
RD - 17	Close median at Mt Zion Boulevard	DS
RD - 18	Close Home Depot Driveway	DS
	STRUCTURES (ST)	
ST - 1	Use modular block walls in- lieu of gravity walls	\$783,920
ST - 2	Use Conspan in- lieu of box culvert at panther creek	\$92,192
ST - 3	Use Guardrail and pedestrian rail in-lieu of parapet	\$19,190
ST - 4	Reconfigure lanes and sidewalk to utilize new bridge only	\$690,901
ST - 5	Perform partial modifications to existing bridge and abandon remaining portion	\$468,198
	RIGHT OF WAY (ROW)	
ROW - 1	Re-align Mill Lake Way and Sandlewood Drive	\$2,011,186
ROW - 4	Limit ROW taking and ease construction by segregating widening to one side	\$4,599,963
	DRAINAGE (DR)	
DR - 1	Reduce the amount of dual trunk lines	\$99,363

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

Battle Creek Road - Mt. Zion Blvd - STP 9108(4)(5) P.I. Nos. 751770 & 751775

Alternative Number	Description of Alternative	Initial Cost Savings
	ROADWAY (RD)	
RD-1	Use 11' lanes throughout project	\$1,105,458
RD -2	Review profile grade to reduce borrow	\$264,000
RD- 4	Use 12' shoulders	\$301,400
RD-5	Re-align Battle Creek Road and Mt Zion Blvd tie-in	DS
RD- 6	Limit side road improvements	\$79,211
RD- 10	Construct an operational – a 6 lane section at I-75 interchange	DS
RD- 16	Modify median opening at Sta. 192+00	DS
RD - 17	Close median at Mt Zion Boulevard	DS
RD - 18	Close Home Depot Driveway	DS
	STRUCTURES (ST)	
ST – 1	Use modular block walls in- lieu of gravity walls	\$783,920
ST – 2	Use Conspan in- lieu of box culvert at panther creek	\$92,192
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ROW – 1	Re-align Mill Lake Way and Sandlewood Drive	\$2,011,186
ROW – 4	Limit ROW taking and ease construction by segregating widening to one side	\$4,599,963
	DRAINAGE (DR)	
DR – 1	Reduce the amount of dual trunk lines	\$99,363

Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation
 STP-9108(4)(5) – P.I. No. 751770 & 751775
 Battle Creek Road – Clayton County

ALTERNATIVE NO.:
 RD-1

DESCRIPTION: USE 11'-0" TRAVEL LANES THROUGHOUT THE PROJECT.

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

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 (45mph), 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	\$ 16,200,851	\$	\$ 16,200,851
ALTERNATIVE	\$ 15,095,392	\$	\$ 15,095,392
SAVINGS	\$ 1,105,458	\$	\$ 1,105,458

Illustrations



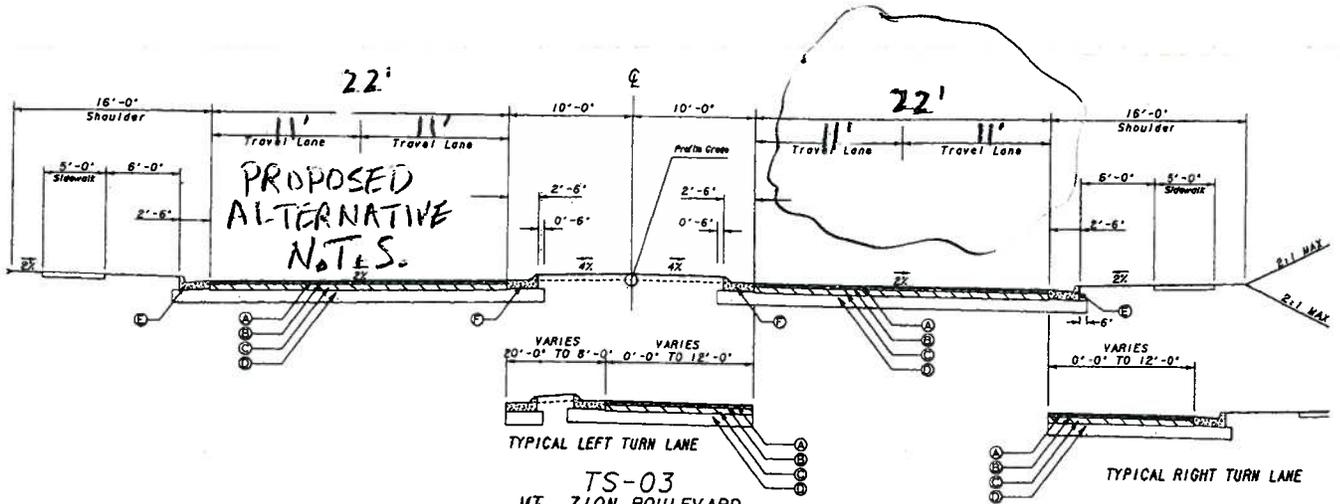
PROJECT: Georgia Department of Transportation
 STP-9108(4)(5) - P.L. No. 751770 & 751775
 Battle Creek Road - Clayton County

ALTERNATIVE NO.:

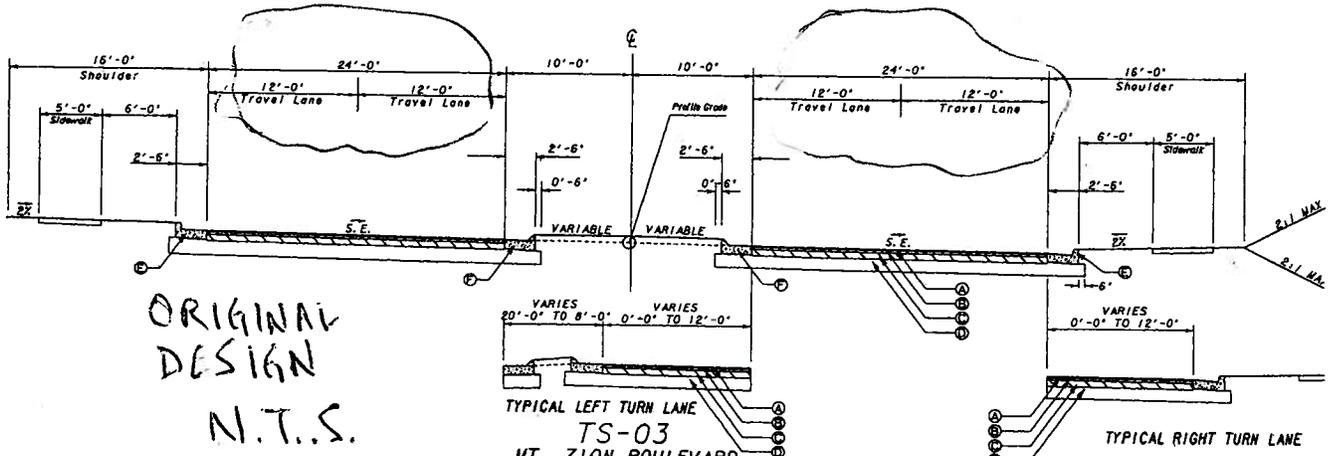
RD-1

DESCRIPTION: USE 11'-0" TRAVEL LANES THROUGHOUT THE PROJECT.

SHEET NO.: 2 of 4



TS-03
 MT. ZION BOULEVARD
 TANGENT SECTION
 STA. 132+50.00 TO STA. 135+83.00
 STA. 140+19.00 TO STA. 145+41.00
 STA. 215+07.00 TO STA. 217+90.00
 STA. 219+85.00 TO STA. 223+08.00



TS-03
 MT. ZION BOULEVARD
 SUPERELEVATION SECTION
 SEE PLAN SHEETS FOR SUPERELEVATION LOCATIONS

Calculations



PROJECT: Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.: RD-1
DESCRIPTION: USE 11'-0" TRAVEL LANES THROUGHOUT THE PROJECT.	SHEET NO.: 3 of 4

Overall project length-29,832 LF
Proposed width savings- 4' (4 lanes @ 1' per lane)
Area= 29,832 LF x 4'/9=13,259 SY
R.O.W. area -> 29,832 LF x 4'w=119,328 SF
119,328 SF/ 43,560 SF/AC=2.74 AC saved, Average \$100,000 per acre= **\$274,000 saved**

Reduction in Quantity-

12" GAB- 13,259 SY saved =>13,259 SY @ \$18/SY= **\$238,662 saved**
12.5 mm Superpave- (13,259 sy) x (165#/sy) / (2000#/ton) => 1,094 tons @ \$90/TN= **\$98,460 saved**
19.0 mm Superpave- (13,259 sy) x (220#/sy) / (2000#/ton) => 1,459 tons @ \$90/TN= **\$131,310 saved**
25.0 mm Superpave- (13,259 sy) x (440#/sy) / (2000#/ton) => 2,917 tons @ \$90/TN= **\$262,530 saved**

Total- \$1,004,962 plus 10% markup(\$100,496)= \$1,105,458

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	RD-2
DESCRIPTION:	REVIEW PROFILE GRADE TO REDUCE BORROW.	SHEET NO.:	1 of 4

Original Design:

The original design shows the project requiring approximately 120,000 CY of fill to construct.

Alternative:

The alternative seeks to review the profile grade to see if it may be lowered to reduce the amount of fill required to complete the desired widening.

Opportunities:

- Savings in earthwork quantities
- Reduced construction time

Risks:

- Moderate design impacts

Technical Discussion:

The intent of this alternative is to reduce the amount of fill required to construct the desired widening. Project # STP-9108(5) shows an overall cut of approximately 7,700 CY for the project. Project # STP-9108(4) shows approximately 127,000 CY of fill required to construct to the proposed P.G.L. Absent compelling circumstances, revisit the profile grade to adjust to minimize fill where practicable, particularly on Project STP-9108(4).

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 1,320,000	\$	\$ 1,320,000
ALTERNATIVE	\$ 1,056,000	\$	\$ 1,056,000
SAVINGS	\$ 264,000	\$	\$ 264,000

PROJECT: Georgia Department of Transportation
STP-9108(4)(5) - P.I. No. 751770 & 751775
Battle Creek Road - Clayton County

ALTERNATIVE NO.:

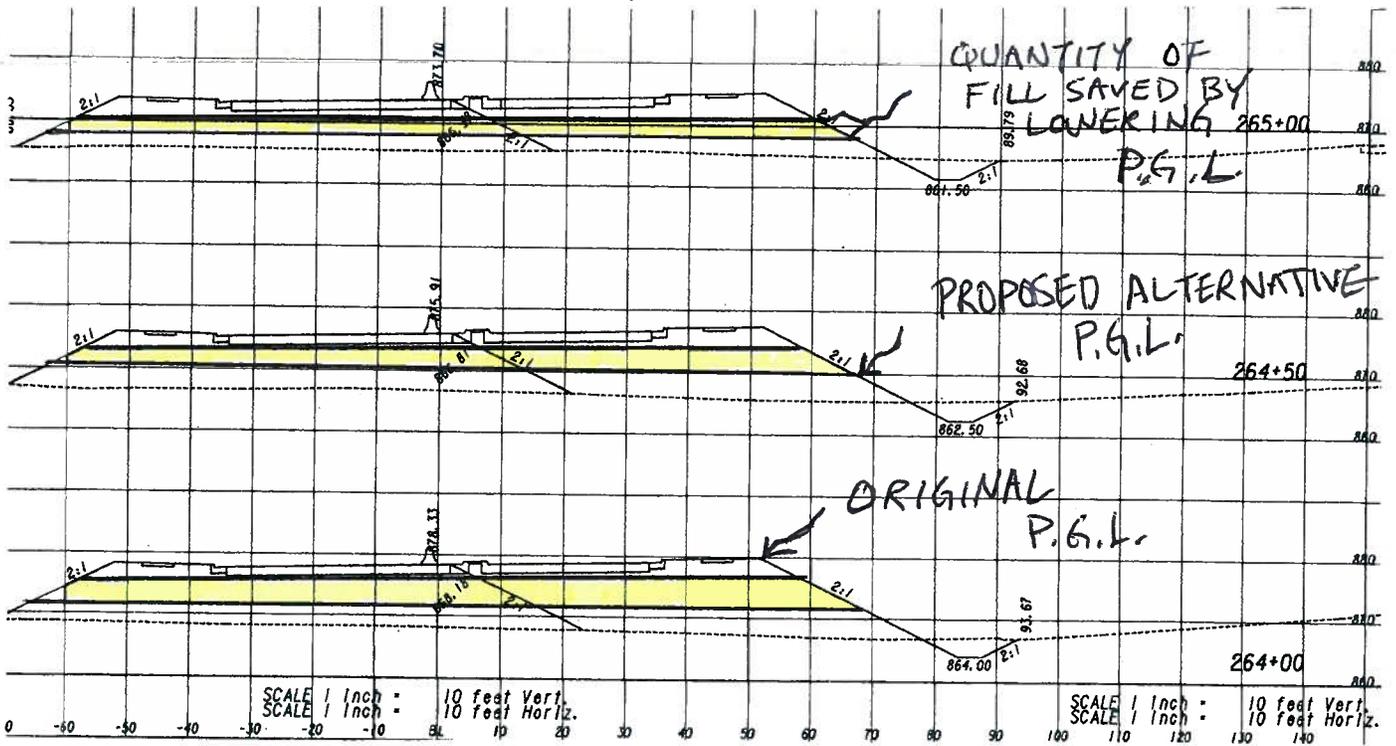
RD-2

DESCRIPTION: REVIEW PROFILE GRADE TO REDUCE BORROW.

SHEET NO.: 2 of 4

EXAMPLE:

- N.T.S. -



- LOWER P.G.L. IN SELECTED AREAS
TO REDUCE BORROW REQUIRED TO
CONSTRUCT PROPOSED WIDENING.

Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-2

DESCRIPTION: **REVIEW PROFILE GRADE TO REDUCE BORROW.**

SHEET NO.: 3 of 4

ASSUMPTIONS:

Total borrow required for both projects= 150,000 CY

Estimated borrow savings by utilizing lower profile grade line in selected areas= 20%

$150,000 \text{ CY} \times .20 = 30,000 \text{ CY saved} \times \$8.00/\text{CY (Borrow estimate price)} = \$240,000$

$\$240,000 \times 10\% \text{ markup} (\$24,000) =$

\$264,000 Total calculated savings.

Value Analysis Design Alternative



PROJECT: Georgia Department of Transportation
 STP-9108(4)(5) – P.L. No. 751770 & 751775
 Battle Creek Road – Clayton County

ALTERNATIVE NO.:

RD-4

DESCRIPTION: USE A 12' SHOULDER IN LIEU OF 16' PROPOSED

SHEET NO.: 1 of 4

Original Design:

The original design utilizes a 16' shoulder throughout the project on both sides of the proposed roadway.

Alternative:

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

Opportunities:

- Minimal earthwork savings.
- R.O.W. savings.
- Reduction in construction time.

Risks:

- 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. The savings on earthwork and grading would likely be incidental.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,520,000	\$	\$ 3,520,000
ALTERNATIVE	\$ 3,218,600	\$	\$ 3,218,600
SAVINGS	\$ 301,400	\$	\$ 301,400

Illustrations



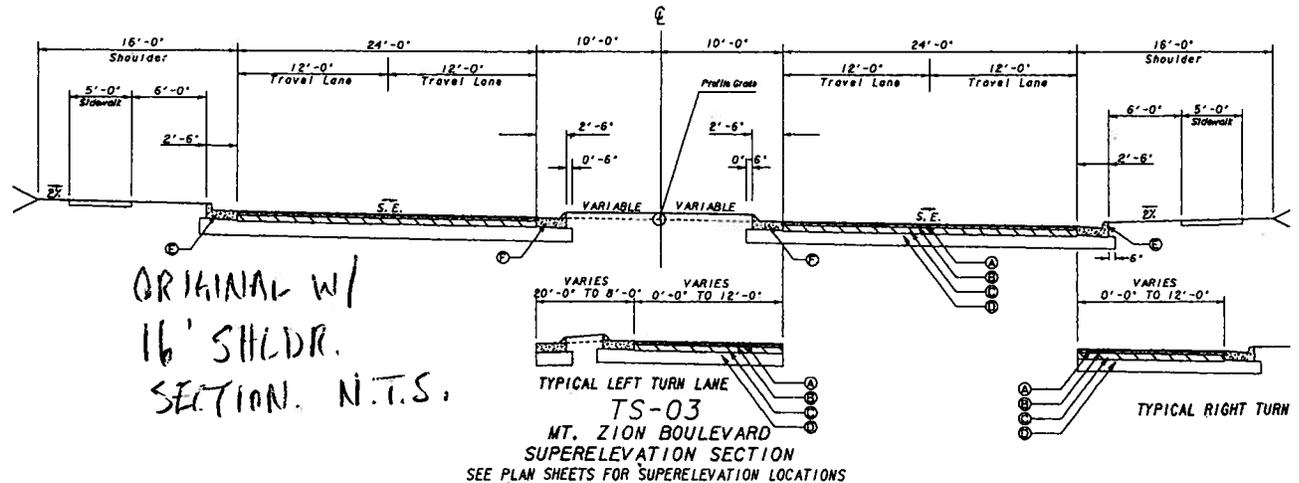
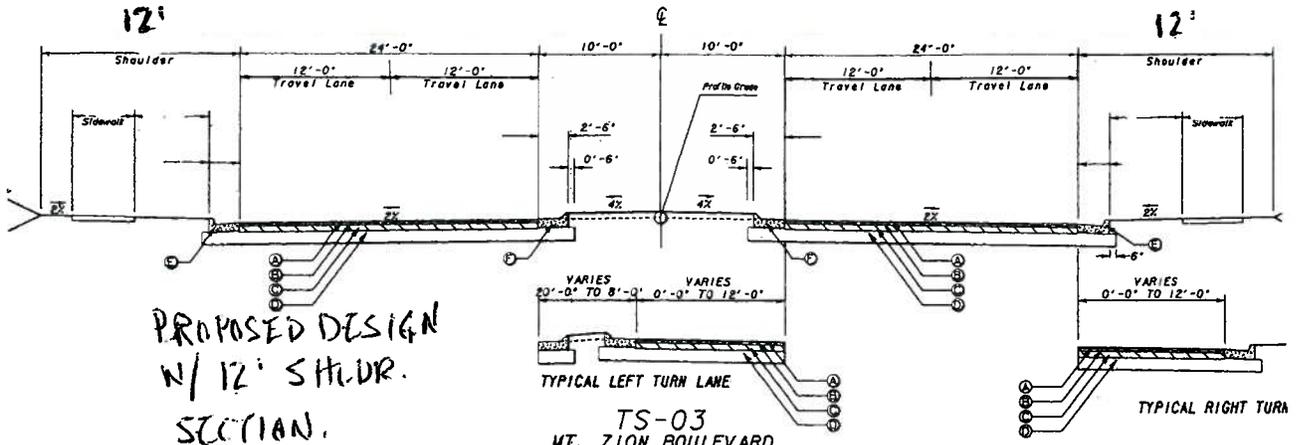
PROJECT: Georgia Department of Transportation
 STP-9108(4)(5) – P.I. No. 751770 & 751775
 Battle Creek Road – Clayton County

ALTERNATIVE NO.:

RD-4

DESCRIPTION: USE A 12' SHOULDER IN LIEU OF 16' PROPOSED.

SHEET NO.: 2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-4

DESCRIPTION: **USE A 12' SHOULDER IN LIEU OF 16' PROPOSED**

SHEET NO.: 3 of 4

ASSUMPTIONS:

Length of Project- 29,832 LF

Width of Shoulder reduction- 4'

Area- 29,832 LF x 4'= 119,328 SF

119,328 SF/ 43,560 SF/AC= 2.74 Acres saved by 4' shoulder width reduction.

2.74 Acres x \$100,000/ Acre average (land only)= \$274,000

\$274,000 + 10% mark-up @ \$27,400= **\$ 301,400 total savings.**

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-5

DESCRIPTION: **RE-ALIGN BATTLE CREEK ROAD AND MOUNT ZION
BOULEVARD TIE-IN**

SHEET NO.: 1 of 2

Original Design:

The original design proposes an alignment on new location north of and parallel to the gas pipeline.

Alternative:

The alternative design would extend the existing Battle Creek Road alignment to the east and then turn north to tie into Mount Zion Boulevard at ~Station 270+00.

Opportunities:

- Improve profile gradeline
- Reduce required fill
- Reduce impacts to water works maintenance yard

Risks:

- Increased right of way cost
- Moderate design effort

Technical Discussion:

The current design introduces a large fill area and steep grades in the vicinity of the water works maintenance yard. By moving the alignment to the south you can lessen the required fill, flatten the grades, and eliminate impacts on the water works.

PROJECT: Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County

ALTERNATIVE NO.:

RD-5

DESCRIPTION: **RE-ALIGN BATTLE CREEK ROAD AND MOUNT ZION
BOULEVARD TIE-IN**

SHEET NO.: 2 of 2



Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-6

DESCRIPTION: **LIMIT SIDE ROAD IMPROVEMENTS.**

SHEET NO.: 1 of 4

Original Design:

The original design shows a number of significant improvements to side streets throughout the project.

Alternative:

The alternative proposes minimizing side street work beyond the radius return from the mainline.

Opportunities:

- Reduction in construction time.
- Reduction in construction cost.

Risks:

- Minor design impacts.

Technical Discussion:

The proposed plans show a number of significant side street improvements throughout the project. The intent of the alternative is to reduce or eliminate side street improvements beyond the radius return. The illustrations and calculations take proposed improvements to Mount Zion Boulevard as an example. The cost savings shown are only for the improvements beyond the radius return on Mount Zion Boulevard. While suggesting deleting or limiting side street improvements, it is noted that replacement of in-kind features, as well as appropriate slope and drainage ties must be made.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 5,034,205	\$	\$ 5,034,205
ALTERNATIVE	\$ 4,954,994	\$	\$ 4,954,994
SAVINGS	\$ 79,211	\$	\$ 79,211

Illustrations



PROJECT: Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County

ALTERNATIVE NO.:

RD-6

DESCRIPTION: LIMIT SIDE ROAD IMPROVEMENTS.

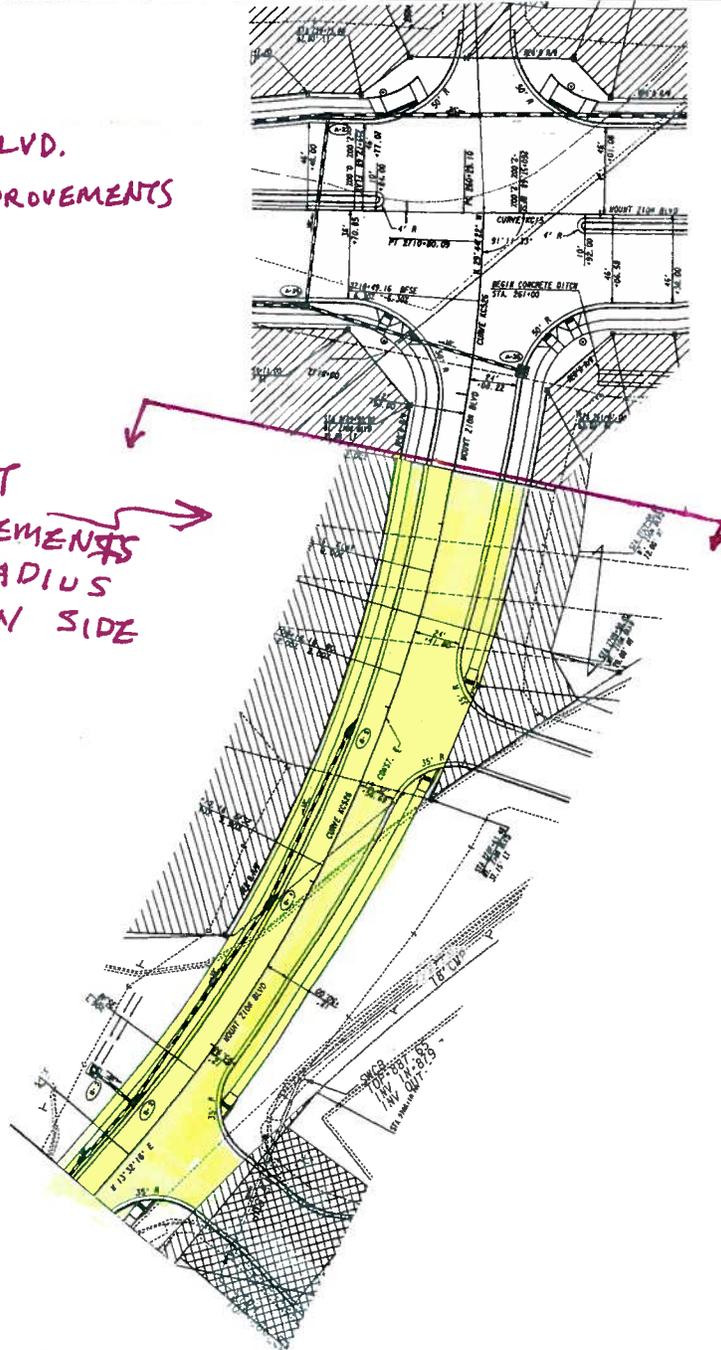
SHEET NO.: 2 of 4

EXAMPLE:

N.T.S.

MOUNT ZION BLVD.
PROPOSED IMPROVEMENTS

LIMIT/OMIT
ALL IMPROVEMENTS
BEYOND RADIUS
RETURN ON SIDE
STREETS.



MINIMIZE
SIDE STREET
WORK BEYOND
RADIUS RETURN
ON ALL SIDE
STREETS
WHERE
POSSIBLE.
MAINTAIN
APPROPRIATE
GRADE AND
DRAINAGE
TIES.

Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-6

DESCRIPTION: **LIMIT SIDE ROAD IMPROVEMENTS**

SHEET NO.: 3 of 4

ASSUMPTIONS:

R.O.W. saved- 20LF acquisition for 1,000LF. $20' \times 1,000 \text{ LF} = 20,000 \text{ SF} / 43,560 = 0.46 \text{ AC} \times \$100,000 \text{ AVG}$
cost/acre= **\$46,000.**

Pavement overlay saved- 30' avg. width x 1,050 LF/9= 3,500 SY x 165lb/SY/2,000lb/SY= 289 tons

289 TN x \$90/TN= **\$26,010**

\$46,000 + \$26,010 + 10% markup= \$79,211

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:
RD-10

DESCRIPTION: **CONSTRUCT AN OPERATIONAL IMPROVEMENT-A
SIX-LANE SECTION AT THE I-75 INTERCHANGE**

SHEET NO.: 1 of 1

Original Design:

The original design provides 4 lanes throughout the entire project.

Alternative:

The alternative design would propose widening Mount Zion Boulevard to 6 lanes in the vicinity of the I-75 interchange.

Opportunities:

- Improve operations of I-75, the I-75 interchange and the Mt. Zion Boulevard intersection

Risks:

- Increased paving cost
- Required bridge widening
- Significant increase in the design effort

Technical Discussion:

Design year traffic projections predict poor operations on Mount Zion Boulevard from Mount Zion Road through the I-75 Intersection and on the I-75 southbound exit ramp. The close proximity of the three intersections creates operational problems for this section of roadway. Providing a six lane section would increase intersection capacity and improve the lane balance in this area.

The designer stated that a 6 lane section was eliminated from consideration due to the fact that 6 lanes were not included in the TIP, therefore requiring modification of the TIP and additional air quality analysis. It is recommended that this be reconsidered. A small section of 6 lane roadway in the area of the interchange should be considered an operational improvement and not an upgrade of the overall corridor to 6 lanes. Widening of the corridor to 4 lanes results in LOS F and LOS D conditions which would impact the air quality issue in a negative manner. A 6 lane section may alleviate this condition and have a positive effect on both operations and the air quality issue.

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-16

DESCRIPTION: **MODIFY MEDIAN OPENING AT STATION 192+00**

SHEET NO.: 1 of 2

Original Design:

The original design provides a median opening at Station 192+00 for the Fire Station.

Alternative:

The alternative design would modify the median opening to provide more opening and match the fire station's driveway. It would replace the R3-4 signs with R3-3 to prohibit "all turns" and yellow diagonal pavement markings to not only prohibit but to discourage illegal turns by non-emergency vehicles.

Opportunities:

- Improve safety and operations

Risks:

- Minimal design effort

Technical Discussion:

By providing an opening that matches the driveway of the Fire Station it will ease ingress and egress for the vehicles in emergency situations. Modification of the signing and marking should improve safety and operations by doing a better job of discouraging illegal turns at the median opening.

Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:
RD-17

DESCRIPTION: **CLOSE MOUNT ZION PARKWAY MEDIAN OPENING**

SHEET NO.: 1 of 2

Original Design:

The original design provides a signal and median opening at Station 311+38.04.

Alternative:

The alternative design would propose either closing or modifying the median opening at Station 311+38.04.

Opportunities:

- Improve operations of both the I-75 interchange and the Mt. Zion Boulevard intersection

Risks:

- Objections from the local businesses on Mount Zion Parkway

Technical Discussion:

Design year traffic projections predict poor operations on Mount Zion Boulevard from Mount Zion Road through the I-75 Intersection. The close proximity of the three intersections creates operational problems for this area. Closing the median opening may provide some benefit however due to the amount of development on Mount Zion Parkway, simply closing the median opening may create other issues which should be investigated. A more feasible option may be to modify the intersection to reduce the number of signal phases and provide a right-in, right-out and left-in with no through movements.

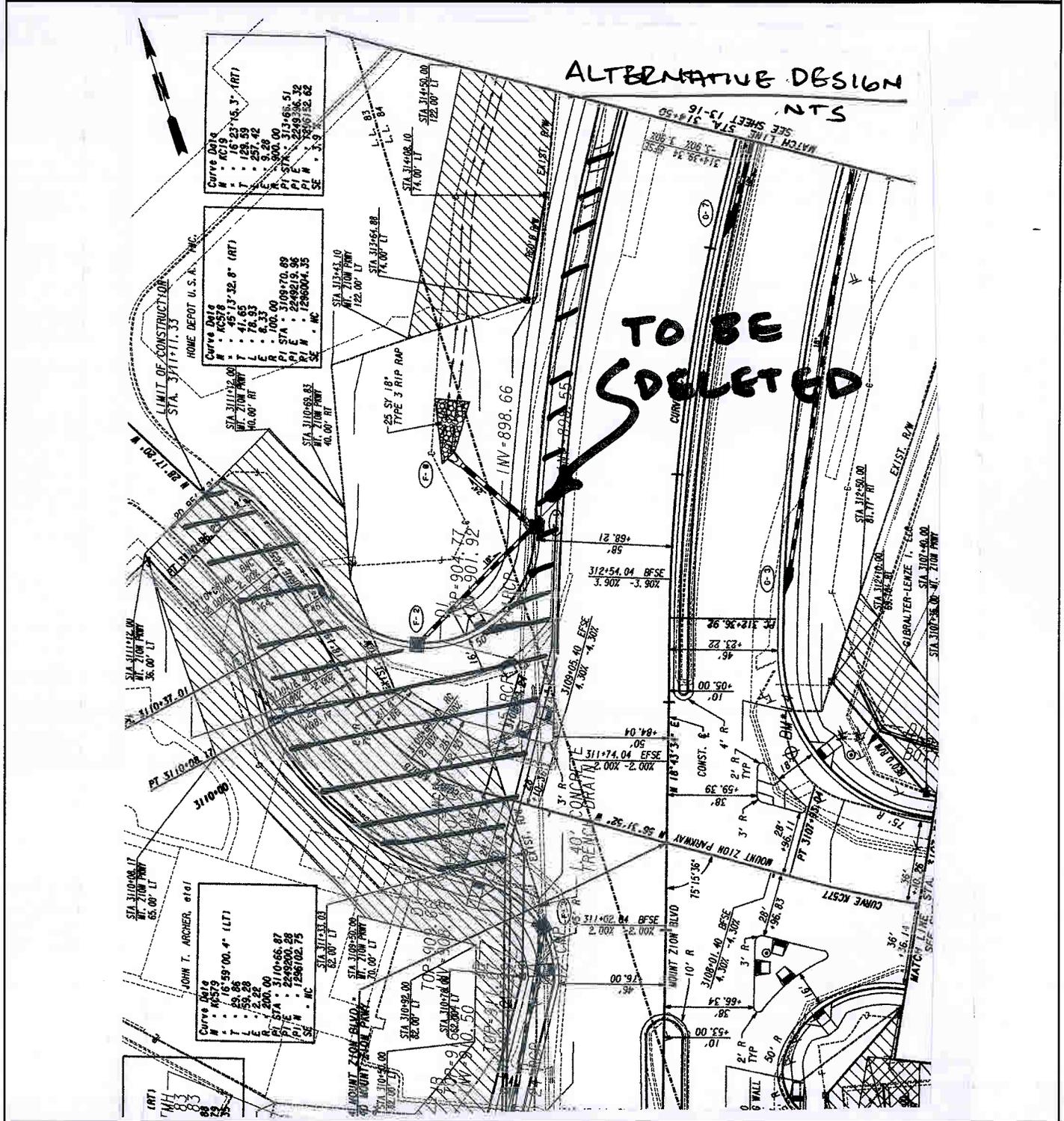
PROJECT: Georgia Department of Transportation
STP-9108(4)(5) - P.I. No. 751770 & 751775
Battle Creek Road - Clayton County

ALTERNATIVE NO.:

RD-17

DESCRIPTION: CLOSE MOUNT ZION PARKWAY MEDIAN OPENING

SHEET NO.: 2 of 2



Value Analysis Design Suggestion



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

RD-18

DESCRIPTION: **CLOSE “HOME DEPOT” DRIVEWAY**

SHEET NO.: 1 of 2

Original Design:

The original design reconstructs the existing driveway at Station 311+38.04 left.

Alternative:

The alternative design would eliminate the existing driveway at Station 311+38.04 left.

Opportunities:

- Improve operations of both the I-75 interchange and the Mt. Zion Road intersection.

Risks:

- Objections from the land owner

Technical Discussion:

Design year traffic projections predict a LOS F on the southbound exit ramp from I-75 to Mount Zion Boulevard. The primary cause for the breakdown in LOS appears to be congestion caused by the access to Home Depot. Elimination of this connection combined with extending the channelized right turn for traffic turning northbound on Mount Zion Road should not only improve the traffic flow on the I-75 exit ramp but also improve the operation of the Mount Zion Road / Mount Zion Boulevard intersection.

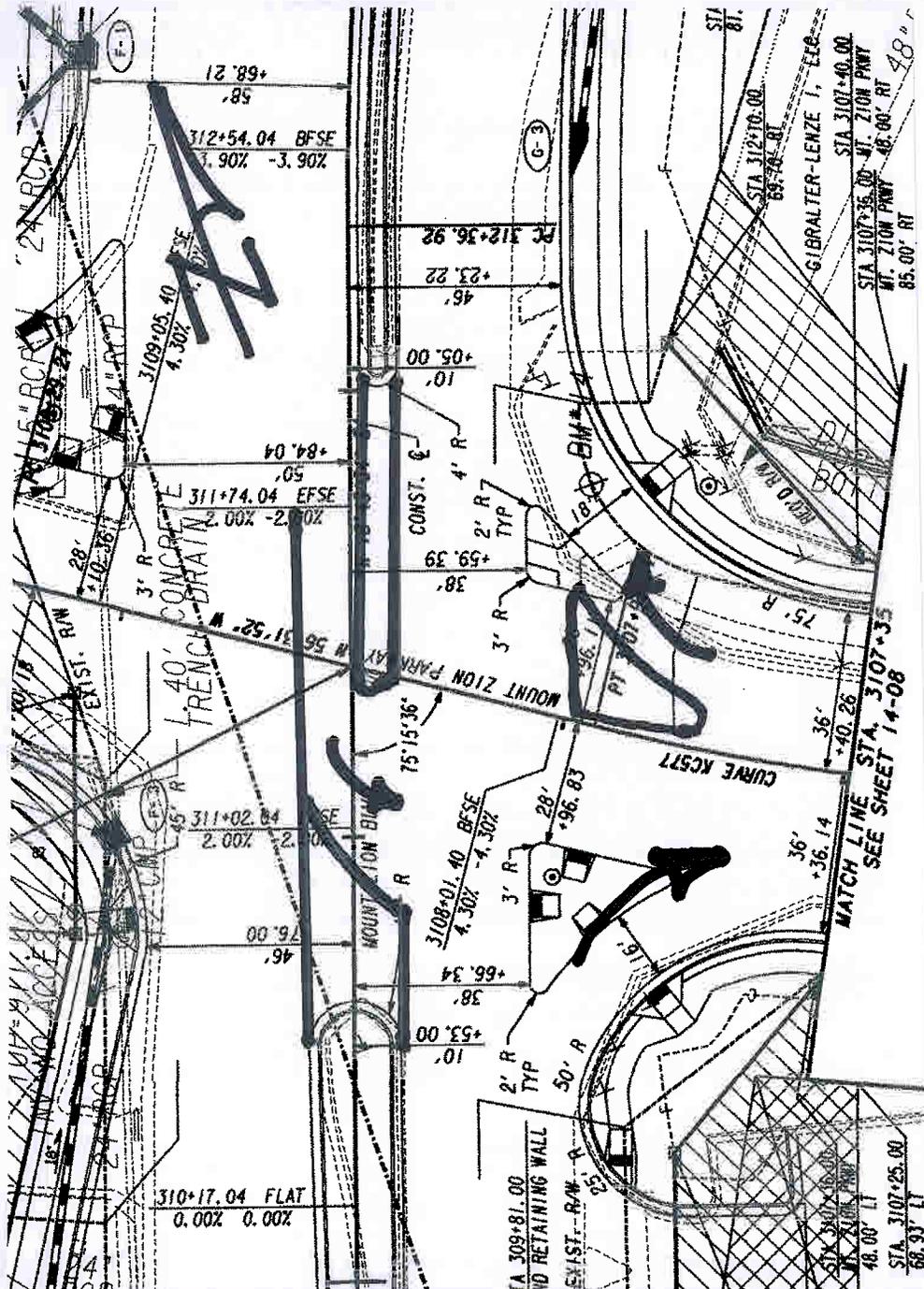
PROJECT: Georgia Department of Transportation
STP-9108(4)(5) - P.I. No. 751770 & 751775
Battle Creek Road - Clayton County

ALTERNATIVE NO.:

RD-18

DESCRIPTION: CLOSE "HOME DEPOT" DRIVEWAY

SHEET NO.: 2 of 2



ALTERNATING DESIGN

MTS

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ST-1
DESCRIPTION:	USE MODULAR BLOCK WALLS IN-LIEU OF GRAVITY WALLS	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 and other Structural components were under development. The study was based on available information and certain assumptions).

The original roadway design drawings call for cast-in-place concrete barrier walls, as in GDOT Standard Type 2-B side barriers, on various sections of the roadway. The latest available cost estimates list the wall types to be 6800 SF of MSE Walls and 500 LF of concrete side barrier on Project STP-9108(4) and 500 LF of concrete side barrier on Project STP-9108(5).

Alternative:

The alternative proposes the use of Modular Block walls with coping in-lieu of the cast-in-place concrete barrier walls and MSE walls.

The alternative maintains the original design geometry.

Risks:

- Minimal redesign effort

Opportunities:

- Cost savings
- Reduced construction time
- Improved aesthetics

Technical Discussion:

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

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	\$ 1,068,056	\$	\$ 1,068,056
ALTERNATIVE	\$ 284,136	\$	\$ 284,136
SAVINGS	\$ 783,920	\$	\$ 783,920

PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-1

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

SHEET NO.: **2 of 4**

KEY FEATURES

All of the features of the Keystone Compac units plus:

Inextensible Steel Reinforcement

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

Designed to More Rigorous AASHTO Standards

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

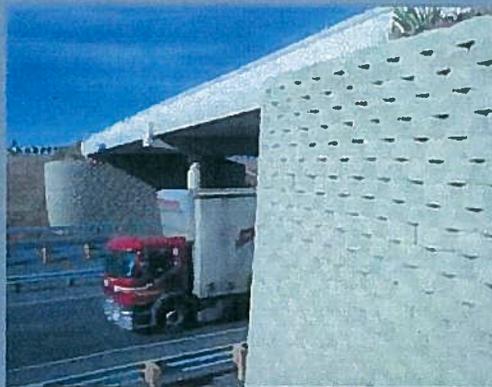
Intended for the Most Demanding Applications

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



**Note: Sample of KEYSTONE™ Modular Block Wall applications shown.
Source: www.keystonewalls.com**

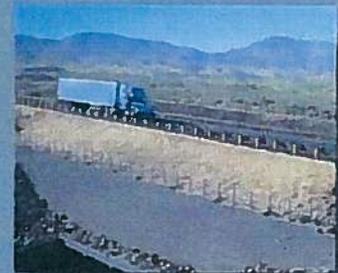
Endless Applications



GOVERNMENTAL

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

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



Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-1

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

SHEET NO.:

3 of 4

Current Design (Cast-in-Place Concrete Side Barriers (Retaining Walls) and MSE Walls)

GA STD 4948B Type 2-B Wall (Assume average height of 7.5’):

Total length of Type 2-B walls (as listed in provided cost estimate) = 500’ [STP-9108(4)] +
500’ [STP-9108(5)] = 1000 LF

Total area of Type 2-B walls (as listed in provided cost estimate) = 1000’ STP-9108(4) X 7.5’ = 7500 SF

MSE Walls (Assume average height of 10’):

Total area of MSE Walls (as listed in provided cost estimate) = 6800 SF [STP-9108(4)]

Total length of MSE Walls (as listed in provided cost estimate) = 6800 SF/10’ = 680 LF

Alternative (Modular Block Walls with Coping)

Total area of required Modular Block Walls in place of Type 2-B & MSE Walls = 7500 SF + 6800 SF

= 14300 SF

Length of Coping = 680 LF

NOTE:

Reduction from current design = savings for alternative.

Cost of MSE Wall Construction assumed to be \$60 per SF. Also, 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 and obtain more accurate quantities. A detailed analysis may show greater cost savings than that shown in this report.

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ST-2
DESCRIPTION:	USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF BOX CULVERT AT PANTHER CREEK	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 and other Structural components were under development. The study was based on available information and certain assumptions).

The original roadway design drawings call for the extension to the North and South of the existing Double 10’X12’ Box Culvert. The extensions will be CIP Box Culverts of similar dimensions to that of the existing structure. Additionally, a retaining wall is proposed to be constructed along with stream bed remediation. The major design constraint at this location is the confluence of two streams at the limit of the Box Culvert.

Alternative:

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

The alternative maintains the original design geometry.

Opportunities:

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

Risks:

- Minimal redesign effort
- Design of pre-cast system performed by manufacturer

Technical Discussion:

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

While maintaining the existing Double 10’X12’ Box Culvert in place, the required extensions to the North and South can be constructed using the CONSPAN system.

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	\$ 374,617	\$	\$ 374,617
ALTERNATIVE	\$ 282,425	\$	\$ 282,425
SAVINGS	\$ 92,192	\$	\$ 92,192

Illustrations

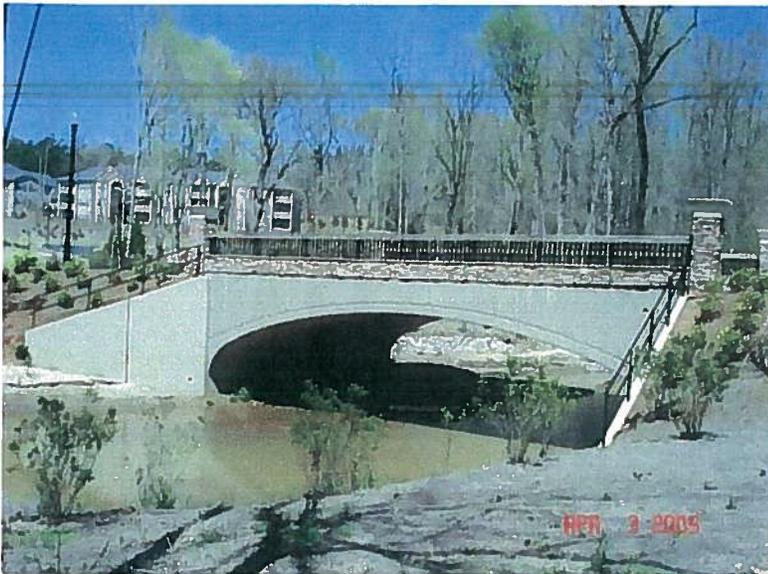


PROJECT: Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County

ALTERNATIVE NO.:

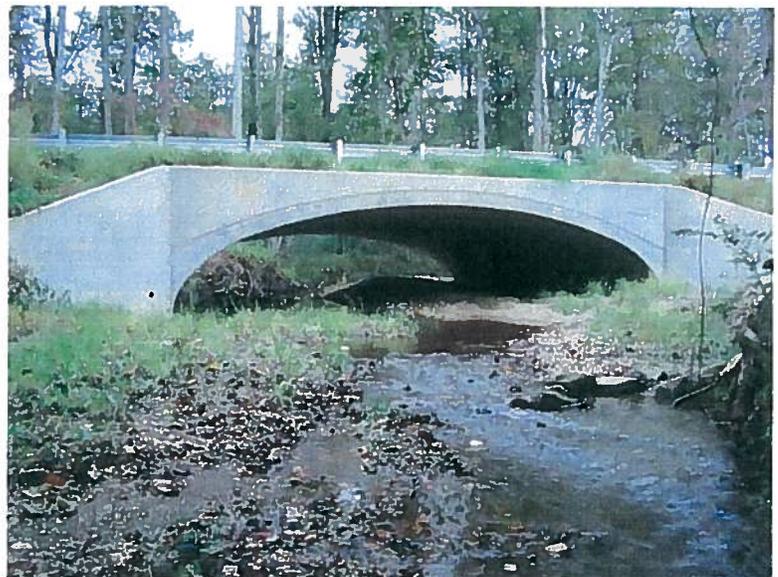
ST-2

DESCRIPTION: USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF BOX CULVERT AT PANTHER CREEK SHEET NO.: 2 of 4



**CONSPAN PRECAST CULVERTS
ROADWAY APPLICATIONS**

SOURCE: WWW.CON-SPAN.COM



Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-2

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

SHEET NO.:

3 of 4

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

Per cost estimate provided at the time of this VE Study, the quantities for the extension of the existing Box Culvert at Panther Creek are as follows:

Bar Reinforcement Steel = 47443 LB

Class A Concrete = 317 CY

Found Backfill Material = 7200 CY

Alternative (CONSPAN Pre-cast Culvert)

From Roadway design drawings, total length of culvert extension (23' North extension & 56' South extension)
= 79'.

Approximate span required for single span CONSPAN culvert = 45'

Reduction in streambed remediation is an additional cost saving that can be realized using CON SPAN.

NOTE:

Reduction from current design = savings for alternative.

Cost of Pre-cast culvert as provided by CONSPAN.

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

Streambed remediation costs are an approximation.

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



COST WORKSHEET

PROJECT: **Georgia Department of Transportation** ALTERNATIVE NO.: **ST-2**

STP-9108(4)(5) – P.I. No.751770 & 771775
Battle Creek Road - Clayton County

DESCRIPTION: **USE SINGLE CELL PRECAST CONSPAN IN-LIEU OF BOX CULVERT AT PANTHER CREEK** 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
Bar Reinforcement Steel	LB	47443	\$ 2.00	\$ 94,886.00	0	\$ 2.00	\$ -
Class A Concrete	CY	317	\$ 775.00	\$ 245,675.00	0	\$ 775.00	\$ -
CON SPAN Culvert (42' Span)	LF	0	\$ 40.00	\$ -	79	\$ 3,250.00	\$ 256,750.00
Note: Reduction in Alternative = Cost for Current Design							
In-place embankment assumed to be same for both options							
Sub-total				\$ 340,561			\$ 256,750
Mark-up at 10.00%				\$ 34,056			\$ 25,675
TOTAL				\$ 374,617			\$ 282,425
Estimated Savings:							\$92,192

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ST-3
DESCRIPTION:	USE GUARDRAIL AND PEDESTRIAN RAIL IN-LIEU OF PARAPET	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 and other Structural components were under development. The study was based on available information and certain assumptions).

The original roadway design drawings call for cast-in-place concrete barrier walls, as in GDOT Standard Type 2-B side barriers, on various sections of the roadway. The latest available cost estimates list the wall types to be 6800 SF of MSE Walls and 500 LF of concrete side barrier on Project STP-9108(4) and 500 LF of concrete side barrier on Project STP-9108(5).

Alternative:

The alternative proposes the use of Guardrails adjacent to the travel lane and Pedestrian rail mounted on the wall to be able to reduce the shoulder width requirements.

The alternative maintains the original design geometry.

Risks:

- Minimal redesign effort

Opportunities:

- Cost savings
- Reduced construction time
- Improved aesthetics
- Improved safety for pedestrians
- Reduction in wetland mitigation
- Reduced land disturbance

Technical Discussion:

By providing a Guardrail adjacent to the travel lanes and Pedestrian rails on top of the walls, the shoulder width can be reduced from the current 16' to 12'. This results in reduction of fill and right-of-way requirements along with improving safety of the pedestrians.

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	\$ 191,387	\$	\$ 191,387
ALTERNATIVE	\$ 172,197	\$	\$ 172,197
SAVINGS	\$ 19,190	\$	\$ 19,190

Illustrations



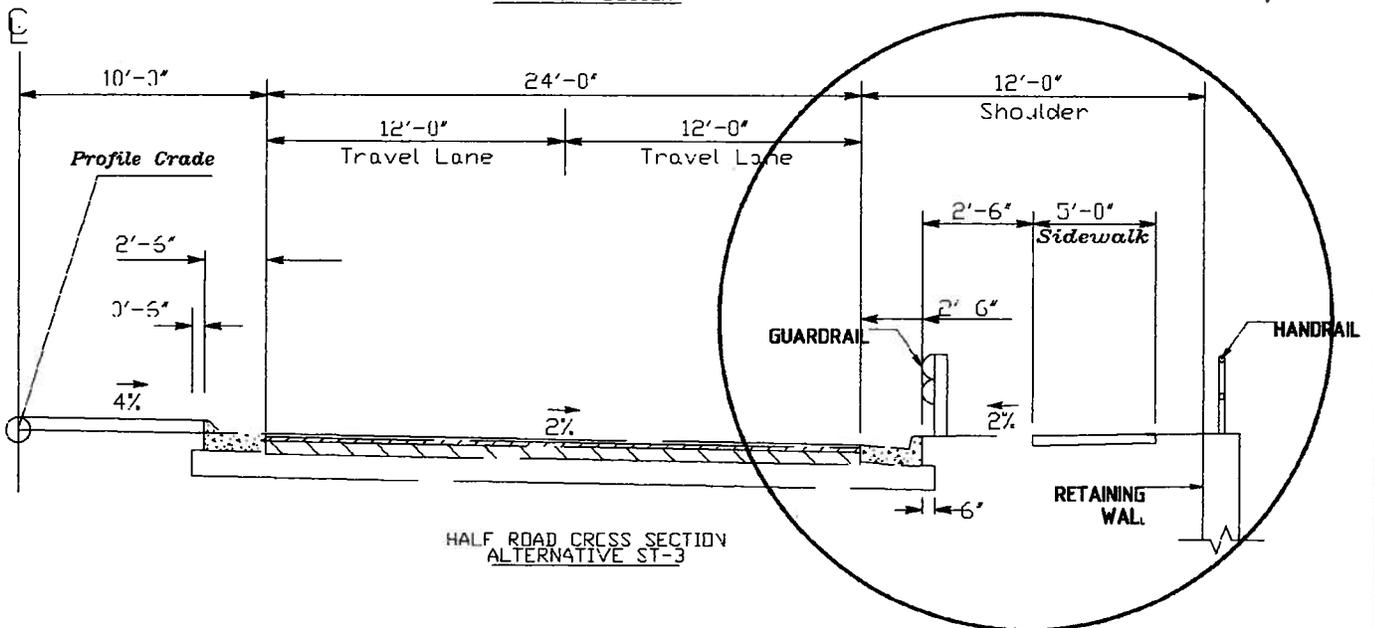
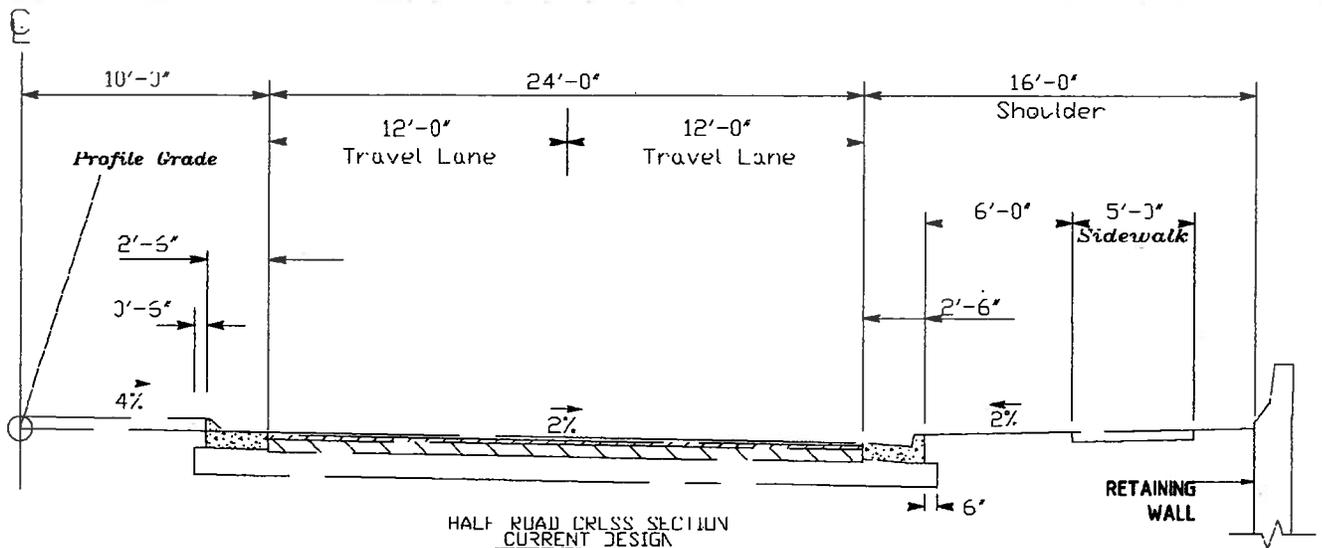
PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-3

DESCRIPTION: **USE GUARDRAIL AND PEDESTRIAN RAIL IN-LIEU OF
PARAPET**

SHEET NO.: **2 of 4**



Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.L. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-3

DESCRIPTION: **USE GUARDRAIL AND PEDESTRIAN RAIL IN-LIEU OF
PARAPET**

SHEET NO.:

3 of 4

Current Design (Cast-in-Place Concrete Side Barriers (Retaining Walls) and MSE Walls)

GA STD 4948B Type 2-B Wall (Assume average height of 7.5’):

Total length of Type 2-B walls (as listed in provided cost estimate) = 500’ [STP-9108(4)] +
500’ [STP-9108(5)] = 1000 LF

Total area of Type 2-B walls (as listed in provided cost estimate) = 1000’ STP-9108(4) X 7.5’ = 7500 SF

MSE Walls (Assume average height of 10’):

Total area of MSE Walls (as listed in provided cost estimate) = 6800 SF [STP-9108(4)]

Total length of MSE Walls (as listed in provided cost estimate) = 6800 SF/10’ = 680 LF

Alternative (Provide Guardrail & Pedestrian rails along length of walls)

Total length of walls = 1000 + 680 = 1680 LF

Length of required “T” Beam Guardrail (STD 4270) between edge of travel lane & sidewalk = 1680 LF

Length of required Pipe Handrail mounted on wall (STD. 9031R) = 1680 LF

Savings in Right-of-Way = [1680’ X 4’] / 43560 = 0.16 Acres

Savings in in-place embankment = 4 X [(1000’ X 7.5’) + (680’ X 10’)] / 27 = 2118.52 CY

Savings in barrier section (assume Type 20) on top of Gravity wall = 1000 LF

NOTE:

Reduction from current design = savings for alternative.

Cost of MSE Wall Construction assumed to be \$60 per SF. Also, 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 and obtain more accurate quantities. A detailed analysis may show greater cost savings than that shown in this report.



COST WORKSHEET

PROJECT: **Georgia Department of Transportation** ALTERNATIVE NO.: **ST-3**

STP-9108(4)(5) – P.I. No.751770 & 771775
Battle Creek Road - Clayton County

DESCRIPTION: **USE GUARDRAIL AND PEDESTRIAN RAIL IN-LIEU OF PARAPET** 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
"T" Beam Guardrail	LF	0	\$ 53.18	\$ -	1680	\$ 53.18	\$ 89,342.40
Pipe Handrail	LF	0	\$ 40.00	\$ -	1680	\$ 40.00	\$ 67,200.00
In-place Embankment	CY	2118.52	\$ 8.00	\$ 16,948.16	0	\$ 8.00	\$ -
Right-of-Way	AC	0.16	\$ 100,000.00	\$ 16,000.00	0	\$ 100,000.00	\$ -
Type 20 Concrete Barrier	LF	1000	\$ 141.04	\$ 141,040.00	0	\$ 141.04	\$ -
Note: Reduction in Alternative = Cost for Current Design							
Sub-total				\$ 173,988			\$ 156,542
Mark-up at 10.00%				\$ 17,399			\$ 15,654
TOTAL				\$ 191,387			\$ 172,197
Estimated Savings:							\$19,190

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ST-4
DESCRIPTION:	RECONFIGURE LANES & SIDEWALK TO UTILIZE NEW BRIDGE ONLY	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 and other Structural components were under development. The study was based on available information and certain assumptions).

The original design calls for the rehabilitation of the old portion of the bridge to bring the entire bridge width to HS-20 load capacity. The old bridge, made up of GDOT “T” beams and Steel “H” Pile bents has a sufficiency rating of 68 and is rated to fail in shear. The old bridge (currently being used) is posted for HS-15 truck load. The new portion of the bridge, with skewed bents and AASHTO Type I PPC Beams, was built in 1997 as an extension to the old bridge and has a sufficiency rating of above 95. It is proposed in the current design to fiber wrap (using carbon fiber stirrups) the “T” beams on the old portion of the bridge to enhance its shear capacity and bring it HS-20 load capacity. The project widening will then be able to utilize the entire 84’ of bridge width to accommodate 2 – 12’ travel lanes, 20 median (16’ raised), required buffers and 6’ raised sidewalks on either side.

Alternative:

The alternative proposes reconfiguring the lane width, sidewalk and median requirements to be able to utilize only the new bridge and abandon the old bridge.

Opportunities:

- Cost savings
- Reduced construction time

Risks:

- Minimal redesign effort
- Design exceptions may be required

Technical Discussion:

The new bridge is 59’- 4” wide including a 1’-1” parapet, 6’ raised sidewalk and 16’ raised median. By removing the 16’ raised median and 1’ of the raised sidewalk, the new bridge may be able to accommodate a 1’-1” parapet and 5’ raised sidewalk on the south side, 2 – 11’ Eastbound lanes, 2’ buffer, a 2’ raised median, 2’ buffer, 2 -11’ Westbound lanes, 2’ buffer and a Jersey barrier. The sidewalk on the North side can be diverted on to the old bridge behind the Jersey barrier.

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	\$ 726,000	\$	\$ 726,000
ALTERNATIVE	\$ 35,099	\$	\$ 35,099
SAVINGS	\$ 690,901	\$	\$ 690,901

Illustrations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

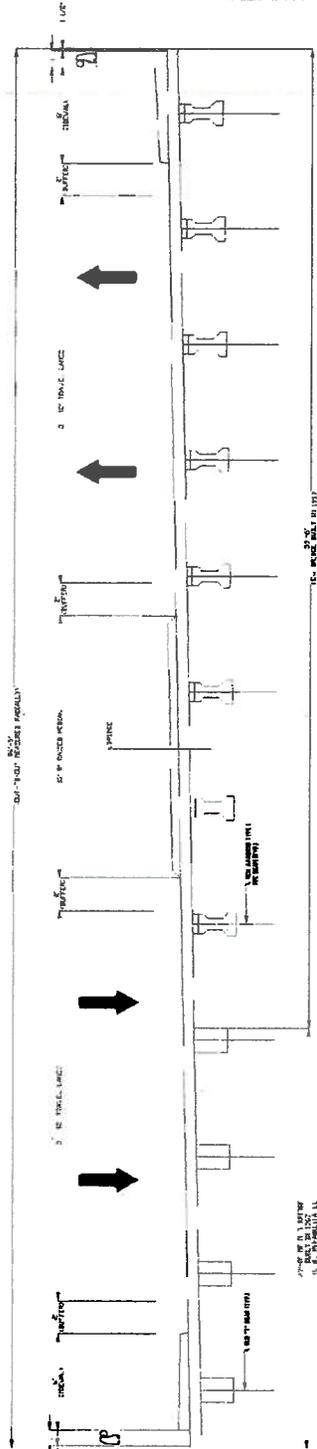
ALTERNATIVE NO.:

ST-4

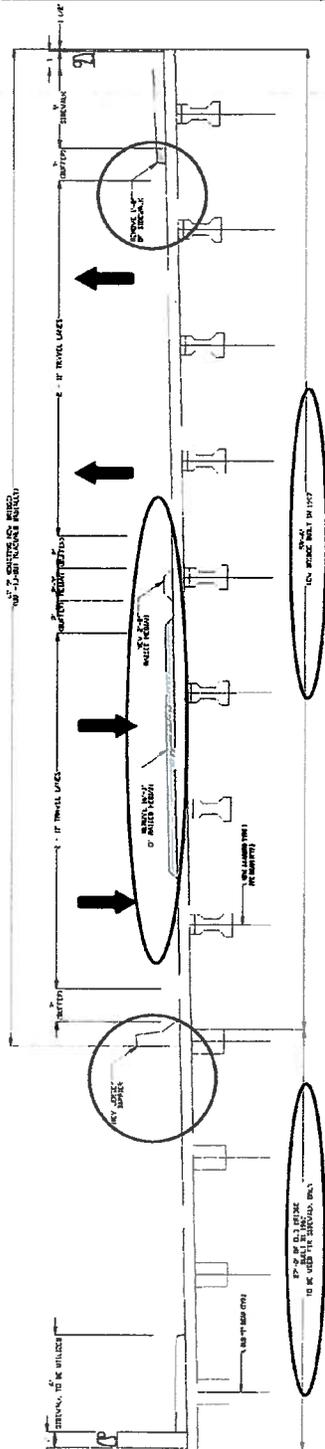
DESCRIPTION: **RECONFIGURE LANES & SIDEWALK TO UTILIZE NEW
BRIDGE ONLY**

SHEET NO.:

2 of 4



CURRENT CONFIGURATION



**PROPOSED CONFIGURATION
ALTERNATIVE ST-4**

Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-4

DESCRIPTION: **RECONFIGURE LANES & SIDEWALK TO UTILIZE NEW
BRIDGE ONLY**

SHEET NO.: 3 of 4

Current Design (Rehabilitation of Old Portion of Bridge)

Area of Bridge to be rehabilitated = 6000 SF (From cost estimates)

Alternative (Abandon old bridge, modify new bridge)

Removal of 16' raised median = $[16' \times 108.25'] / 9 = 192.44$ SY

Removal of 1' width of raised sidewalk (length of sidewalk at 118.25' approx.) = $[1' \times 118.25'] / 9 = 13.14$ SY

Total area of raised concrete to be removed = $192.44 + 13.14 = 205.58$ SY

Area of new 2' raised median along 110' (approx.) of bridge) = $[2' \times 110'] / 9 = 24.44$ SY

Length of new Jersey barrier = 108.25'

NOTE:

Reduction from current design = savings for alternative.

Cost of bridge rehabilitation assumed to be \$110 per SF (as stated in provided cost estimates).

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

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ST-5
DESCRIPTION:	PERFORM PARTIAL MODIFICATIONS TO THE EXISTING BRIDGE AND ABANDON REMAINING	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 and other Structural components were under development. The study was based on available information and certain assumptions).

The original design calls for the rehabilitation of the old portion of the bridge to bring the entire bridge width to HS-20 load capacity. The old bridge, made up of GDOT “T” beams and Steel “H” Pile bents has a sufficiency rating of 68 and is rated to fail in shear. The old bridge (currently being used) is posted for HS-15 truck load. The new portion of the bridge, with skewed bents and AASHTO Type I PPC Beams, was built in 1997 as an extension to the old bridge and has a sufficiency rating of above 95. It is proposed in the current design to fiber wrap (using carbon fiber stirrups) the “T” beams on the old portion of the bridge to enhance its shear capacity and bring it HS-20 load capacity. The project widening will then be able to utilize the entire 84’ of bridge width to accommodate 2 – 12’ travel lanes, 20 median (16’ raised), required buffers and 6’ raised sidewalks on either side.

Alternative:

The alternative proposes reconfiguring the lane width, sidewalk and median requirements to be able to utilize all of the new bridge and only a portion of the old bridge. Only the first interior beam of the old bridge will need to be rehabilitated to be able to carry the barrier and sidewalk weight (no wheel load).

Opportunities:

- Cost savings
- Reduced construction time

Risks:

- Minimal redesign effort
- Design exceptions may be required

Technical Discussion:

The new bridge is 59’- 4” wide including a 1’-1” parapet, 6’ raised sidewalk and 16’ raised median. By removing the 16’ raised median and 1’ of the raised sidewalk and rehabilitating only the interior beam of the old bridge to carry the dead load from a new barrier and sidewalk (& pedestrian load), the bridge may be able to accommodate a 1’-1” parapet and 5’ raised sidewalk on the south side, 2 – 11’ Eastbound lanes, 2’ buffer, a 4’ raised median, 2’ buffer, 2 -11’ Westbound lanes, 2’ buffer, 5’ raised sidewalk and a 1’-1” barrier on the North side. The out-to-out of the modified superstructure will be 66’-5”. The remaining portion of the old bridge may be abandoned.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 726,000	\$	\$ 726,000
ALTERNATIVE	\$ 257,802	\$	\$ 257,802
SAVINGS	\$ 468,198	\$	\$ 468,198

Illustrations



**PROJECT: Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

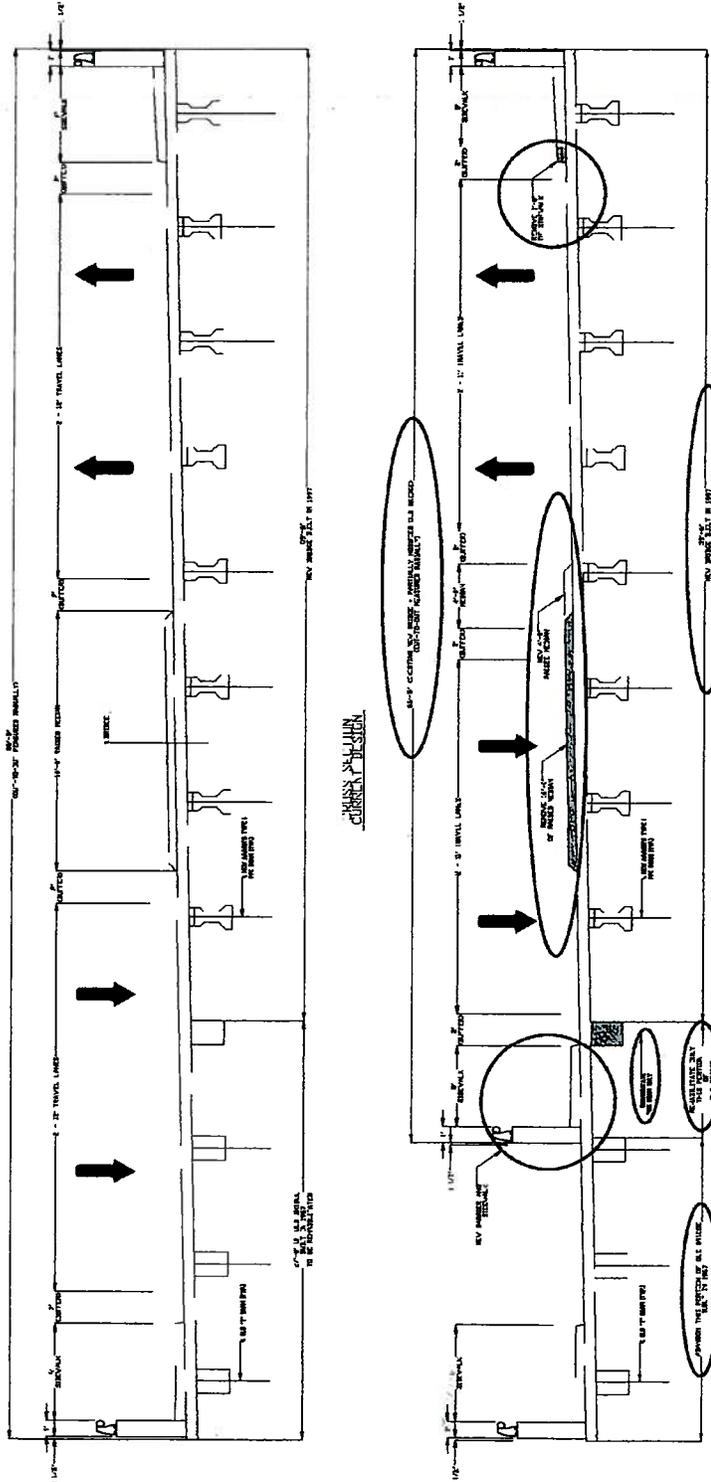
ALTERNATIVE NO.:

ST-5

**DESCRIPTION: PERFORM PARTIAL MODIFICATIONS TO THE
EXISTING BRIDGE AND ABANDON REMAINING**

SHEET NO.:

2 of 4



Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ST-5

DESCRIPTION: **PERFORM PARTIAL MODIFICATIONS TO THE
EXISTING BRIDGE AND ABANDON REMAINING**

SHEET NO.: 3 of 4

Current Design (Rehabilitation of Old Portion of Bridge)

Area of Bridge to be rehabilitated = 6000 SF (From cost estimates)

Alternative (Abandon old bridge, modify new bridge)

Removal of 16' raised median = $[16' \times 108.25'] / 9 = 192.44$ SY

Removal of 1' width of raised sidewalk (length of sidewalk at 118.25' approx.) = $[1' \times 118.25'] / 9 = 13.14$ SY

Total area of raised concrete to be removed = $192.44 + 13.14 = 205.58$ SY

Area of new sidewalk = $[5' \times 108.25'] / 9 = 60.14$ SY

Area of new 4' raised median along 110' (approx.) of bridge = $[4' \times 110'] / 9 = 48.88$ SY

Area of new raised concrete = $60.14 + 48.88 = 109.02$ SY

Length of new special barrier = 108.25'

Partial rehabilitation of old bridge (one beam line only – by prorating) = $[6000/4] = 1500$ SF

NOTE:

Reduction from current design = savings for alternative.

Cost of bridge rehabilitation assumed to be \$110 per SF (as stated in provided cost estimates).

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

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	
		ROW-1	
DESCRIPTION:	RE-ALIGN THE MILL LAKE WAY AND SANDLEWOOD DRIVE INTERSECTION.	SHEET NO.:	1 of 4

Original Design:

The original design shows realigning Mill Lake Way to match existing Sandlewood Drive.

Alternative:

The alternative is to realign existing Sandlewood Drive to match Mill Lake Way.

Opportunities:

- Reduce the number of right of way takings.
- Eliminate 4 relocations

Risks:

- Minimal design effort
- Impacts to apartment complex parking.

Technical Discussion:

The current alignment calls for acquiring 6 parcels of residential right of way including 4 residences. By realigning Sandlewood Drive to align with existing Mill Lake Way you can realize a saving in right of way acquisition.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 3,128,511	\$	\$ 3,128,511
ALTERNATIVE	\$ 1,117,325	\$	\$ 1,117,325
SAVINGS	\$ 2,011,186	\$	\$ 2,011,186

Illustrations



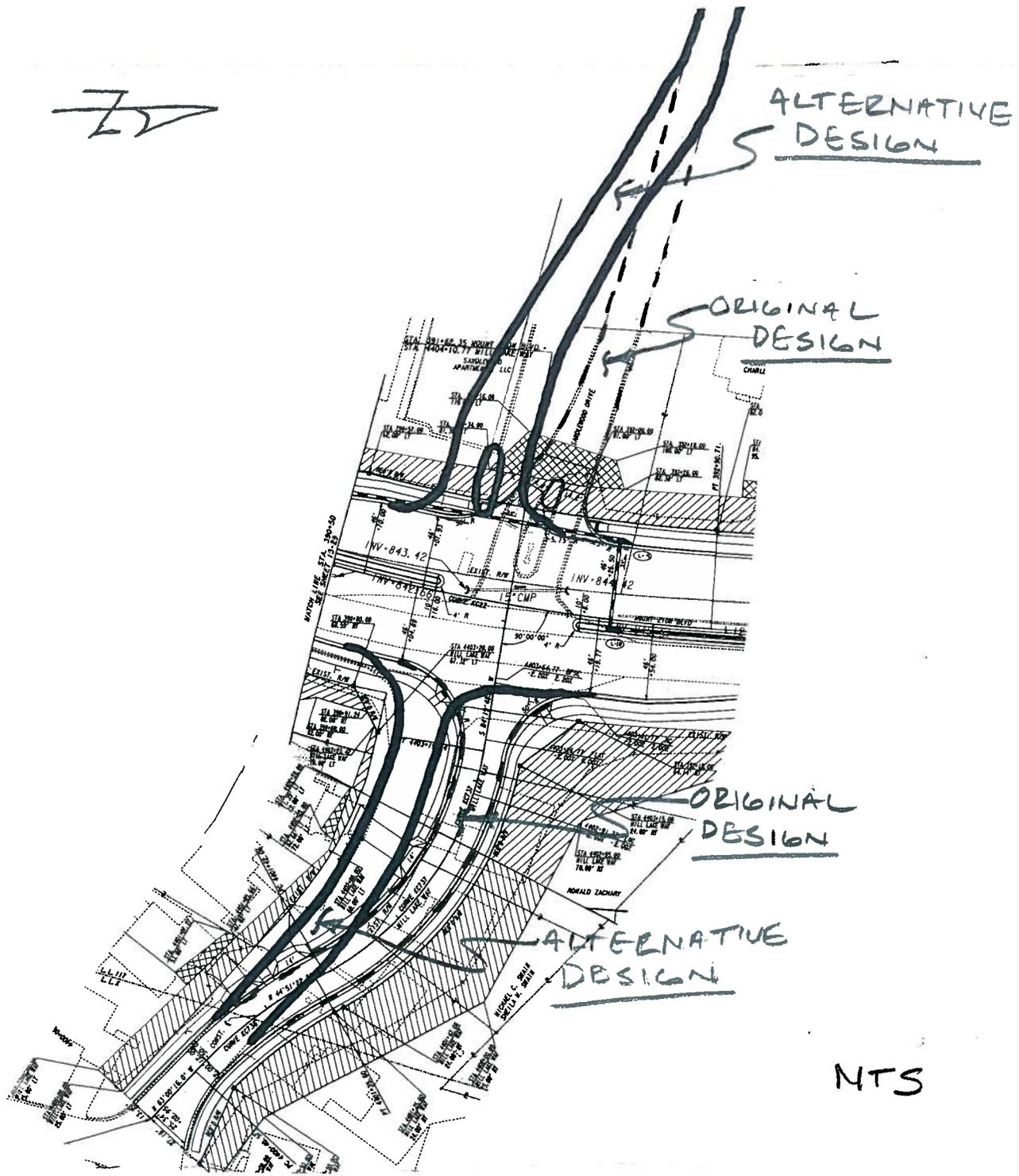
PROJECT: **Georgia Department of Transportation**
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County

ALTERNATIVE NO.:

ROW-1

DESCRIPTION: **RE-ALIGN THE MILL LAKE WAY AND SANDLEWOOD**
DRIVE INTERSECTION

SHEET NO.: 2 of 4



Calculations



PROJECT: Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.: ROW-1
DESCRIPTION: RE-ALIGN THE MILL LAKE WAY AND SANDLEWOOD DRIVE INTERSECTION	SHEET NO.: 3 of 4

Assume paving costs would offset

Original:

Relocation: 4 each x \$250,000%	= \$1,000,000
Right of way: Residential-Assume [360'1 x 20'w (avg.)] / (43560sf/ac)=> 0.17 ac	
Net cost 0.17 ac x \$50,000	= \$8,500
Easement: Residential-Assume [420'1 x 30'w (avg.)] / (43560sf/ac)=> 0.29 ac	
Net cost 0.29 ac x \$25,000	= \$7,250
Sub-Total	= \$1,015,750
Scheduling @ 55%	= \$558,663
Court cost @ 60%	= \$609,450
Inflation @ 65%	= \$660,238
Total	= \$2,844,101

Alternative:

Improvements: Parking/16 spaces @ \$20,000	= \$320,000
Easement: Commercial-Assume [400'1 x 50'w (avg.)] / (43560sf/ac)=> 0.46 ac	
Net cost 0.46 ac x \$100,000	= \$46,000
Sub-Total	= \$366,000
Scheduling @ 55%	= \$201,300
Court cost @ 60%	= \$219,600
Inflation @ 65%	= \$237,900
Total	= \$1,024,800

Value Analysis Design Alternative



PROJECT:	Georgia Department of Transportation STP-9108(4)(5) – P.I. No. 751770 & 751775 Battle Creek Road – Clayton County	ALTERNATIVE NO.:	ROW-4
DESCRIPTION:	LIMIT R.O.W. TAKING AND EASE CONSTRUCTION BY SEGREGATING WIDENING TO ONE SIDE.	SHEET NO.:	1 of 4

Original Design:

The original design shows taking R.O.W from both sides of the existing roadway for use in widening.

Alternative:

The alternative is to segregate R.O.W. taking to one side of the existing roadway where practicable, to reduce the number of parcels affected, and to ease construction by impacting either the north or south sides of the existing roadway, as opposed to both.

Opportunities:

- Reduction in R.O.W. costs
- Reduction in construction time
- Reduction in M.O.T costs

Risks:

- Moderate design impacts

Technical Discussion:

The intent of the alternative is to isolate the proposed widening to one side of the existing roadway where practicable. This would allow construction to take place on a single side, as opposed to both sides, which would likely have the effect of reducing M.O.T. costs. More significantly, a reduction in the number of R.O.W. parcels required for the proposed widening would result in significant cost and time savings during the R.O.W. acquisition phase. It appears that the least resistant corridor for widening from the beginning of the project to Southlake Parkway is to the south. From Southlake Parkway to the end of the project, the least resistant corridor appears to be widening to the north side of the existing roadway. Estimated R.O.W. parcel savings were 20% of overall cost.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 22,999,813	\$	\$ 22,999,813
ALTERNATIVE	\$ 18,399,851	\$	\$ 18,399,851
SAVINGS	\$ 4,599,963	\$	\$ 4,599,963

Illustrations



PROJECT: Georgia Department of Transportation
 STP-9108(4)(5) - P.I. No. 751770 & 751775
 Battle Creek Road - Clayton County

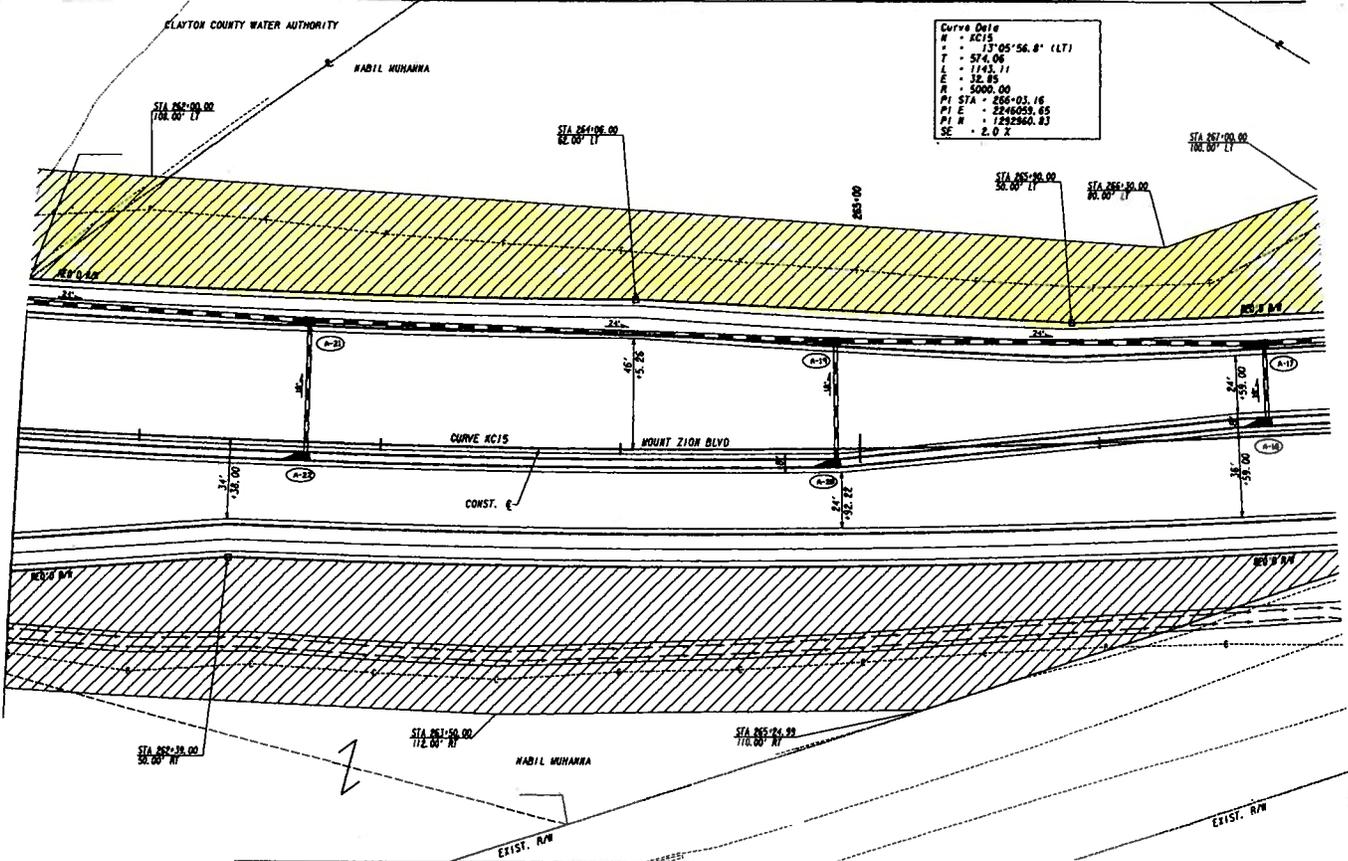
ALTERNATIVE NO.:

ROW-4

DESCRIPTION: LIMIT R.O.W. TAKING AND EASE CONSTRUCTION BY
 SEGREGATING WIDENING TO ONE SIDE.

SHEET NO.: 2 of 4

EXAMPLE - N.T.S.



- OMIT R.O.W. ACQUISITION ON THE NORTH SIDE OF THE EXISTING ROADWAY IN THIS EXAMPLE. ACQUIRE R.O.W. ON SOUTH SIDE OF EXISTING ROADWAY FOR WIDENING. -

Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

ROW-4

DESCRIPTION: **LIMIT R.O.W. TAKING AND EASE CONSTRUCTION BY
SEGREGATING WIDENING TO ONE SIDE.**

SHEET NO.: 3 of 4

-Total R.O.W. cost for both projects-\$20,908,921.03

-20% estimated R.O.W. parcel savings overall by acquiring R.O.W. and widening to one side of the existing roadway only.

$\$20,908,921.03 \times .20 = \$4,181,784.21$ R.O.W. savings at 20% reduction in acquisition.

10% MARK-UP=\$418,178.42

Total savings- $\$4,181,784.21 + \$418,178.42 = \$4,599,963$

Value Analysis Design Alternative



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

DR-1

DESCRIPTION: **REDUCE THE AMOUNT OF DUAL TRUNKLINES**

SHEET NO.: 1 of 4

Original Design:

The original design has several locations with dual/parallel trunk lines

Alternative:

The alternative is to reduce the amount of the parallel systems.

Opportunities:

- Reduce the quantity of RCP.
- Reduce construction time.
- Move some trunk lines closer to the outlet end of the outfall structure.

Risks:

- Requires shifting traffic or more open cutting of the roadway.
- Minimum design effort.

Technical Discussion:

Sometimes it is necessary due to construction sequencing to build parallel trunk lines, however it appears that at several locations in closed drainage systems could be consolidated or eliminated. It is also recommended that the designer outfall the closed drainage systems on the down stream end of the cross drains whenever possible, outfall J-2 => J-0 and K-2 => K-0 downstream instead of upstream, and avoid multiple angled connections to a structure if possible(see structure M-1 on unit 4)

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
ORIGINAL DESIGN	\$ 236,460	\$	\$ 236,460
ALTERNATIVE	\$ 137,097	\$	\$ 137,097
SAVINGS	\$ 99,363	\$	\$ 99,363

Calculations



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

ALTERNATIVE NO.:

DR-1

DESCRIPTION: **REDUCE THE AMOUNT FOR DUAL TRUNKLINES**

SHEET NO.: 3 of 4

STP-9108(4)

A)CONNECT A-36 TO A NEW MANHOLE BETWEEN A-38 AND A-37/ ELIMINATE A-36 TO A-35

ORIGINAL: 290 lf 18”RCP ALTERNATIVE: 75 lf 18” RCP, 1-MANHOLE

B)CONNECT K-16 TO K-5/ ELIMINATE K-16 TO K-15

ORIGINAL: 215 lf 18”RCP ALTERNATIVE: 95 lf 18” RCP

C)CONNECT K-19 TO K-9 AND K-18 TO K-7/ ELIMINATE K-19 TO K-18 AND K-18 TO K-17

ORIGINAL: 420 lf 18”RCP ALTERNATIVE: 75 lf 18” RCP AND 75 lf 24” RCP

STP-9108(4)

D)CONNECT H-47 TO H-43/ ELIMINATE H-47 TO H-46

ORIGINAL: 115 lf 18”RCP ALTERNATIVE: 35 lf 18” RCP

E)CONNECT H-18 TO A NEW MANHOLE BETWEEN H-33 AND H-32/ ELIMINATE H-18 TO H-16

ORIGINAL: 275 lf 18”RCP ALTERNATIVE: 50 lf 18” RCP, 1-MANHOLE

F)CONNECT H-20 AND H-19 TO CROSSDRAIN/ ELIMINATE H-20 TO H-19 TO H-18

ORIGINAL: 135 lf 18”RCP ALTERNATIVE: 0 lf 18” RCP

G)CONNECT H-21 TO A NEW MANHOLE BETWEEN H-34 AND H-33/ ELIMINATE H-21 TO H-18

ORIGINAL: 175 lf 18”RCP ALTERNATIVE: 40 lf 18” RCP, 1-MANHOLE

H)CONNECT H-21 TO A NEW MANHOLE BETWEEN H-34 AND H-33/ ELIMINATE H-21 TO H-18

ORIGINAL: 175 lf 18”RCP ALTERNATIVE: 40 lf 18” RCP, 1-MANHOLE

I)OUTFALL H-4 THRU H-11 INT THE SIDE DITCH / ELIMINATE H-5 THRU H-11 AND H-4 THRU H-2

ORIGINAL: 675 lf 18”RCP ALTERNATIVE: 280 lf 18” RCP, 8-18” FES

J)RECONFIGURE TARA ROAD SYSTEM CONNECT M-2 => M-3 => M-4 => M-5 => NEW MANHOLE,
TIE M-6 => NEW MANHOLE, OUTFALL NEW MANHOLE TO M-0.

ORIGINAL: 285 lf 18”RCP, 385 lf 24”RCP, 1-JUNCTION BOX ALTERNATIVE: 270 lf 18”RCP, 105 lf
24”RCP, 130 lf 36” RCP, 1-MANHOLE

K)RECONFIGURE CHASE LAKE DRIVE SYSTEM CONNECT L-9 =>L-12 => NEW MANHOLE, TIE L-6
=> L10 => L-8 => NEW MANHOLE, OUTFALL NEW MANHOLE TO SIDE DITCH

ORIGINAL: 520 lf 18”RCP, 1-18” FES ALTERNATIVE: 300 lf 18”RCP, 50 lf 24”RCP, 1-24” FES , 1-
MANHOLE

L)CONNECT N-5 TO N-11/ ELIMINATE N-5 TO N-4

ORIGINAL: 250 lf 18”RCP ALTERNATIVE: 115 lf 18” RCP

M)CONNECT N-4 TO N-10 AND N-8 TO N-2 / ELIMINATE N-4 TO N-3 AND N-8 TO N-6

ORIGINAL: 245 lf 18”RCP, 100 lf 30”RCP ALTERNATIVE: 105 lf 18”RCP, 85 lf 30”RCP

N)CONNECT R-17 TO R-20 AND R-16 TO R-19 / ELIMINATE R-17 TO R-16 AND R-16 TO R-14

ORIGINAL: 425 lf 18”RCP ALTERNATIVE: 195 lf 18”RCP

TOTAL: ORIGINAL- 18”RCP 4200lf, 24” RCP 385 lf, 30” RCP 100 lf, 1-18” FES, 1- JUNCTION BOX

ALTERNATIVE - 18”RCP 1675 lf, 24” RCP 230 lf, 36” RCP 130 lf, 1-18” FES, 1-24” FES, 6- MANHOLES

Project Description

PROJECT DESCRIPTION

Project STP-9108(4) consists of the widening and reconstruction of Battle Creek Road /CR 1342 and Mt. Zion Boulevard/CR 28. The project begins on Battle Creek Road beginning at Southlake Parkway and ending at Mt. Zion Boulevard and Somerton Drive. Total length of the project is 3.48 miles

Proposed improvements will increase the level of service by providing additional travel lanes, and additional turn lanes at major intersections. The project will also improve vertical sight distance. Proposed improvements will allow each intersection to operate at LOS "D" or better. Other proposed improvements include widening from the existing two and four lane facilities to four 12' lanes with a 20" raised median and urban shoulders consisting of 2.5' curb and gutter, 6' grassed strip and 5' sidewalks.

For Project STP-9108(4) the estimated construction cost is 22,946,564. The preliminary ROW acquisition cost is \$11,939,071.

Project STP-9108(5) consists of the widening and reconstruction of Battle Creek Road/CR1342 from Valley Hill Road to Southlake parkway for a total of 2.11 miles. Proposed improvements are the same as for STP-9108(4).

For Project STP-9108(5) the estimated construction cost is \$14,289,139. The preliminary ROW acquisition cost is \$8,969,849.

Clayton County is a heavily developed area with a need for improved east-west connectivity. This project will serve this need. Both roads are urban collectors.

REPRESENTATIVE DOCUMENTS

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

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

Representative documents follow:

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-9108(4)
 DATE: April 11, 2007
 PREPARED BY: Kimley-Horn and Associates

COUNTY: Clayton
 ESTIMATED LETTING DATE:
 PROJECT LENGTH: 3.62 MILES

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

PROJECT COST				
A. RIGHT-OF-WAY				
1. PROPERTY (LAND & EASEMENT)				\$3,939,071
2. DISPLACEMENTS; (20 Residential, 3 Commercial)				\$8,000,000
			SUBTOTAL:A	\$11,939,071
B. REIMBURSABLE UTILITIES:				
1. PIPELINE RELOCATION				\$2,000,000
2. TRANSMISSION LINES				\$0
3. SERVICES				\$0
			SUBTOTAL:B	\$2,000,000
C. CONSTRUCTION				
1. MAJOR STRUCTURES				
a. BOX CULVERTS				
1) BAR REINF STEEL	47443 LB	@	\$2.00	\$94,886
2) CLASS A CONC	317 CY	@	\$775	\$245,675
3) FOUND BACKFILL MAT'L	7200 CY	@	\$35	\$252,000
b. RETAINING WALLS				
1) CONC SIDE BARRIER	500 LF	@	\$450	\$225,000
2) MSE WALL	6800 SF	@	\$75	\$510,000
			SUBTOTAL:C-1	\$1,327,561
2. GRADING AND DRAINAGE				
a. EARTHWORK				
1) BORROW EXCAV	100000 CY	@	\$8	\$800,000
2) UNCLASS EXCAV	75000 CY	@	\$8	\$600,000
b. DRAINAGE				
1) CROSS DRAINS				
24" Pipe	3900 LF	@	\$65	\$253,500
24" FES	78 EA	@	\$870	\$67,860
2) SIDE DRAINS				
18" Pipe	2400 LF	@	\$38	\$91,200
18" SES	160 EA	@	\$655	\$104,800
3) LONGITUDINAL SYSTEMS				
Catch Basins	132 EA	@	\$2,285	\$301,620
24" Pipe	39600 LF	@	\$65	\$2,574,000
24" FES	33 EA	@	\$870	\$28,710
			SUBTOTAL:C-2	\$4,821,690
3. BASE AND PAVING				
a. AGGREGATE BASE				
	69442 TN	@	\$18	\$1,249,949
b. ASPHALT PAVING				
Surface	9513 TN	@	\$90	\$856,152
Binder	12097 TN	@	\$90	\$1,088,736
Base	44282 TN	@	\$90	\$3,985,344
c. CONCRETE PAVING				
d. OTHER (LEVELING, TACK)				
Leveing	293 TN	@	\$75	\$22,000
Tack	15770 GAL	@	\$2	\$31,539
			SUBTOTAL:C-3	\$7,233,720
4. LUMP ITEMS				
a. GRASSING				
	22 AC	@	\$1,000	\$22,000
b. CLEARING AND GRUBBING				
	22 AC	@	\$5,000	\$110,000
c. LANDSCAPING				
				\$0
d. EROSION CONTROL				
Silt Fence	10000 LF	@	\$3	\$30,000
Erosion Mat	5000 SY	@	\$2	\$10,000

Baled Straw	1500 LF @	\$2	\$3,000
Ty 3 Silt Gates	39 EA @	\$350	\$13,650
Sediment Basins	3 EA @	\$8,500	\$25,500
e. TRAFFIC CONTROL	LS		\$350,000
f. ITS DEVICES	LS		\$684,475
g. TRAFFIC SIGNAL INSTALLATION	10 EA @	\$75,000	\$750,000
	SUBTOTAL:C-4		\$1,998,625
5. MISCELLANEOUS			
a. LIGHTING			
b. SIGNING - MARKING			
Solid Traff Stripe, 5 IN, White	80000 LF @	\$0.75	\$60,000
Solid Traff Stripe, 5 IN, Yellow	20000 LF @	\$0.75	\$15,000
Skip Traff Stripe, 5 IN, White	40000 GLF @	\$0.50	\$20,000
Hlgway Signs, TP 6 Sheeting	2500 SF @	\$20	\$50,000
Galv Steel Posts, TP 7	2000 LF @	\$9	\$18,000
Raised Pvmt Markers	500 EA @	\$4	\$2,000
c. GUARDRAIL			
W Beam	3500 LF @	\$20	\$70,000
Ty 12 Ancors	8 EA @	\$1,900	\$15,200
Ty 1 Ancors	8 EA @	\$650	\$5,200
d. CURB AND GUTTER			
Curb and Gutter TP 2	45000 LF @	\$18	\$810,000
Curb and Gutter TP 7	40000 LF @	\$16	\$640,000
	SUBTOTAL:C-5		\$1,705,400
6. SPECIAL FEATURES			
1) FIELD ENGINEERS OFFICE TY 3			\$75,000
	SUBTOTAL:C-6		\$75,000

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY		\$11,939,071
B. REIMBURSABLE UTILITIES		\$2,000,000
C. CONSTRUCTION		
1. MAJOR STRUCTURES		\$1,327,561
2. GRADING AND DRAINAGE		\$4,821,690
3. BASE AND PAVING		\$7,233,720
4. LUMP ITEMS		\$1,998,625
5. MISCELLANEOUS		\$1,705,400
6. SPECIAL FEATURES		\$75,000
SUBTOTAL CONSTRUCTION COST		\$17,161,996
INFLATION (5% PER YEAR)		\$3,698,517
NUMBER OF YEARS	4	
E. & C. (10%)		\$2,086,051
TOTAL CONSTRUCTION COST		\$22,946,565
GRAND TOTAL PROJECT COST		\$36,885,636

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-9108(5)
DATE: April 11, 2007
PREPARED BY: Kimley-Horn and Associates

COUNTY: Clayton
ESTIMATED LETTING DATE:
PROJECT LENGTH: 2.11 MILES

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

PROJECT COST				
A. RIGHT-OF-WAY				
1. PROPERTY (LAND & EASEMENT)				\$2,969,849
2. DISPLACEMENTS; (12 Residential, 3 Commercial)				\$6,000,000
SUBTOTAL:A				\$8,969,849
B. REIMBURSABLE UTILITIES:				
1. RAILROAD				
2. TRANSMISSION LINES				
3. SERVICES				\$0
SUBTOTAL:B				\$0
C. CONSTRUCTION				
1. MAJOR STRUCTURES				
a. BOX CULVERTS				
1) BAR REINF STEEL	5196 LB	@	\$2.00	\$10,392
2) CLASS A CONC	61 CY	@	\$775	\$47,275
3) FOUND BACKFILL MAT'L	2000 CY	@	\$35	\$70,000
b. BRIDGES				
1) BRIDGE REHABILITATION				
	6000 SF	@	\$110	\$660,000
c. RETAINING WALLS				
1) CONC SIDE BARRIER				
	500 LF	@	\$450	\$225,000
SUBTOTAL:C-1				\$1,012,667
2. GRADING AND DRAINAGE				
a. EARTHWORK				
1) BORROW EXCAV				
	50000 CY	@	\$8	\$400,000
2) UNCLASS EXCAV				
	35000 CY	@	\$8	\$280,000
b. DRAINAGE				
1) CROSS DRAINS				
24" Pipe				
	2300 LF	@	\$65	\$149,500
24" FES				
	46 EA	@	\$870	\$40,020
2) SIDE DRAINS				
18" Pipe				
	1800 LF	@	\$38	\$68,400
18" SES				
	120 EA	@	\$655	\$78,600
3) LONGITUDINAL SYSTEMS				
Catch Basins				
	80 EA	@	\$2,285	\$182,800
24" Pipe				
	30000 LF	@	\$65	\$1,950,000
24" FES				
	20 EA	@	\$870	\$17,400
SUBTOTAL:C-2				\$3,166,720
3. BASE AND PAVING				
a. AGGREGATE BASE				
	41915 TN	@	\$18	\$754,474
b. ASPHALT PAVING				
Surface				
	5782 TN	@	\$90	\$520,344
Binder				
	7415 TN	@	\$90	\$667,392
Base				
	26729 TN	@	\$90	\$2,405,568
c. CONCRETE PAVING				
d. OTHER (LEVELING, TACK)				
Leveing				
	147 TN	@	\$75	\$11,000
Tack				
	9625 GAL	@	\$2	\$19,249
SUBTOTAL:C-3				\$4,378,027
4. LUMP ITEMS				
a. GRASSING				
	13 AC	@	\$1,000	\$13,000
b. CLEARING AND GRUBBING				
	13 AC	@	\$5,000	\$65,000
c. LANDSCAPING				\$0
d. EROSION CONTROL				
Silt Fence				
	7500 LF	@	\$3	\$22,500

Erosion Mat	9000 SY @	\$2	\$18,000
Baled Straw	1000 LF @	\$2	\$2,000
Ty 3 Silt Gates	23 EA @	\$350	\$8,050
Sediment Basins	2 EA @	\$8,500	\$17,000
e. TRAFFIC CONTROL	LS		\$200,000
f. ITS DEVICES	LS		\$408,975
g. TRAFFIC SIGNAL INSTALLATION	4 EA @	\$75,000	\$300,000
	SUBTOTAL:C-4		\$1,054,525
5. MISCELLANEOUS			
a. LIGHTING			
b. SIGNING - MARKING			
Solid Traff Stripe, 5 IN, White	45000 LF @	\$0.75	\$33,750
Solid Traff Stripe, 5 IN, Yellow	15000 LF @	\$0.75	\$11,250
Skip Traff Stripe, 5 IN, White	25000 GLF @	\$0.50	\$12,500
Higway Signs, TP 6 Sheeting	750 SF @	\$20	\$15,000
Galv Steel Posts, TP 7	1000 LF @	\$9	\$9,000
Raised Pvrmt Markers	300 EA @	\$4	\$1,200
c. GUARDRAIL			
W Beam	2000 LF @	\$20	\$40,000
T Beam	84 LF @	\$55	\$4,620
Ty 12 Ancors	5 EA @	\$1,900	\$9,500
Ty 1 Anchors	5 EA @	\$650	\$3,250
d. CURB AND GUTTER			
Curb and Gutter TP 2	30000 LF @	\$18	\$540,000
Curb and Gutter TP 7	20000 LF @	\$16	\$320,000
	SUBTOTAL:C-5		\$1,000,070
6. SPECIAL FEATURES			
1) FIELD ENGINEERS OFFICE TY 3			
	SUBTOTAL:C-6		\$75,000

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY		\$8,969,849
B. REIMBURSABLE UTILITIES		\$0
C. CONSTRUCTION		
1. MAJOR STRUCTURES		\$1,012,667
2. GRADING AND DRAINAGE		\$3,166,720
3. BASE AND PAVING		\$4,378,027
4. LUMP ITEMS		\$1,054,525
5. MISCELLANEOUS		\$1,000,070
6. SPECIAL FEATURES		\$75,000
SUBTOTAL CONSTRUCTION COST		\$10,687,009
INFLATION (5% PER YEAR)		
NUMBER OF YEARS	4	\$2,303,117
E. & C. (10%)		\$1,299,013
TOTAL CONSTRUCTION COST		\$14,289,138
GRAND TOTAL PROJECT COST		\$23,258,987



Department of Transportation

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January 30, 2006

Andrew Adams, Deputy Director of Transportation
Clayton County Transportation and Development
7960 North McDonough Street
Jonesboro, GA 30236

RE: STP-9108(4), Clayton County
P.I. 751770
Battlecreek – Mt. Zion Blvd from
Southlake Pkwy to Lake Harbin Rd

Dear Andrew Adams:

Attached please find a copy of the approved Concept Report. You will also find within the approval package a letter from the State Environment/Location Engineer stating that a detour meeting will need to be held regarding the detours described within the Concept Report, so govern yourselves accordingly and we will contact you about a meeting date soon.

If you should have any questions or comments, please contact Merishia Robinson or Gerald Ford at (404) 463-4947.

Sincerely,

Merishia Robinson

For: Mike A. Lobdell, P.E.
District Preconstruction Engineer

MAL:wsl:mkr
Attachment

Cc: Robert Lewis, CH2M Hill
Gary Newton, Kimley-Horn
Sean Johnston, Kimley-Horn
File

ORIGINAL TO GENERAL FILES

D.O.T. 66

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

INTERDEPARTMENT CORRESPONDENCE

FILE P. I. No. 751770-, Clayton County **OFFICE** Preconstruction
STP-9108(4)
Battle Creek Road/Mt. Zion
Boulevard Widening
DATE January 25, 2006
FROM *Cybil Kunk*
Margaret B. Pirkle, P.E., Assistant Director of Preconstruction
TO SEE DISTRIBUTION

SUBJECT APPROVED PROJECT CONCEPT REPORT

Attached for your files is the approval for subject project.

MBP/cj

Attachment

DISTRIBUTION:

Brian Summers
Harvey Keepler
Ken Thompson
Jamie Simpson
Michael Henry
Keith Golden
Joe Palladi (file copy)
Paul Liles
Babs Abubakari
Bryant Poole
BOARD MEMBER

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 751770-, Clayton County **OFFICE** Preconstruction
STP-9108(4)
Battle Creek Road/Mt. Zion Boulevard Widening **DATE** January 20, 2006

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

TO David E. Studstill, Jr., P.E., Chief Engineer

SUBJECT PROJECT CONCEPT REPORT

This project is the widening and reconstruction of Battle Creek Road/CR 1342 and Mt. Zion Boulevard/CR 28, beginning on Battle Creek Road at Southlake Parkway and ending at Mt. Zion Boulevard and Somerton Drive. This project will improve the Level of Service (LOS) along the roadway by adding additional through lanes along Battle Creek Road and Mt. Zion Boulevard, as well as adding additional turn lanes at major intersections. The proposed improvements will allow each intersection within the project limits to operate at LOS "D" or better. Base year (2011) traffic volumes in the corridor are 15,400 VPD along Battle Creek Road and 49,700 VPD along Mt. Zion Boulevard. Future design year (2031) volumes are projected to be 22,900 along Battle Creek Road and 73,500 VPD along Mt. Zion Boulevard.

The construction consists of widening Battle Creek Road/CR 1342 and Mt. Zion Boulevard/CR 28 from the existing two and four lane facilities to four, 12' lanes with a 20' raised median and urban shoulders consisting of 2.5' curb and gutter, 6' grassed strip and 5' sidewalks. The project begins on Battle Creek Road and continues to the intersection of Battle Creek Road and Mt. Zion Boulevard. This intersection will be realigned to provide east-west through movement from eastbound Battle Creek Road to eastbound Mt. Zion Boulevard. The project continues east along Mt. Zion Boulevard, crosses I-75 and ends at Somerton Drive. Temporary on-site detour pavement will be utilized along Mt. Zion Boulevard from Richardson Parkway to Lake Harbin Road to facilitate vertical reconstruction of Mt. Zion Boulevard.

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

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>FUNDING</u>	<u>PROG DATE</u>
Construction (includes E&C and inflation)	\$14,296,000	\$16,546,000	L230/L240	2009
Right-of-Way & Utilities*	Local	Local	Local	

David Studstill

Page 2

P. I. No. 751770-, Clayton

January 20, 2006

*Clayton County signed PMA for PE, right-of-way and utilities 4-12-02.

I recommend this project concept be approved.

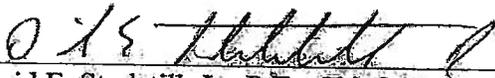
MBP:JDQ/cj

Attachment

CONCUR

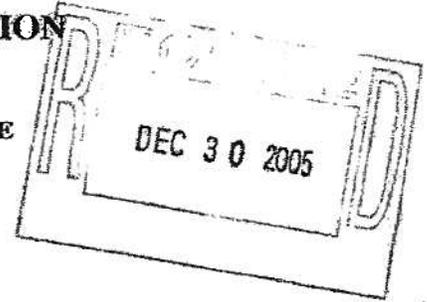

Buddy Gratton, P.E., Director of Preconstruction

APPROVE


David E. Studstill, Jr., P.E., Chief Engineer

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENTAL CORRESPONDENCE



FILE STP-9108(4)
Clayton County
Battlecreek - Mt. Zion Blvd from Southlake
Parkway to Lake Harbin Road
P.I. 751770-

OFFICE: Chamblee Metro

DATE: December 23, 2005

FROM: Bryant Poole, District Engineer ^{Pirke}

TO: Margaret B. Pirke, Assistant Director of Preconstruction

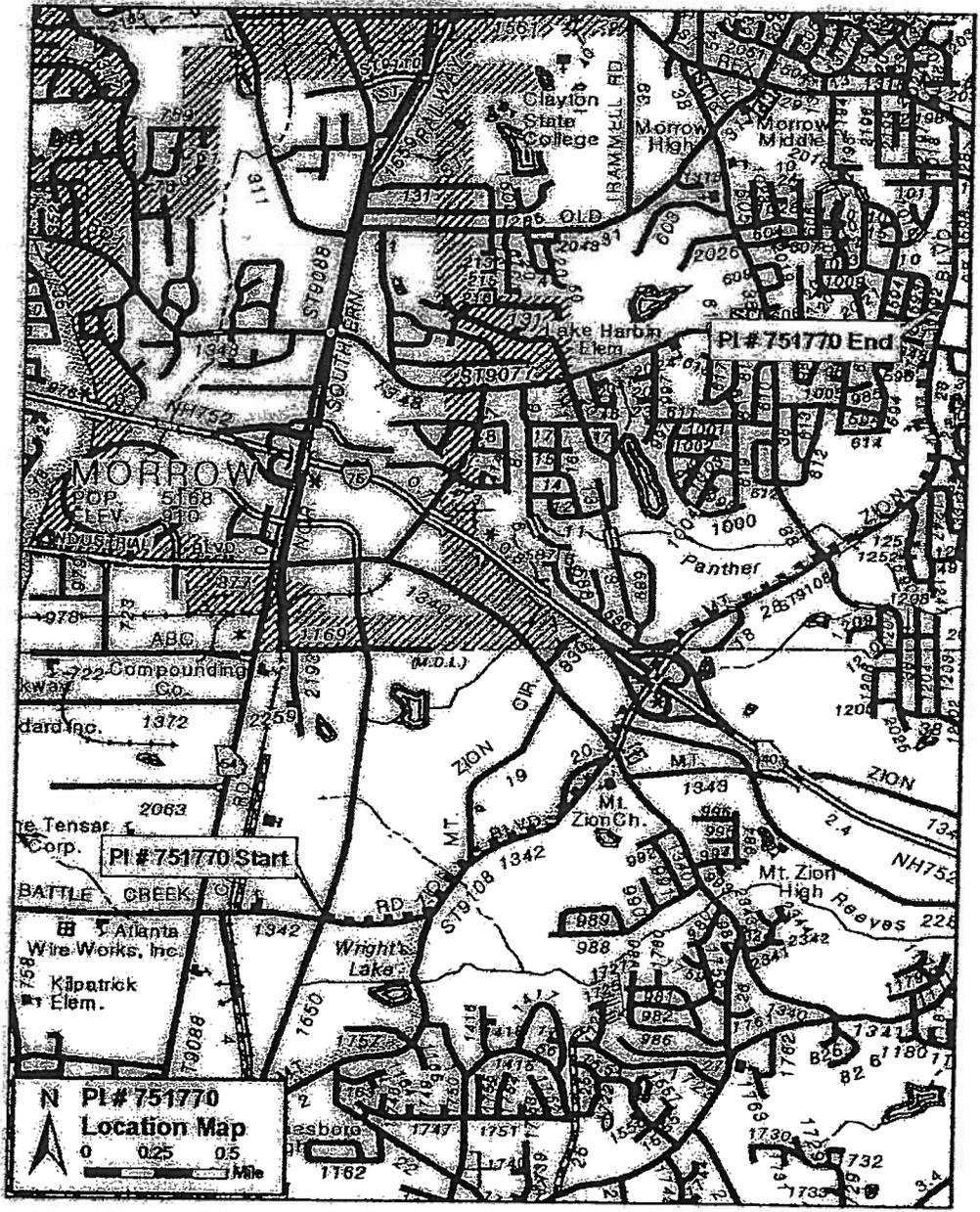
SUBJECT: PROJECT CONCEPT REPORT

Attached is the original copy of the concept report for your further handling for approval in accordance with the PDP.

If you have any questions in regards to this concept, please contact Merishia Robinson or Gerald Ford at (404) 463-4947.

BP\MAL\mk

cc: Joe Palladi
Jamie Simpson
Harvey Keepler
Keith Golden
Brian Summers
Paul Liles
File



Location Map
Project: STP-9108(4) Clayton County PI No: 751770
Description: Widening of Battle Creek Road and Mt. Zion Boulevard

Project Concept Report Page 3
Project Number: STP-9108(4)
P. I. Number: 751770
County: Clayton

Need and Purpose: Project STP-9108(4) consists of widening Battle Creek Road (CR 1342) and Mt. Zion Boulevard (CR 28) from the existing two and four lane facilities to four 12-foot lanes with 20-foot raised median and urban curb and gutter, beginning on Battle Creek Road at Southlake Parkway and ending at Mt. Zion Boulevard and 4th Somerton Drive. Mt. Zion Boulevard and Battle Creek Road are classified as urban collectors.

Base year 2011 traffic volumes in the corridor are approximately 15,400 Vehicles per Day (VPD) along Battle Creek Road and 49,700 VPD along Mt. Zion Boulevard. Future design year 2031 volumes are expected to be approximately 22,900 VPD along Battle Creek Road and 73,500 VPD along Mt. Zion Boulevard.

Project STP-9108(4) will improve the Level of Service (LOS) along the roadway by adding additional through lanes along Battle Creek Road and Mt. Zion Boulevard, as well as adding additional turn lanes at major intersections. The proposed improvements will allow each major intersection within the project limits to operate at LOS D or better in the design year as shown in the attached traffic analysis summary.

Project STP-9108(4) will also improve vertical sight distance and provide for additional turn lanes and signal upgrades at intersections. Accident rates at each major intersection along the project for 2003 and 2004 are shown in the attached traffic analysis summary.

Furthermore, central Clayton County is a heavily developed area consisting of a mix of commercial, residential and industrial land uses with a need for improved east-west connectivity. The project will serve this need by reconfiguring the intersection of Battle Creek Road and Mt. Zion Boulevard to provide an east-west through movement. There are also three other projects in the immediate vicinity which will combine with this project to create a major east-west thoroughfare in central Clayton County. These projects are the widening of Valley Hill Road from Upper Riverdale Road to Battle Creek Road (Clayton County Project), the widening of Battle Creek Road from Valley Hill Road to Southlake Parkway (GDOT P.I. No 751775) and the widening Mt. Zion Boulevard from Somerton Drive to Rex Road (Clayton County Project).

Also, existing Battle Creek Road and Mt. Zion Boulevard currently have intermittent pedestrian facilities along the project corridor. Project STP-9108(4) will improve pedestrian facilities within the project limits by providing for an urban section with curb and gutter and 5-foot sidewalks.

Project Concept Report Page 4
Project Number: STP-9108(4)
P. I. Number: 751770
County: Clayton

Description of the proposed project: Project STP-9108(4) consists of widening Battle Creek Road (CR 1342) and Mt. Zion Boulevard (CR 28) from the existing two and four lane facilities to four 12-foot lanes with a 20-foot raised median and urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalks. The project begins on Battle Creek Road at Southlake Parkway (Battle Creek Road M.P. 2.02) and continues to the intersection of Battle Creek Road and Mt. Zion Boulevard (Battle Creek Road M.P. 2.37, Mt. Zion Boulevard M.P. 1.32). This intersection will be realigned to provide an east-west through movement from eastbound Battle Creek Road to eastbound Mt. Zion Boulevard. The project then continues east along Mt. Zion Boulevard, crosses I-75 (Mt. Zion Boulevard M.P. 2.45) and ends at Somerton Drive (Mt. Zion Boulevard M.P. 4.45). The total project length is approximately 18350 feet (3.48 miles)

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

The proposed concept calls for four through lanes (two in each direction) with a 20-foot raised median. The project begins on Battle Creek Road at Southlake Parkway and continues for 0.35 miles to the intersection of Battle Creek Road and Mt. Zion Boulevard. The project then continues along Mt. Zion Boulevard for 3.13 miles to Somerton Drive. The total project length is 3.48 miles and the opening year is 2011.

The conforming plan describes the project beginning on Mt. Zion Boulevard at Southlake Parkway and continuing for 3.93 miles to Somerton Drive, just past Lake Harbin Road. The plan calls for four through lanes (two in each direction) with a total project length of 3.93 miles and an opening year of 2011.

PDP Classification: Major () Minor ()

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

Functional Classification: Urban Collector Street

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

County Route Number(s): Battle Creek Road: CR 1342; Mt. Zion Boulevard: CR 28

Traffic (ADT):

Current Year: (2005): 43,981 Design Year: (2031): 73,448

Existing design features:

- Typical Section: The existing typical section varies as follows:
 - Battle Creek Road: One travel lane in each direction with variable width rural grassed shoulders.
 - Mt. Zion Boulevard from Battle Creek Road to Spring Place: One travel lane in each direction with variable width rural grassed shoulders.
 - Mt. Zion Boulevard from Spring Place to Richardson Parkway: Two travel lanes in each direction separated by a 20-foot raised median with curb and gutter and variable width urban shoulders.
 - Mt. Zion Boulevard from Richardson Parkway to Maddox Road: Two travel lanes in each direction separated by a 14-foot flush median. Shoulders vary from variable width urban shoulders with curb and gutter to variable width rural grassed shoulders.
 - Mt. Zion Boulevard from Maddox Road to Lake Harbin Road: One travel lane in each direction with a variable width rural grassed shoulders.
- Posted speed 40 mph Minimum Curve Radius: 900'
- Maximum grade: 7% mainline, 9% side roads, 11% driveways
- Width of right of way: Varies 80-120 ft
- Major structures: 320-foot long by 92-foot wide reinforced concrete bridge on Mt. Zion Boulevard over I-75; Sufficiency Rating: 95.02
- Major interchanges or intersections along the project:
 - Major interchange: Mt. Zion Boulevard at I-75
 - Major Intersections: Battle Creek Road and Southlake Parkway; Mt. Zion Boulevard and Battle Creek Road; Mt. Zion Boulevard and Mt. Zion Road; Mt. Zion Boulevard and Mt. Zion Parkway; Mt. Zion Boulevard and Richardson Parkway; Mt. Zion Boulevard and Maddox Road; Mt. Zion Boulevard and Lake Harbin Road
- Existing length of roadway segments:
 - Battle Creek Road: 0.35 Miles beginning at M.P. 2.02
 - Mt Zion Boulevard: 3.13 Miles Beginning at M.P. 1.32

Proposed Design Features:

- Proposed typical section(s): Four 12-foot travel lanes (two in each direction) separated by a 20-foot raised median with curb and gutter and 16-foot urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalk.
- Proposed Design Speed Mainline 45 mph
- Proposed Maximum grade Mainline 6% Maximum grade allowable 9%.
- Proposed Maximum grade Side Street 10% Maximum grade allowable 15%.
- Proposed Maximum grade driveway 11%
- Proposed Minimum Curve Radius 730' Minimum Radius Allowable 643'.

Project Concept Report Page 6
Project Number: STP-9108(4)
P. I. Number: 751770
County: Clayton

- Right of way
 - Width Varies 120-200'
 - Easements: Temporary (X), Permanent (X), Utility (X), Other ().
 - Type of access control: Full (), Partial (), By Permit (X), Other (X).
 - Number of parcels: 135
 - Number of displacements:
 - Business: 3
 - Residences: 5
 - Mobile homes: None
 - Other: None
- Structures:
 - Bridges: The existing bridge at Mt. Zion Boulevard and I-75 will not be modified by this concept.
 - Bridge Culverts: The existing double 10'x12' bridge culvert on Mt. Zion Boulevard at Panther Creek will be extended to accommodate the widening.
 - Retaining walls: An approximate 500' long, 15' tall mechanically stabilized wall will be required at the intersection of Mt. Zion Boulevard and Battle Creek Road in order to reduce impacts to the Clayton County Water Authority property. Gravity walls may be utilized at various locations throughout the project to minimize impacts to adjacent properties. These locations include eastbound Mt. Zion Boulevard along the frontage of the Mt. Zion Baptist Church and Mt. Zion Baptist Cemetery properties located at the intersection of Mt. Zion Boulevard and Mt. Zion Road.
- Major intersections and interchanges.
 - Major interchange: Mt. Zion Boulevard at I-75 – This interchange will not be modified. Dual left turn lanes will be added to the northbound I-75 exit ramp to Mt. Zion Boulevard
 - Major Intersections: Battle Creek Road and Southlake Parkway; Mt. Zion Boulevard and Battle Creek Road; Mt. Zion Boulevard and Mt. Zion Road; Mt. Zion Boulevard and Mt. Zion Parkway; Mt. Zion Boulevard and Richardson Parkway; Mt. Zion Boulevard and Maddox Road; Mt. Zion Boulevard and Lake Harbin Road.
- Traffic control during construction:
 - The intersection of Battle Creek Road and Mt. Zion Boulevard will be closed to through traffic during construction. Traffic will be routed on an off-site detour utilizing Mt. Zion Road and Southlake Parkway to the east and Mt. Zion Boulevard and Southlake Parkway to the west.
 - Temporary on-site detour pavement will be utilized along Mt. Zion Boulevard from Richardson Parkway to Lake Harbin Road in order to facilitate vertical reconstruction of Mt. Zion Boulevard

- Design Exceptions to controlling criteria anticipated:

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

- Design Variances:

- A design variance will be required for substandard median opening spacing along Mt. Zion Boulevard between Mt. Zion Parkway and Mt. Zion Road. Results of the traffic analysis show that levels of service at the Mt. Zion Road/Mt. Zion Boulevard intersection will be severely reduced if the median opening at Mt. Zion Parkway is closed.
- Design variances will be required at various median openings along the project for substandard left turn storage length due to the spacing of median openings. These locations include the median openings along Mt. Zion Boulevard at Spring Place, Mt. Zion Road, Mt. Zion Parkway and Richardson Parkway.

- Environmental concerns:

- It is anticipated that an Individual Permit will be required for impacts to the three streams and two wetlands on the project corridor. The streams include Reeves Creek, an unnamed stream near Mt. Zion Boulevard and Spring Place, and Panther Creek. The wetlands are located in the vicinity of Reeves Creek and Panther Creek. There are seven USTs along the project corridor, two of which are considered LUST's. At this time, it is not known how many of these UST's will be impacted by the project. A finding of No Historic Properties Affected is expected for the history and archaeology studies.

- Level of environmental analysis:

- Are Time Savings Procedures appropriate? Yes (), No (X),
- Categorical exclusion (),
- Environmental Assessment/Finding of No Significant Impact(FONSI) **Anticipated**
- Environmental Impact Statement (EIS) ().

Project Concept Report Page 8
Project Number: STP-9108(4)
P. I. Number: 751770
County: Clayton

- Utility involvements:
 - Utility facilities located within the project limits include natural gas, phone, power, cable TV, Clayton County IFS systems, water/sewer and the Williams trans-continental gas pipeline. A major utility easement exists near the Battle Creek Road/Mt. Zion Boulevard intersection which includes the gas pipeline as well as power transmission lines and distribution lines.

Project responsibilities:

- Design: Clayton County
- Right of Way Acquisition: Clayton County
- Relocation of Utilities: Clayton County
- Letting to contract: GDOT Office of Contract Administration
- Supervision of construction: GDOT Construction
- Providing material pits: Responsibility of the Construction Contractor
- Providing detours: Clayton County; Construction Contractor to complete detours as shown in final plans.

Coordination

- Initial Concept Meeting 4/11/2005: See attached minutes
- Concept Team Meeting 11/10/2005: See attached minutes
- P. A. R. meetings, dates and results: None Required
- FEMA, USCG, and/or TVA:
- Public involvement. A Public Information Open House was held on June 7, 2005 at Jonesboro High School in Jonesboro, GA. 109 people attended the PIOH and a total of 51 comments were received. Of these comments, 5 were opposed to the project, 16 were in support of the project, 7 were uncommitted and 23 were conditional.
- Local government comments: See attached Concept Team Meeting Minutes
- Other projects in the area:
 - STP-9108(5) Widening of Battle Creek Road from Valley Hill Road to Southlake Parkway
 - NHS-0006-00(401) I-75 Ramp Meters from Cleveland Avenue in the City of Atlanta to Hudson Bridge Road in Henry County
 - NHS-0003-00(167) I-75 HOV Lanes from SR 54/Jonesboro Road to Eagles Landing Parkway Clayton/Henry Counties
 - Clayton County Project; Widening of Mt. Zion Boulevard from Somerton Drive to Rex Road
- Other coordination to date: N/A

Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 18 Months.
- Time to complete preliminary construction plans: 10 Months.
- Time to complete right of way plans: 5 Months.
- Time to complete the Section 404 Permit: 8 Months.
- Time to complete final construction plans: 5 Months.
- Time to purchase right of way: 25 Months.

Other alternates considered: (1) Widen Battle Creek Road and Mt. Zion Boulevard to four lanes and reconstruct the Mt. Zion Boulevard/Battle Creek Road intersection to the north of the Williams Transcontinental Pipeline easement. (2) Widen Battle Creek Road and Mt. Zion Boulevard to four lanes and reconstruct the Mt. Zion Boulevard/Battle Creek Road intersection to the south of the Williams Transcontinental Pipeline easement. (3) Widen Battle Creek Road and Mt. Zion Boulevard to four lanes and maintain the current configuration of the Mt. Zion Boulevard/Battle Creek Road intersection. (4) Widen Battle Creek Road and Mt. Zion Boulevard to four lanes except for the section along Mt. Zion Boulevard from Mt. Zion Road to the I-75 Southbound ramps. This section would be widened to six lanes. (5) No Build.

Comments:

Comparison Summary of Alternates 1-5

Alternate (1) is recommended for this concept. Reconstructing the Battle Creek Road/Mt. Zion Boulevard intersection to the north of the pipeline will avoid major impacts to the subdivision located in the southwest quadrant of the existing intersection.

Alternate (2) is not recommended for this concept. Reconstructing the Battle Creek Road/Mt. Zion Boulevard intersection to the south of the pipeline will severely impact the subdivision at the southwest quadrant of the existing intersection. The difference in cost of impacts to the pipeline between Alternate (1) and Alternate (2) is negligible.

Alternate (3) is not recommended for this concept. Traffic projections in the capacity analysis report show that the major traffic movement at this intersection is from eastbound Battle Creek Road to eastbound Mt. Zion Boulevard. Leaving the Mt. Zion Boulevard/Battle Creek Road intersection in its current configuration does not allow for this movement to operate as a through movement, which would result in a lower level of service than if the interchange were reconstructed as recommended in Alternate (1).

Alternate (4) is not recommended for this concept. The six lane section along Mt. Zion Boulevard from Mt. Zion Road to the I-75 Southbound ramps does not match the conforming plan model.

Project Concept Report Page 10
Project Number: STP-9108(4)
P. I. Number: 751770
County: Clayton

Alternate (5) is not recommended for this concept. Traffic projections in the capacity analysis report indicate that the current two lane facilities along Battle Creek Road and Mt. Zion Boulevard will fail under future traffic conditions, thus providing an unacceptable level of service along the two roadways.

Attachments:

1. Cost Estimates:
 - a. Construction including E&C,
 - b. Right of Way, and
 - c. Utilities.
2. Typical Sections
3. Bridge inventory
4. Confirming plan's network schematics showing through lanes
5. Initial Concept Team Meeting Minutes 4/11/05
6. Concept Team Meeting Minutes 11/10/05
7. Summary of Traffic Analysis

PRELIMINARY COST ESTIMATE

PROJECT NUMBER: STP-0108(4)
 DATE: July 22, 2006
 PREPARED BY: Kinley-Horn and Associates

COUNTY: Clayton
 ESTIMATED LETTING DATE:
 PROJECT LENGTH: 3.62 MILES

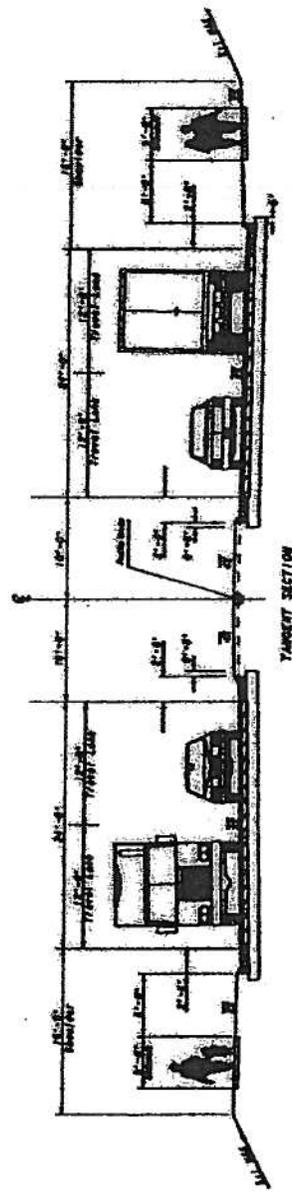
()PROGRAMMING PROCESS (X)CONCEPT DEVELOPMENT ()DURING PROJECT DEV.

PROJECT COST				
A. RIGHT-OF-WAY				
1. PROPERTY (LAND & EASEMENT)				\$2,620,443
2. DISPLACEMENTS; (5 Residential, 3 Commercial)				\$4,250,000
			SUBTOTAL:A	\$6,870,443
B. REIMBURSABLE UTILITIES:				
1. PIPELINE RELOCATION				\$2,000,000
2. TRANSMISSION LINES				\$0
3. SERVICES				\$0
			SUBTOTAL:B	\$2,000,000
C. CONSTRUCTION				
1. MAJOR STRUCTURES				
a. BOX CULVERTS				
1) BAR REINF STEEL	47443 LB	@	\$0.60	\$28,466
2) CLASS A CONC	317 CY	@	\$475	\$150,575
3) FOUND BACKFILL MAT'L	7200 CY	@	\$36	\$262,000
b. RETAINING WALLS				
1) CONC SIDE BARRIER	500 LF	@	\$400	\$200,000
2) MSE WALL	6800 SF	@	\$50	\$340,000
			SUBTOTAL:C-1	\$971,041
2. GRADING AND DRAINAGE				
a. EARTHWORK				
1) BORROW EXCAV	100000 CY	@	\$5	\$500,000
2) UNCLASS EXCAV	75000 CY	@	\$3	\$225,000
b. DRAINAGE				
1) CROSS DRAINS				
24" Pipe	3900 LF	@	\$35	\$136,500
24" FES	78 EA	@	\$475	\$37,050
2) SIDE DRAINS				
18" Pipe	2400 LF	@	\$20	\$48,000
18" SES	160 EA	@	\$480	\$78,800
3) LONGITUDINAL SYSTEMS				
Catch Basins	132 EA	@	\$1,500	\$198,000
24" Pipe	39600 LF	@	\$35	\$1,386,000
24" FES	33 EA	@	\$475	\$15,575
			SUBTOTAL:C-2	\$2,623,025
3. BASE AND PAVING				
a. AGGREGATE BASE				
	69442 TN	@	\$18	\$1,249,949
b. ASPHALT PAVING				
Surface	9513 TN	@	\$42	\$399,538
Binder	12097 TN	@	\$37	\$447,591
Base	44282 TN	@	\$37	\$1,638,419
c. CONCRETE PAVING				
d. OTHER (LEVELING, TACK)				
Leveling	293 TN	@	\$36	\$10,560
Tack	15770 GAL	@	-\$1	\$15,770
			SUBTOTAL:C-3	\$3,761,827
4. LUMP ITEMS				
a. GRASSING				
	22 AC	@	\$1,000	\$22,000
b. CLEARING AND GRUBBING				
	22 AC	@	\$5,000	\$110,000
c. LANDSCAPING				
				\$0
d. EROSION CONTROL				
Silt Fence	10000 LF	@	\$3	\$30,000
Erosion Mat	5000 SY	@	\$2	\$10,000

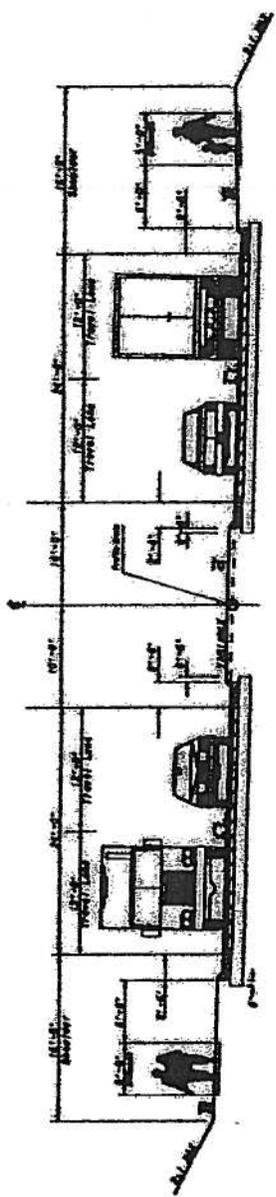
Baled Straw	1500 LF @	\$2	\$3,000
Ty 3 Silt Gates	39 EA @	\$350	\$13,650
Sediment Basins	3 EA @	\$7,000	\$21,000
a. TRAFFIC CONTROL	LS		\$350,000
f. IIS DEVICES	LS		\$684,475
g. TRAFFIC SIGNAL INSTALLATION	10 EA @	\$75,000	\$750,000
		SUBTOTAL C-4	\$1,994,125
5. MISCELLANEOUS			
a. LIGHTING			
b. SIGNING - MARKING			
Sold Traff Strips, 5 IN. White	80000 LF @	\$0.30	\$24,000
Sold Traff Strips, 5 IN. Yellow	20000 LF @	\$0.30	\$6,000
Sldo Traff Strips, 5 IN. White	40000 GLF @	\$0.20	\$8,000
Highway Signs, TP 6 Sheeting	2500 SF @	\$18	\$45,000
Galv Steel Posts, TP 7	2000 LF @	\$8	\$16,000
Raised Pmnt Markers	500 EA @	\$3	\$1,500
c. GUARDRAIL			
W. Beam	3500 LF @	\$15	\$52,500
Ty E2 Ancors	8 EA @	\$1,300	\$10,400
Ty E Ancors	8 EA @	\$440	\$3,520
d. CURB AND GUTTER			
Curb and Gutter TP 2	45000 LF @	\$16	\$720,000
Curb and Gutter TP 7	40000 LF @	\$10	\$400,000
		SUBTOTAL C-5	\$1,288,920
6. SPECIAL FEATURES			
1) FIELD ENGINEERS OFFICE TY 3			\$55,000
		SUBTOTAL C-6	\$55,000

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY		\$6,870,443
B. REIMBURSABLE UTILITIES		\$2,000,000
C. CONSTRUCTION		
1. MAJOR STRUCTURES		\$971,041
2. GRADING AND DRAINAGE		\$2,623,025
3. BASE AND PAVING		\$3,761,827
4. EUMPTIEMS		\$1,994,125
5. MISCELLANEOUS		\$1,288,920
6. SPECIAL FEATURES		\$55,000
SUBTOTAL CONSTRUCTION COST		\$10,691,637
INFLATION (5% PER YEAR)		\$2,304,179
NUMBER OF YEARS	4	
E. & C. (10%)		\$1,298,612
TOTAL CONSTRUCTION COST		\$14,295,728
GRAND TOTAL PROJECT COST		\$23,166,171

PROJECT: ...
 DRAWING: ...
 SHEET: ...



TARGET SECTION



SUPERVISION SECTION



PROJECT: ...
 DRAWING: ...
 SHEET: ...
 TYPICAL SECTIONS
 NUMBER: STS-9100(4)
 CORNER: STATION
 5-01

TRAFFIC ANALYSIS SUMMARY

WIDENING OF BATTLE CREEK ROAD PROJECT STP-9108(4), P.L. NO. 751770

Description of the proposed project: Project STP-9108(4) consists of widening Battle Creek Road (CR 1342) and Mt. Zion Boulevard (CR 28) from the existing two and four lane facilities to four 12-foot lanes with a 20-foot raised median and urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalks. The project begins on Battle Creek Road at Southlake Parkway (Battle Creek Road M.P. 2.02) and continues to the intersection of Battle Creek Road and Mt. Zion Boulevard (Battle Creek Road M.P. 2.37, Mt. Zion Boulevard M.P. 1.32). This intersection will be realigned to provide an east-west through movement from eastbound Battle Creek Road to eastbound Mt. Zion Boulevard. The project then continues east along Mt. Zion Boulevard, crosses I-75 (Mt. Zion Boulevard M.P. 2.45) and ends at Somerton Drive (Mt. Zion Boulevard M.P. 4.45). The total project length is approximately 18350 feet (3.48 miles)

Level of Service: The following tables illustrate the design year level of service for the proposed roadway conditions as well as the no-build condition. The results of the traffic study show that the proposed improvements will allow each major intersection within the project limits to operate at LOS D or better. The results of the analysis of the no-build alternative show most of the major intersections operating at LOS F. Therefore, the proposed improvements will result in significant reductions in delay and improved Level of Service at each intersection.

Design Year 2031 Level Of Service (Delay in Seconds)		
Intersection	AM Peak	PM Peak
Battle Creek Road at Southlake Parkway	B (18.5)	C (20.4)
Battle Creek Road at Mt. Zion Boulevard	B (16.1)	C (27.9)
Mt. Zion Boulevard at Mt. Zion Road	C (25.2)	D (50.4)
Mt. Zion Boulevard at Mt. Zion Parkway	C (34.2)	D (54.7)
Mt. Zion Boulevard at Richardson Parkway	C (26.3)	C (24.1)
Mt. Zion Boulevard at Maddox Road	B (16.0)	C (26.4)
Mt. Zion Boulevard at Lake Harbin Road	C (28.6)	D (51.4)

No-Build Design Year 2031 Level Of Service (Delay in Seconds)		
Intersection	AM Peak	PM Peak
Battle Creek Road at Southlake Parkway	C (22.0)	C (29.2)
Battle Creek Road at Mt. Zion Boulevard	D (35.3)	D (54.4)
Mt. Zion Boulevard at Mt. Zion Road	F (137.2)	F (460.1)
Mt. Zion Boulevard at Mt. Zion Parkway	F (89.5)	F (122.1)
Mt. Zion Boulevard at Richardson Parkway	F (108.5)	F (135.4)
Mt. Zion Boulevard at Maddox Road	F (95.6)	F (84.0)
Mt. Zion Boulevard at Lake Harbin Road	D (54.6)	F (148.4)



Department of Transportation

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January 30, 2006

Andrew Adams, Deputy Director of Transportation
Clayton County Transportation and Development
7960 North McDonough Street
Jonesboro, GA 30236

RE: STP-9108(5), Clayton County
P.I. 751775
Battlecreek Rd from Valley Hill
Rd to Southlake Pkwy

Dear Andrew Adams:

Attached please find a copy of the approved Concept Report. You will also find within the approval package a letter from the State Environment/Location Engineer stating that a detour meeting will need to be held regarding the detours described within the Concept Report, so govern yourselves accordingly and we will contact you about a meeting date soon.

If you should have any questions or comments, please contact Merishia Robinson or Gerald Ford at (404) 463-4947.

Sincerely,

Merishia Robinson

For: Mike A. Lobdell, P.E.
District Preconstruction Engineer

MAL:wsl:mkr
Attachment

Cc: Robert Lewis, CH2M Hill
Gary Newton, Kimley-Horn
Sean Johnston, Kimley-Horn
File

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

INTERDEPARTMENT CORRESPONDENCE

FILE P.I. No. 751775-, Clayton County **OFFICE** Preconstruction
 STP-9108(5)
 Battle Creek Road from Valley Hill Road
 To Southlake Parkway **DATE** January 20, 2006

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

TO *for* David E. Studstill, Jr., P.E., Chief Engineer

SUBJECT PROJECT CONCEPT REPORT

This project is the widening and reconstruction of Battle Creek Road (CR 1342) from Valley Hill Road to Southlake Parkway for a total of 2.11 miles. This project will improve the level of service (LOS) along the roadway by adding additional through lanes along Battle Creek Road as well as adding additional turn lanes at major intersections. The proposed improvements will allow each major intersection within the project limits to operate at an acceptable LOS. Based year (2011) traffic volumes are 15,400 VPD along Battle Creek Road and future design year (2031) volumes are projected to be 22,900 VPD.

The construction consists of widening Battle Creek Road/CR 1342 from the existing two lane facility to four, 12' lanes with a 20' raised median and urban shoulders consisting of 2.5' curb and gutter, 6' grassed strip and 5' sidewalks. The intersection of Battle Creek Road and Valley Hill Road will be realigned to provide an east-west thru movement from eastbound Valley Hill Road to eastbound Battle Creek Road. Temporary on-site detour pavement will be utilized at various locations to facilitate vertical reconstruction of Battle Creek Road.

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

The estimated costs for this project are:

	<u>PROPOSED</u>	<u>APPROVED</u>	<u>FUNDING</u>	<u>PROG DATE</u>
Construction (includes E&C and inflation)	\$9,147,000	\$9,147,000	L230	2009
Right-of-Way & Utilities*	Local	Local	Local	

*Clayton County signed PMA for PE, right-of-way, and utilities 2-19-02.

David Studstill

Page 2

P. I. No. 751775-, Clayton

January 20, 2006

I recommend this project concept be approved.

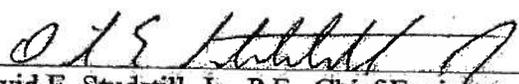
MBP:JDQ/cj

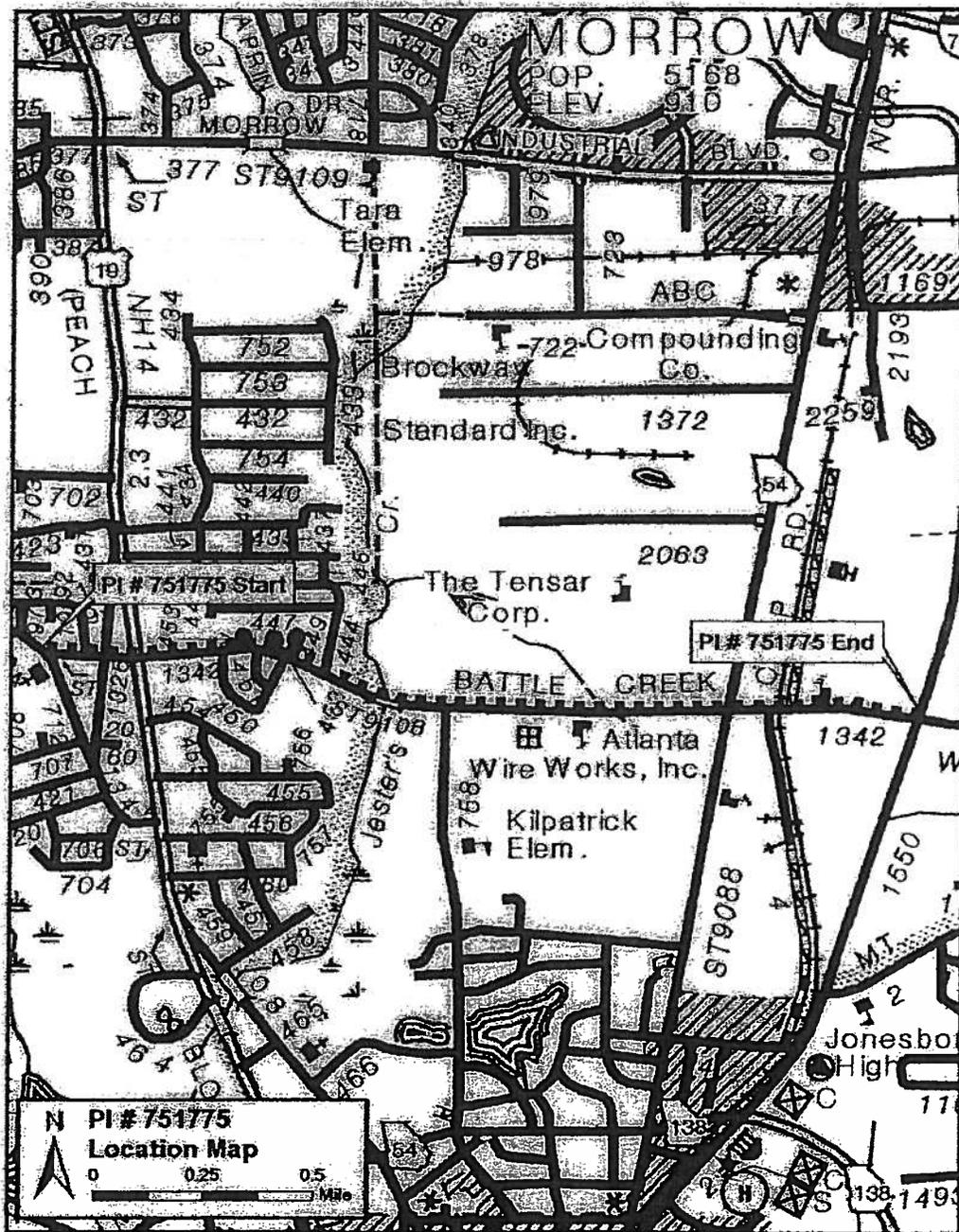
Attachment

CONCUR


Buddy Gratton, P.E., Director of Preconstruction

APPROVE


David E. Studstill, Jr., P.E., Chief Engineer



Location Map

Project: STP-9108(5) Clayton County PI No: 751775

Description: Widening of Battle Creek Road from Valley Hill Road to Southlake Parkway.

Project Concept Report Page 3
Project Number: STP-9108(5)
P. I. Number: 751775
County: Clayton

Need and Purpose: Project STP-9108(5) consists of widening Battle Creek Road (CR 1342) in Clayton County from the existing two and four lane facility to four lanes with 20-foot raised median and urban curb and gutter, beginning at Valley Hill Road and ending at Southlake Parkway. Battle Creek Road is classified as an urban collector.

Base year 2011 traffic volumes are approximately 15,400 Vehicles per Day (VPD) along Battle Creek Road and future design year 2031 volumes are expected to be approximately 22,900 VPD.

Project STP-9108(5) will improve the Level of Service (LOS) along the roadway by adding additional through lanes along Battle Creek Road, as well as adding additional turn lanes at major intersections. The proposed improvements will allow each major intersection within the project limits to operate at the design year LOS as shown in the attached traffic analysis summary.

Project STP-9108(5) will also improve vertical sight distance and provide for additional turn lanes and signal upgrades at intersections. Accident rates at each major intersection along Battle Creek Road are shown in the attached traffic analysis summary.

Furthermore, central Clayton County is a heavily developed area consisting of a mix of commercial, residential and industrial land uses with a need for improved east-west connectivity. The project will serve this need by reconfiguring the intersection of Battle Creek Road and Valley Hill Road to provide an east-west through movement. There are also three other projects in the immediate vicinity which will combine with this project to create a major east-west thoroughfare in central Clayton County. These projects are the widening of Valley Hill Road from Upper Riverdale Road to Battle Creek Road (Clayton County Project), the widening of Battle Creek Road and Mt. Zion Boulevard from Southlake Parkway to Somerton Drive (GDOT P.I. No 751770) and the widening Mt. Zion Boulevard from Somerton Drive to Rex Road (Clayton County Project).

Also, existing Battle Creek Road currently has intermittent pedestrian facilities along the project corridor. Project STP-9108(5) will improve pedestrian facilities within the project limits by providing for an urban section with curb and gutter and 5-foot sidewalks.

Project Concept Report Page 4
Project Number: STP-9108(5)
P. I. Number: 751775
County: Clayton

Description of the proposed project: Project STP-9108(5) consists of widening Battle Creek Road (CR 1342) from the existing two lane facility to four 12-foot lanes with a 20-foot raised median and urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalks. The project begins 475 ft west of the intersection of Valley Hill Road and Battle Creek Road (M.P. 0.00) and continues to the intersection of Battle Creek Road and Southlake Parkway. (M.P. 2.02) The intersection of Battle Creek Road and Valley Hill Road will be realigned to provide an east-west through movement from eastbound Valley Hill Road to eastbound Battle Creek Road. The total project length is approximately 11150 feet (2.11 miles)

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

The proposed concept calls for four through lanes with a 20-foot raised median. The project begins 475 ft west of the intersection of Battle Creek Road and Valley Hill Road (M.P. 0.00) and continues to the intersection of Battle Creek Road and Southlake Parkway. (M.P. 2.02) The total project length is 2.11 miles and the opening year is 2011.

The conforming plan describes the project beginning just west of the Valley Hill Road/Battle Creek Road intersection and continuing along Battle Creek Road for 2.03 miles to Southlake Parkway. The plan calls for four through lanes with a total project length of 2.03 miles and an opening year of 2011.

PDP Classification: Major Minor

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

Functional Classification: Urban Collector Street

U. S. Route Number(s): None

State Route Number(s): None

County Route Number(s): 1342

Traffic (ADT):

Current Year: (2005): 13,632

Design Year: (2031): 22,890

Existing design features:

- Typical Section: Battle Creek Road consists of one travel lane in each direction with variable width rural grassed shoulders.
- Posted speed 40 mph Minimum Curve Radius: 730'
- Maximum grade: 6% mainline, 8.5% side roads, 17% driveways
- Width of right of way: Varies 80-175 ft
- Major structures: 108-foot long by 84-foot wide reinforced concrete bridge on Battle Creek Road over Jesters Creek; Sufficiency Rating: 68.77
- Major intersections along the project: Battle Creek Road at: Valley Hill Road; Tara Boulevard/US 19/41; Jonesboro Road/SR 54; Southlake Parkway.
- Existing length of roadway segments:
 - o Battle Creek Road: 2.11 Miles beginning at M.P. 0.00

Proposed Design Features:

- Proposed typical section(s): Four 12-foot travel lanes (two in each direction) separated by a 20-foot raised median with curb and gutter and 16-foot urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalk.
- Proposed Design Speed Mainline 45 mph
- Proposed Maximum grade Mainline 6% Maximum grade allowable 9%.
- Proposed Maximum grade Side Street 11% Maximum grade allowable 15%.
- Proposed Maximum grade driveway 11%
- Proposed Minimum Curve Radius 730' Minimum Radius Allowable 643'.
- Right of way
 - o Width Varies 120-175'
 - o Easements: Temporary () , Permanent () , Utility () , Other () .
 - o Type of access control: Full () , Partial () , By Permit () , Other () .
 - o Number of parcels: 65 Number of displacements:
 - o Business: 1
 - o Residences: 2
 - o Mobile homes: None
 - o Other: None
- Structures:
 - o Bridges: The existing bridge on Battle Creek Road over Jesters Creek will be rehabilitated to improve load rating and allow for the removal of the existing load posting.
 - o Retaining walls: Gravity walls may be utilized at various locations throughout the project to minimize impacts to adjacent properties.
- Major intersections: Battle Creek Road at: Valley Hill Road; Tara Boulevard/US 19/41; Jonesboro Road/SR 54; Southlake Parkway.

- **Traffic control during construction:**
 - The intersection of Battle Creek Road and Valley Hill Road will be closed to through traffic during construction. Traffic will be routed on an off-site detour utilizing Tara Boulevard, Upper Riverdale Road, Lamar Hutcheson Parkway and Valley Hill Road.
 - Tara Road will be closed to traffic at Battle Creek Road during construction. Traffic will be routed on an off-site detour utilizing O'Hara Drive and Jonesboro Road.
 - Temporary on-site detour pavement will be utilized at various locations in order to facilitate vertical reconstruction of Battle Creek Road.

- **Design Exceptions to controlling criteria anticipated:**

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

- **Design Variances:**
 - Design variances will be required at various median openings along the project for substandard left turn storage length due to the spacing of median openings. These locations include the median openings on Battle Creek Road at Tara Road and Clayton County Fire Station No. 3.
- **Environmental concerns:**
 - It is anticipated that an Individual Permit will be required for impacts to the two streams (Jesters Creek and Jesters Creek Tributary) on the project corridor. There are three USTs along the project corridor, one of which is considered a LUST. At this time, it is not known how many of these UST's will be impacted by the project. A finding of No Historic Properties Affected is expected for the history and archaeology studies.
- **Level of environmental analysis:**
 - Are Time Savings Procedures appropriate? Yes (), No (X),
 - Categorical exclusion (),
 - Environmental Assessment/Finding of No Significant Impact(FONSI): **Anticipated**
 - Environmental Impact Statement (EIS) ().

- Utility involvements:
 - Utility facilities located within the project limits include natural gas, phone, power, cable TV, Clayton County ITS systems, and water/sewer.

Project responsibilities:

- Design: Clayton County
- Right of Way Acquisition: Clayton County
- Relocation of Utilities: Clayton County
- Letting to contract: GDOT Office of Contract Administration
- Supervision of construction: GDOT Construction
- Providing material pits: Responsibility of the Construction Contractor
- Providing detours: Clayton County; Construction Contractor to complete detours as shown in final plans.

Coordination

- Initial Concept Meeting 4/11/2005: See attached minutes.
- Concept Team Meeting 11/10/2005: See attached minutes.
- P. A. R. meetings, dates and results: None Required
- FEMA, USCG, and/or TVA:
- Public involvement. A Public Information Open House was held on June 7, 2005 at Jonesboro High School in Jonesboro, GA. 109 people attended the PIOH and a total of 51 comments were received. Of these comments, 5 were opposed to the project, 16 were in support of the project, 7 were uncommitted and 23 were conditional.
- Local government comments: See attached Concept Team Meeting Minutes
- Other projects in the area:
 - STP-9108(4) Widening of Battle Creek Road from Southlake Parkway to Mt. Zion Boulevard and Widening of Mt. Zion Boulevard from Battle Creek Road to Somerton Drive.
 - Clayton County Project: Widening of Valley Hill Road from Upper Riverdale Road to Battle Creek Road.
- Other coordination to date: N/A

Scheduling – Responsible Parties' Estimate

- Time to complete the environmental process: 18 Months.
- Time to complete preliminary construction plans: 10 Months.
- Time to complete right of way plans: 5 Months.
- Time to complete the Section 404 Permit: 8 Months.
- Time to complete final construction plans: 5 Months.
- Time to purchase right of way: 25 Months.

Other alternates considered: (1) Widen Battle Creek Road to four lanes, reconstruct the Valley Hill Road/Battle Creek Road intersection to provide a through movement from eastbound Valley Hill Road to eastbound Battle Creek Road and rehabilitate the westbound section of the existing bridge over Jesters Creek to improve the bridge load rating. (2) Widen Battle Creek Road to four lanes, reconstruct the Valley Hill Road/Battle Creek Road intersection to provide a through movement from eastbound Valley Hill Road to eastbound Battle Creek Road and replace the existing westbound section of the bridge over Jesters Creek with a new bridge. (3) Widen Battle Creek Road to four lanes and allow the Valley Hill Road/Battle Creek Road intersection in its current configuration. (4) No Build.

Comments:

Comparison Summary of Alternates 1-4

Alternate (1) is recommended for this concept. The proposed four lane section is necessary to provide adequate level of service throughout the Battle Creek Corridor under design year 2031 traffic conditions. A bridge condition survey conducted by the Office of Maintenance concluded that the existing bridge should be reinforced with external carbon fiber stirrups at the ends of the existing T-beams.

Alternate (2) is not recommended for this concept. A bridge condition survey conducted by the Office of Maintenance concluded that the existing bridge be reinforced with external carbon fiber stirrups at the ends of the existing T-beams.

Alternate (3) is not recommended for this concept. Projections in the traffic capacity report indicate that the major movement at this intersection is from eastbound Valley Hill Road to eastbound Battle Creek Road. Leaving the Valley Hill Road/Battle Creek Road intersection in its current configuration does not allow the movement to operate as a through movement, which would result in a lower level of service than if the intersection were reconstructed as recommended in Alternate (1).

Alternate (4) is not recommended for this concept. Projections in the traffic capacity report indicate that the current two lane facility along Battle Creek Road will fail under future traffic conditions, thus providing an unacceptable level of service along the roadway.

Project Concept Report Page 9
Project Number: STP-9108(5)
P. I. Number: 751775
County: Clayton

Attachments:

1. Cost Estimates:
 - a. Construction including E&C,
 - b. Right of Way, and
 - c. Utilities.
2. Typical Sections
3. Bridge Inventory
4. Conforming plan's network schematics showing through lanes
5. Initial Concept Team Meeting Minutes 4/11/05
6. Concept Team Meeting Minutes 11/10/05
7. Summary of Traffic Analysis

Erosion Mat	9000 SY @	\$2	\$18,000
Baled Straw	1000 LF @	\$2	\$2,000
Ty 3 Silt Gates	23 EA @	\$350	\$8,050
Sediment Basins	2 EA @	\$7,000	\$14,000
e. TRAFFIC CONTROL	LS		\$200,000
f. ITS DEVICES	LS		\$408,975
g. TRAFFIC SIGNAL INSTALLATION	4 EA @	\$75,000	\$300,000
	SUBTOTAL C-4		\$1,051,525
5. MISCELLANEOUS			
a. LIGHTING			
b. SIGNING - MARKING			
Solid Traff Strips, 5 IN, White	45000 LF @	\$0.30	\$13,500
Solid Traff Strips, 5 IN, Yellow	15000 LF @	\$0.30	\$4,500
Skip Traff Strips, 5 IN, White	25000 GLF @	\$0.20	\$5,000
Highway Signs, TP 8 Sheeting	750 SF @	\$18	\$13,500
Galv Sign Posts, TP 7	1000 LF @	\$8	\$8,000
Raised Pymt Markers	300 EA @	\$3	\$900
c. GUARDRAIL			
W Beam	2000 LF @	\$15	\$30,000
T Beam	84 LF @	\$30	\$2,520
Ty 12 Ancors	5 EA @	\$1,300	\$6,500
Ty 1 Anchors	5 EA @	\$440	\$2,200
d. CURB AND GUTTER			
Curb and Gutter TP 2	30000 LF @	\$16	\$480,000
Curb and Gutter TP 7	20000 LF @	\$10	\$200,000
	SUBTOTAL C-5		\$768,620
6. SPECIAL FEATURES			
1) FIELD ENGINEERS OFFICE TY 3			\$55,000
	SUBTOTAL C-6		\$55,000

ESTIMATE SUMMARY		
A. RIGHT-OF-WAY		\$3,708,487
B. REIMBURSABLE UTILITIES		\$0
C. CONSTRUCTION		
1. MAJOR STRUCTURES		\$962,093
2. GRADING AND DRAINAGE		\$1,730,450
3. BASE AND PAVING		\$2,275,533
4. LUMP ITEMS		\$1,051,525
5. MISCELLANEOUS		\$768,620
6. SPECIAL FEATURES		\$55,000
SUBTOTAL CONSTRUCTION COST		\$8,841,221
INFLATION (5% PER YEAR)		\$1,474,326
NUMBER OF YEARS	4	
E. & C. (10%)		\$831,555
TOTAL CONSTRUCTION COST		\$9,147,101
GRAND TOTAL PROJECT COST		\$12,855,588

TRAFFIC ANALYSIS SUMMARY

WIDENING OF BATTLE CREEK ROAD PROJECT STP-9108(5), P.I. NO. 751775

Description of the proposed project: Project STP-9108(5) consists of widening Battle Creek Road (CR 1342) from the existing two lane facility to four 12-foot lanes with a 20-foot raised median and urban shoulders consisting of 2.5-foot curb and gutter, 6-foot grassed strip and 5-foot sidewalks. The project begins 475 ft west of the intersection of Valley Hill Road and Battle Creek Road (M.P. 0.00) and continues to the intersection of Battle Creek Road and Southlake Parkway. (M.P. 2.02) The intersection of Battle Creek Road and Valley Hill Road will be realigned to provide an east-west through movement from eastbound Valley Hill Road to eastbound Battle Creek Road. The total project length is approximately 11150 feet (2.11 miles)

Level of Service: The following tables illustrate the design year level of service for the proposed roadway conditions as well as the no-build condition. The results of the traffic study show that the proposed improvements will allow most major intersections within the project limits to operate at LOS D or better. The results of the analysis of the no-build alternative show three of the four major intersections operating at LOS F. The intersections on Battle Creek Road at Tara Boulevard and Jonesboro Road will still operate at LOS F in the design year under the proposed conditions, but overall delay at these intersections will be significantly reduced. Therefore, the proposed improvements will result in improved Level of Service at each intersection.

Design Year 2031 Level Of Service (Delay in Second)		
Intersection	AM Peak	PM Peak
Battle Creek Road at Valley Hill Road	C (30.9)	C (22.5)
Battle Creek Road at Tara Boulevard (US 19/41)	F (157.8)	F (177.9)
Battle Creek Road at Jonesboro Road (SR 54)	D (48.1)	F (120.2)
Battle Creek Road at Southlake Parkway	B (18.5)	C (20.4)

No-Build Design Year 2031 Level Of Service (Delay in Seconds)		
Intersection	AM Peak	PM Peak
Battle Creek Road at Valley Hill Road	E (38.1)	F (245.5)
Battle Creek Road at Tara Boulevard (US 19/41)	F (236.1)	F (252.3)
Battle Creek Road at Jonesboro Road (SR 54)	F (106.2)	F (133.2)
Battle Creek Road at Southlake Parkway	C (22.0)	C (29.2)

Accident Data: Accident data for the intersections along Battle Creek Road was obtained from the Clayton County Department of Transportation for years 2003 and 2004. The following table summarizes accident rates per 1 million vehicles entering each intersection within the project limits. There is no data available for statewide averages of accidents per 1 million vehicles entering an intersection, however project STP-9108(5) is expected to improve safety and reduce accidents by improving intersection sight distance, upgrading existing traffic signals and providing for additional turn lanes.

Battle Creek Road Accident Rates*		
Intersection	2003	2004
Battle Creek Road at Valley Hill Road	3.91	3.38
Battle Creek Road at Tara Boulevard (US 19/41)	17.41	26.35
Battle Creek Road at Jonesboro Road (SR 54)	8.66	12.47
Battle Creek Road at Southlake Parkway	2.64	1.85

* Rates are per 1 million vehicles entering the intersection

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 Dec 3 – Dec. 6, 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., AVS	Highway Design Engineer
Kevin Martin, AVS	Highway Construction Specialist
Ramesh Kalvakaalva, P.E., AVS	Bridge Design Engineer
Randy S. Thomas, AVS	Assistant Team Leader
Craig S. Thomas, AVS	Assistant Team Leader

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

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

- The important functions of the project were identified as follows:
 - **Project Objective/Goals**
 - **Improve Level of Service**
 - **Increase Capacity**
 - **Separate Traffic**
 - **Provide for future growth**
 - **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- 9108(4) – P.I. No. 751770 Battle Creek Road/Mt. Zion Boulevard – Clayton County	SHEET NO.: 1 of 3
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NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Increase	Traffic Capacity	B	36,885	32,885	C/W = 1.12
		Facilitate	Access	B			
		Enhance	Safety	S			
2	ROW	Accommodate	Widening	B	11,939	10,000	CW=1.19
		Facilitate	Utilities	RS			
		Accommodate	Amenities	S			
3	ASPHALT PAVING	Create	Lanes	B	5,984	4,984	C/W = 1.2
		Increase	Capacity	B			
		Enhance	Safety	RS			
		Connect	Points	B			
4	DRAINAGE (DR)	Convey	Storm Water	B	3,422	3,322	C/W = 1.03
		Facilitate	Utilities	S			
		Enhance	Safety	RS			
5	CURB & GUTTER	Convey	Stormwater	RS	1,450	1450	C/W=1.0

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



PROJECT: **Georgia Department of Transportation**
STP- 9108(4) – P.I. No. 751770
Battle Creek Road/Mt. Zion Boulevard – Clayton County

SHEET NO.: **2 of 3**

NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
6	EARTHWORK	Support	Base	S	1,400	1,200	C/W=1.66
7	AGGREGATE BASE	Support	Wearing Course	B	1,250	1,100	C/W=1.14
8	TRAFFIC SIGNAL INSTALLATION			S	750	750	C/W=1.0
9	RETAINING WALLS			RS	735	635	C/W=1.2
10	ITS DEVICES			S	684	684	C/W=1.0
11	BOX CULVERTS			RS	593	400	C/W=1.48
12	TRAFFIC CONTROL	Facilitate	Safe Construction	S	350	350	C/W = 1.0
		Enhance	Safety	RS			

Function defined as: **Action Verb**
Measurable Noun

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

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

FUNCTION ANALYSIS AND COST-WORTH



PROJECT: Georgia Department of Transportation STP- 9108(5) – P.I. No. 751775 Battle Creek Road/Mt. Zion Boulevard – Clayton County	SHEET NO.: 1 of 3
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NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
1	OVERALL PROJECT	Increase	Traffic Capacity	B	23,259	21,000	C/W = 1.11
		Facilitate	Access	B			
		Enhance	Safety	S			
2	ROW	Accommodate	Widening	B	8,970	8,000	CW=1.21
		Facilitate	Utilities	RS			
		Accommodate	Amenities	S			
3	ASPHALT PAVING	Create	Lanes	B	3,624	3,000	C/W = 1.21
		Increase	Capacity	B			
		Enhance	Safety	RS			
		Connect	Points	B			
4	DRAINAGE (DR)	Convey	Storm Water	B	2,487	2,000	C/W = 1.24
		Facilitate	Utilities	S			
		Enhance	Safety	RS			
5	CURB & GUTTER	Convey	Stormwater	RS	860	860	C/W=1.0

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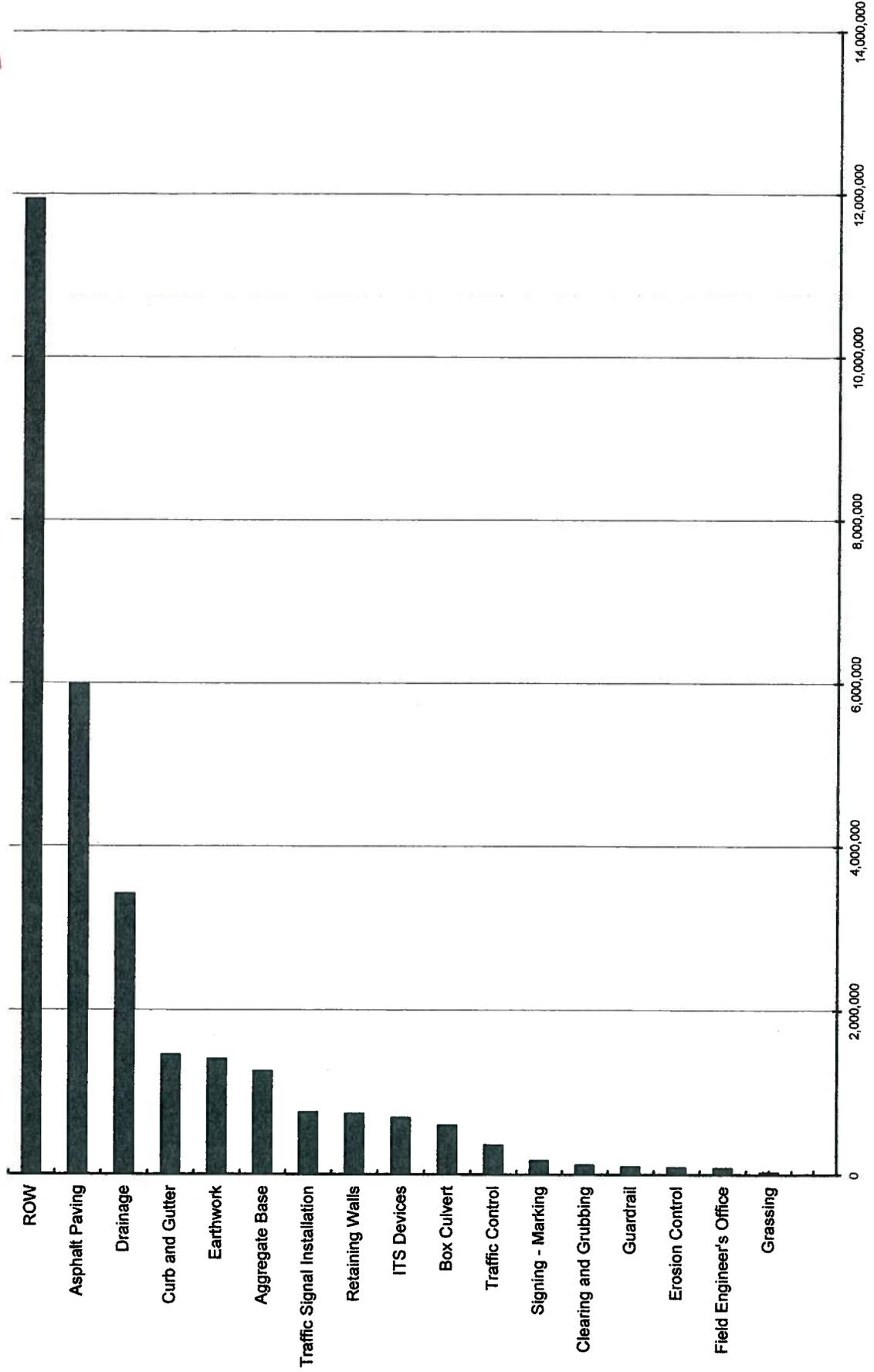
FUNCTION ANALYSIS AND COST-WORTH

PROJECT: Georgia Department of Transportation STP- 9108(5) – P.I. No. 751775 Battle Creek Road/Mt. Zion Boulevard – Clayton County					SHEET NO.: 3 of 3		
NO.	ELEMENT	FUNCTION			COST (000)	WORTH (000)	COMMENTS
		VERB	NOUN	KIND			
14	FIELD OFFICE	Oversee	Work	S	75	75	C/W=1.0
15	EROSION CONTROL	Stabilize	Earthwork	S	68	68	C/W =1.0
		Protect	Environment	RS			
		Connect	Points	B			
16	CLEARING & GRUBBING	Remove	Vegetation	S	65	65	C/W =1.0
17	GUARDRAIL	Enhance	Safety	B	57	57	C/W=1.0
18	GRASSING	Stabilize	Earthwork	S	13	13	C/W=1.0
Function defined as: Action Verb Measurable Noun							
Kind: B = Basic HO = Higher Order S = Secondary LO = Lower Order RS = Required Secondary							
Cost/Worth Ratio = (Total Cost ÷ Basic Worth)							

Pareto Chart 2



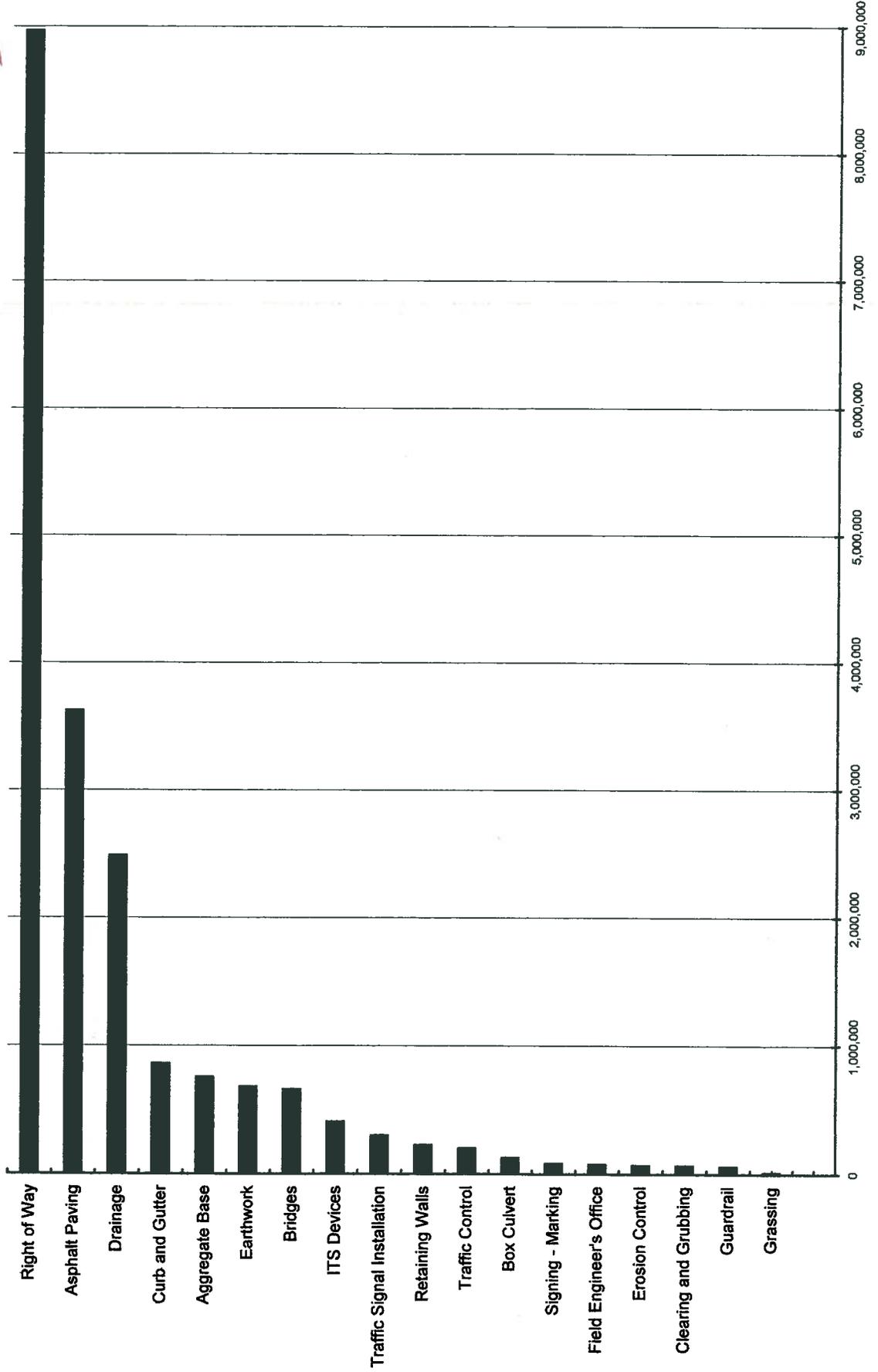
STP -9108 (4) - P.I. 751770
Clayton County



Pareto Chart 2



STP 9108 (5) - P.I. 751775
Clayton County



DESIGNER PRESENTATION MEETING PARTICIPANTS



Georgia Department of Transportation		December 3, 2007	
STP - 9108 (4)(5) - P.I. No. 751770 & 751775 County: Clayton			
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE
Lisa Myers	 GDOT - Engineering Services	lisa.myers@dot.state.ga.us	404-651-7468
Ron Wishon	 GDOT - Engineering Services	ron.wishon@dot.state.us.ga.us	(404)651-7470
Brian Summers	 GDOT - Engineering Services	brian.summers@dot.state.us.ga.us	
Gerald Ford	 GDOT - Design	gerald.ford@dot.state.ga.us	770-986-3982
Amber Perkins	 GDOT - OEL	amber.perkins@dot.state.ga.us	404-699-3473
Cindy Treadway	 GDOT - OEL	cindy.treadway@dot.state.ga.us	404-699-6665
Judy Meisner	 GDOT - Bridge Design	judy.meisner@dot.state.ga.us	404-656-5196
Loren Bartlett	 GDOT - Construction	loren.fros@dot.state.ga.us	404-559-6699
James Magnus	 GDOT - Construction	james.magnus@dot.state.ga.us	404-656-5306
Ken Wertho	 GDOT - Design Review	ken.wertho@dot.state.ga.us	404-635-8144
Scott Lee	 GDOT - District 7 Design	scott.lee@dot.state.ga.us	770-986-1261
Les Thomas	 PBS&J	lmthomas@pbsi.com	678-677-6420
Luke Clarke	 PBS&J - Highway/Roadway Design	lwlclarke@pbsi.com	205-969-3776
Randy Thomas	 PBS&J	rsthomas@pbsi.com	770-883-1545
Kevin Martin	 PBS&J	kimartin@pbsi.com	205-969-3776
Craig Thomas	 PBS&J	csthomas@pbsi.com	404-313-5437
Sean Johnston	 Kimley-Horn	sean.johnston@kimley-horn.com	404-419-8716
Ramesh Kalvakaalva	Civil Services, Inc.	ramesh@civilservicesinc.com	404-685-8001

**VE TEAM PRESENTATION
MEETING PARTICIPANTS**



Georgia Department of Transportation		December 6, 2007		
STP - 9108 (4)(5) - P.I. No. 751770 & 751775 County: Clayton				
NAME	ORGANIZATION & TITLE	E-MAIL	PHONE	
Gerald Ford	 GDOT - Design	gerald.ford@dot.state.ga.us	770-986-3982	
Mac Cranford	 GDOT	mac.cranford@dot.state.ga.us	770-986-1113	
Steve Matthews	 GDOT - Engineering Services	steve.matthews@dot.state.ga.us	404-651-7462	
Les Thomas	 PBS&J	lmthomas@pbsi.com	678-677-9420	
Luke Clarke	 PBS&J	lucclarke@pbsi.com	205-969-3776	
Kevin Martin	 PBS&J	kimartin@pbsi.com	205-253-5389	
Ramesh Kalvakaalva	 Civil Services, Inc.	rameshk@civilservicesinc.com	404-685-8001	

CREATIVE IDEA LISTING & EVALUATION



PROJECT: **Georgia Department of Transportation
STP-9108(4)(5) – P.I. No. 751770 & 751775
Battle Creek Road – Clayton County**

SHEET NO.: **1 of 2**

NO.	IDEA DESCRIPTION	RATING
ROADWAY (RD)		
RD-1	Use 11' lanes throughout project	5
RD -2	Review profile grade to reduce borrow	4
RD -3	Adjust sidewalk profile to reduce borrow	1
RD- 4	Use 12' shoulders	5
RD- 5	Re-align Battle Creek Road and Mt Zion Blvd tie in	DS
RD- 6	Limit side road improvements	4
RD- 7	Construct a 5 lane section	2
RD- 8	Construct bi-directional sidewalk in lieu of two separate sidewalks	2
RD- 9	Locate sidewalks to reduce earthwork; use guardrail as required	1
RD- 10	Construct an operational – a 6 lane section at I-75 interchange	DS
RD- 11	Realign Battle Creek Road from SR 54 to SouthLake Pkwy to the North	See ROW - 4
RD- 12	Retain existing intersection configuration at Valley Hill and Battle Creek Roads	1
RD- 13	Terminate west end of project at Tara Blvd	1
RD- 14	Retain existing pavement and construct on either north or south side of the existing alignment	See ROW - 4
RD- 15	Extend roadway to south side only at Panther creek to minimize stream bed remediation	3
RD- 16	Close median opening at Sta. 192+000	DS
RD - 17	Close median at Mt Zion Boulevard	DS
RD - 18	Close Home Depot Driveway	DS
STRUCTURES (ST)		
ST – 1	Use modular block walls in- lieu of gravity walls	5
ST – 2	Use Conspan in- lieu of box culvert at panther creek	4

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

