VALUE ENGINEERING STUDY

Project # STP00-2009-00(004) PI No. 742870-

SR 920 from SR 54/Fayette to SR 3/US 19/Clayton
Fayette/Clayton County, Georgia

Prepared for:

Georgia Department of Transportation

One Georgia Center
600 West Peachtree NW
Atlanta, Georgia 30308

16 May 2013

U.S. COST

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U.S. COST

16 May 2013

Mr. Matt Sanders, AVS
Value Engineering Specialist
GDOT - Engineering Services
One Georgia Center - 5th Floor
600 W. Peachtree Street NW
Atlanta, GA 30308

Re: V.E. Workshop – SR 920 from SR 54 to SR 3/US 19, Fayette/Clayton County, GA
Project #: STP00-2009-00(004) - PI#: 742870-

Dear Mr. Sanders:

U.S. Cost, Inc. is pleased to submit two (2) hard copies and one (1) CD of the Value Engineering Study Report on the above referenced project. We appreciate the assistance and participation of the GDOT management personnel as well as the GDOT design team.

This Workshop resulted in the development of eighteen (18) value-enhancing proposals. We hope that incorporation of some of these value improvement alternatives provided herein results in an enhanced project in relation to cost, constructability and long-term performance of the project features.

Please feel free to contact me to discuss any information within this report. We look forward to the next opportunity to be of service to the Georgia Department of Transportation.

Sincerely,

U.S. COST INCORPORATED

Tom Orr, P.E., CVS
V.E. Team Leader

CC: L. Myers, GDOT

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PROJECT DESCRIPTION

This SR 920 from SR 54 to SR 3/US 19 project involves widening of SR 920 in Fayette and Clayton Counties in Georgia. The project will widen the existing two-lane roadway to a 4-lane with raised concrete median and bike lanes.

The proposed project involves work along a 5.78 mile section of SR 920 beginning at the intersection with SR 54 and ending just West of the intersection with SR 3/US 19. The new roadway consists of a four-lane roadway (two lanes in each direction) with 20' raised median, bike lanes in each direction and 5' wide sidewalks along each side. The right-of-way is a consistent corridor width of 120' along the SR 920 mainline.

Project components include:

- New 4-lane (11' travel lanes) roadway with 20' wide raised median
- Bike lines and 5' sidewalks along each side
- Three (3) existing signals and three (3) proposed new signals
- Two (2) bridge locations, at Flint River and Hurricane Creek

KEY INFORMATION/NOTES

Introduction

U.S. Cost conducted the Value Engineering Team Study on SR 920 from SR 54 to SR 3/US 19. The V.E. study was conducted for three and ½ days, 13 - 16 May 2013, at the Georgia Department of Transportation 5th floor Conference Room in Atlanta, GA. The study team was furnished with a concept report and preliminary construction plans for use in conducting the VE workshop. The following individuals were members of the V.E. team:

Name	Firm	Discipline
Tom Orr, P.E., CVS	U.S. Cost, Inc.	VE Team Leader (VETL)
Chris Haggard, P.E.	Wolverton & Associates	Roadway Engineer
Ashley Zellner, P.E.	Michael Baker Corporation	Bridge/Structures
Lenor Bromberg, P.E., AVS	KEA Group	Construction

Value Engineering Study Process

The Value Engineering Study followed the Value Engineering Job Plan as certified by SAVE International as follows:

- Information Phase (Monday)
- Function Analysis Phase (Monday)
- Creative Phase (Monday)
- Evaluation Phase (Tuesday)
- Development Phase (Tuesday - Wednesday)
- Presentation Phase (Thursday AM)

Information Phase

The V.E. team was first briefed on the project design by Georgia DOT project management and American Engineers design team representatives in a Design Presentation the morning of the first day of the V.E. Study. The briefing included a review of the design requirements and rationale for the selection and arrangement of the major project features. Discussions regarding alternatives considered, adjacent properties/facilities, and project criteria and constraints were included in the design presentation.

KEY INFORMATION/NOTES

Project Design Criteria

During the Design Presentation meeting, project design criteria were identified. The following listing identifies the design criteria with which the project must comply:

AASHTO Design Policies
FHWA Design Policies
Other Environmental Restrictions (EA Requirements TBD)

Project Constraints

During the presentation by the design team on the project overview, the VE Team was alerted to the stakeholder's constraints on this project which include:

- Bike paths must be provided
- Maintain median opening locations along McCurry Park
- Avoid or minimize impacts to cemetery and historical farm structures at Sta 550+00 to 600+00

Function Analysis

As a basic part of the V.E. process, the team conducted a Function Analysis session on the SR 920 from SR 54 to SR 3/US 19 project to identify the needs and goals of the project and facilitate the creative idea session, by addressing functions as opposed to the specific design elements.

The Basic Function of the project is to ***"****Increase Capacity"*. A detailed project function analysis of the characteristics of the project and the project features is presented in the Appendix.

KEY INFORMATION/NOTES

Risk Analysis

The group identified the following project risk elements, which may impact the SR 920 from SR 54 to SR 3/US 19 project. This exercise served as a catalyst for the Creative Phase of the study when several ideas were suggested which would mitigate these project risks.

Risk Elements/Concerns

- Length of Side Road Improvements
- Streams Dictating Bridge Designs
- Historical and Archaeological Impacts to Alignment
- 4(f)/Park Properties Affecting Alignments
- MS-4 Ponds Not Currently Included in Design
- Significant Property Impacts
- Eliminating Non-substandard Curves
- Balancing of Earthwork Unknown
- Unconfirmed Timelines on Adjacent Projects
- Traffic Counts not Adjusted for Bypass Project
- Significant Lengths of Turn Lanes
- Bike Lane Movements Conflicting with Vehicle Turn Lane Movements
- Traffic Control Complexity Due to Changing Alignment

KEY INFORMATION/NOTES

Creative Phase

The Creative Phase of the V.E. study was initiated the afternoon of the first day of the study. A total of thirty-nine (39) creative ideas were generated for further investigation by the team. The creative ideas focused on areas of the project which the VE Team felt had the most opportunity for value improvement, including:

- Revising Traffic Counts based on Proposed Bypass Project
- Revising Approach to Bike Facilities
- Reducing Right-of-way acquisition required
- Locating New Alignment as Close as Possible to Existing
- Minimizing Work on Side Roads not Improving Operations of SR 920

Additional ideas were generated reflecting alternative project components based on an understanding of local construction products and materials and the relative costs of installing them.

A listing of all creative ideas on this project is included in the Appendix.

Alternative Idea Evaluation Criteria

The session participants identified the characteristics for evaluating the V.E. ideas for which alternatives would be the most acceptable for incorporation in the project. The highest ranked ideas would satisfy several of these criteria. The evaluation criteria for V.E. ideas are as follows:

V.E. Idea Evaluation Criteria

Improves Operations
Reduces Construction Time
Acceptability
Reduces Impacts
- Property
- Business
- Environmental

Reduces Costs
Enhances Constructability

KEY INFORMATION/NOTES

Evaluation Phase

The ideas generated during the Creative Phase were reviewed and evaluated by the VE session participants during an Analysis/Judgment Phase session on the morning of the second study day. The intent of the meeting was to allow the participants an opportunity to discuss and evaluate the ideas. A few of the V.E. ideas were dropped at that time as being conceptually unacceptable. The ranking session consisted of the VE team members assigning a ranking for each idea. The ranking was based on how each idea improves the value of the project when considered against the evaluation criteria listed previously. All ideas were given a designation of 1-5 with a 5 being those ideas that brought the most added value to the project. This is a time management tool to identify those proposals that have the greatest potential. Approximately eighteen (18) out of the original thirty-nine (39) creative ideas were deemed promising for further investigation and analysis by the V.E. team.

The time management ranking system used by the VE team is as follows:

RANKING SYSTEM

5 points - Excellent Idea
4 points – Very Good Idea
3 points - Good Idea
2 points - Fair Idea
1 point - Do Not Develop

KEY INFORMATION/NOTES

Development Phase

The specific proposals found in the body of this report represent the positive results of investigations by the V.E. team on the SR 920 from SR 54 to SR 3/US 19 project. Each proposal represents a quality enhancing or cost saving alternative, which is documented by words, drawings and numbers. The proposal format presents the idea, describes the original design element proposed for change and the proposed change, lists the perceived advantages and disadvantages of the proposed change and supports the idea with a detailed cost estimate for the original and proposed design. Where necessary for clarity, the proposal also includes thumbnail design drawings and supporting engineering calculations.

Presentation Phase

A presentation to the GDOT and design team representatives was conducted on 16 May 2013 at 9 AM.

Basis of V.E. Cost Savings

The cost information for proposals in this report are based on the cost data prepared by the design team, GDOT Item Mean Summary (Jan. 9, 2012), VE Team member experience, and discussions with vendors/Contractors. Overhead and profit are included in the project cost estimate and the GDOT Item Mean. Therefore, no additional markups are applied. The savings presented in the proposals is a general order of magnitude (estimate of the potential savings) if the idea were to be accepted. These figures are solely intended to identify the most attractive design solution, and are not prepared to represent a net deduction to the overall project budget. The costs are in 2013 dollars.

Evaluation of Alternatives

When reviewing the value engineering proposals, consider each part of an alternative on its own merit. There may be a tendency to disregard an entire alternative because of a concern about one aspect of it. We encourage partial acceptance of ideas; thus, each aspect of an alternative should be considered for incorporation into the design, even if the entire alternative is not implemented. Variations of these proposed alternatives are encouraged.

Several of these alternatives are either “mutually exclusive”/or have overlapping cost savings with other alternatives. These are indicated in the Proposal Summary Table. Items indicated as mutually exclusive indicates that acceptance of one alternative, precludes acceptance of the related proposal. Decision-makers are encouraged to evaluate these alternatives carefully in order to select the combination of alternatives that provides the greatest benefits to the project.

VALUE ENGINEERING RESULTS

The VE Team generated 39 creative ideas and developed 18 proposals for consideration by GDOT. Brief outlines of the VE proposals are as follows:

Proposal Highlights

B-1.0 – Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Flint River Bridge. The current design of the Flint River Bridge uses long spans that will require concrete bents. It consists of 3 spans at 68', 150' and 71' with a Bulb-T 74" beam main span and Type 3 PSC beam end spans. In Proposal B-1.0, it is proposed to use short spans on pile bent foundations. The proposed bridge spans are 6 – 48'-4" Type 2 PSC beam spans. The reduction in beam depth will also allow for the profile to be lowered by approximately 2.75 ft. This alternative will save approximately $455,000 in project costs.

B-2.0 – Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Hurricane Creek Bridges. The current design of the Hurricane Creek bridges uses long spans that will require concrete bents. The current right bridge includes 3 spans at 61', 110' and 110'. The current left bridge consists of 3 spans at 110', 110', and 56'. All spans use Bulb-T 54" beams. In Proposal B-2.0, it is proposed to use short spans on pile bent foundations. The proposed bridges will consist of 6 equal Type II PSC beam spans. The right bridge will be use 46'-10" spans and the left bridge will use 46'-0" spans. The reduction in beam depth will also allow for the profile to be lowered by approximately 1.5 ft. This proposal results in a savings of $375,000.

B-4.0 - Use Smaller Beams on End Spans of Hurricane Creek Bridges in lieu of Consistent Beam Type. The current design of the Hurricane Creek bridges includes 54" Bulb-T beams for all spans. As an alternative to B-2.0, it is proposed to use smaller Type II PSC beams for only the shorter spans on these bridges. These spans are span 1 of the right bridge (61') and span 3 of the left bridge (56'). This alternative would save approximately $28,000.

R-1.0 - Revise Intersection Improvements at County Line Road/ McElroy Road to Reflect Traffic Shift to Proposed East Fayetteville Bypass. The current design provides for improvements along McElroy Road and County Line Road to a distance of approximately 1200' North and 1280' South of SR 920/McDonough Road. The length of improvements is to provide dual left turns, a single through lane, and a single right turn lane at each roadway approach. The number of turn lanes and length of lanes does not account for the improvements associated with the proposed East Fayetteville Bypass (PI 0006904 and 0008517). In R-1.0, it is proposed to adjust the traffic volume due to the East Fayetteville Bypass construction; in doing this, the lane assignments required for the Build condition would be a single left turn lane, a single through lane, and a single right turn lane on County Line Road and McElroy Road. This alternative results in reduced right-of-way impacts, and provides a project cost savings of $515,000.

VALUE ENGINEERING RESULTS

R-2.0 - Use 10' Wide Multi-use Trail on One Side with 5' Wide Sidewalk on Opposite Side in lieu of Bike Lanes and Sidewalks. The current design includes 5-foot wide sidewalks and 4-foot wide bike lanes on both sides of SR 920. In R-2.0, it is proposed to include a 10-foot wide multi-use trail on one side of SR 920 and a 5-foot sidewalk on the opposite side. The multi-use trail would be located on the North side of SR 920 from the beginning of the project where the park and schools are located to Panhandle Road where it would crossover to the South side of SR 920. From Panhandle Road to the end of the project the trail would remain on the South side of SR 920 where the high school and Lovejoy Park could be accessed. This proposal minimizes right-of-way impacts, while saving an estimated $1,315,000 in construction costs.

R-3.0 - Lower Vertical Profile at 2 Locations: Sta 616+00 to Sta 635+00, and Sta 716+00 to Sta 729+00. Based on the VE Team's review of the current vertical profiles, the following roadway sections have vertical profiles that could be adjusted closer to existing grade:

- Sta 616+00 to Sta 635+00: lower profile closer to existing grade.
- Sta 716+00 to Sta 729+00: lower profile closer to existing grade.

This revision meets GDOT design policy and reduces project costs by approximately $190,000.

R-5.0 - Utilize Existing Right-of-Way for Pavement Widening from Sta 550+00 to 600+00. The current design realigns SR 920 off the existing alignment to the South from Sta 550+00 to 600+00 in order to avoid impacts to a cemetery and a historical farm. It is proposed to widen SR 920 on the existing alignment and shift the widening from North to South in order to avoid creating an adverse effect to the historic farm on the North side of SR 920. This proposal reduces right-of-way impacts and results in a cost savings of approximately $775,000.

R-6.0 - Locate New Pavement Closer to Existing Horizontal Alignment from Sta 605+00 to 625+00; Construct Flint River Bridge using Stage Construction. The current design realigns SR 920 off the existing alignment to the South at the Flint River in order to construct a new bridge in one stage. In R-6.0, it is proposed to widen SR 920 South of the existing alignment and use stage construction. This proposal reduces right-of-way and utility impacts and would result in a savings of approximately $835,000.

VALUE ENGINEERING RESULTS

R-9.0 - Reduce Turn Lane Lengths on Panhandle Road. The current design is based on approved project traffic and provides for improvements along Panhandle Road to a distance of approximately 1050' North and 1080' South of SR 920/McDonough Road. The length of improvements is to provide dual left turns, a single through lane, and a single right turn lane at each roadway approach. In R-9.0, it is proposed to shorten the dual left turn and right turn lanes on each Panhandle Road approach to more accurately reflect the turning movement counts and adjusted vehicles per peak hour as reflected in the Synchro output data included in the February 2012 Traffic Analysis. Reducing the length of the turn lanes to reflect the traffic volumes would reduce property impacts and save approximately $389,000.

R-10.0 - Reduce Turn Lane Lengths on Side Roads. The current design includes long turn lanes on many side roads intersecting with SR 920. In R-10.0, it is proposed to shorten the right or left turn lanes on select side roads to meet required storage and GDOT minimum turn lengths. Turn lane lengths are proposed to be shortened on Zoie Court, Turner Road, New Hope Road, Folsom Road, Southwood Drive, Pebble Ridge Drive, Knotty Pine Place, Shannon Circle and the Home Depot driveway. This alternative provides a project cost savings of $550,000.

R-12.0 - For New Pavement Sections on Side Roads, Use 11' Lane Widths in lieu of 12'. In the current design, the side road sections with new pavement are shown as having widths from 11' to 12'. In R-12.0, it is proposed to construct all new travel and turn lanes on the side roads with a width of 11'. The side roads to be included in this width reduction include Zoie Court, Folsom Road, Southwood Drive, Pebble Ridge Drive, and Shannon Circle. This proposal saves an estimated $45,000 in construction costs.

R-13.0 - Eliminate Retaining Walls 2, 10, 11, 12, 13, 14 and Use Fill Slopes and Guardrail at These Locations. The original design uses gravity wall in 7 locations adjacent to the roadway in lieu of slopes. In R-13.0, it is proposed to use 2:1 fill slopes and guardrail at 6 of these locations and eliminate the walls. This meets GDOT policies and reduces project costs by approximately $252,000.

R-14.0 - Eliminate Easements Behind Retaining Walls and at Hurricane Creek Bridge. In the current design, at the location of proposed retaining walls there is shown right-of-way as needed for construction of the walls as well as easement beyond the right-of-way limits. The current design also shows significant easement areas in the vicinity of the proposed Hurricane Creek Bridge. In R-14.0, it is proposed to eliminate the easements beyond the right-of-way limits at the location of proposed new retaining walls. In addition, it is proposed to eliminate the extraneous easement areas shown in the vicinity of the Hurricane Creek bridge. This alternative provides a savings of approximately $50,000.

VALUE ENGINEERING RESULTS

R-17.0 - Eliminate Sidewalks on Side Roads Where None Currently Exist. In the current design, the majority of the side road sections include new sidewalks where none currently exist. In R-17.0, it is proposed to eliminate the sidewalks from the new roadway sections for side roads where no sidewalks currently exist. This eliminates dead end sidewalks and saves approximately $163,000.

R-21.0 - Limit Improvements at Intersection with SR 54 to North of SR 920 Plus Raised Median Nose to South. The current design includes overlay, curb and gutter and sidewalk on SR 54 to the South of the realigned intersection of SR 920 and SR 54. In R-21.0, it is proposed to eliminate the overlay, curb and gutter and sidewalk on SR 54 South of the realigned intersection of SR 920 and SR 54. This alternative eliminates project elements that do not increase capacity of the intersection or improve operation of SR 54, while resulting in a project cost savings of $106,000.

R-25.0 - Set Right-of-Way Limits at Shoulder Break and Use Permanent Easements as Necessary Beyond the Right-of-Way Limit. The current design shows a consistent Right-of-Way corridor width of 120' along the SR 920 mainline. In R-25.0, it is proposed to set the Right-of-Way limits at the shoulder break with easements beyond the Right-of-Way in lieu of the consistent 120' wide corridor. This proposal saves an estimated $217,000 in construction costs.

R-28.0 - Use Cast-in-Place Concrete Wall in lieu of MSE Wall for Hurricane Creek Bridge Walls #4 and 7. The current design uses MSE walls in the vicinity of the Hurricane Creek bridge, walls #4 and 7. These walls are 10'-15' in height. In R-28.0, it is proposed to use a cast-in-place concrete wall at these taller wall locations, eliminating MSE walls from the project. This reduces project costs by approximately $137,000.

R-29.0 - Reduce Permanent Easement at Sta 762+00 LT to Eliminate Displacement. The current design includes a 15' permanent easement through the existing residential structure at Sta 762+00 LT. In R-29.0, it is proposed to reduce the permanent easement to 10' to eliminate the displacement of the residential structure. This alternative eliminates a displacement and provides a savings of approximately $100,000.

SUMMARY OF VALUE ENGINEERING PROPOSALS

Project # STP00-2009-00(004) PI No. 742870-
SR 920 from SR 54/Fayette to SR 3/US 19/Clayton
FAYETTE/CLAYTON COUNTY, GEORGIA

IDEA NO.	PROPOSAL DESCRIPTION	CONSTRUCTION SAVINGS	RELATED PROPOSALS
	Note: Brackets mean additional cost		
	BRIDGE (B)		
1.0	Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Flint River Bridge	455,365	
2.0	Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Hurricane Creek Bridges	375,641	Mutually exclusive with B-4.0; Cost savings overlap with R-28.0
4.0	Use Smaller Beams on End Spans of Hurricane Creek Bridges in lieu of Consistent Beam Type	28,431	Mutually exclusive with B-2.0
	ROADWAY (R)		
1.0	Revise Intersection Improvements at County Line Road/ McElroy Road to Reflect Traffic Shift to Proposed East Fayetteville Bypass	515,399	Cost Savings overlap with R-17.0
2.0	Use 10’ Wide Multi-use Trail on One Side with 5’ Wide Sidewalk on Opposite Side in lieu of Bike Lanes and Sidewalks	1,315,291	
3.0	Lower Vertical Profile at 2 Locations: Sta 616+00 to Sta 635+00, and Sta 716+00 to Sta 729+00	191,703	
5.0	Utilize Existing Right-of-Way for Pavement Widening from Sta 550+00 to 600+00	774,389	
6.0	Locate New Pavement Closer to Existing Horizontal Alignment from Sta 605+00 to 625+00; Construct Flint River Bridge using Stage Construction	835,891	

SUMMARY OF VALUE ENGINEERING PROPOSALS

Project # STP00-2009-00(004) PI No. 742870-
SR 920 from SR 54/Fayette to SR 3/US 19/Clayton
FAYETTE/CLAYTON COUNTY, GEORGIA

IDEA NO.	PROPOSAL DESCRIPTION	CONSTRUCTION SAVINGS	RELATED PROPOSALS
	ROADWAY (R) - continued .		
9.0	Reduce Turn Lane Lengths on Panhandle Road	388,806	Cost Savings overlap with R-17.0
10.0	Reduce Turn Lane Lengths on Side Roads	552,895	Cost savings overlap with R-12.0 & R-17.0
12.0	For New Pavement Sections on Side Roads, Use 11’ Lane Widths in lieu of 12’	45,621	Cost savings overlap with R-10.0
13.0	Eliminate Retaining Walls 2, 10, 11, 12, 13, 14 and Use Fill Slopes and Guardrail at These Locations	252,907	Mutually exclusive with R-14.0
14.0	Eliminate Easements Behind Retaining Walls and at Hurricane Creek Bridge	50,625	Mutually exclusive with R-13.0
17.0	Eliminate Sidewalks on Side Roads Where None Currently Exist	163,311	Cost savings overlap with R-1.0, R-9.0 & R-10.0
21.0	Limit Improvements at Intersection with SR 54 to North of SR 920 Plus Raised Median Nose to South	106,232	
25.0	Set Right-of-Way Limits at Shoulder Break and Use Permanent Easements as Necessary Beyond the Right-of-Way Limit	217,500	
28.0	Use Cast-in-Place Concrete Wall in lieu of MSE Wall for Hurricane Creek Bridge Walls #4 and 7.	137,114	Cost savings overlap with B-2.0
29.0	Reduce Permanent Easement at Sta762+00 LT to Eliminate Displacement	100,375	

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	B-1.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	USE SHORT SPANS ON PILE BENTS IN LIEU OF PSC BEAMS ON CONCRETE BENTS AT THE FLINT RIVER BRIDGE.

ORIGINAL DESIGN: The original design uses long spans that will require concrete bents. The current design is 289' long by 93'-6". It consists of 3 spans at 68', 150' and 71' with a Bulb-T 74" beam main span and Type 3 PSC beam end spans. The construction of footings for proposed concrete bents may also require cofferdams and disturb the river banks.

PROPOSED CHANGE: It is proposed to use short spans on pile bent foundations. The proposed bridge is 290' long by 93'-6" and consists of 6 – 48'-4" Type 2 PSC beam spans. The reduction in beam depth will also allow for the profile to be lowered by approximately 2.75 ft.

JUSTIFICATION: Pile bents provide adequate support and are more economical than concrete bents.

ADVANTAGES:

- Provides cost savings
- Potential reduction in stream impacts due to footing construction.

DISADVANTAGES:

- Locates piles in river channel

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 2,567,043		$ 2,567,043
PROPOSED CHANGE:	$ 2,111,678		$ 2,111,678
SAVINGS:	$ 455,365		$ 455,365

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	B-1.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge – PSC Beam on Concrete Bents	7	SF	27,021.5	95	2,567,043
SUBTOTAL – COST TO PRIME					2,567,043
MARKUP					Incl.
TOTAL CONTRACT COST					**$2,567,043**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge - Short Spans on Pile Bents	7	SF	27,115	$80	2,169,200
Reduction in Earthwork	3	CY	18,676	$3.08	(57,522)
SUBTOTAL – COST TO PRIME					2,111,678
MARKUP					Incl.
TOTAL CONTRACT COST					**2,111,678**

Difference [Original-Proposed] **$455,365**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other – GDOT Bridge Policy Manual

ORIGINAL DESIGN SKETCH/DETAIL

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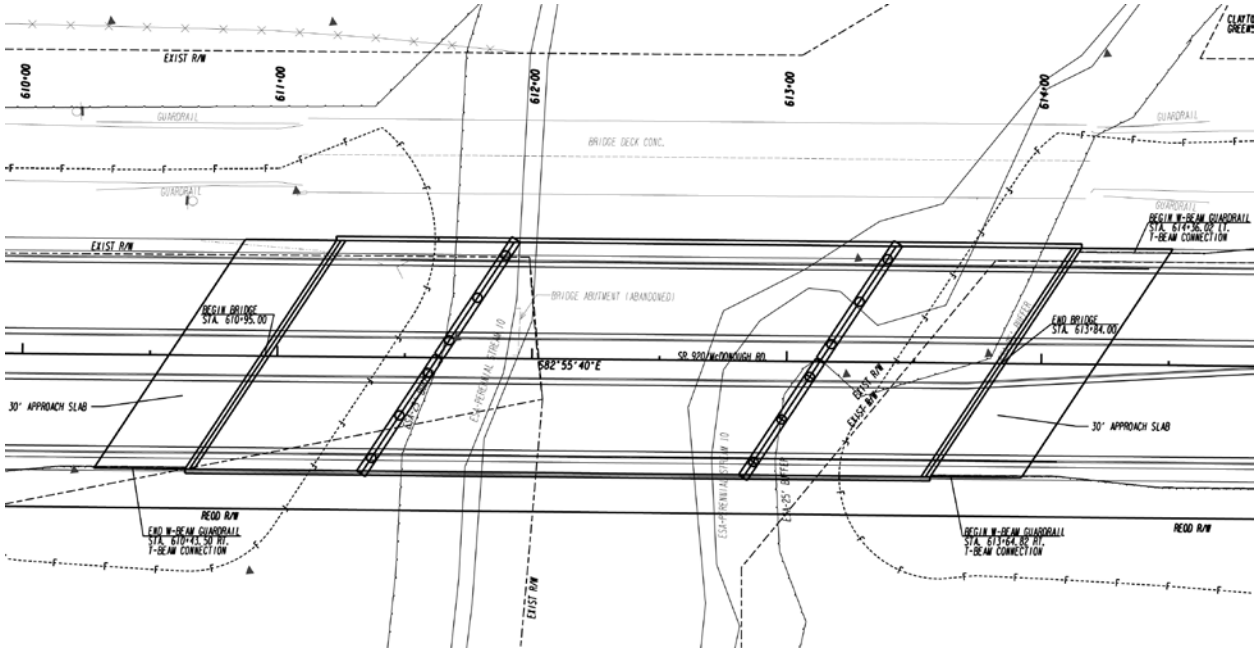

Flint River Bridge
Long Spans On Concrete Bents

PROPOSED CHANGE SKETCH/DETAIL

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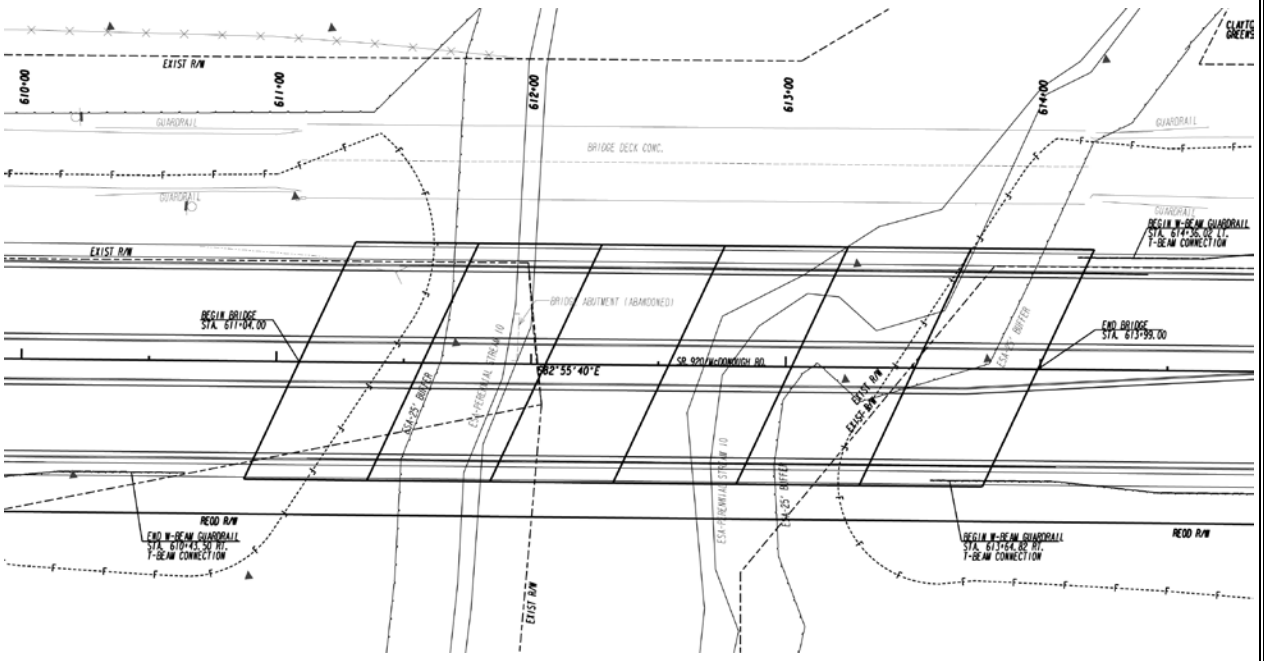


Flint River Bridge
Short Spans on Pile Bents

CALCULATIONS

PROPOSAL NUMBER:	B-1.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Original Design

Bridge	Length	Width	Area (SF)	Unit Cost ($/SF)	Cost
Flint River	289	93.5	27021.5	$95.00	$2,567,043

Note: From GDOT Bridge & Structures Policy Manual, unit cost for PSC beams on concrete bents is $95/SF

Proposed Change

Bridge	Length	Width	Area (SF)	Unit Cost ($/SF)	Cost
Flint River	290	93.5	27115	$80.00	$2,169,200

Note: From GDOT Bridge & Structures Policy Manual, unit cost for short spans on pile bents is $80/SF

Reduction in Earthwork Due to Profile Change:
Lower grade from Sta 605+00 to 627+00 = 2200' – 290' bridge = 1910'
Lower profile by 2.75' across roadway width of 96'.

1910' x 2.75' x 96' = 504,240 CF = 18,676 CY

18,676 CY x 3.08 $/CY = $57,522

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	B-2.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	USE SHORT SPANS ON PILE BENTS IN LIEU OF PSC BEAMS ON CONCRETE BENTS AT THE HURRICANE CREEK BRIDGES.

ORIGINAL DESIGN: The original design of the Hurricane Creek bridges uses long spans that will require concrete bents. The current right bridge is 281' long by 40'-9" wide. It consists of 3 spans at 61', 110' and 110'. The current left bridge is 276' long by 40'-9" wide and consists of 3 spans at 110', 110', and 56'. All spans use Bulb-T 54" beams. The construction of footings for proposed concrete bents may also require cofferdams and disturb the river banks.

PROPOSED CHANGE: It is proposed to use short spans on pile bent foundations. The proposed bridges will consist of 6 equal Type II PSC beam spans. The right bridge will be 281' long by 40'-9" wide with 46'-10" spans and the left bridge 276' long by 40'-9" wide with 46'-0" spans. The reduction in beam depth will also allow for the profile to be lowered by approximately 1.5 ft.

JUSTIFICATION: Pile bents provide adequate support and are more economical than concrete bents.

ADVANTAGES:

- Provides cost savings
- Potential reduction in stream impacts due to footing construction.
- Reduces wall height on approaches

DISADVANTAGES:

- Locates piles in river channel

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 2,156,286		$ 2,156,286
PROPOSED CHANGE:	$ 1,780,645		$ 1,780,645
SAVINGS:	$ 375,641		$ 375,641

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	B-2.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge – PSC Beam on Concrete Bents	7	SF	22,697.75	95	2,156,286
SUBTOTAL – COST TO PRIME					2,156,286
MARKUP					Incl.
TOTAL CONTRACT COST					**2,156,286**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Bridge - Short Spans on Pile Bents	7	SF	22,697.75	80	1,815,820
Reduction in Earthwork	3	CY	4,373	3.08	(13,467)
Reduction in MSE Wall	3	SF	547.5	39.65	(21,708)
SUBTOTAL – COST TO PRIME					1,780,645
MARKUP					Incl.
TOTAL CONTRACT COST					**1,780,645**

Difference [Original-Proposed] **$375,641**

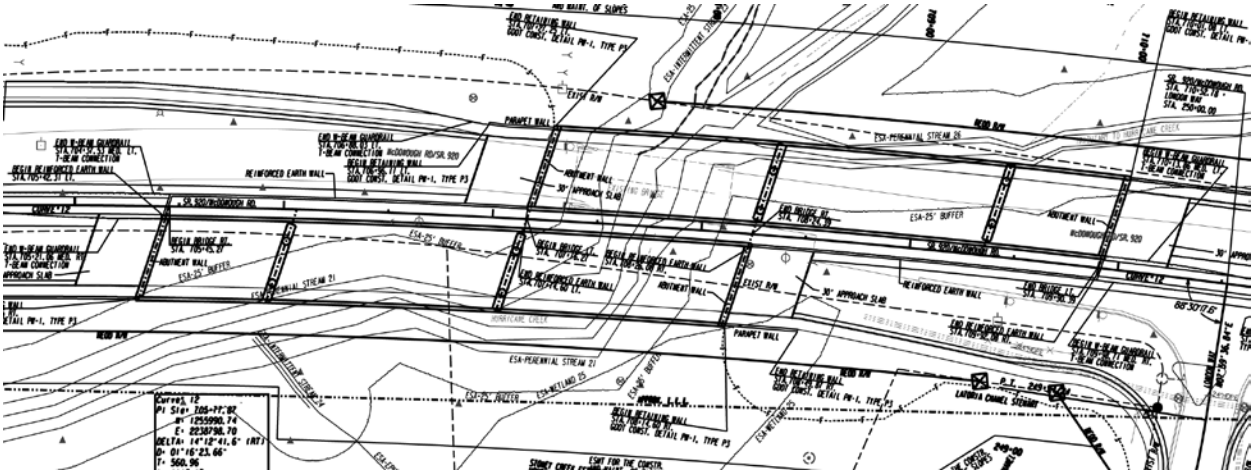
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other – GDOT Bridge Policy Manual

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	B-2.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

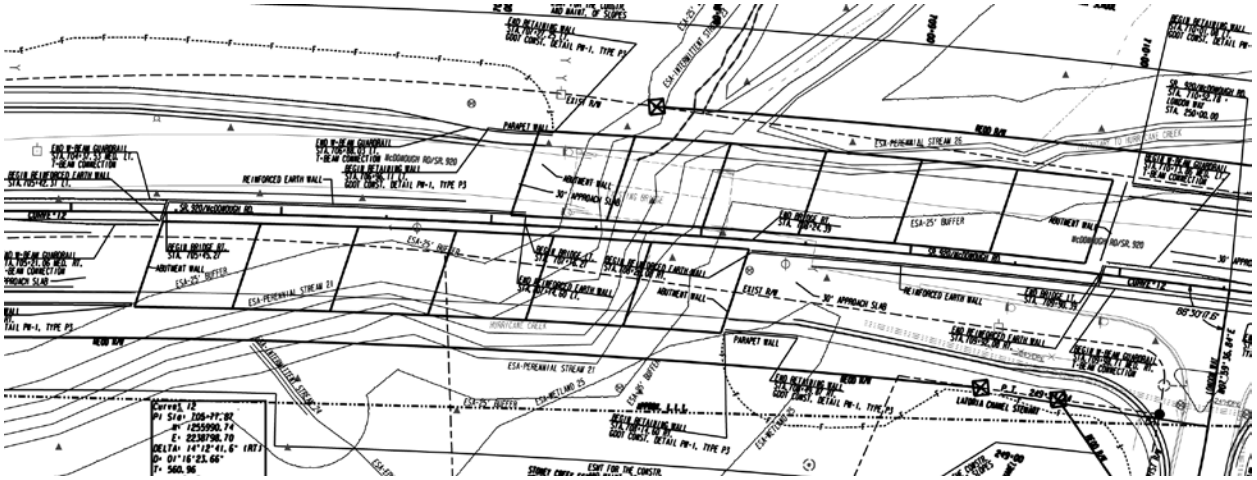


Hurricane Creek Bridges
Long Spans on Concrete Bents

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	B-2.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



Hurricane Creek Bridges
Short Spans on Pile Bents

CALCULATIONS

PROPOSAL NUMBER:	B-2.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Original Design

Bridge	Length	Width	Area (SF)	Unit Cost ($/SF)	Cost
Hurricane Creek RT	281	40.75	11450.75	$95.00	$1,087,821
Hurricane Creek LT	276	40.75	11247	$95.00	$1,068,465
Total			22697.75		$2,156,286

Note: From GDOT Bridge & Structures Policy Manual, unit cost for PSC beams on concrete bents is $95/SF

Proposed Change

Bridge	Length	Width	Area (SF)	Unit Cost ($/SF)	Cost
Hurricane Creek RT	281	40.75	11450.75	$80.00	$916,060
Hurricane Creek LT	276	40.75	11247	$80.00	$899,760
Total			22697.75		$1,815,820

Note: From GDOT Bridge & Structures Policy Manual, unit cost for short spans on pile bents is $80/SF

Reduction in Earthwork Due to Profile Change:
Lower grade from Sta 702+00 to 713+00 = 1100' – 280' bridge = 820'
Lower profile by 1.5' across roadway width of 96'.

820' x 1.5' x 96' = 118,080 CF = 4,373 CY

4,373 CY x 3.08 $/CY = $13,469

Reduction in MSE Wall Area, Walls 4 and 7
Wall 4 – 190 LF, Wall 7 - 175LF => 365 LF MSE wall.
Lower top of wall by 1.5'

365' x 1.5' = 547.5 SF wall.

547.5 x 39.65 $/SF = $21,708

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	B-4.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	USE SMALLER BEAMS ON END SPANS OF HURRICANE CREEK BRIDGES IN LIEU OF CONSISTENT BEAM TYPE.

ORIGINAL DESIGN: The original design of the Hurricane Creek bridges includes 54" Bulb-T beams for all spans.

PROPOSED CHANGE: It is proposed to use smaller Type II PSC beams for the shorter spans on these bridges. These spans are span 1 of the right bridge (61') and span 3 of the left bridge (56').

JUSTIFICATION: Constant depth or fascia beams are typically not required on stream crossings. The use of smaller beams provides adequate bridge support while also providing a cost savings.

ADVANTAGES:

- Provides cost savings
- Smaller beams are easier to lift and place

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 85,644		$ 85,644
PROPOSED CHANGE:	$ 57,213		$ 57,213
SAVINGS:	$ 28,431		$ 28,431

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	B-4.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
PSC Beam, Bulb-T 54	3	LF	585	146.40	85,644
SUBTOTAL – COST TO PRIME					85,644
MARKUP					Incl.
TOTAL CONTRACT COST					**85,644**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
PSC Beam, AASHTO Type II	3	LF	585	97.80	57,213
SUBTOTAL – COST TO PRIME					57,213
MARKUP					Incl.
TOTAL CONTRACT COST					**57,213**

Difference [Original-Proposed] **$28,431**

SOURCES

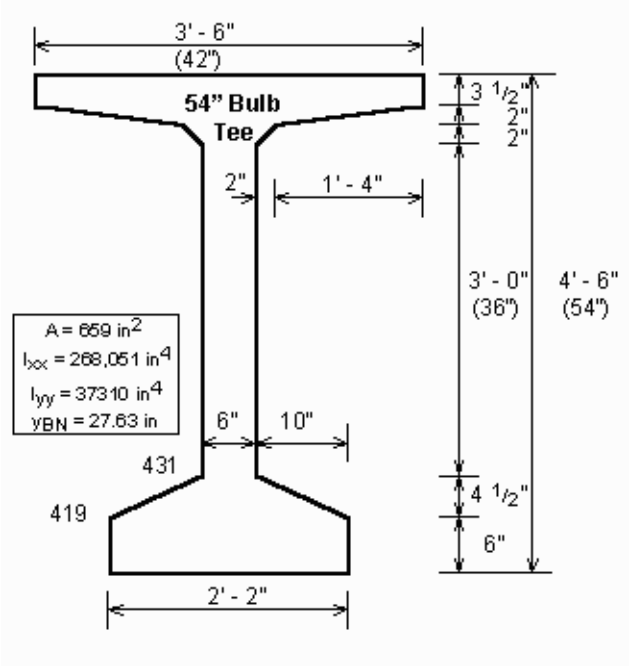
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL/PROPOSED DESIGN SKETCH/DETAIL

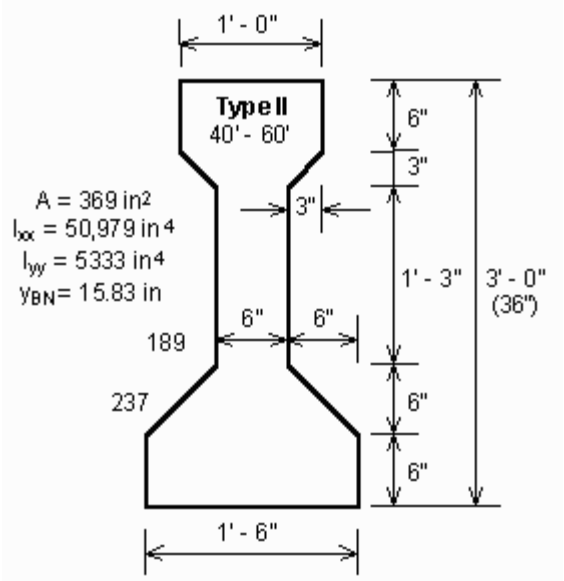
PROPOSAL NUMBER:	B-4.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Original Beam, Bulb-T 54”



Proposed Beam, AASHTO Type II



CALCULATIONS

PROPOSAL NUMBER:	B-4.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Assume 5 beams at approximately 8’ spacing for 40’-9” bridge width.

Original Design
Span 1 RT: 5 BT54 x 61’ x 146.40 $/LF = $44,652
Span 3 LT: 5 BT54 x 56’ x 146.40 $/LF = $40,992
Total: $85,644

Based on the GDOT Preliminary Bridge Design Charts a Type II PSC beam will work for these spans and spacing.

Proposed Design
Span 1 RT: 5 Type II x 61’ x 97.80 $/LF = $29,829
Span 3 LT: 5 Type II x 56’ x 97.80 $/LF = $27,384
Total: $57,213

Savings = $28,431

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	1 of 7

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	REVISE INTERSECTION IMPROVEMENTS AT COUNTY LINE ROAD/ MCELROY ROAD TO REFLECT TRAFFIC SHIFT TO PROPOSED EAST FAYETTEVILLE BYPASS.

ORIGINAL DESIGN: The current design is based on approved project traffic, which does not account for the improvements associated with the proposed East Fayetteville Bypass (PI 0006904 and 0008517). The current design provides for improvements along McElroy Road and County Line Road to a distance of approximately 1200' North and 1280' South of SR 920/McDonough Road. The length of improvements is to provide dual left turns, a single through lane, and a single right turn lane at each roadway approach. Curb and gutter and 5' concrete sidewalks are provided along each side of the length of roadway improvements. Right-of-way and permanent easements are required along both sides of each roadway to accommodate the improvements.

PROPOSED CHANGE: The approved traffic for the proposed East Fayetteville Bypass indicates that a large percentage of traffic will continue North along the bypass alignment to access SR 920/McDonough Road and SR 54 to the North, thereby shifting traffic off of County Line Road and McElroy Road between the bypass alignment and SR 54. As a result of this reduced traffic volume due to the East Fayetteville Bypass construction, the lane assignments required for the Build condition would be a single left turn lane, a single through lane, and a single right turn lane on County Line Road and McElroy Road. The turning volumes in the AM and PM peak would be low enough that the minimum right and left turn lane storage lengths as suggested in the GDOT Driveway and Encroachment Manual should be sufficient.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 838,018		$ 838,018
PROPOSED CHANGE:	$ 322,619		$ 322,619
SAVINGS:	$ 515,399		$ 515,399

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	2 of 7

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

JUSTIFICATION: The magnitude of improvement included in the current design is not required for the anticipated traffic volumes. Reducing the number of lanes and length of auxiliary lanes to reflect the traffic volumes would reduce cost and property impacts.

ADVANTAGES:

- Reduces quantities and costs
- Reduces right-of-way impacts

DISADVANTAGES:

- None apparent

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	3 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Full Depth Pavement	1,7	SY	13,355	49.42	660,004
Conc Curb & Gutter, TP 2	1	LF	4972	9.93	49,372
Conc Sidewalk, 4 in	1	SY	2762	19.15	52,892
Residential Right-of-way	1	AC	0.76	75,000	57,000
Residential Permanent Easement	1	AC	0.50	37,500	18,750
			SUBTOTAL – COST TO PRIME		838,018
			MARKUP		Incl.
			TOTAL CONTRACT COST		**838,018**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Full Depth Pavement	1,7	SY	4,656	49.42	230,100
Conc Curb & Gutter, TP 2	1	LF	2420	9.93	24,031
Conc Sidewalk, 4 in	1	SY	1344	19.15	25,738
Residential Right-of-way	1	AC	0.42	75,000	31,500
Residential Permanent Easement	1	AC	0.30	37,500	11,250
			SUBTOTAL – COST TO PRIME		322,619
			MARKUP		Incl.
			TOTAL CONTRACT COST		**322,619**

Difference [Original-Proposed] **$515,399**

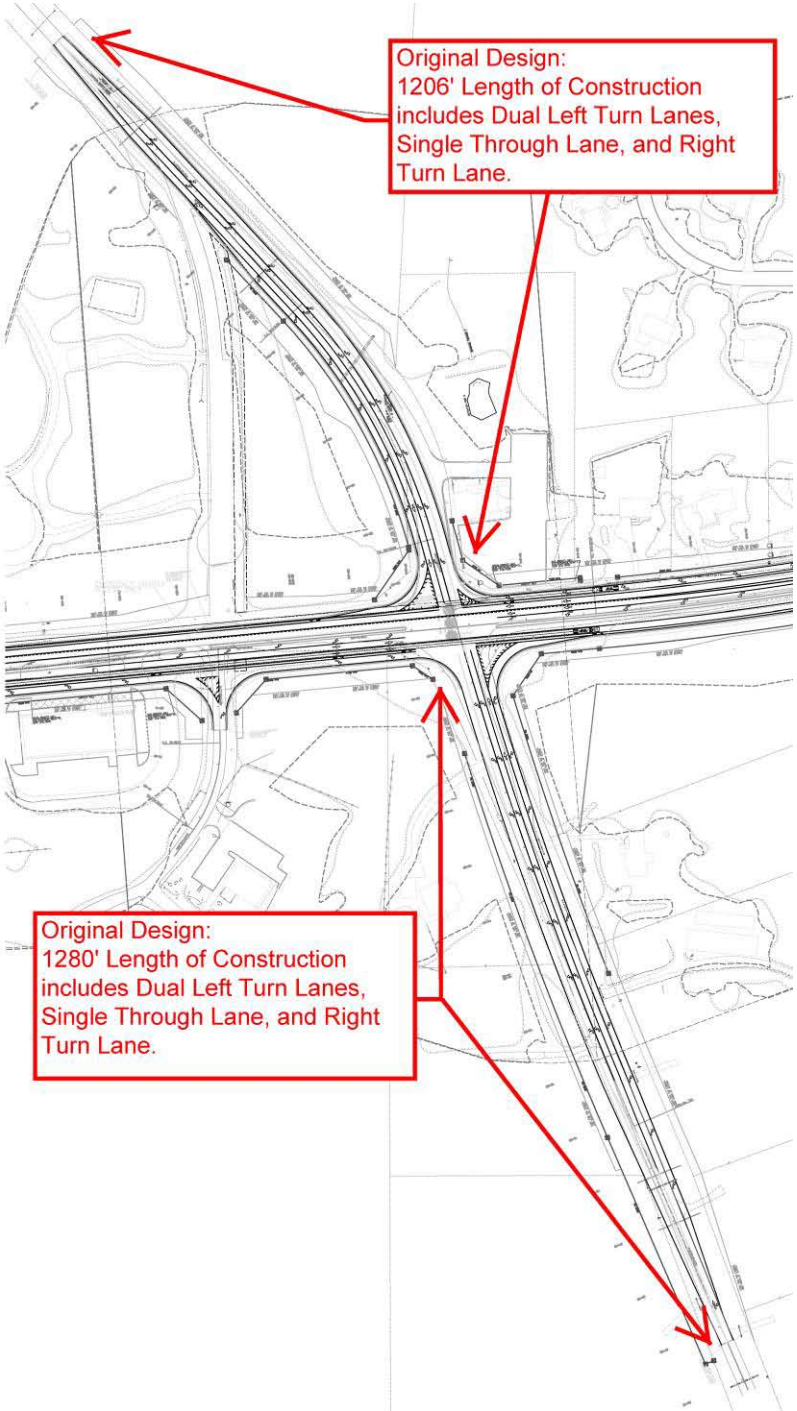
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (See Calculation Sheet)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	4 of 7

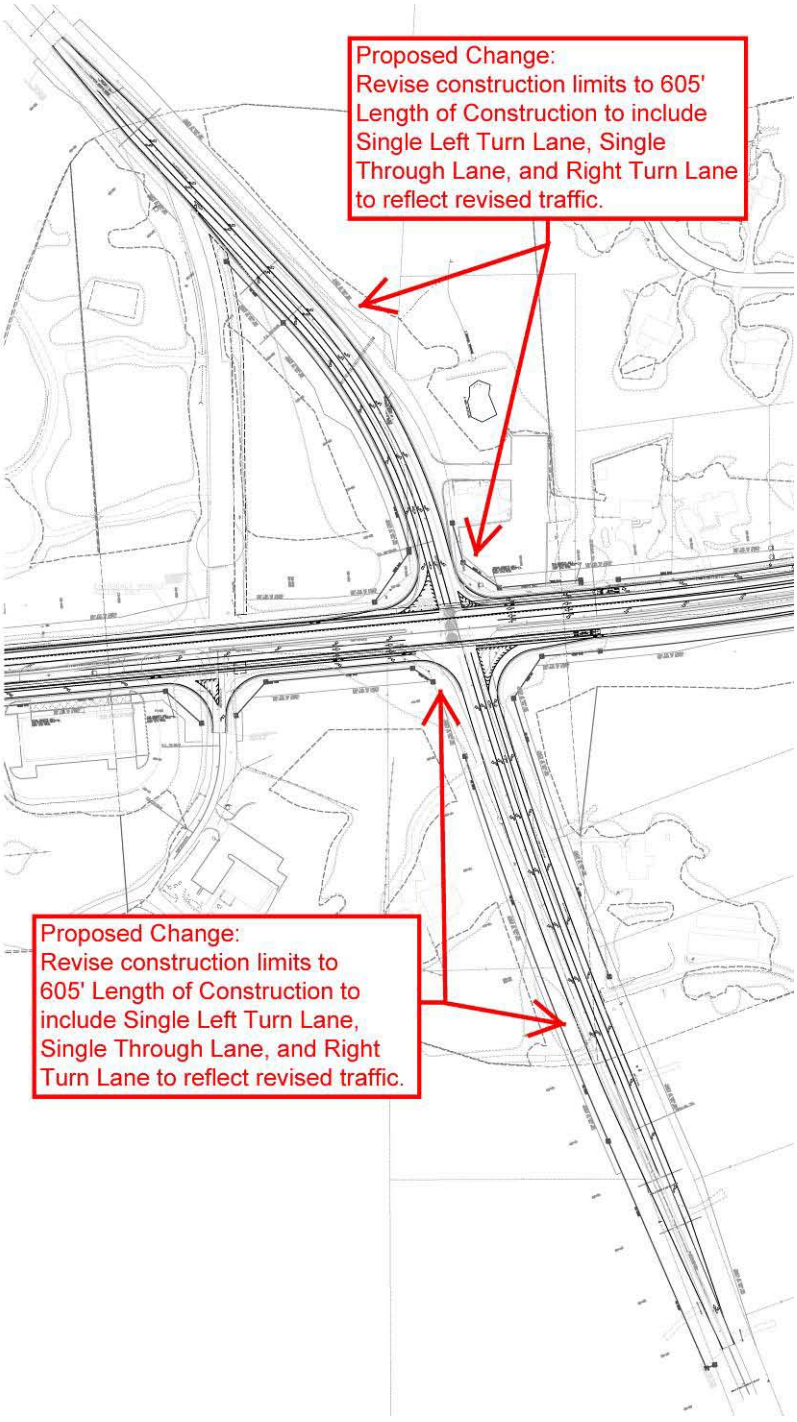
PROJECT #/PI #:	STP00-2009-00(004) / 742870-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	5 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



CALCULATIONS

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	6 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Data presented from 2012 SR 920/McDonough Rd Traffic Analysis; East Fayetteville Bypass approved traffic and Logical Termini Form (2013).

Side Road	2042 Build ADT (SR 920 data)	2035 Build ADT (East Fayetteville Byp data)
McElroy Rd	5,760	2,200
County Line Rd	5,130	1,000
East Fayetteville Byp (N)	-	5,275
East Fayetteville Byp (S)	-	5,875

Side Road	2042 Build PHV AM/PM (SR 920 data)	2035 Build PHV AM/PM (East Fayetteville Byp data)
McElroy Rd	325/1055	100/400
County Line Rd	970/530	150/100

Side Road	2042 Build PH Left AM/PM (SR 920 data)	2035 Build PHV Left AM/PM (E. Fayetteville Byp data)
McElroy Rd	170/450	50/170
County Line Rd	155/175	25/40

ORIGINAL:

County Line Road:
Northbound (NB) Right Turn Lane (RTL) = 90’ taper + 960’ RTL
NB Left Turn Lane (LTL) = DUAL LTL = 315’ approach taper + 180’ taper + 790’ dual LTL
NB and southbound (SB) through lane (ThruL) = Sta 86+70 to Sta 99+50 = ~1280’ ThruL
McElroy Road:
SB RTL = 180’ taper + 660’ RTL
SB LTL = 206’ approach taper (to dual width, which includes 100’ taper) + 1000’ dual LTL
NB and SB ThruL = 206’ approach taper + 1000’ ThruL = 1206’ ThruL

Pavement Cost Calculations:

310-5120: 12” GAB = $18.81/SY
402-3121: 7” Asph 25MM = (7”)(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2” Asph 19MM = (2”)(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3130: 1.5” Asph 12.5MM = (1.5”)(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$49.42/SY**
[960’+(970’x2)+(1280’x2)+660’+(1000’x2)+(1206’x2)] x 11’ x SY/9 SF = 12,872 SY
(90’+315’+180’+206’) x ½ x 11’ x SY/9 SF = 483 SY
[12,872 SY + 483 SY] = 13,355 SY at $49.42/SY = $660,004

CALCULATIONS

PROPOSAL NUMBER:	R-1.0	PAGE NUMBER:	7 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL (CONTINUED):

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$37,500/ac for permanent easement at 50% of ROW
Per MicroStation files:
0.76 ac R/W at $75,000/ac = $57,000; 0.50 ac Perm Easement at $37,500/ac = $18,750

Curb & Gutter and Sidewalk:
C&G: (1280'+1206') x 2 = 4972' at $9.93/lf = $49,372
Sidewalk: (1280'+1206') x 2 x 5' wide x SY/9 SF = 2762 SY at $19.15/SY = $52,892

PROPOSED CHANGE:
County Line Road:
NB RTL = 100' taper + 175' RTL
NB LTL = 270' approach taper + 100' taper + 235' LTL
NB and SB ThruL = 270' approach taper + 100' taper + 235' ThruL

McElroy Road:
SB RTL = 100' taper + 175' RTL
SB LTL = 270' approach taper + 100' taper + 235' LTL
NB and SB ThruL = 270' approach taper + 100' taper + 235' ThruL

Pavement Cost Calculations:
[175'+335'+(605' x 2)+175'+335'+(605' x 2)] x 11' x SY/9 SF = 4,204 SY
(100'+270'+100'+270') x ½ x 11' x SY/9 SF = 452 SY
[4,204 SY + 452 SY] = 4,656 SY at $49.42/SY = $230,100

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$37,500/ac for permanent easement at 50% of ROW
Per MicroStation files:
0.42 ac R/W at $75,000/ac = $31,500; 0.30 ac Perm Easement at $37,500/ac = $11,250

Curb & Gutter and Sidewalk:
C&G: (605'+605') x 2 = 2420' at $9.93/lf = $24,031
Sidewalk: (605'+605') x 2 x 5' wide x SY/9 SF = 1344 SY at $19.15/SY = $25,738

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	USE 10' WIDE MULTI-USE TRAIL ON ONE SIDE WITH 5' WIDE SIDEWALK ON OPPOSITE SIDE IN LIEU OF BIKE LANES AND SIDEWALKS.

ORIGINAL DESIGN: The current design includes 5-foot wide sidewalks and 4-foot wide bike lanes on both sides of SR 920.

PROPOSED CHANGE: It is proposed to include a 10-foot wide multi-use trail on one side of SR 920 and a 5-foot sidewalk on the opposite side. The SR 920 corridor is on a statewide bike plan. The multi-use trail would be located on the North side of SR 920 from the beginning of the project where the park and schools are located to Panhandle Road where it would crossover to the South side of SR 920. From Panhandle Road to the end of the project the trail would remain on the South side of SR 920 where the high school and Lovejoy Park could be accessed. Pedestrian access would be provided by the 5-foot sidewalk on the opposite side of the road from the trail and cross access would be provided at signalized intersections.

JUSTIFICATION: This corridor has many streets and driveways, and the multi-use trails will take the bicycles off the pavement and reduce conflicts between vehicles and bicycles, especially at turn lane locations.

ADVANTAGES:

- Reduces quantities/cost
- Reduces right-of-way impacts
- Meets Complete Streets policy
- Reduces conflicts between vehicles and bicycles

DISADVANTAGES:

- Bicycles share path with pedestrians.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,619,929		$ 1,619,929
PROPOSED CHANGE:	$ 304,638		$ 304,638
SAVINGS:	$ 1,315,291		$ 1,315,291

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
FULL DEPTH PAVEMENT	1	SY	25453	49.42	1,257,904
BRIDGE	1	SF	1695	95	161,025
RIGHT-OF-WAY, RESIDENTIAL	1	AC	2.68	75,000	201,000
SUBTOTAL – COST TO PRIME					1,619,929
MARKUP					Incl.
TOTAL CONTRACT COST					**1,619,929**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
CONC SIDEWALK, 4 IN	1	SY	15908	19.15	304,638
SUBTOTAL – COST TO PRIME					304,638
MARKUP					Incl.
TOTAL CONTRACT COST					**304,638**

Difference [Original-Proposed] **$1,315,291**

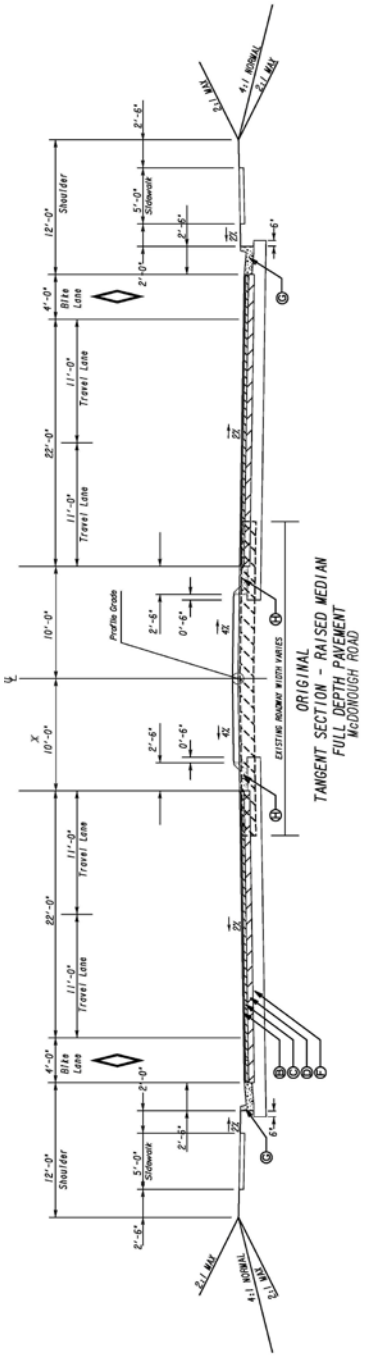
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

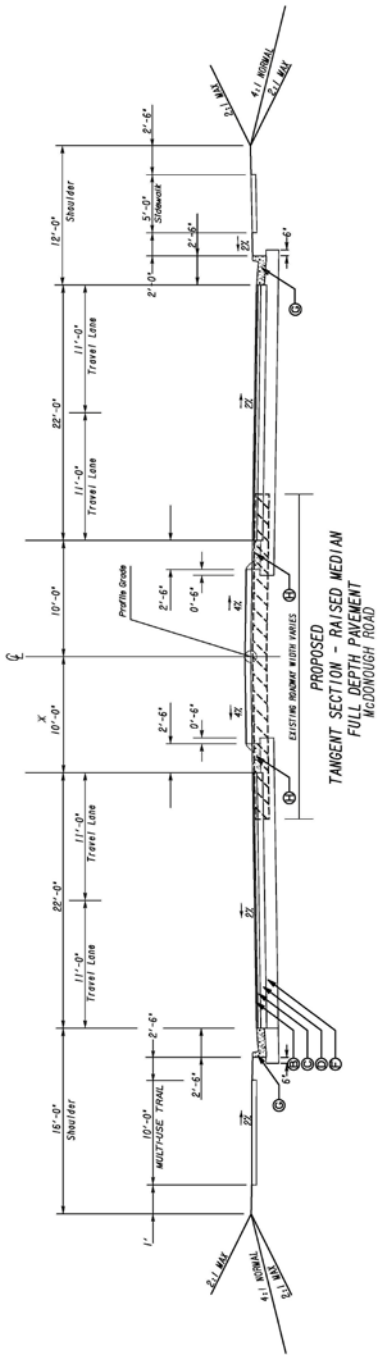


PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Change: Use 10’ wide multi-use trail on one side and 5’ wide sidewalk on the other



CALCULATIONS

PROPOSAL NUMBER:	R-2.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Current Design Pavement Cost Calculations:
310-5120: 12" GAB = $18.81/SY
402-3121: 7" Asph 25MM = (7")(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2" Asph 19MM = (2")(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3130: 1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$49.42/SY**

Multi-use Trail:
Original:
8 FT bike lane x 28,635 FT = 25,453 SY * $49.42/SY = $1,257,904
3 FT bridge x 565 FT = 1,695 SF * $95/SF = $161,025

Proposed:
Additional 5 FT sidewalk width x 28,635 FT = 15,908 SY * $19.15/SY = $304,638

Right-of-way:
$75,000/ac for residential property (Preliminary ROW Estimate)
$250,000/ac for commercial property (Preliminary ROW Estimate)

Proposed:
Reduction in total R/W = 4 FT width x 29,200 FT = 116,800 SF = 2.68 AC
Assume overall reduction from residential
2.68 AC at $75,000/AC = $201,000 reduction

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	1 of 6

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: LOWER VERTICAL PROFILE IN SPECIFIC AREAS
STA 616+00 TO STA 635+00
STA 716+00 TO STA 729+00

ORIGINAL DESIGN: The vertical profile as provided in VE Study package was reviewed to determine areas where adjustments could be made.

PROPOSED CHANGE: The following roadway sections have vertical profiles that could be adjusted closer to existing grade:

- Sta 616+00 to Sta 635+00 lower profile closer to existing grade.
- Sta 716+00 to Sta 729+00 lower profile closer to existing grade.

JUSTIFICATION: Lowered profiles will lower cross sections and reduce earthwork and easement needs.

ADVANTAGES:

- Reduces costs and impacts
- Possible construction time savings
- Reduces impacts to adjacent properties

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 191,703		$ 191,703
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 191,703		$ 191,703

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	2 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Sta 616+00 to Sta 635+00:					
Borrow Excavation, Incl Material	1	CY	33,778	3.08	104,036
Residential Permanent Easement	1	AC	0.71	37,500	26,687
Sta 716+00 to Sta 729+00:					
Borrow Excavation, Incl Material	1	CY	13,867	3.08	42,710
Residential Permanent Easement	1	AC	0.48	37,500	18,000
SUBTOTAL – COST TO PRIME					191,703
MARKUP					Incl.
TOTAL CONTRACT COST					**191,703**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Sta 616+00 to Sta 635+00:					
Borrow Excavation, Incl Material	1	CY	0	3.08	0
Residential Permanent Easement	1	AC	0	37,500	0
Sta 716+00 to Sta 729+00:					
Borrow Excavation, Incl Material	1	CY	0	3.08	0
Residential Permanent Easement	1	AC	0	37,500	0
SUBTOTAL – COST TO PRIME					0
MARKUP					Incl.
TOTAL CONTRACT COST					**0**

Difference [Original-Proposed] **$191,703**

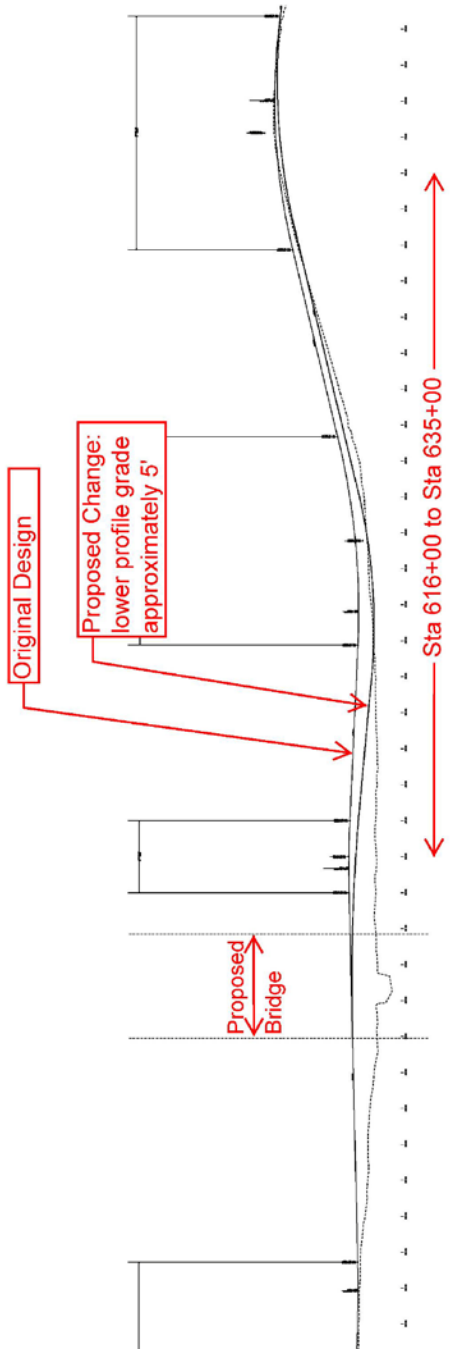
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL/PROPOSED DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	3 of 6

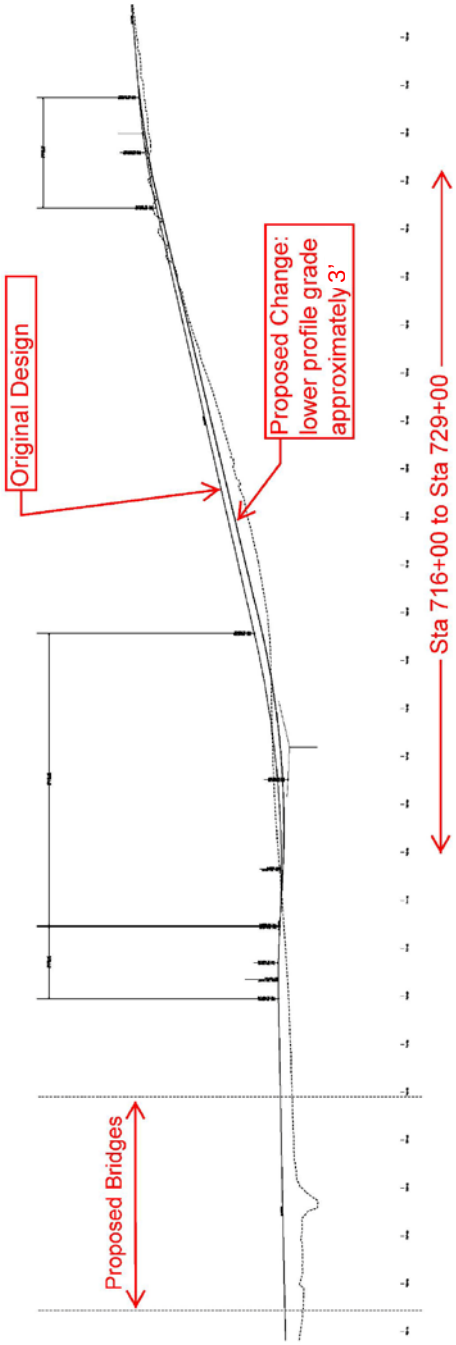
PROJECT #/PI #:	STP00-2009-00(004) / 742870-



ORIGINAL/PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	4 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



CALCULATIONS

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	5 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

PROPOSED CHANGE: Sta 616+00 to Sta 635+00:

Summary of revise vertical profile design: Hold the minimum bridge elevation per the original design. Move the crest curve back station to the bridge. Increase down grade in order to lower the vertical curve between Sta 620+00 to Sta 626+00 by approximately 9 feet. After a sag curve continue with a 5 foot lower profile utilizing a 5.99% grade (same as original design) to form a vertical crest curve from Sta 633+00 to Sta 639+00 and match original design.

Borrow Excavation:
Lowered profile = average 5'
Sta 616+00 to Sta 635+00 = 1900'
Shoulder break to shoulder break = 96'
5' x 1900' x 96' = 912,000 CF = 33,778 CY at $3.08/CY = $104,036

Residential R/W Cost Calculations:
$37,500/ac for permanent easement at 50% of ROW
Assume all R/W limits remain same as Original Design.
Original design includes permanent easement along south side Sta 616+00 to Sta 635+00
Original design includes permanent easement along north side Sta 625+00 to Sta 635+00
Reduction in permanent easement: ranges 0' to 21' = 10' average on south side of road
Reduction in permanent easement: 12' average on north side of road
(10' x 1900') + (12' x 1000') = 31,000 SF = 0.71 ac at $37,500/ac = $26,687

CALCULATIONS

PROPOSAL NUMBER:	R-3.0	PAGE NUMBER:	6 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

PROPOSED CHANGE: Sta 716+00 to Sta 729+00:

Summary of revise vertical profile design: Lower grades by approximately 3 feet within station limits.

Borrow Excavation:
Lowered profile = average 3'
Sta 716+00 to Sta 729+00 = 1300'
Shoulder break to shoulder break = 96'
3' x 1300' x 96' = 374,400 CF = 13,867 CY at $3.08/CY = $42,710

Residential R/W Cost Calculations:
$37,500/ac for permanent easement at 50% of ROW
Assume all R/W limits remain same as Original Design.
Original design includes permanent easement along both north and south side
Reduction in permanent easement: 8' average on each side of road
(8' x 2 x 1300') = 20,800 SF = 0.48 ac at $37,500/ac = $18,000

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-5.0	PAGE NUMBER:	1 of 7

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: UTILIZE EXISTING RIGHT-OF-WAY FOR PAVEMENT WIDENING FROM STA 550+00 TO 600+00.

ORIGINAL DESIGN: The current design realigns SR 920 off the existing alignment to the South from Sta 550+00 to 600+00 in order to avoid impacts to a cemetery and a historical farm.

PROPOSED CHANGE: It is proposed to widen SR 920 on the existing alignment and shift the widening from North to South in order to avoid creating an adverse effect to the historic farm on the North side of SR 920.

JUSTIFICATION: The boundary of the cemetery has been reduced since the initial decision to realign to the South, and the boundary for the historic farm on the north side of SR 920 can be impacted as long as none of the contributing elements are adversely impacted by the project. The contributing houses are located East of the cemetery and therefore an alignment can be used that widens North at the cemetery and then widens to the South in front of the farm house.

ADVANTAGES:

- Reduces right-of-way impacts.
- Allows for overlay of existing pavement if profile is revised
- Eliminates a residential displacement

DISADVANTAGES:

- Requires additional environmental consideration to avoid impacts.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 1,092,250		$ 1,092,250
PROPOSED CHANGE:	$ 317,861		$ 317,861
SAVINGS:	$ 774,389		$ 774,389

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-5.0	PAGE NUMBER:	2 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
RIGHT-OF-WAY, RESIDENTIAL	1	AC	13.23	75,000	992,250
DISPLACEMENT,RESIDENTIAL	1	EA	1	100,000	100,000
SUBTOTAL – COST TO PRIME					1,092,250
MARKUP					Incl.
TOTAL CONTRACT COST					**1,092,250**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
RIGHT-OF-WAY, RESIDENTIAL	1	AC	3.74	75,000	280,500
CLASS B CONC, RET WALL	1	CY	85	439.54	37,361
SUBTOTAL – COST TO PRIME					317,861
MARKUP					Incl.
TOTAL CONTRACT COST					**317,861**

Difference [Original-Proposed] **$774,389**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

R-5.0 Original Design
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R-5.0 Original Design
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R-5.0 Proposed Change
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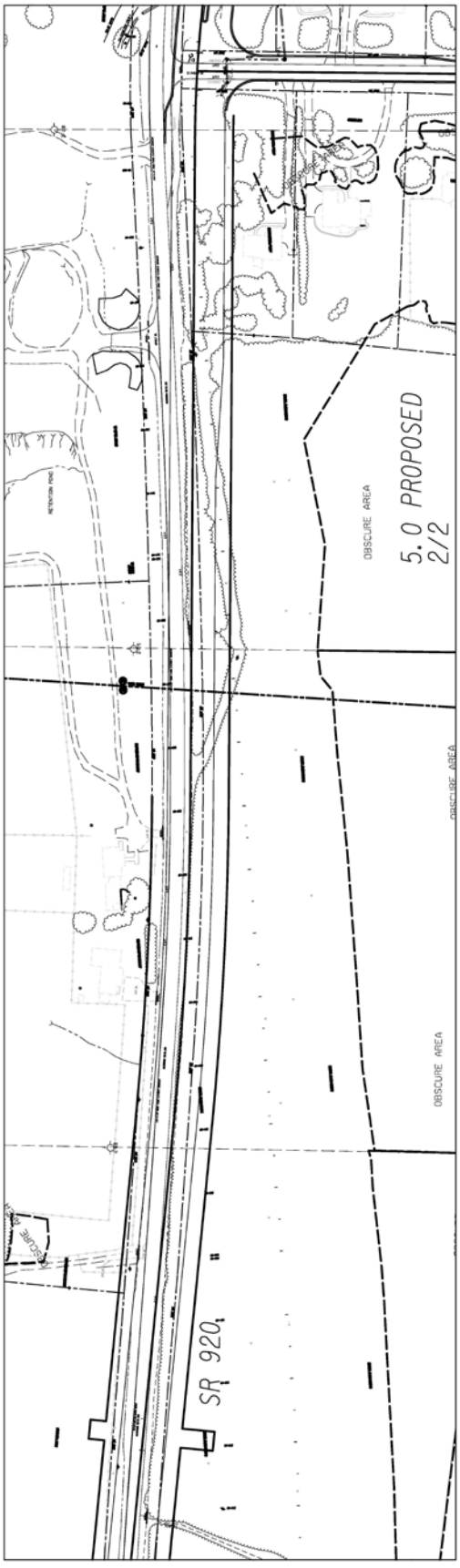


R-5.0 Proposed Change
6 of 7

CALCULATIONS

PROPOSAL NUMBER:	R-5.0	PAGE NUMBER:	7 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Right-of-way:
$75,000/ac for residential property (Preliminary ROW Estimate)
$250,000/ac for commercial property (Preliminary ROW Estimate)

Original;
RW = 576,445 SF = 13.23 AC x $75,000/AC = $992,250
1 Residential Displacement = $100,000

Proposed:
R/W = 162,927 SF = 3.74 AC x $75,000/AC = $280,500
Gravity Wall = (5' tall x 80' long) = 85 CY Class B * $439.54/CY = $37,361

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	1 of 6

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	LOCATE NEW PAVEMENT CLOSER TO EXISTING HORIZONTAL ALIGNMENT FROM STA 605+00 TO 625+00; CONSTRUCT FLINT RIVER BRIDGE USING STAGE CONSTRUCTION

ORIGINAL DESIGN: The current design realigns SR 920 off the existing alignment to the South at the Flint River in order to construct a new bridge in one stage.

PROPOSED CHANGE: It is proposed to widen SR 920 South of the existing alignment and use stage construction to limit right-of-way and utility impacts.

JUSTIFICATION: The proposed bridge can be built in two stages with a construction joint in the middle of the bridge. By constructing half of the bridge to the South and then shifting two lanes of traffic to the new bridge, the old bridge can be removed and replaced with the Northern half of the proposed bridge. This reduces right-of-way and utility impacts and provides a cost savings to the project.

ADVANTAGES:

- Reduces right-of-way impacts.
- Reduces utility impacts
- Allows for overlay of existing pavement if profile is revised.

DISADVANTAGES:

- Requires stage construction of bridge.

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 835,891		$ 835,891
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 835,891		$ 835,891

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	2 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right-of-Way, Res. (Reduction)	1	AC	2.89	75,000	216,750
Borrow Excav, incl matl (reduction)	1	CY	28,520	3.08	87,841
GA Power Transmission line (Red.)	1	EA	1	531,300	531,300
SUBTOTAL – COST TO PRIME					835,891
MARKUP					Incl.
TOTAL CONTRACT COST					**835,891**

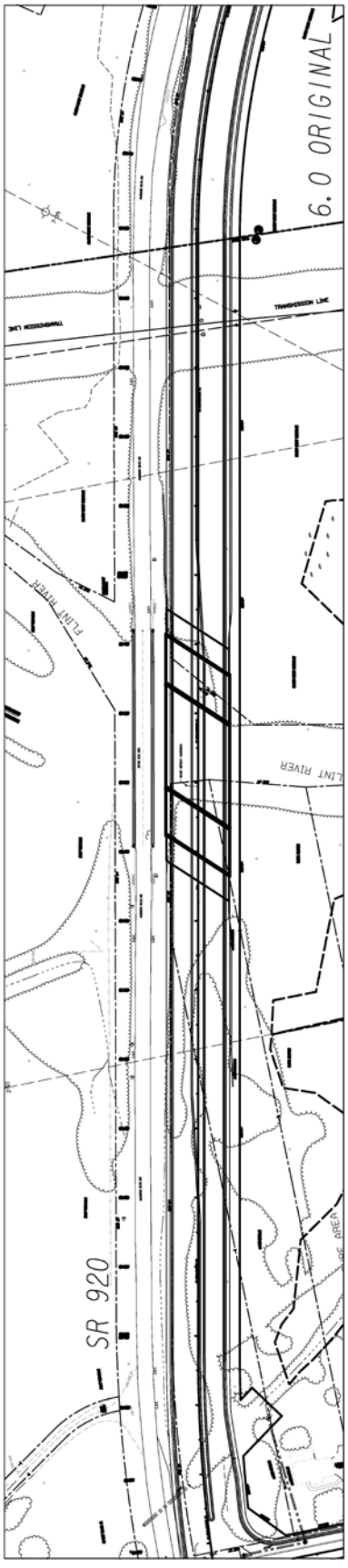
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0
MARKUP					Incl.
TOTAL CONTRACT COST					**0**

Difference [Original-Proposed] **$835,891**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)



R-6.0 Original Design
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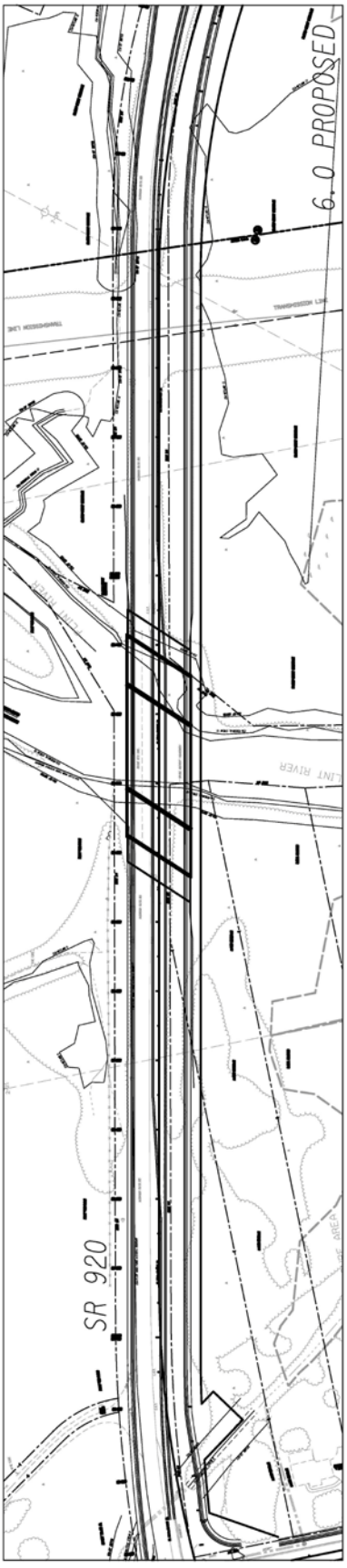

R-6.0 Proposed Change
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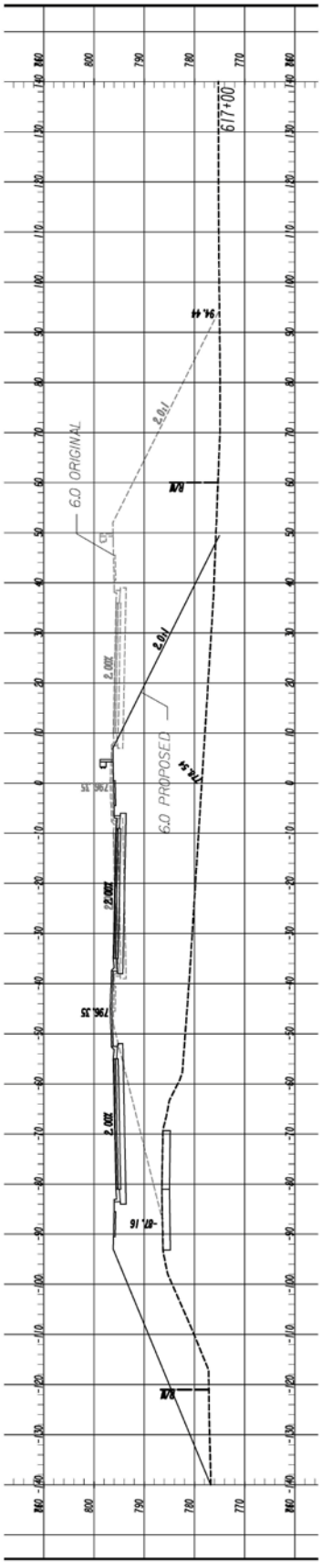


R-6.0 Proposed Change
5 of 6

CALCULATIONS

PROPOSAL NUMBER:	R-6.0	PAGE NUMBER:	6 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Right-of-way:
$75,000/ac for residential property (Preliminary ROW Estimate)
$250,000/ac for commercial property (Preliminary ROW Estimate)

Reductions Based on Proposed Change:
Reduced R/W = 125,736 SF = 2.89 AC x $75,000/AC = $216,750
Reduced Earthwork = (550 SF * 1400 LF) = 770,000 CF = 28,520 CY * $3.08/CY = $87,841
Georgia Transmission Line Utility Cost = $531,300

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	1 of 6

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: REDUCE TURN LANE LENGTHS ON PANHANDLE ROAD.

ORIGINAL DESIGN: The current design is based on approved project traffic and provides for improvements along Panhandle Road to a distance of approximately 1050' North and 1080' South of SR 920/McDonough Road. The length of improvements is to provide dual left turns, a single through lane, and a single right turn lane at each roadway approach. Curb and gutter and 5' concrete sidewalks are provided along each side of the roadway improvements. Right-of-way and permanent easements are required along both sides of the roadway to accommodate the improvements.

PROPOSED CHANGE: It is proposed to shorten the dual left turn and right turn lanes on each Panhandle Road approach to more accurately reflect the turning movement counts and adjusted vehicles per peak hour as reflected in the Synchro output data included in the February 2012 Traffic Analysis.

JUSTIFICATION: The magnitude of improvements included in the original design does not appear to be required for the anticipated traffic volumes. Reducing the length of the turn lanes to reflect the traffic volumes would reduce cost and property impacts.

ADVANTAGES:

- Reduces costs and impacts
- Reduces property impacts

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 794,573		$ 794,573
PROPOSED CHANGE:	$ 405,767		$ 405,767
SAVINGS:	$ 388,806		$ 388,806

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	2 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Full Depth Pavement	1,7	SY	11,500	49.42	568,330
Conc Curb & Gutter, TP 2	1	LF	4254	9.93	42,242
Conc Sidewalk, 4 in	1	SY	2363	19.15	45,251
Residential Right-of-way	1	AC	1.47	75,000	110,250
Residential Permanent Easement	1	AC	0.76	37,500	28,500
			SUBTOTAL – COST TO PRIME		799,573
			MARKUP		Incl.
			TOTAL CONTRACT COST		**799,573**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Full Depth Pavement	1,7	SY	5439	49.42	268,795
Conc Curb & Gutter, TP 2	1	LF	2320	9.93	23,038
Conc Sidewalk, 4 in	1	SY	1289	19.15	24,684
Residential Right-of-way	1	AC	1.03	75,000	77,250
Residential Permanent Easement	1	AC	0.32	37,500	12,000
			SUBTOTAL – COST TO PRIME		388,806
			MARKUP		Incl.
			TOTAL CONTRACT COST		**388,806**

Difference [Original-Proposed] **$388,806**

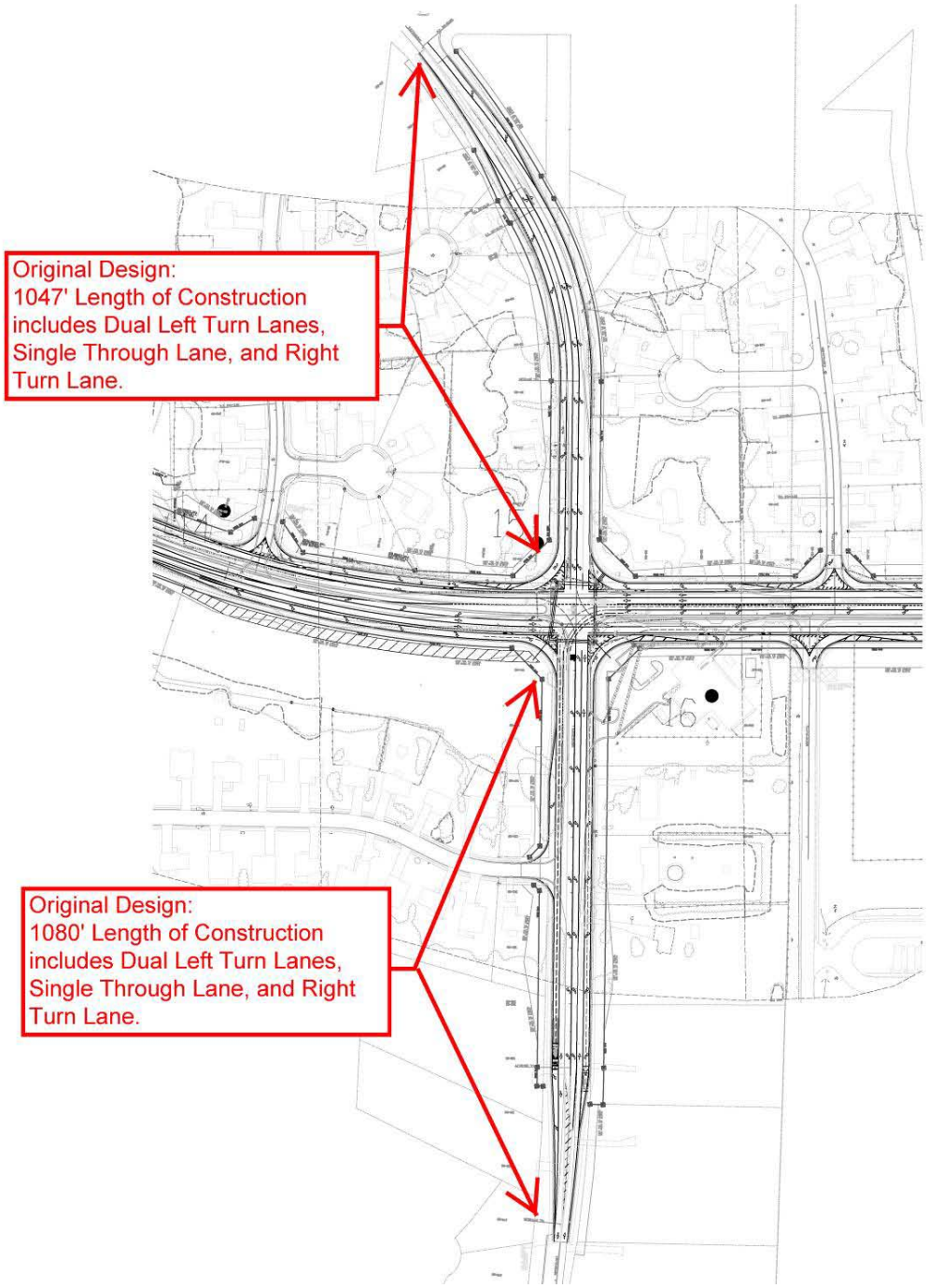
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (See Calculation Sheet)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	3 of 6

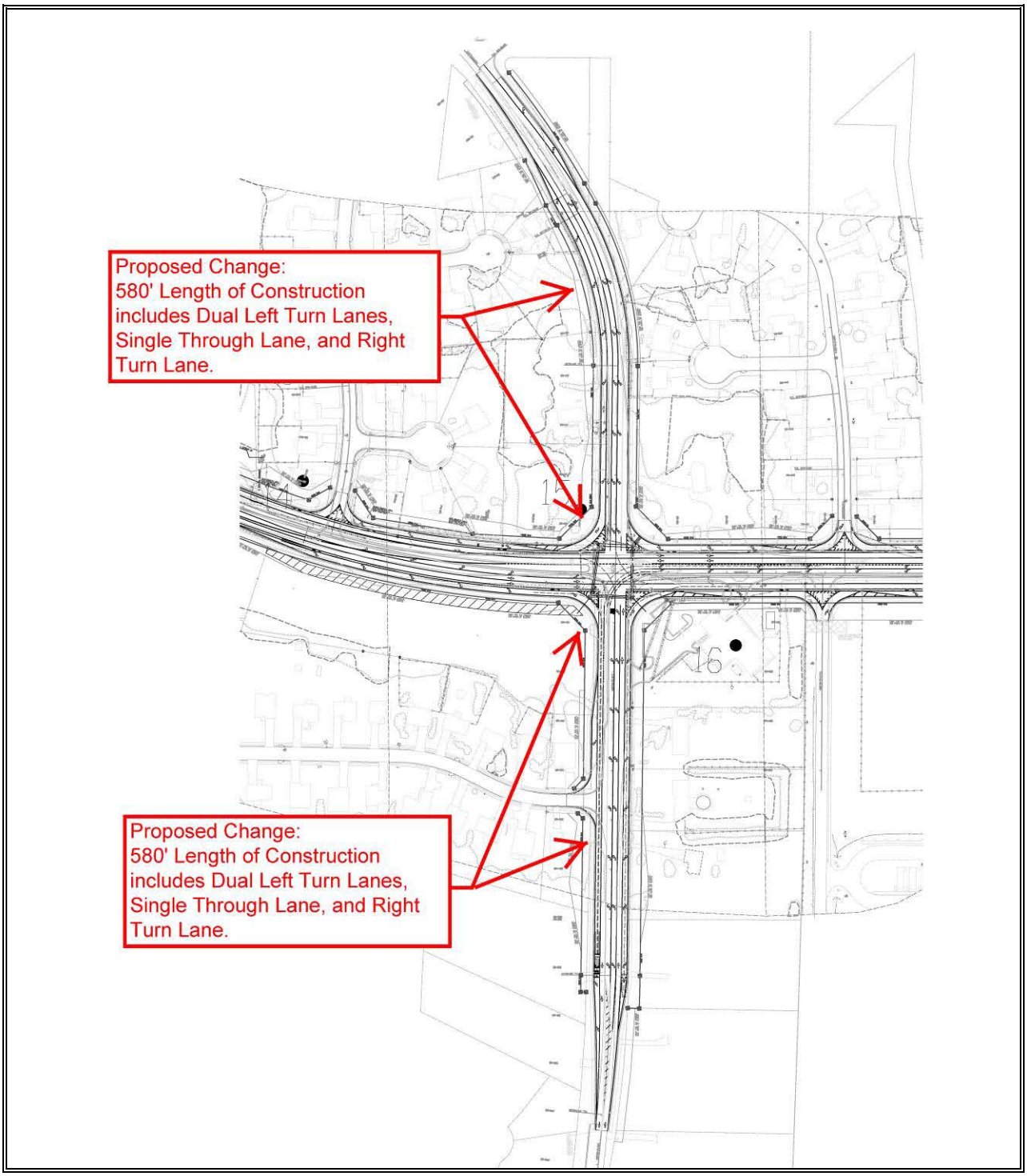
PROJECT #/PI #:	STP00-2009-00(004) / 742870-



PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	4 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



CALCULATIONS

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	5 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Per the GDOT Driveway and Encroachment Manual, left turn lanes provided at signalized intersections should be designed to include storage for the number of left turning vehicles that are anticipated to arrive during 1.5 signal cycles. In addition, dual left turn lanes may be provided if more than 300 left turning vehicles are anticipated. For a 35 mph design speed, a 250-foot approach taper for a 12-foot offset and a 100-foot lane taper should be provided for left turn lanes. Right turn lanes should also provide storage for the number of vehicles that are anticipated to arrive during 1.5 signal cycles with a 100-foot lane taper.

Per the 2012 SR 920/McDonough Road Traffic Analysis (Synchro 8 report for Panhandle Road in the 2042 Build condition, 409 vehicles per hour are expected to in the northbound left turn lane. Using this value – the following minimum lane storage lengths have been calculated: 409 veh per hour = 7 veh per minute. According to the Synchro report the signal cycle is 130 seconds. 1.5 x 130 sec = 195 sec or 3.25 minutes. 7 veh per min x 3.25 min = 23 cars. Using 20 feet per car = 460 feet. Split into dual left turn lane = 230 foot each left turn lane. Use 230 foot storage for right turn lane.

ORIGINAL:

Panhandle Road:
Northbound (NB) Right Turn Lane (RTL) = 110’ taper + 750’ RTL
NB Left Turn Lane (LTL) = DUAL LTL = 200’ approach taper + 115’ taper + 750’ dual LTL
NB and southbound (SB) through lane (ThruL) = Sta 298+70 to Sta 309+50 = ~1080’ ThruL
SB RTL = 100’ taper + 730’ RTL
SB LTL = 220’ approach taper (to dual width) + 100’ taper + 715’ dual LTL
NB and SB ThruL = Sta 310+50 to Sta 320+96.45 = 1047’ ThruL

Pavement Cost Calculations:

310-5120: 12” GAB = $18.81/SY
402-3121: 7” Asph 25MM = (7”)(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2” Asph 19MM = (2”)(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3130: 1.5” Asph 12.5MM = (1.5”)(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$49.42/SY**

[750’+(865’ x 2)+(1080’ x 2) +730’+(815’ x 2)+(1047’ x 2)] x 11’ x SY/9 SF = 11,115 SY
(110’+200’+100’+220’) x ½ x 11’ x SY/9 SF = 385 SY
[11,115 SY + 385 SY] = 11,500 SY at $49.42/SY = $568,330

CALCULATIONS

PROPOSAL NUMBER:	R-9.0	PAGE NUMBER:	6 of 6

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL (CONTINUED_

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$37,500/ac for permanent easement at 50% of ROW

Per MicroStation files:
1.47 ac R/W at $75,000/ac = $110,250; 0.76 ac Perm Easement at $37,500/ac = $28,500

Curb & Gutter and Sidewalk:
C&G: (1080'+1047') x 2 = 4254' at $9.93/lf = $42,242
Sidewalk: (1080'+1047') x 2 x 5' wide x SY/9 SF = 2363 SY at $19.15/SY = $45,251

PROPOSED CHANGE:
Panhandle Road:
NB RTL = 100' taper + 230' RTL
NB LTL = 250' approach taper + 100' taper + 230' Dual LTL
NB and SB ThruL = 250' approach taper + 100' taper + 230' ThruL
SB RTL = 100' taper + 230' RTL
SB LTL = 250' approach taper + 100' taper + 230' Dual LTL
NB and SB ThruL = 250' approach taper + 100' taper + 230' ThruL

Pavement Cost Calculations:
[230' + (330' x 2) + (580' x 2) + 230' + (330' x 2) + (580' x 2)] x 11' x SY/9 SF = 5,011 SY
[100' + 250' + 100' + 250'] x ½ x 11' x SY/9 SF = 428 SY
[5,011 SY + 428 SY] = 5,439 SY at $49.42/SY = $268,795

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$37,500/ac for permanent easement at 50% of ROW

Per MicroStation files:
1.03 ac R/W at $75,000/ac = $77,250; 0.32 ac Perm Easement at $37,500/ac = $12,000

Curb & Gutter and Sidewalk:
C&G: (580'+580') x 2 = 2320' at $9.93/lf = $23,038
Sidewalk: (580'+580') x 2 x 5' wide x SY/9 SF = 1289 SY at $19.15/SY = $24,684

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	1 of 7

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: REDUCE TURN LANE LENGTHS ON SIDE ROADS.

ORIGINAL DESIGN: The current design includes long turn lanes on many side roads intersecting with SR 920.

PROPOSED CHANGE: It is proposed to shorten the right or left turn lanes on select side roads to meet required storage and GDOT minimum turn lengths. Turn lane lengths are proposed to be shortened on Zoie Court, Turner Road, New Hope Road, Folsom Road, Southwood Drive, Pebble Ridge Drive, Knotty Pine Place, Shannon Circle and the Home Depot driveway. Specific proposed turn lane lengths are shown on the following Proposed Change detail sheets.

JUSTIFICATION: The required turn lane length for a side road must meet either the required storage lengths based on the traffic volumes or the minimum turn length required by the GDOT driveway manual. Based on these lengths, numerous side roads have turn lanes which can be shortened and in turn shorten the overall limit of construction for the side road.

ADVANTAGES:

- Reduces quantities/costs
- Reduces right-of-way impacts.
- Reduces project limits

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 552,895		$ 552,895
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 552,895		$ 552,895

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	2 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Easement, Residential (Reduction)	1	AC	0.87	37,500	32,620
Curb & Gutter TP 2 (Reduction)	1	LF	3070	9.93	30,480
Sidewalk (Reduction)	1	SY	1928	19.15	36,920
Asphalt Overlay (Reduction)	1	SY	4519	5.60	25,305
Asphalt Full Depth (Reduction)	1	SY	3998	49.42	197,570
Right of way, Res. (Reduction)	1	AC	0.40	75,000	30,000
Displacement, Res. (Reduction)	1	EA	2	100,000	200,000
			SUBTOTAL – COST TO PRIME		552,895
			MARKUP		Incl.
			TOTAL CONTRACT COST		**552,895**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
			SUBTOTAL – COST TO PRIME		0
			MARKUP		Incl.
			TOTAL CONTRACT COST		**0**

Difference [Original-Proposed] **$552,895**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	3 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Current Design, Turn Lane Lengths on Side Roads:

Original			
Side Road	Left Turn Length	Right Turn Length	Taper Length
Zoie Ct		270	100
Turner Rd	250		100
New Hope Rd	320		100
Folsom Rd	600 (2)	550	100
Southwood Dr		330	100
Pebble Ridge Dr		375	100
Knotty Pine Place		330	100
Shannon Cir		360	100
Home Depot Dr		400	100

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	4 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Changes, Turn Lane Lengths on Side Roads:

Proposed			
Side Road	Left Turn Length	Right Turn Length	Taper Length
Zoie Ct		100	50
Turner Rd	100		50
New Hope Rd	200		50
Folsom Rd	200 (2)	200	100
Southwood Dr		100	50
Pebble Ridge Dr		200	50
Knotty Pine Place		100	50
Shannon Cir		100	50
Home Depot Dr		250	50

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	5 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Current Full Depth Design Pavement Cost Calculations:
310-5120: 12" GAB = $18.81/SY
402-3121: 7" Asph 25MM = (7")(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2" Asph 19MM = (2")(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3130: 1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$49.42/SY**

Current Overlay Design Pavement Cost Calculations:
402-3130: 1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 1 layers tack coat = 0.035 gals/SY/layer x 1 x $2.25/gal = $0.08/SY
Total pavement cost = **$5.60/SY**

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$210,000 /ac if complete parcel is eliminated (Using GSOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $75,000)
$37,500/ac for permanent easement at 50% of ROW
Res. displacement: 37,500 legal + 40,000 Reloc + 15,000 Demo + 7,500 Admin = $100,000

Commercial R/W Cost Calculations:
$250,000/ac for partial property (Preliminary ROW Estimate)
$492,000 /ac if complete parcel is eliminated (Using GDOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $250,000)
$125,000/ac for permanent easement at 50% of ROW
Comm. displacement: 37,500 legal + 15,000 Reloc + 25,000 Demo + 7,500 Admin = $85,000

Reductions between Current Design and Proposed Change:
Zoie Ct:
Right of Way = 0.02 AC * $75,000/AC = $1,500
Permanent Easement = 0.02 AC * $37,500/AC = $750
Curb and Gutter = 340 LF * $9.93/LF = $3,380
Sidewalk = 189 SY * $19.15/SY = $3,620
Overlay Asphalt = 453 SY * $5.60/SY = $2,540
Full Depth Asphalt = 227 SY * $49.42/SY = $11,200
Total = $22,990

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	6 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Reductions between Current Design and Proposed Change (cont.):

Turner Rd:
Right of Way = 0.14 AC * $75,000/AC = $10,500
Permanent Easement = 0.02 AC * $37,500/AC = $750
Overlay Asphalt = 250 SY * $5.60/SY = $1,400
Full Depth Asphalt = 300 SY * $49.42/SY = $14,830
Total = $27,480

New Hope Rd:
Right of Way = 0.02 AC * $75,000/AC = $1,500
Permanent Easement = 0.02 AC * $37,500/AC = $750
Curb and Gutter = 240 LF * $9.93/LF = $2,380
Sidewalk = 133 SY * $19.15/SY = $2,550
Overlay Asphalt = 267 SY * $5.60/SY = $1,490
Full Depth Asphalt = 173 SY * $49.42/SY = $8,570
Total = $17,240

Folsom Rd:
Right of Way = 0.02 AC * $75,000/AC = $1,500
Permanent Easement = 0.19 AC * $37,500/AC = $7,125
Curb and Gutter = 400 LF * $9.93/LF = $3,970
Sidewalk = 444 SY * $19.15/SY = $8,510
Overlay Asphalt = 1,422 SY * $5.60/SY = $7,960
Full Depth Asphalt = 1,244 SY * $49.42/SY = $61,500
Total = $90,565

Southwood Dr:
Right of Way = 0.06 AC * $75,000/AC = $4,500
Permanent Easement = 0.14 AC * $37,500/AC = $5,250
Displacements = 2 EA * $100,000/EA = $200,000
Curb and Gutter = 460 LF * $9.93/LF = $4,570
Sidewalk = 256 SY * $19.15/SY = $4,890
Overlay Asphalt = 613 SY * $5.60/SY = $3,435
Full Depth Asphalt = 307 SY * $49.42/SY = $15,155
Total = $237,800

CALCULATIONS

PROPOSAL NUMBER:	R-10.0	PAGE NUMBER:	7 of 7

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Reductions between Current Design and Proposed Change (cont.):

Pebble Ridge Dr:
Right of Way = 0.03 AC * $75,000/AC = $2,250
Permanent Easement = 0.05 AC * $37,500/AC = $1,875
Curb and Gutter = 350 LF * $9.93/LF = $3,475
Sidewalk = 194 SY * $19.15/SY = $3,720
Overlay Asphalt = 467 SY * $5.60/SY = $2,610
Full Depth Asphalt = 233 SY * $49.42/SY = $11,530
Total = $25,460

Knotty Pine Place:
Right of Way = 0.05 AC * $75,000/AC = $3,750
Permanent Easement = 0.22 AC * $37,500/AC = $8,250
Curb and Gutter = 460 LF * $9.93/LF = $4,570
Sidewalk = 256 SY * $19.15/SY = $4,890
Overlay Asphalt = 613 SY * $5.60/SY = $3,430
Full Depth Asphalt = 307 SY * $49.42/SY = $15,155
Total = $40,045

Shannon Cir:
Right of Way = 0.06 AC * $75,000/AC = $4,500
Permanent Easement = 0.21 AC * $37,500/AC = $7,875
Curb and Gutter = 520 LF * $9.93/LF = $5,160
Sidewalk = 289 SY * $19.15/SY = $5,530
Full Depth Asphalt = 1040 SY * $49.42/SY = $51,400
Total = $74,465

Home Depot Dr:
Curb and Gutter = 300 LF * $9.93/LF = $2,980
Sidewalk = 167 SY * $19.15/SY = $3,200
Overlay Asphalt = 433 SY * $5.60/SY = $2,430
Full Depth Asphalt = 167 SY * $49.42/SY = $8,240
Total = $16,850

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-12.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: FOR NEW PAVEMENT SECTIONS ON SIDE ROADS, USE 11' LANE WIDTHS IN LIEU OF 12'

ORIGINAL DESIGN: In the current design, the side road sections with new pavement are shown as having widths from 11' to 12'.

PROPOSED CHANGE: It is proposed to construct all new travel and turn lanes on the side roads with a width of 11'. The side roads to be included in this width reduction include Zoie Court, Folsom Road, Southwood Drive, Pebble Ridge Drive, and Shannon Circle.

JUSTIFICATION: GDOT design policy allows 11' lanes for local roads as indicated in Table 6.4 of the Design Policy Manual. This change will provide roads which meet current design policy and result in a construction cost savings.

ADVANTAGES:

- Reduces construction cost
- Acceptable design for these side roads
- Reduces impervious area

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 45,621		$ 45,621
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 45,621		$ 45,621

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-12.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Pavement (reduction)	1/7	SY	942	$48.43	45,621
SUBTOTAL – COST TO PRIME					45,621
MARKUP					Incl.
TOTAL CONTRACT COST					**45,621**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0
MARKUP					Incl.
TOTAL CONTRACT COST					**0**

Difference [Original-Proposed] **$45,621**

SOURCES

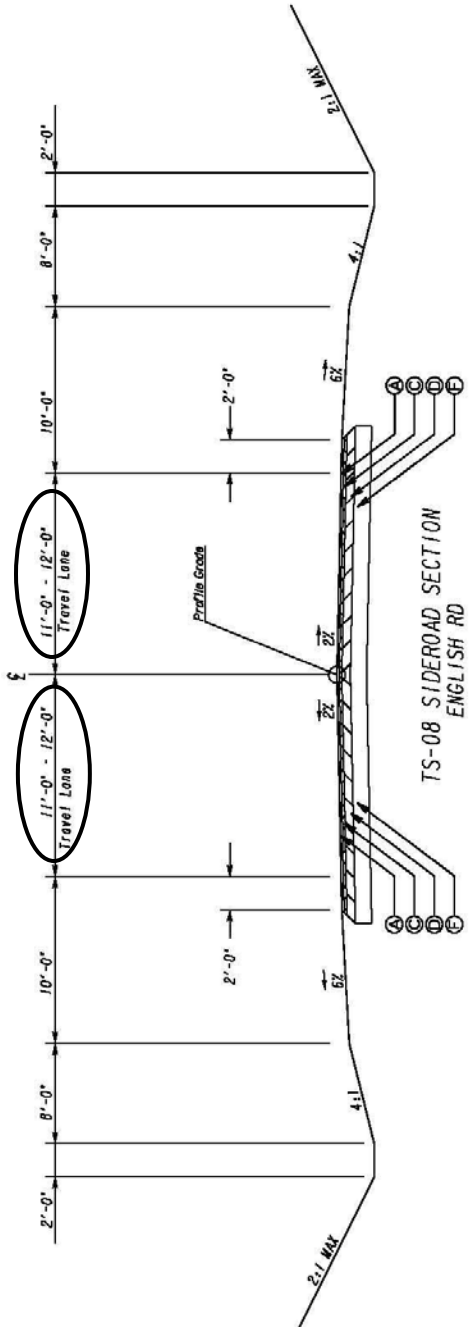
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-12.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Change: Revise 12'0" lanes to 11'0" max.



CALCULATIONS

PROPOSAL NUMBER:	R-12.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Current Design Side Road Pavement Cost Calculations:

310-5120: 12" GAB = $18.81/SY
402-3121: 7" Asph 25MM = (7")(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2" Asph 19MM = (2")(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3100: 1.25" Asph 9.5MM = (1.25")(110#sy-in/2000#)($65.87/T) = $4.53/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$48.43/SY**

Pavement Area Calcs.

Side streets with new pavement sections and 12' wide lanes proposed and their construction lengths are as follows:
Zoie Court: 3 lanes at 300' long
Folsom Road: 5 lanes at 700' long
Southwood Drive: 3 lanes at 400' long
Pebble Ridge Drive: 3 lanes at 480' long
Shannon Circle: 3 lanes at 480' long

Total Length of 12' lanes: 8,480 LF

8,480 LF x 1' width reduction/lane = 8,480 SF/9 = 942 SY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	ELIMINATE RETAINING WALLS 2, 10, 11, 12, 13, 14 AND USE FILL SLOPES AND GUARDRAIL AT THESE LOCATIONS.

ORIGINAL DESIGN: The original design uses gravity wall in 7 locations adjacent to the roadway in lieu of slopes.

PROPOSED CHANGE: It is proposed to use 2:1 fill slopes and guardrail at 6 of these locations and eliminate the walls. Note: costs for this proposal calculated using gravity wall as shown in original design; it is anticipated that these walls will need to be changed to Parapet walls which would result in greater cost savings.

JUSTIFICATION: The fill slopes can be placed within the easements shown; thus, this proposal eliminates construction of unnecessary features and provides a cost savings to the project.

ADVANTAGES:

- Provides cost savings
- Eliminates unnecessary retaining walls

DISADVANTAGES:

- None Apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 265,801		$ 265,801
PROPOSED CHANGE:	$ 12,894		$ 12,894
SAVINGS:	$ 252,907		$ 252,907

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Wall 2	7	LF	133	287.89	38,301
Wall 10	7	LF	75	287.89	21,598
Wall 11	7	LF	153	287.89	44,060
Wall 12	7	LF	186	287.89	53,563
Wall 13	7	LF	217	287.89	62,491
Wall 14	7	LF	159	287.89	45,788
SUBTOTAL – COST TO PRIME					265,801
MARKUP					Incl.
TOTAL CONTRACT COST					**265,801**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY		TOTAL COST
Wall 2 – Added Guard Rail	1	LF	133	13.97	1,858
Wall 10– Added Guard Rail	1	LF	75	13.97	1,048
Wall 11– Added Guard Rail	1	LF	153	13.97	2,137
Wall 12– Added Guard Rail	1	LF	186	13.97	2,598
Wall 13– Added Guard Rail	1	LF	217	13.97	3,031
Wall 14– Added Guard Rail	1	LF	159	13.97	2,221
SUBTOTAL – COST TO PRIME					12,894
MARKUP					Incl.
TOTAL CONTRACT COST					**12,894**

Difference [Original-Proposed] **$252,907**

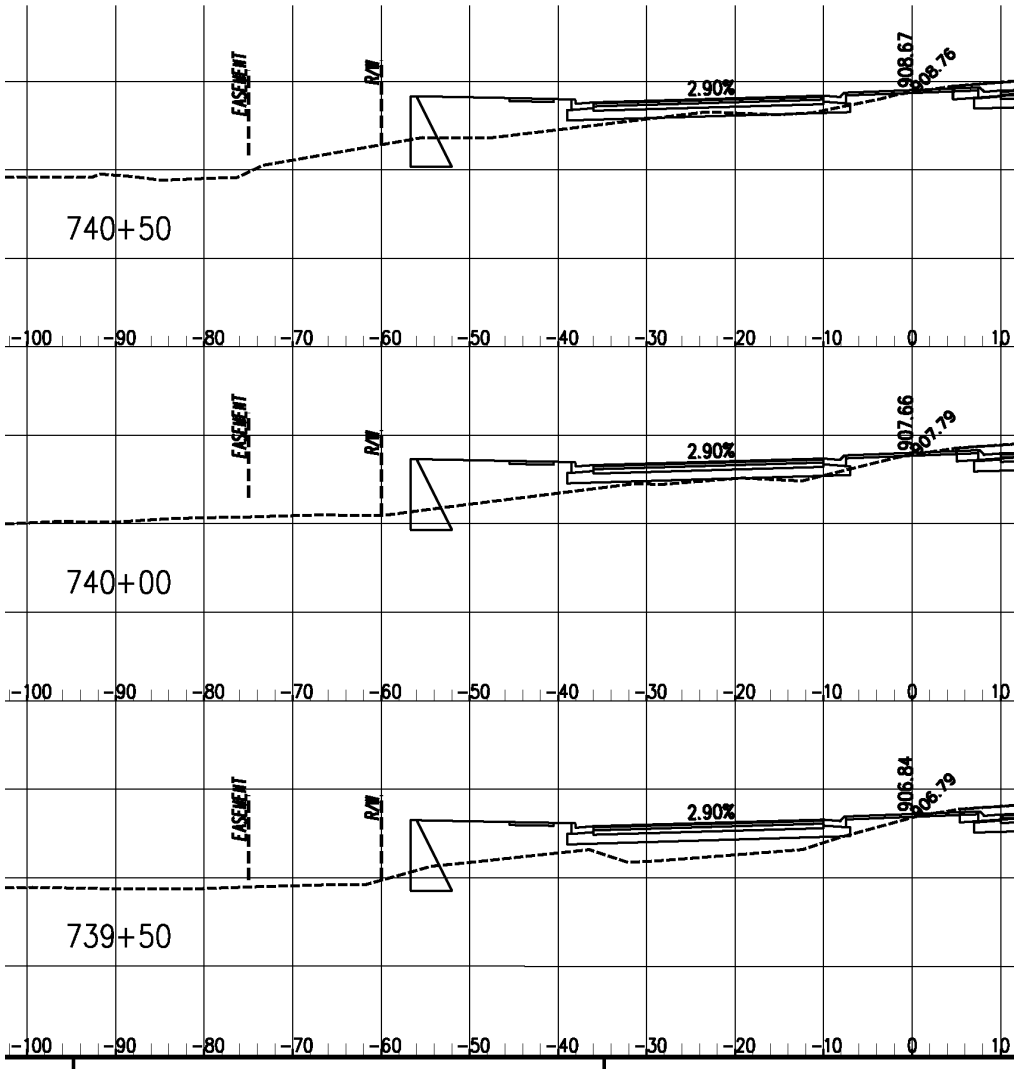
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other – See calculations

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	3 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

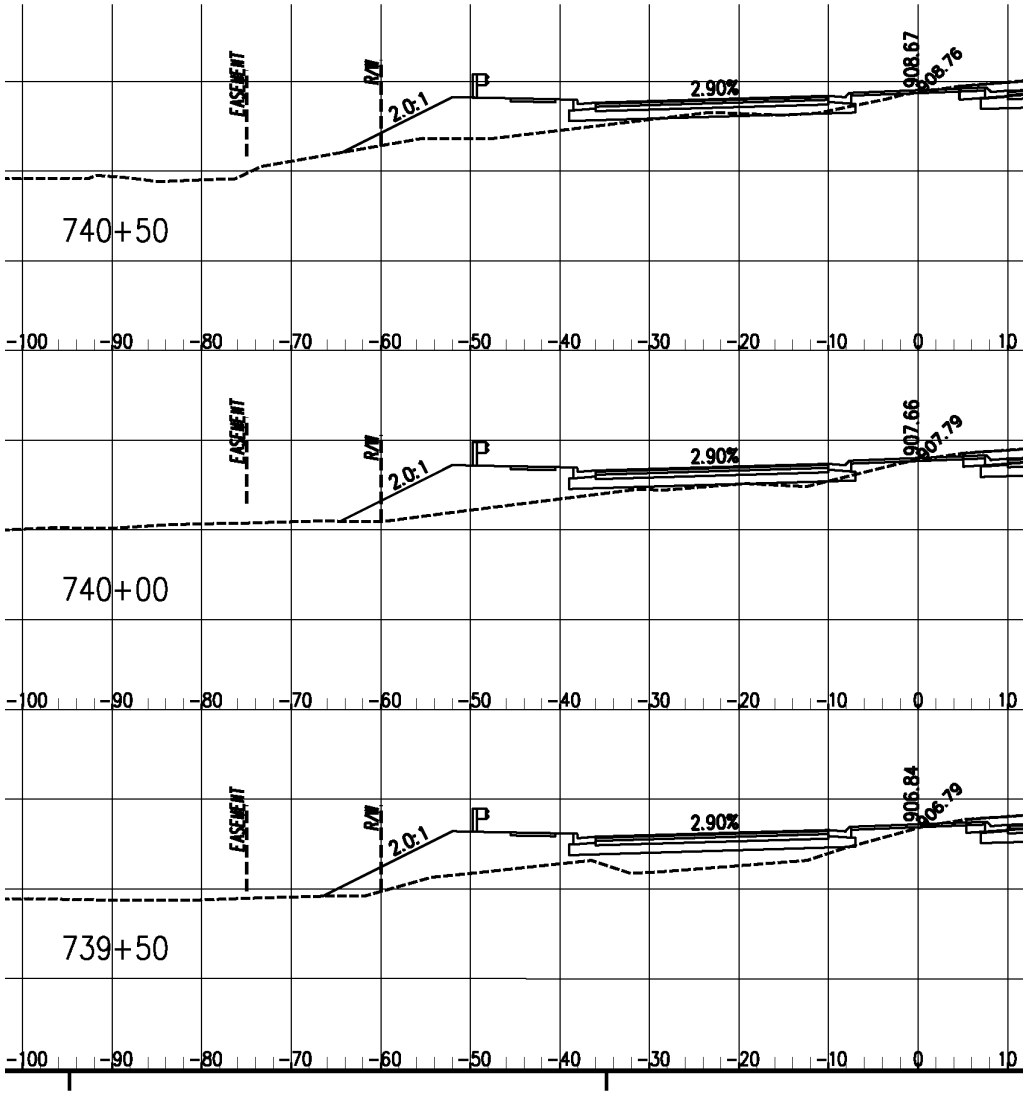


Typical X-Sections at Wall
Original Design

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	4 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



Typical X-Sections at Wall
Proposed Design

CALCULATIONS

PROPOSAL NUMBER:	R-13.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Wall	Begin Sta	Length LF	Estimated Cost	Added GR cost	Net Savings
1*	533+29	237	$68,250	$0*	$0*
2	541+56	133	$38,301	$1,858	$36,443
10	736+00	75	$21,598	$1,048	$20,550
11	738+50	153	$44,060	$2,137	$41,923
12	740+16	186	$53,563	$2,598	$50,965
13	744+51	217	$62,491	$3,031	$59,459
14	778+60	159	$45,788	$2,221	$43,567
Total		1160	$334,051	$12,894	$252,907

*Not recommended to eliminate with slopes, could be eliminated by lowering profile, see R 3.0

Total Wall Cost from Project Estimate =	$334,051
Approximate Wall cost / LF =	$287.98**
Guardrail cost from Project estimate, $/LF =	$13.97

**Found by dividing total wall cost by total length of wall for project. Assumes walls have approximately equal average height.

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-14.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: ELIMINATE EASEMENTS BEHIND RETAINING WALLS AND AT HURRICANE CREEK BRIDGE

ORIGINAL DESIGN: In the current design, at the location of proposed retaining walls there is shown right-of-way as needed for construction of the walls as well as easement beyond the right-of-way limits. The current design also shows significant easement areas in the vicinity of the proposed Hurricane Creek Bridge.

PROPOSED CHANGE: It is proposed to eliminate the easements beyond the right-of-way limits at the location of proposed new retaining walls. In addition, it is proposed to eliminate the extraneous easement areas shown in the vicinity of the Hurricane Creek bridge. See attached calculation sheet for a list of the project locations where this is proposed.

JUSTIFICATION: The right-of-way behind the proposed new retaining walls is required for construction of the walls; however, further easement areas beyond the right-of-way limits should not be necessary in the areas behind the retaining walls. The easements behind the new retaining walls and in the vicinity of the Hurricane Creek bridge appear to be unnecessary and add costs to the project.

ADVANTAGES:

- Reduces project costs
- Reduces right-of-way costs
- Reduces impacts to property

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 50,625		$ 50,625
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 50,625		$ 50,625

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-14.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Easement (reduction)	1/7	AC	1.35	$37,500	50,625
SUBTOTAL – COST TO PRIME					50,625
MARKUP					Incl.
TOTAL CONTRACT COST					**50,625**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0
MARKUP					Incl.
TOTAL CONTRACT COST					**0**

Difference [Original-Proposed] **$50,625**

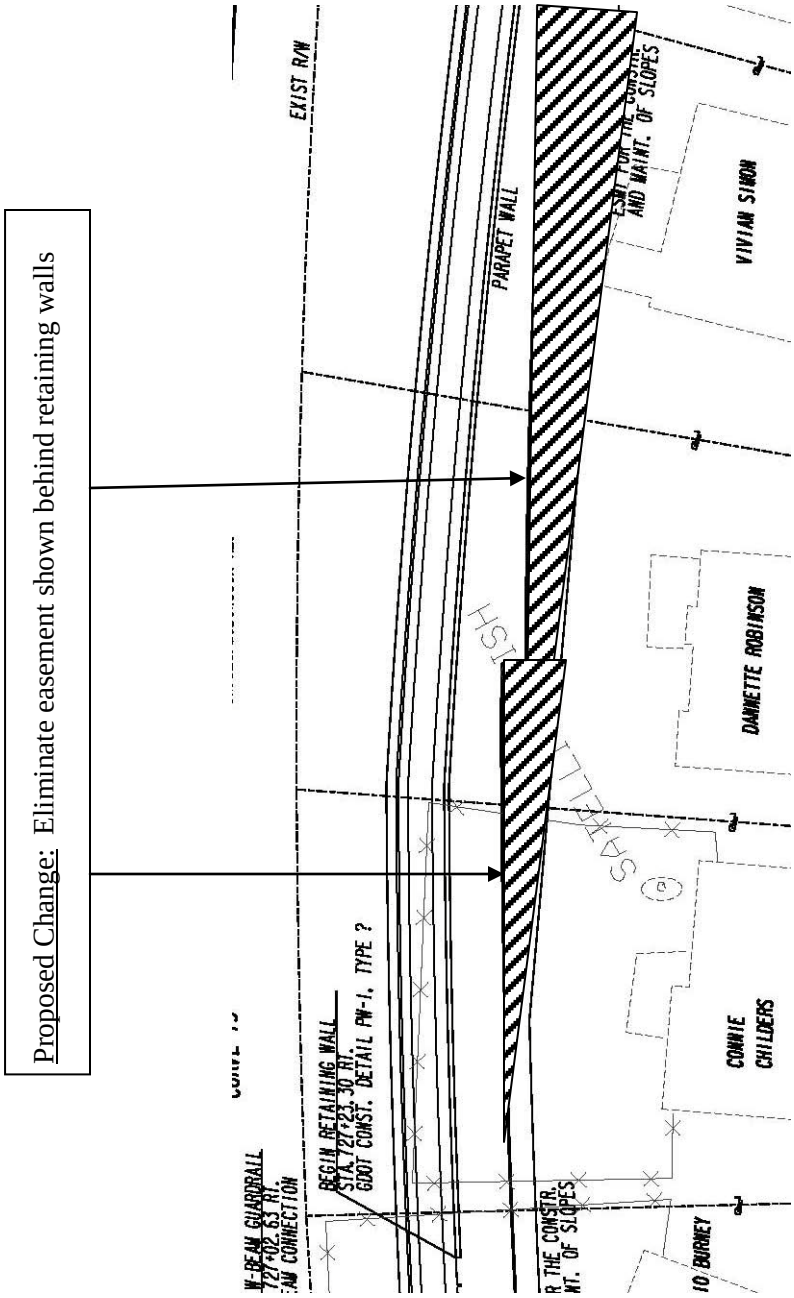
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-14.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



CALCULATIONS

PROPOSAL NUMBER:	R-14.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Easement Quantity Calcs.

Retaining wall locations with easements shown beyond the right-of-way limits, and the areas of the easements are as follows:

Sta 535+00: 3,800 SF
Sta 542+00: 2,900 SF
Sta 706+00 RT: 14,600 SF (extra easements shown at Hurricane Creek Bridge)
Sta 710+00 LT: 18,300 SF (extra easements shown at Hurricane Creek Bridge)
Sta 730+00: 6,500 SF
Sta 740+00: 5,200 SF
Sta 745+00: 2,500 SF
Sta 779+00: 1,500 SF
Sta 787+00: 3,400 SF

Total Area of Easement (reduction): 58,700 SF / 43,560 = 1.35 acres

Residential R/W Cost Calculations:

$75,000/ac for partial property (Preliminary ROW Estimate)
$210,000 /ac if complete parcel is eliminated (Using GSOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $75,000)
$37,500/ac for permanent easement at 50% of ROW

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: ELIMINATE SIDEWALKS ON SIDE ROADS WHERE NONE CURRENTLY EXIST

ORIGINAL DESIGN: In the current design, the majority of the side road sections include new sidewalks where none currently exist.

PROPOSED CHANGE: It is proposed to eliminate the sidewalks from the new roadway sections for side roads where no sidewalks currently exist. See attached calculation sheet for a list of the roads.

JUSTIFICATION: The work on the side roads in this project is limited to only those improvements necessary to provide proper connection and movements for the widening of SR 920. Constructing sidewalks on only a limited portion of the side roads will result in dead end sidewalks.

ADVANTAGES:

- Reduces construction cost
- Reduces impacts to property
- Eliminates dead end sidewalks
- Reduces impervious area

DISADVANTAGES:

- Will eliminate some improvements, while limited in function and purpose
- Requires Design Variance

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 163,311		$ 163,311
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 163,311		$ 163,311

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
4" Sidewalk (reduction)	1/7	SY	8,528	19.15	163,311
SUBTOTAL – COST TO PRIME					163,311
MARKUP					Incl.
TOTAL CONTRACT COST					**163,311**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					$0
MARKUP					Incl.
TOTAL CONTRACT COST					$0

Difference [Original-Proposed] **$163,311**

SOURCES

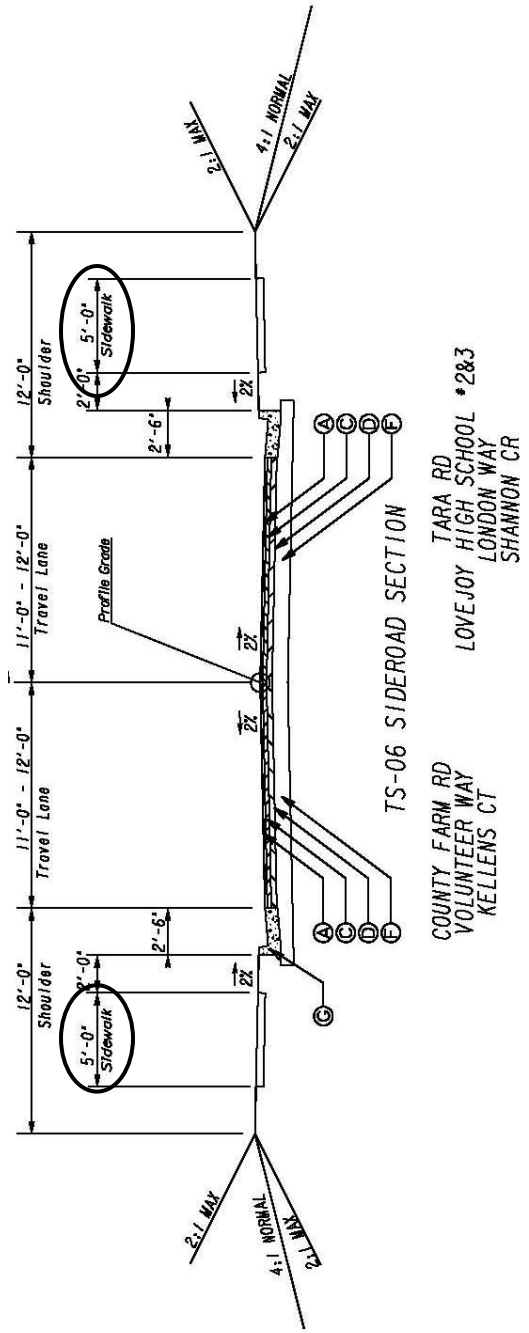
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Change: Eliminate sidewalks where none exist



CALCULATIONS

PROPOSAL NUMBER:	R-17.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Sidewalk Quantity Calcs.

Side streets with proposed new sidewalks where none exist, and their construction lengths are as follows:

Zoie Court: 400' x 2 sides
Folsom Road: 700' x 1 side
McCurry Park: 90' x 2 sides
Champion Lane: 125' x 2 sides
Shannon Circle: 480' x 2 sides
McCurry Park East: 120' x 2 sides
County Farm Road: 210' x 2 sides
Volunteer Way: 75' x 2 sides
McElroy Road: 1,200' x 2 sides
Felton Drive: 110' x 2 sides
Kellens Court: 325' x 2 sides
Tara Road: 380' x 2 sides
New Hope Road: 620' x 2 sides
London Way: 200' x 2 sides
Panhandle Road: 2,000' x 2 sides
Knotty Pine Place: 430' x 2 sides
Home Depot: 560' x 2 sides

Total Length of 5' sidewalks: 15,350 LF

15,350 LF x 5' wide sidewalk = 76,750 SF/9 = 8,528 SY

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	1 of 5

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: LIMIT IMPROVEMENTS AT INTERSECTION WITH SR 54 TO NORTH OF SR 920 PLUS RAISED MEDIAN NOSE TO SOUTH.

ORIGINAL DESIGN: The current design includes overlay, curb and gutter and sidewalk on SR 54 to the South of the realigned intersection of SR 920 and SR 54.

PROPOSED CHANGE: It is proposed to eliminate the overlay, curb and gutter and sidewalk on SR 54 South of the realigned intersection of SR 920 and SR 54.

JUSTIFICATION: None of the proposed improvements South of the intersection of SR 920 and SR 54 are required to increase capacity of the intersection or improve operation of SR 54. The current design also adds sidewalk and curb and gutter to a section of SR 54 where there is no existing sidewalk to tie into. By removing these improvements, additional impacts to the existing culvert and existing driveway are not required and additional guardrail can be removed from the project.

ADVANTAGES:

- Reduces quantities/costs
- Reduces right-of-way impacts

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 106,232		$ 106,232
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 106,232		$ 106,232

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	2 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
EASEMENT, COMMERCIAL	1	AC	0.39	125,000	48,750
CURB AND GUTTER TP 2	1	LF	732	9.93	7,269
SIDEWALK	1	SY	444	19.15	8,502
ASPHALT OVERLAY	1	SY	5216	5.60	29,210
GUARDRAIL W BEAM	1	LF	550	13.97	7,684
TP 1 GUARDRAIL ANCHOR	1	EA	2	609.40	1,219
TP 12 GUARDRAIL ANCHOR	1	EA	2	1799.32	3,598
			SUBTOTAL – COST TO PRIME		106,232
			MARKUP		Incl.
			TOTAL CONTRACT COST		**106,232**

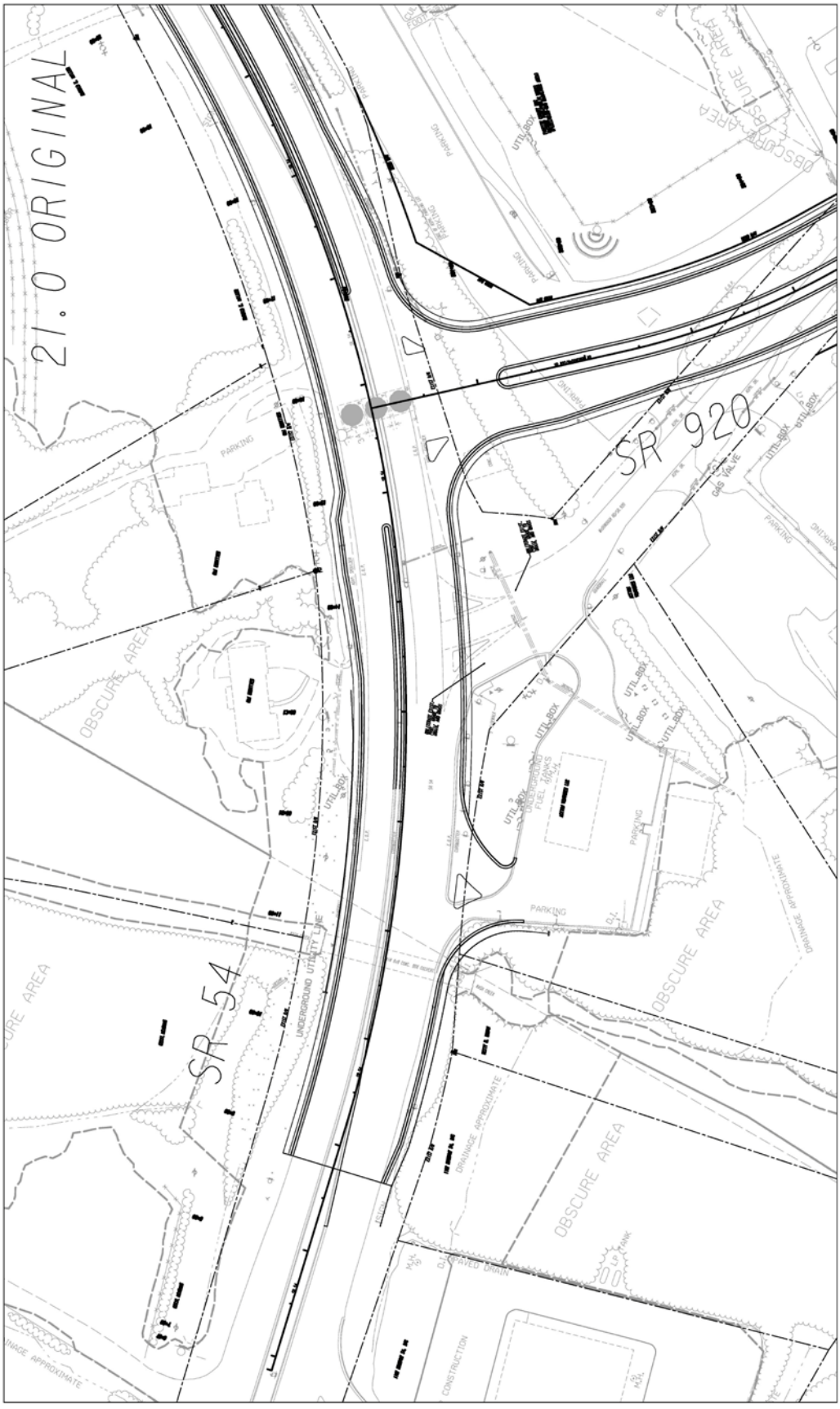
PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
			SUBTOTAL – COST TO PRIME		0
			MARKUP		Incl.
			TOTAL CONTRACT COST		**0**

Difference [Original-Proposed] **$106,232**

SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)



R-21.0 Original Design
3 of 5

R-21.0 Proposed Change
4 of 5

CALCULATIONS

PROPOSAL NUMBER:	R-21.0	PAGE NUMBER:	5 of 5

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Commercial R/W Cost Calculations:
$250,000/ac for partial property (Preliminary ROW Estimate)
$492,000 /ac if complete parcel is eliminated (Using GDOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $250,000)
$125,000/ac for permanent easement at 50% of ROW
Comm. displacement: 37,500 legal + 15,000 Reloc + 25,000 Demo + 7,500 Admin = $85,000

Current Design Pavement Cost Calculations:
402-3130: 1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 1 layers tack coat = 0.035 gals/SY/layer x 1 x $2.25/gal = $0.08/SY
Total pavement cost = **$5.60/SY**

Original:
Permanent Easement = 17,200 SF = 0.39 AC * $125,000/AC = $48,750
Curb and Gutter = 732 LF * $9.93/LF = $7,269
Sidewalk = 444 SY * $19.15/SY = $8,502
Asphalt = 5216 SY * $5.60/SY = $29,210
Guardrail (W-Beam) = 550 LF * $13.97/LF = $7,684
Guardrail Anchor TP 1 = 2 EA * $609.40/EA = $1,219
Guardrail Anchor TP 12 = 2 EA * $1,799.32/EA = $3,598
Total = $106,232

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-25.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	SET RIGHT-OF-WAY LIMITS AT SHOULDER BREAK AND USE PERMANENT EASEMENTS AS NECESSARY BEYOND THE RIGHT-OF-WAY LIMIT

ORIGINAL DESIGN: The current design shows a consistent Right-of-Way corridor width of 120' along the SR 920 mainline.

PROPOSED CHANGE: It is proposed to set the Right-of-Way limits at the shoulder break with easements beyond the Right-of-Way in lieu of the consistent 120' wide corridor.

JUSTIFICATION: The 120' wide Right-of-Way is appropriate for sections where there are turn lanes on both sides of the road; however, a reduced width of 108' could be used where there is only a single turn lane and a further reduced width of 96' could be used where there are no turn lanes. Establishing the shoulder break as the Right-of-Way limit with easement beyond is a common GDOT method, especially in urban or developed areas such as this project area.

ADVANTAGES:

- Reduces right of way cost
- Acceptable design approach

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 435,000		$ 435,000
PROPOSED CHANGE:	$ 217,500		$ 217,500
SAVINGS:	$ 217,500		$ 217,500

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-25.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Right-of-Way (reduction)	1/7	AC	5.80	75,000	435,000
SUBTOTAL – COST TO PRIME					435,000
MARKUP					Incl.
TOTAL CONTRACT COST					**435,000**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
Permanent Easement	1/7	AC	5.80	37,500	217,500
SUBTOTAL – COST TO PRIME					217,500
MARKUP					Incl.
TOTAL CONTRACT COST					**217,500**

Difference [Original-Proposed] **$217,500**

SOURCES

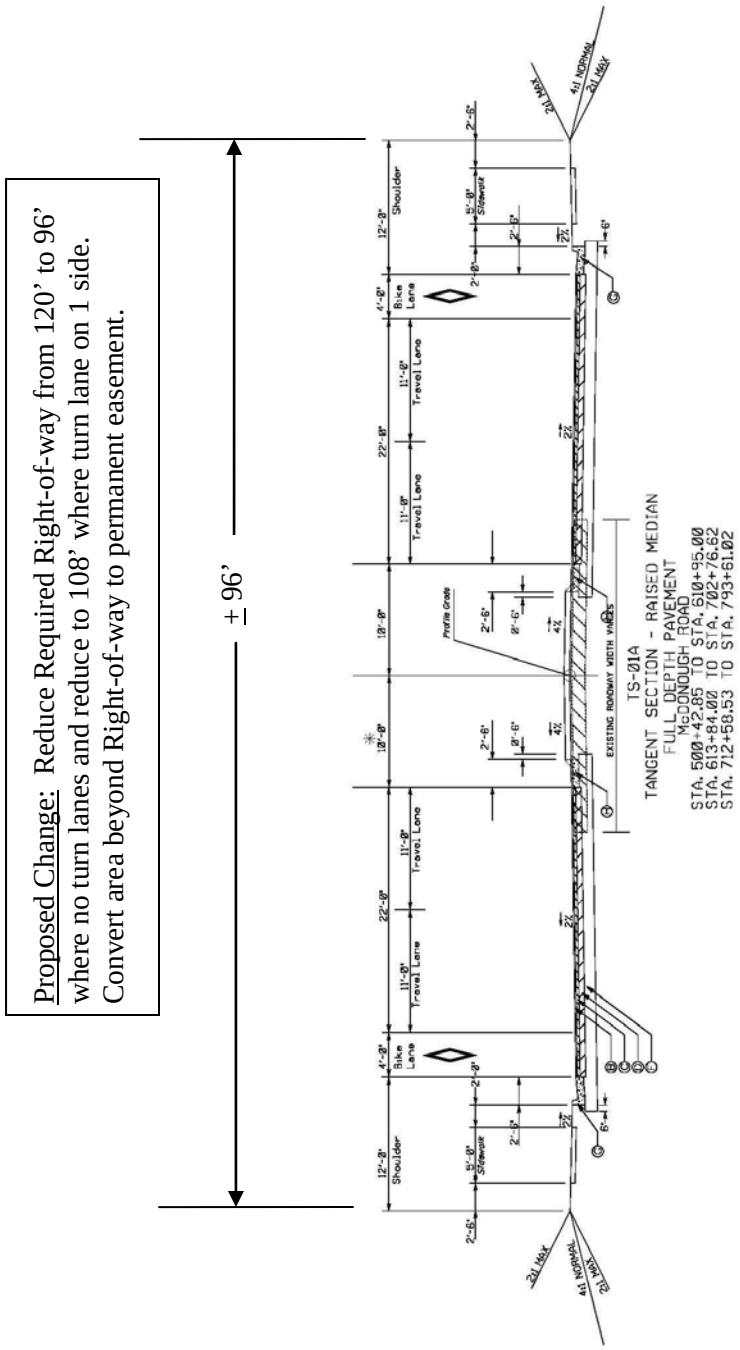
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Attached Calculation Sheet

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R-25.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Change: Reduce Required Right-of-way from 120’ to 96’ where no turn lanes and reduce to 108’ where turn lane on 1 side. Convert area beyond Right-of-way to permanent easement.



CALCULATIONS

PROPOSAL NUMBER:	R-25.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Current Design Pavement Cost Calculations:
310-5120: 12" GAB = $18.81/SY
402-3121: 7" Asph 25MM = (7")(110#sy-in/2000#)($50.03/T) = $19.26/SY
402-3190: 2" Asph 19MM = (2")(110#sy-in/2000#)($51.59/T) = $5.67/SY
402-3130: 1.5" Asph 12.5MM = (1.5")(110#sy-in/2000#)($66.85/T) = $5.52/SY
413-1000: 2 layers tack coat = 0.035 gals/SY/layer x 2 x $2.25/gal = $0.16
Total pavement cost = **$49.42/SY**

Residential R/W Cost Calculations:
$75,000/ac for partial property (Preliminary ROW Estimate)
$210,000 /ac if complete parcel is eliminated (Using GSOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $75,000)
$37,500/ac for permanent easement at 50% of ROW
Res. displacement: 37,500 legal + 40,000 Reloc + 15,000 Demo + 7,500 Admin = $100,000

Right-of-Way Reduction
Right-of-way reduced by 12' along each side that has no turn lane. No turn lanes located along each side the following stations:

Left:	Right:
563+00 to 569+00	504+00 to 512+00
575+00 to 590+00	519+00 to 524+00
631+00 to 650+00	543+00 to 553+00
651+00 to 665+00	560+50 to 566+50
677+00 to 697+00	572+00 to 595+00
709+00 to 718+00	605+00 to 638+00
	654+00 to 667+00
	691+00 to 708+00
	719+00 to 728+00
	774+50 to 778+00

Right-of-Way reduction = 21,050 LF x 12 for turn lane widths = 252,600 SF / 43560 = 5.80 ac
Majority of property is Residential; thus, $75,000/ac for partial property (Preliminary ROW Estimate)

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-28.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION:	USE CAST-IN-PLACE CONCRETE WALL IN LIEU OF MSE WALL FOR HURRICANE CREEK BRIDGE WALLS #4 AND 7.

ORIGINAL DESIGN: The current design uses MSE walls in the vicinity of the Hurricane Creek bridge, walls #4 and 7. These walls are 10'-15' in height.

PROPOSED CHANGE: It is proposed to use a cast-in-place concrete wall at these taller wall locations, eliminating MSE walls from the project.

JUSTIFICATION: The change eliminates a special design element from the project and results in a cost savings to the project.

ADVANTAGES:

- Provides cost savings
- Eliminates special design MSE wall
- Eliminates mobilization cost of MSE wall construction

DISADVANTAGES:

- None Apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 362,991		$ 362,991
PROPOSED CHANGE:	$ 225,877		$ 225,877
SAVINGS:	$ 137,114		$ 137,114

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R 28.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
MSE Backfill	1	CY	5209	25.00	130,225
MSE Wall Face	1	SF	4688	36.14	169,445
MSE Wall Barrier Coping	1	LF	357	177.37	63,321
SUBTOTAL – COST TO PRIME					362,991
MARKUP					Incl.
TOTAL CONTRACT COST					**362,991**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
CIP Ret Wall	1	LF	357	632.71	225,877
SUBTOTAL – COST TO PRIME					225,877
MARKUP					Incl.
TOTAL CONTRACT COST					**225,877**

Difference [Original-Proposed] **$137,114**

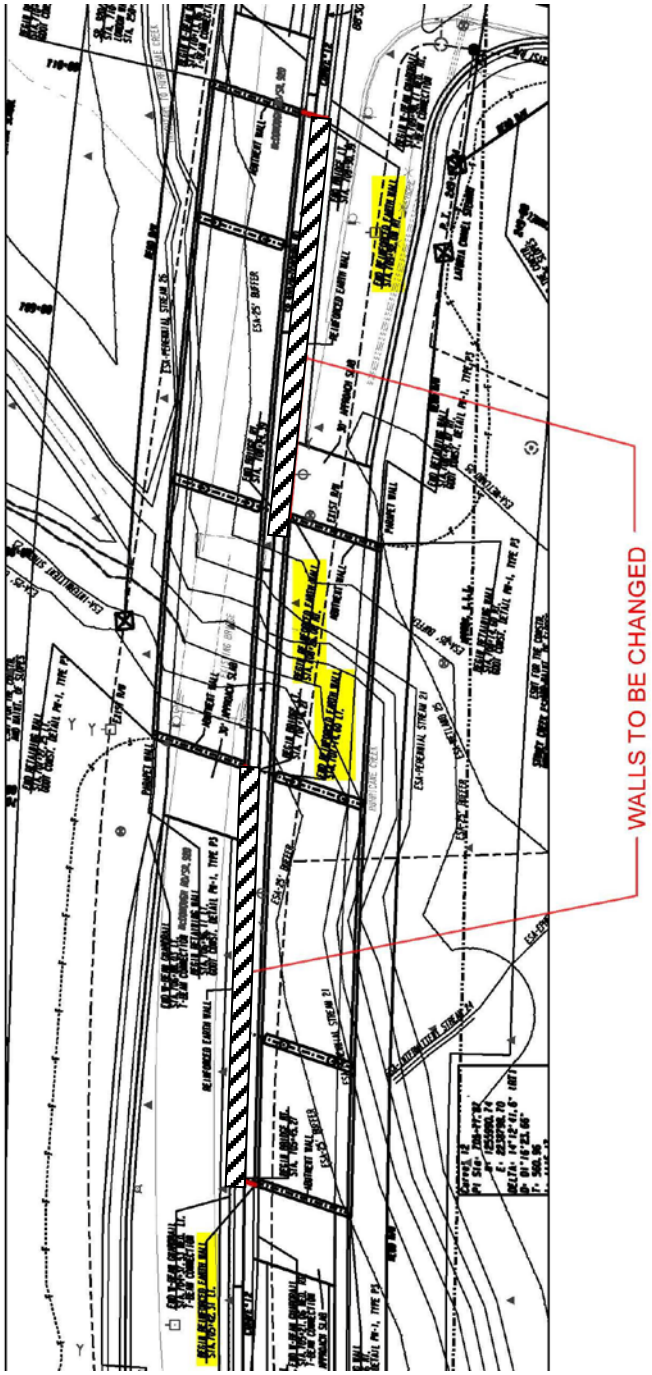
SOURCES

1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

PROPOSED CHANGE SKETCH/DETAIL

PROPOSAL NUMBER:	R 28.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-



CALCULATIONS

PROPOSAL NUMBER:	R 28.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

From Project Cost Estimate:
MSE Back Fill - $130,225
MSE Wall Face – $169,445
MSE Barrier Coping (357 LF) - $63,321
Total MSE Cost (walls 4 and 8) - $362,991

By inspection of wall envelopes, walls 4 and 8 will be of similar height to Parapet walls 3,5,6,and 8 in the same area of the project. Assume that a CIP wall with barrier top will be similar cost per LF to the CIP parapet walls.

From Project Cost Estimate, Type P3 Retaining Wall, Cost = 632.71 $/LF

Replace MSE with CIP wall:
357 LF x 632.71 $/LF = $225,877

Savings:
$362,991 - $225,877 = $137,114

VALUE ENGINEERING PROPOSAL

PROPOSAL NUMBER:	R-29.0	PAGE NUMBER:	1 of 4

PROJECT #/PI #:	**STP00-2009-00(004) / 742870-**
PROJECT TITLE:	**SR 920 from SR 54/Fayette to SR 3/US 19/Clayton Fayette/Clayton Counties**

PROPOSAL DESCRIPTION: REDUCE PERMANENT EASEMENT AT STA 762+00 LT TO ELIMINATE DISPLACEMENT.

ORIGINAL DESIGN: The current design includes a 15' permanent easement through the existing residential structure at Sta 762+00 LT.

PROPOSED CHANGE: It is proposed to reduce the permanent easement to 10' to eliminate the displacement of the residential structure.

JUSTIFICATION: The construction limits are located at the right-of-way line at station 762+00 and the proposed easement is offset 15' from this point. Typically, permanent easement is set from 7' to 10' from the construction limit.

ADVANTAGES:

- Reduces right-of-way impacts
- Eliminates unnecessary costs

DISADVANTAGES:

- None apparent

	INITIAL COST	OPERATING COST	TOTAL LIFE-CYCLE COST
ORIGINAL DESIGN:	$ 100,375		$ 100,375
PROPOSED CHANGE:	$ 0		$ 0
SAVINGS:	$ 100,375		$ 100,375

COST ESTIMATING WORKSHEET

PROPOSAL NUMBER:	R-29.0	PAGE NUMBER:	2 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

ORIGINAL DESIGN

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
EASEMENT, RESIDENTIAL	1	AC	0.01	37,500	375
DISPLACEMENT, RESIDENTIAL	1	EA	1	100,000	100,000
SUBTOTAL – COST TO PRIME					100,375
MARKUP					Incl.
TOTAL CONTRACT COST					**100,375**

PROPOSED CHANGE

ITEM	SOURCE CODE	U/M	QTY	UNIT COST	TOTAL COST
SUBTOTAL – COST TO PRIME					0
MARKUP					Incl.
TOTAL CONTRACT COST					**0**

Difference [Original-Proposed] **$100,375**

SOURCES

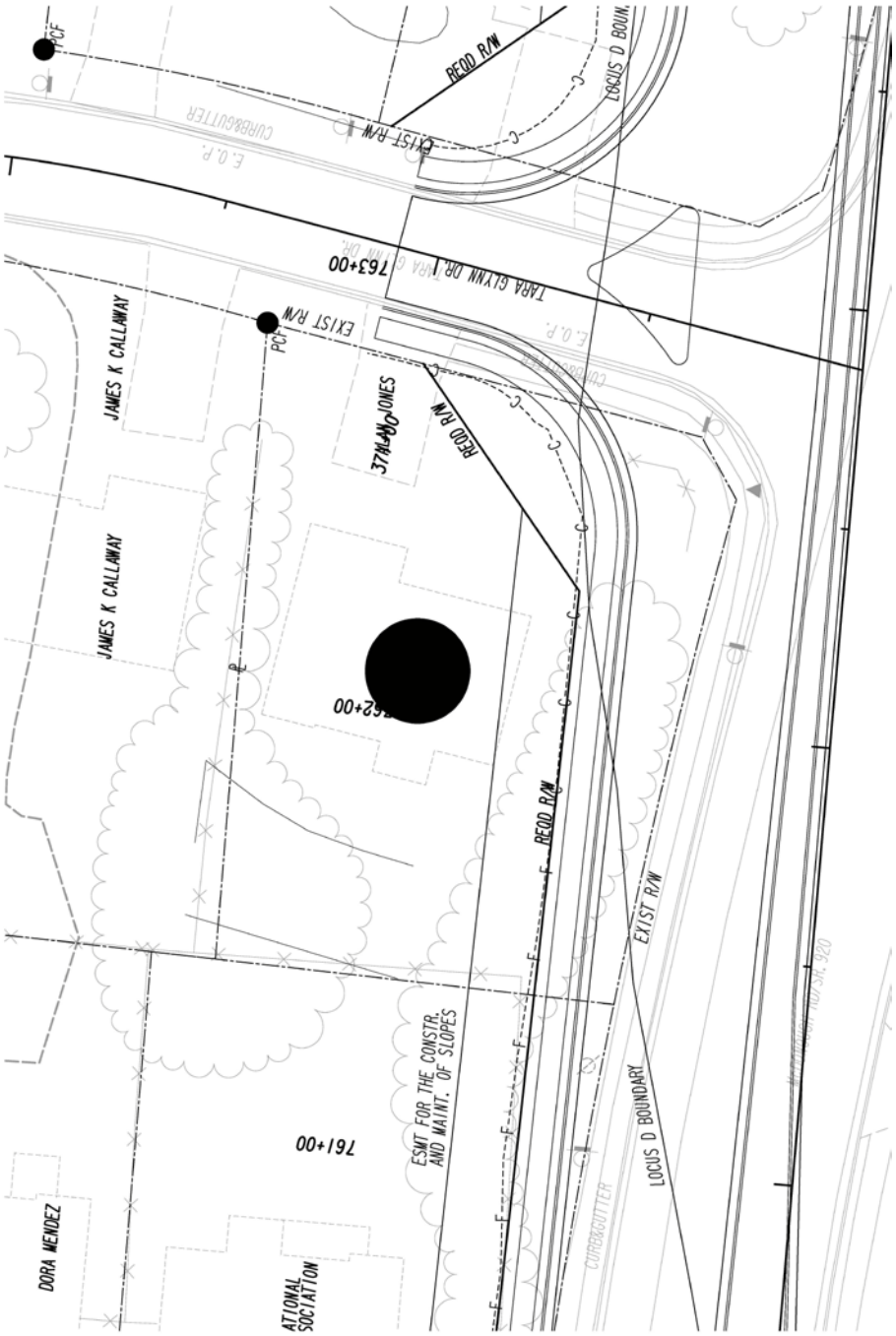
1. Project Cost Estimate
2. USC Estimate Database
3. GDOT Item Mean Summary
4. Means Estimating Manual
5. Richardson's Estimating Manual
6. Vendor (Specify)
7. Other (Specify)

ORIGINAL DESIGN SKETCH/DETAIL

PROPOSAL NUMBER:	R-29.0	PAGE NUMBER:	3 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Proposed Change: Reduce permanent easement to 10’ and avoid Displacement



CALCULATIONS

PROPOSAL NUMBER:	R-29.0	PAGE NUMBER:	4 of 4

PROJECT #/PI #:	STP00-2009-00(004) / 742870-

Residential R/W Cost Calculations:

$75,000/ac for partial property (Preliminary ROW Estimate)
$210,000 /ac if complete parcel is eliminated (Using GSOT Preliminary ROW Cost Estimate Spreadsheet based on 1 Ac @ $75,000)
$37,500/ac for permanent easement at 50% of ROW
Res. displacement: 37,500 legal + 40,000 Reloc + 15,000 Demo + 7,500 Admin = $100,000

Original:
Permanent Easement = 540 SF = 0.01 AC * $37,500/AC = $375
1 displacement = $100,000

VE STUDY SIGN-IN SHEET

Project No.: STP00-2009-00(004) County: Clayton/Fayette PI No.: 742870- Date: May13-16, 2013

Days

FIRST	LAST	NAME	GDOT OFFICE OR COMPANY NAME	PHONE NUMBER	EMAIL ADDRESS
X	X	Robert Reid Jr.	Engineering Services	404-631-1754	rreid@dot.ga.gov
X	X	Matt Sanders	Engineering Services	404-631-1752	msanders@dot.ga.gov
X	O	Ken Werho	Traffic Operations	404-635-8144	kwerho@dot.ga.gov
X	X	Bill DuVall	Bridge Design	404-631-1883	bduvall@dot.ga.gov
X	X	Jeremy Busby	Program Delivery	404-631-1154	jbusby@dot.ga.gov
X	X	Andy Lindsey	D7 - Construction	404-556-7912	alindsey@dot.ga.gov
X	O	William Dunwoody	D7 - Construction	404-326-5331	wdunwoody@dot.ga.gov
X	O	Bobby Dollar	Environmental Services	404-631-1920	rdollar@dot.ga.gov
X	O	Carlos Figueroa	FHWA	404-562-4280	carlos.figueroa@dot.gov
X	X	Alvin Gutierrez	FHWA	404-562-3632	alvin.gutierrez@dot.gov
X	X	Tom Orr	U.S. Cost	770-481-1638	torr@uscost.com
X	X	Lenor Bromberg	KEA Group	404-805-8244	lbromberg@keagroup.com
X	X	Chris Haggard	Wolverton & Associates	770-447-8999	Chris.haggard@wolverton-assoc.com
X	X	Ashley Zellner	Baker	770-263-9118	azellner@mbakercorp.com
X	O	Ken Ott	American Engineers (AEI)	502-245-3813	kott@aei.cc
X	O	Tom Fravel	AEI	770-421-8422	tfravel@aei.cc
X	X	Mark Wilkinson	AEI	770-421-8422	mwilkinson@aei.cc
X	X	Austin Williams	AEI	770-421-8422	awilliams@aei.cc
X	O	Sujith Racha	Arcadis	770-386-6613	sujith.racha@arcadis-us.com
X	O	Austin Meadows	Atkins - Ecology	678-247-2551	austin.meadows@atkinsglobal.com

X = Attended Meeting **O** = Did Not Attend **20** Attended Project Overview(Day 1) **12** Attended Project Presentation (Day 4)

FUNCTION ANALYSIS

The following functions for the SR 920 from SR 54 to SR 3/US 19 project were identified during discussions with the VE participants on the first day of the study. These two-word functions consist of an active verb, and a quantifiable (measurable) noun. The functions represent the proposed capital improvement expenditures of the project, and assist the V.E. team in becoming familiar with the needs and long-term goals for the project. The Basic Function of the project is to "Increase Capacity". The following are considered by the V.E. team to be Secondary and Supporting Functions.

Verb	Noun		Verb	Noun
Accommodate	Pedestrians		Maintain	Access
Accommodate	Cyclists		Minimize	Impacts
Support	Commerce		Improve	Operations
Reduce	Congestion		Convey	Water
Span	Water		Re-establish	Vegetation
Achieve	Speed Design		Award	Contract
Protect	Travelers		Control	Erosion
Direct	Traffic		Control	Traffic
Direct	Flow		Protect	Property
Separate	Traffic		Maintain	Sight Distance
Maintain	Traffic		Inform	Traveler
Retain	Water		Retain	Earth
Treat	Water		Excavate	Earth
Improve	Connectivity		Allow (Future)	Connectivity

COST MODEL/DISTRIBUTION

Project # STP00-2009-00(004) PI No. 742870-
SR 920 from SR 54/Fayette to SR 3/US 19/Clayton
Fayette/Clayton County, Georgia

ITEM	COST $	% OF TOTAL
RIGHT-OF-WAY	18,006,000	32.96%
ASPHALT CONCRETE PAVING	9,287,958	17.00%
AGGREGATE BASE COURSE	5,669,004	10.38%
BRIDGES/STRUCTURES	5,112,020	9.36%
EARTHWORK	3,613,051	6.61%
DRAINAGE SYSTEM	3,257,149	5.96%
TRAFFIC CONTROL	2,462,358	4.51%
RETAINING WALLS	1,602,927	2.93%
CURB & GUTTER	1,496,195	2.74%
CONCRETE SLABS/APRONS/MEDIANS	1,197,826	2.19%
GRASSING/EROSION CONTROL	967,168	1.77%
SIDEWALKS	787,241	1.44%
SIGNALS	424,818	0.78%
SIGNAGE/MARKING	423,323	0.77%
DEMOLITION	166,000	0.30%
GUARDRAILS	126,689	0.23%
FENCING	35,732	0.07%
CLEARING AND GRUBBING	0	0.00%
LIGHTING	0	0.00%
LANDSCAPING	0	0.00%
***TOTAL - PROJECT**	**54,635,459**	**100.00%**
*Does not include Engrg & Inspection, Fuel Adjustment or Liquid AC Adjustment		

BRAINSTORMING OR SPECULATION IDEAS

PROJECT TITLE: SR 920 FROM SR 54 to SR 3/US 19
PROJECT LOCATION: FAYETTE/CLAYTON COUNTY, GEORGIA

NO.	IDEA	RANK
	BRIDGE (B)	
1.0	Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Flint River Bridge	4
2.0	Use Short Spans on Pile Bents in lieu of PSC beams on Concrete Bents at the Hurricane Creek Bridges	4
3.0	Lengthen Bridge at Hurricane Creek to Reduce Required Walls, Improve Constructability and Provide More Natural Flow	3
4.0	Use Smaller Beams on End Spans of Hurricane Creek Bridge in lieu of Consistent Beam Type	4
5.0	Use Single Bridge at Hurricane Creek in lieu of 2 Bridges	3
5.1	Retain and Widen Existing Bridge at Hurricane Creek and Build New Bridge Adjacent	2
	ROADWAY (R)	4
1.0	Revise Intersection Improvements at County Line Road/ McElroy Road to Reflect Traffic Shift to Proposed East Fayetteville Bypass	5
2.0	Use 10’ Wide Multi-use Trail on One Side with 5’ Wide Sidewalk on Opposite Side in lieu of Bike Lanes and Sidewalks	4
2.1	Use 8’ Multi-use Trails on Both Sides ILO Bike Lanes & Sidewalks	3
3.0	Lower Vertical Profile in Specific Areas	5
3.1	Revise Vertical Profile to Match Existing Side Road Elevations	Cmmt
4.0	Mill & Overlay Existing Pavement Wherever Possible in lieu of Total Pavement Replacement	3
5.0	Utilize Existing Right-of-Way for Pavement Widening from Sta 550+00 to 600+00	5
5.1	Use 1-way Pair of Roads Around Cemetery (Sta 550+00 to 600+00)	3
6.0	Locate New Pavement Closer to Existing Horizontal Alignment from Sta 605+00 to 625+00; Construct Flint River Bridge using Stage Construction	5
7.0	Follow Existing Horizontal Alignment from Sta 750+00 to 793+00 (End of Project)	Drop
8.0	Re-evaluate Lengths of Right turn Lanes along SR 920	Cmmt

The rankings indicated as “Drop” were ideas that were investigated by the VE Team during the workshop but did not prove to be feasible for consideration.

BRAINSTORMING OR SPECULATION IDEAS

PROJECT TITLE: SR 920 FROM SR 54 to SR 3/US 19
PROJECT LOCATION: FAYETTE/CLAYTON COUNTY, GEORGIA

NO.	IDEA	RANK
	ROADWAY (R)	
9.0	Reduce Turn Lane Lengths on Panhandle Road	4
10.0	Reduce Turn Lane Lengths on Side Roads	4
11.0	Eliminate Improvements on Southwood Drive and Avoid Displacements	w/ 10.0
12.0	For New Pavement Sections on Side Roads, Use 11' Lanes ILO 12'	4
13.0	Eliminate Retaining Walls 2, 10, 11, 12, 13, 14 and Use Fill Slopes and Guardrail at These Locations	5
14.0	Eliminate Easements Behind Retaining Walls and at Hurricane Creek Bridge	4
15.0	Add Retaining Walls to Reduce Right-of-Way Acquisition	w/ 13.0
16.0	Use Parapet ILO Gravity Wall Where Sidewalk is on High Side of Wall	Cmmt
17.0	Eliminate Sidewalks on Side Roads Where None Currently Exist	4
18.0	Shift Horizontal Alignment to the North at Sta 725+00 to Avoid Property Displacement	3
19.0	Eliminate Right-in to High School Driveway at Sta 754+00 to Avoid Property Displacement	Drop
20.0	Make Closest Driveway to SR 920 at Kemp Elementary School Right-in/Right-out	Cmmt
21.0	Limit Improvements at Intersection with SR 54 to North of SR 920 Plus Raised Median Nose to South	4
22.0	Move Closer to Existing Hor. Alignment from Sta 638+00 to 650+00	3
23.0	Eliminate Realignment of English Road	2
24.0	Eliminate Realignment at Beginning of Project at SR 54	3
24.1	Eliminate Realignment at SR 54 & Eliminate Improvements on SR 54	2
25.0	Set Right-of-Way Limits at Shoulder Break and Use Permanent Easements as Necessary Beyond the Right-of-Way Limit	4
26.0	Revise Skew for Kellens Court to Meet 70 Degree Minimum	Cmmt
27.0	Remove In-place Embankment from Pay Items in Cost Estimate	Cmmt
28.0	Use Cast-in-Place Concrete Wall in lieu of MSE wall for Hurricane Creek Bridge Walls #4 and 7.	4
29.0	Reduce Permanent Easement at 762+00 LT to Eliminate Displacement	4

The rankings indicated as "Drop" were ideas that were investigated by the VE Team during the workshop but did not prove to be feasible for consideration.

VALUE ENGINEERING WORKSHOP AGENDA

For

GEORGIA DEPARTMENT OF TRANSPORTATION

Project # STP00-2009-00(004) PI No. 742870-
SR 920 from SR 54/Fayette to SR 3/US 19/Clayton
Fayette/Clayton County, Georgia

28 HOUR - V.E. STUDY
13-16 May 2013

The value engineering workshop for the subject project will be conducted for 3-1/2 days from 13-16 May 2013, **in the Engineering Services Conference Room (5CR1L2) on the 5th floor of the GDOT General Office Facility located at 600 W. Peachtree Street NW, Atlanta GA 30308; POC – Matt Sanders @ (404)631-1752 voice**

Pre-workshop Activities

The V.E. Team Leader coordinates logistics with GDOT, and confirms project objectives and any unique requests, and develops a cost model for the project. The V.E. Team receives and reviews all project documents.

MONDAY

0800 - 0900 **V.E. Team Introduction Phase** Tom Orr, P.E., CVS
Team Leader, U.S. Cost, Inc.
(V.E. Team Only)

The VETL will review previous events along with activities planned for the week and outline several areas which may be investigated by the V.E. team.

The team members will discuss their initial impression and understanding of the project with other team members based on their pre-study review of the project plans, cost estimates, and available calculations. The V.E. Team Leader will provide cost models, and cost bar graphs to help the team identify the high-cost features of the project.

0900 - 1100 **Project Design Briefing** V.E. Team; A/E, GDOT

The A/E project design manager will discuss the project constraints/requirements and the proposed design solution(s) in detail. The V.E. team members will ask questions as appropriate to completely understand the project requirements and the proposed design solution (both alternatives considered and those recommended by the design team).

MONDAY (CONTINUED)

1100 - 1200 **Function Analysis Phase** V.E. Team

The V.E. team will discuss the required functions of the project. The project cost model will be analyzed to identify functions provided by all project features.

1200 - 1300 **Lunch**

1300 - 1600 **Creative Phase** V.E. Team

The V.E. team will creatively review, Brainstorm, and tabulate possible design alternatives for the project. While the designer's solution will serve as the "baseline", the team will identify alternatives not in the recommended solution, but deserving of further investigation. Each project feature will be carefully analyzed with the basic questions in mind:

What is the system/item?
What does it do (what is its basic function)?
What must it do?
What does it cost?
What is the item worth?
What else will do the same, or a better job?
What does that alternative cost?

During the creative phase, the team will not judge the ideas. The essential requirements for the project, however, must always be considered.

1600 - 1700 **Analysis Phase** V.E. Team

During this phase, all of the ideas or alternatives will be ranked according to their potential for life-cycle (25-year) cost reduction and the potential for acceptance by GDOT, Engineering Designers, and other appropriate parties.

TUESDAY

0800 - 1700 **Development Phase** V.E. Team

During the development phase, each team member will gather information and prepare written proposals for those ideas assigned to him/her. These may require additional discussions with the designer, GDOT representatives, outside contractors and suppliers, and other specialists to fully define the alternative. The team members will prepare sketches, perform calculations and develop other data to support each proposal. In addition, each team member will prepare estimates of costs for each alternative as originally designed, and as proposed by the V.E. team.

WEDNESDAY

0800 - 1200	**Development Phase**	V.E. Team
1200 - 1300	Lunch	
1300 - 1700	**Development Phase & Quality Review**	V.E. Team

THURSDAY

0800 – 0900	**Prepare for Presentation**	V.E. Team
0900 – 1000	**V.E. Presentation**	V.E. Team Members, Design Team & GDOT Reps

The Value Engineering Team will present the proposals developed in the course of the study to the design team representatives and any participating stakeholders. The intent of the presentation is to give a clear understanding of the basis of the proposals rather than to reach a conclusion as to their acceptability. A summary table of results will be distributed at the presentation. The formal V.E. Reports will be issued within 8 business days of the workshop conclusion.

1000 – 1200	**V.E. Team Wrap-up & Final QC/QA**	V.E. Team Members only

The Value Engineering Team will have a wrap-up session consisting of a final review of proposals to ensure consistency and clarity of content.