

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA**

**INTERDEPARTMENT CORRESPONDENCE**

**FILE:** BHFST-0001-05(024) Cobb Fulton                      **OFFICE:** Engineering Services  
 CSSTP-0009-00(410)  
 P.I. Nos.: 720125 0009410  
 SR 3/US 41: Northgate Dr. to Paces Mill Rd.    **DATE:** September 28, 2009

**FROM:** Ronald E. Wishon, Project Review Engineer *REW*

**TO:** Bobby K. Hilliard, PE, State Program Delivery Engineer  
 Attn.: Tim Matthews

**SUBJECT: IMPLEMENTATION OF VALUE ENGINEERING STUDY ALTERNATIVES**

The VE Study for the above projects was held August 4-7, 2009. Responses were received on September 18, 2009. Recommendations for implementation of Value Engineering Study Alternatives are indicated in the table below. The Project Manager shall incorporate the VE alternatives recommended for implementation to the extent reasonable in the design of the project.

ALT #	Description	Potential Savings/LCC	Implement	Comments
B-1	Re-space the beams for the Chattahoochee River bridge to use fewer beams; Use 72 in bulb-T beams in lieu of 65 in Bulb-T beams	Proposed = \$249,041  Actual = (-\$86,361) Cost increase	No	Based on calculations provided by the designer, the potential savings have been reduced to \$9,639. The cost to redesign the plans would require an additional \$96,000 and the redesign work would delay the project schedule by 4 months.
B-2	Use plain reinforcing steel for all deck bars in lieu of epoxy coated bars for the top mat of the bridge deck	\$40,635	Yes	This will be done.
B-3	Reduce stamped concrete width on multi-use path from 5 ft to 3 ft; reduce bridge width by 2 ft	Proposed = \$51,151  Actual = (-\$44,859) Cost increase	No	The staging has been designed to utilize the area designated for the proposed multi-use path during the interim traffic conditions, and the section cannot be reduced without sacrificing lane widths (already proposed to be 11 ft) or offsets from the proposed traffic barriers. The cost of redesign would negate any savings and the redesign work would delay the project schedule by 4 months.

B-5	Omit deck drain system on bridge	\$101,245	No	It is no longer acceptable to allow runoff to discharge directly into a stream or river. The deck drain system is an environmental commitment on this project.
W-3	In Phase II, use soil nail walls in lieu of tie-back walls for Wall Nos. 1, 2, 6 and 8	\$184,976	Yes	The walls have not been designed, so this change will not delay the project schedule. Soil nail walls will be used unless prohibited as a result of the wall foundation investigation.
W-5	In Phase II, build the tie-back portions of Wall Nos. 2 and 8 as MSE walls	\$74,889	Yes	The walls have not been designed, so this change will not delay the project schedule. MSE walls will be used unless prohibited as a result of the wall foundation investigation.
W-6	Delete the concrete traffic barrier in front of the MSE walls	\$109,859	No	All cut walls will be either soil nail or tie-back walls. The AASHTO Roadside Design Guide requires 20-22 feet of clear zone for a 45 mph roadway with ADT > 6000. Since the cut walls (Walls 1 & 4) are adjacent to a 16 foot shoulder (and within the clear zone), a side barrier with a slanted face is necessary to lessen the potential impact on a vehicle in case of a collision.
W-7	In Phase I, move Wall No. 6 closer to the roadway and align it with the guardrail on both ends	\$43,818	Yes	This will be done.
W-8	In Phase I, use a bin-type wall in lieu of MSE wall No. 2	\$47,518	Yes	A bin wall will be used unless prohibited as a result of the wall foundation investigation.
W-10	In Phase I, use a soil nail wall for Wall No. 4 in lieu of a MSE wall	<b>(-\$89,412)</b> Cost increase	Yes	The walls have not been designed, so this change will not delay the project schedule. Soil nail walls will be used unless prohibited as a result of the wall foundation investigation.

W-11	In Phase I, use a soil nail wall for Wall No. 1 in lieu of a MSE wall	<b>(-\$85,707) Cost increase</b>	Yes	The walls have not been designed, so this change will not delay the project schedule. Soil nail walls will be used unless prohibited as a result of the wall foundation investigation.
R-1	Use 11 ft inside lanes	Proposed = \$244,732  <b>Actual = (-\$122,317) Cost increase</b>	No	This route has modest truck percentages (4%), but has a high projected ADT (50,250 VPD in 2032), and is on bus routes for both MARTA and Cobb County Transit. AASHTO states that 12 foot lanes are desirable on higher speed principal arterials. The design consultant has provided calculations to show a reduced savings. The cost of redesign will negate the savings and increase the cost of this recommendation. Plan changes would delay the project by 6 months.
R-2	Minimize improvements to the roadway at the IBM north entrance	Design Suggestion	Yes	This will be done.
R-3	Leave the right-out exit at the existing IBM south entrance	Design Suggestion	Yes	This will be done.
R-4	For both phases, narrow the shoulders by reducing the grass strip; provide 5 ft from the edge of lane to the edge of the sidewalk or multi-use trail	Proposed = \$1,083,330  Actual = \$149,278	No	The Cumberland Community Improvement District desires to add streetscaping/landscaping in the future. Reducing the 6 foot strip would limit landscaping options. The design consultant has provided calculations to show a reduced savings. The cost of redesign will further decrease the cost savings of this recommendation. Plan changes would delay the project by 6 months.

S-1	In both phases, use asphalt in lieu of cast in place concrete for the multi-use trail	\$244,732	No	Maintenance of utilities within the corridor (GA Power transmission, cable, fiber-optic, etc.) will result in maintenance vehicles often driving over the multi-use path. A thin, 2 inch asphalt section as proposed by the VE Team would easily be damaged by heavy maintenance vehicles and would pose a danger to cyclists and pedestrians.
S-2	In both phases, eliminate the 5 ft sidewalk on the west side from Mount Paran Road to Chattahoochee NRA Road West	\$138,639	No	This is a highly developed corridor with apartments, office complexes and shopping on both sides of the roadway. Eliminating the sidewalk would require pedestrian traffic to either make multiple crossings of US 41 or walk along the grass shoulders. Either option is undesirable, especially for wheelchair traffic.
S-3	In both phases, use asphalt for the sidewalk in lieu of cast in place concrete	\$96,875	No	Maintenance of utilities within the corridor will result in maintenance vehicles often driving over the sidewalk. A thin, 2 inch asphalt section as proposed by the VE Team would easily be damaged by heavy maintenance vehicles and would pose a danger to cyclists and pedestrians.

CG-1	In both phases, use 24 in curb and gutter and narrow the median from 8 ft to 7 ft	Proposed = \$324,956  Actual = (-\$147,513) Cost increase	No	Using a 24 inch wide curb and gutter section would reduce the gutter capacity by 44% and would require additional catch basins. If the 30 inch curb and gutter is maintained, reducing the median width to 7 feet would result in a raised median section that is too narrow to construct a standard catch basin. Drop inlets and grates that extend into the travel way would be required. This is not recommended by AASHTO (page 322). The design consultant has provided calculations to show a reduced savings. The cost of redesign will negate the savings and increase the cost of this recommendation. Plan changes would delay the project by 6 months.
D-1	In both phases, use HDPE pipe in lieu of concrete pipe for longitudinal drainage not under the roadway pavement	\$40,649	Yes	This will be done.
D-2	In both phases, use HDPE pipe in lieu of concrete pipe for piping under the pavement	\$9,682	No	Plastic pipe is not allowed by GDOT's pipe material chart under traffic bearing sections.

The Office of Engineering Services concurs with the Project Manager's responses.

Approved:  Date: 9/28/09  
Gerald M. Ross, PE, Chief Engineer

REW/LLM  
Attachments

- c: Genetha Rice Singleton  
Paul Liles/Bill Duvall/Bill Ingalsbe/Doug Franks  
Bobby Hilliard/Stanley Hill/Tim Matthews  
Ben Buchan/Darrell Richardson/Albert Welch/Marcela Coll  
Larry Bowman  
Mickey McGee/Dale Ferris  
Nabil Raad  
Lisa Myers/ Matt Sanders/ David Zoeckler

DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA

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INTERDEPARTMENT CORRESPONDENCE

FILE BHFST-0001-05(024), Cobb/ Fulton County OFFICE Program Delivery  
SR3/ US 41 Phase 1  
From Northgate Drive to Paces Mill Road  
P.I. No. 720125 DATE September 17, 2009

FROM Bobby K. Hilliard, PE, State Program Delivery Engineer *Bobby Hilliard*  
TO Ronald E. Wishon, Project Review Engineer  
SUBJECT **Value Engineering Study Report Response**

The proposed project will widen SR3/ US41 to a 6-lane urban facility with a 20-ft raised median, a 12-ft multi-use path on the east side of SR3/ US41, and a 5-ft sidewalk on the west side of SR3/ US41. The project will also replace the existing bridge over the Chattahoochee River. The existing bridge is in need of replacement due to low sufficiency rating of 47, age of the bridge (originally constructed in 1935), and insufficient width to carry projected traffic volumes.

Cobb County and Cumberland CID have requested this project be split into two Phases to capture stimulus funds for Phase 1, the bridge replacement over the Chattahoochee River and to program a new project for Phase 2, the widening of SR3/ US41 from Mt. Paran Road to Northgate Drive. Both Phases will be covered under a single environmental document (Categorical Exclusion) and VE Study for P.I. 720125.

This office has received and reviewed the recommendations of the Value Engineering Study Workshop Report dated August 18, 2009. Attached are our responses to the recommendations:

If there are any questions please contact Tim W. Matthews, P.E. of this Office at (404) 631-1568.

BKH:SH:TWM

Attachments

Cc: Director of Preconstruction  
Attn: Genetha Rice-Singleton, Assistant Director of Preconstruction  
Lisa Myers/Matt Sanders- Engineering Services  
Brad Hale - Project Manager, Moreland Altobelli Associates, Inc.

# MorelandAltobelliAssociates,Inc

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Vice President

September 18, 2009

Mr. Tim Matthews  
Georgia Department of Transportation  
Office of Program Delivery – 25<sup>th</sup> Floor  
600 West Peachtree Street NW  
Atlanta, GA 30308

Re: Response to Value Engineering Recommendations  
US 41 over the Chattahoochee River  
BHFST-0001-05(024), Cobb & Fulton Counties  
P.I. No. 720125

Dear Mr. Matthews:

Outlined below are responses to the recommendations included in the Value Engineering (VE) report for the above referenced project.

Implementation of alternatives B-1, B-3, R-1, R-4, and/or CG-1 would delay the project schedule for phase 1 by a minimum of 6 months and would require significant re-design cost. An estimated cost for re-design is included in each response below. At this point, preliminary plans are complete, a PFPR has been held, and right-of-way plans have been submitted for review for phase 1 (Northgate Drive to Paces Mill Rd, incl. the bridge over the Chattahoochee River). Construction for this phase of the project is currently scheduled for May 2010 (FY 2010).

## Alternative B-1

Description: Respace the beams for the river bridge to use fewer beams and use 72 in bulb-T beams in lieu of 65 in bulb-T beams.

Cost savings: \$249,041 (MA estimated cost savings: \$9,639 CST - \$96,000 DES = -\$86,361)

Response: By our calculations, the cost savings in using 14 - 72 inch bulb-T (BT) beams versus the 18 - 65 in BT beams options would be only \$9,639 (see attached). Items that affected this estimate include:

1. A beam analysis of the VE proposed 8-1 1/2" beam spacing was run and final concrete strength of 10K is required.
2. The weights of the Edge beams, Endwalls, and Diaphragms were added.
3. A 10% premium (per precaster) increase in the unit cost of the BT 72 beams was added since they will require concrete release strength of higher than 8000 psi.
4. The additional costs of longitudinal and transverse bar were added.

Items that were not quantified:

- The cost of heavier cranes required for placement of the BT 72
- Since the rebar quantity is 30% with the 72 in BT option, the labor intensive placement of rebar was not added.
- Additional camber was not calculated due to larger beam spacing and therefore the additional coping costs were not included.

Re-design of this bridge would delay the schedule by 4 months and would require an additional \$96,000 in design fees. Attached is a detailed breakdown of manhours for the estimated add'l design work.

Final Disposition: REJECT



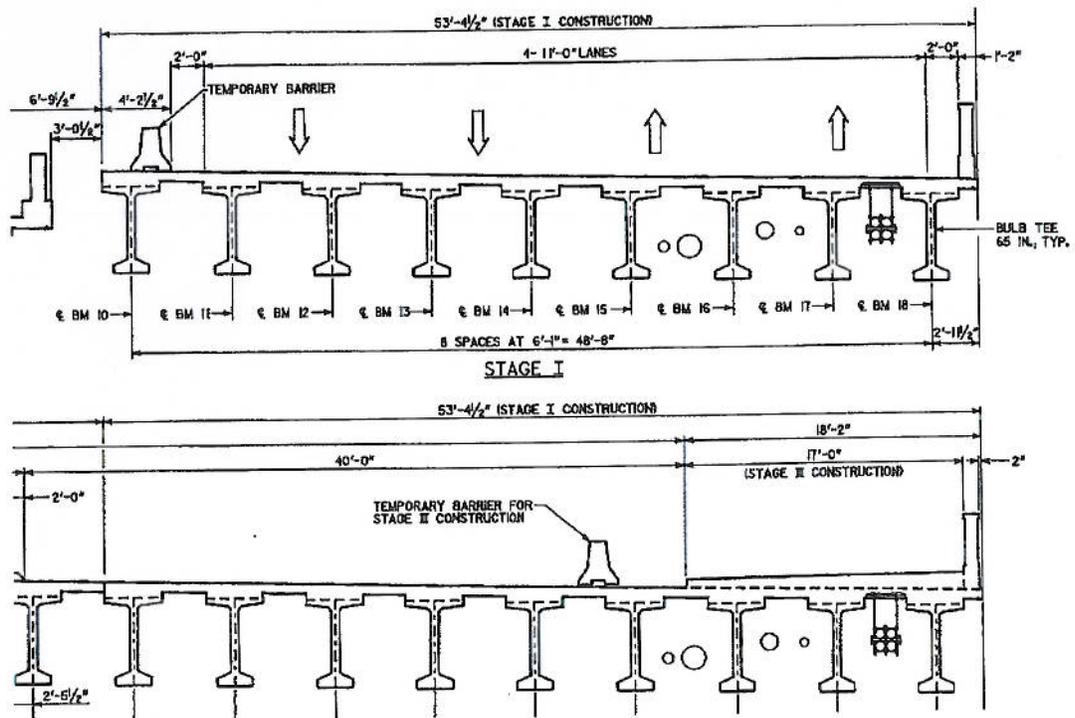


**Alternative B-2**

Description: Use black steel reinforcing bars in lieu of epoxy coated steel reinforcing bars for the superstructure.  
 Cost savings: \$40,635  
 Response: Agree. MA has already made this revision to the bridge design.  
 Final Disposition: **ACCEPT**

**Alternative B-3**

Description: Reduce the width of the stamped concrete from 5 ft to 3 ft and reduce the bridge width 2 ft.  
 Cost savings: \$51,141 (MA estimated cost savings: \$51,141 CST - \$96,000 DES = -\$44,859)  
 Response: Maintenance of traffic during construction of this bridge will be accomplished by building the new structure in two phases. The current design provides four, eleven-foot lanes on a segment of the new bridge during the final stage of construction (see below). The staging has been designed to utilize the area under the proposed multi-use path for the interim traffic condition, and the section cannot be reduced without sacrificing either the lane widths or the offsets from the proposed traffic barriers. Reducing the overall bridge width is therefore not recommended.



Re-design of this bridge would delay the schedule by 4 months and would require an additional \$96,000 in design fees. Attached is a detailed breakdown of manhours for the estimated add'l design work.

Final Disposition: **REJECT**

**Alternative B-5**

Description: Delete the bridge deck drain system.  
 Cost savings: \$101,245  
 Response: It is no longer a standard practice to allow bridge runoff to directly discharge into a stream or river. The deck



*drain system is an environmental commitment on this project.*

Final Disposition: **REJECT**

**Alternative W-3**

Description: In Phase II, use soil nail walls in lieu of tie-back walls for Walls No. 1, 2, 6 and 8.

Cost savings: \$184,976

Response: *Agree. The walls have not been designed yet and this will not delay our schedule. The wall types shown on the preliminary cost estimate were for estimating purposes only. Soil nail design will be used unless prohibited as a result of the wall foundation investigation.*

Final Disposition: **ACCEPT**

**Alternative W-5**

Description: In Phase II, build Wall Nos. 2 and 9 as mechanically stabilized embankment walls in lieu of tie-back walls.

Cost savings: \$74,889

Response: *Agree. The walls have not been designed yet and this will not delay our schedule. The wall types shown on the preliminary cost estimate were for estimating purposes only. MSE design will be used unless prohibited as a result of the wall foundation investigation.*

Final Disposition: **ACCEPT**

**Alternative W-6**

Description: Remove concrete barrier from in front of mechanically stabilized embankment walls in cut areas.

Cost savings: \$109,859

Response: *All cut walls will be either soil nail or tie-back type walls. The AASHTO Roadside Design Guide requires 20–22 feet of clear zone for a 45 mph roadway with ADT over 6000. Since the cut walls (walls 1 and 4) are adjacent to a 16-foot shoulder (and within the AASHTO required clear-zone), a side barrier with a slanted face is necessary lessen the potential impact on a vehicle in the case of a collision.*

Final Disposition: **REJECT**

**Alternative W-7**

Description: In Phase I, move Wall No. 6 closer to the roadway to line up with the guard rail at each end of the wall.

Cost savings: \$43,818

Response: *Agree.*

Final Disposition: **ACCEPT**

**Alternative W-8**

Description: In Phase I, use a bin wall for Wall No. 2 in lieu of a mechanically stabilized embankment wall.

Cost savings: \$47,518

Response: *Agree. The bin wall is basically another type of mechanically stabilized embankment wall. We will investigate the bin wall option during design of this wall in the final design process. A soil (wall foundation) investigation will need to be done to determine if this option is feasible.*

Final Disposition: **ACCEPT**

**Alternative W-10**

Description: In Phase I, use a soil nail wall in lieu of a mechanically stabilized embankment wall for Wall No. 4.

Cost savings: (\$89,412)

Response: *Agree. The walls have not been designed yet and this will not delay our schedule. The wall types shown on the preliminary cost estimate were for estimating purposes only. Soil nail design will be used unless prohibited as a result of the wall foundation investigation.*

Final Disposition: **ACCEPT**



**Alternative W-11**

Description: In Phase I, use a soil nail wall in lieu of a mechanically stabilized earth wall for Wall No. 1.

Cost savings: (\$85,707)

Response: Agree. The walls have not been designed yet and this will not delay our schedule. The wall types shown on the preliminary cost estimate were for estimating purposes only. Soil nail design will be used unless prohibited as a result of the wall foundation investigation.

Final Disposition: **ACCEPT**

**Alternative R-1**

Description: Use 11-ft-wide lanes in lieu of 12-ft-wide lanes for the inside lanes of the road.

Cost savings: \$416,335 (MA estimated cost savings: \$207,324 CST - \$329,641 DES = -\$122,317)

Response: The 2004 AASHTO Policy on Geometric Design of Highways and Streets (Green Book) states that 12-foot lanes are desirable on higher speed principal arterials (page 472). Table 6.3 in GDOT's Design Policy Manual requires 12-foot lanes for 45-mph Urban Roadways.

*This route experiences modest truck volumes (4%), but has a high projected ADT (50,250 vehicles per day by the year 2032) and is on bus routes for both MARTA and Cobb County Transit.*

*Considering the traffic volumes, bus traffic, and the AASHTO & GDOT criteria above, 12-foot lanes are appropriate for this corridor.*

*Changing the typical section would also result in the following:*

- 1) **Schedule delay.** The plan changes associated with this recommendation would delay the project schedule for phase 1 (PI 720125) by at least 6 months. Additional work would include revision to all roadway plan (with the exception of the roadway profiles) for a total of 233 drawings, re-design of the bridge and all retaining walls, a revised concept report, an additional PIOH (potentially), an additional preliminary field plan review (PFPR), an environmental re-evaluation, and a general revision to the approved right-of-way plans. Phase 1 of the project is currently scheduled to be let in FY 2010 (May 2010). This schedule cannot be met if the above additional work is required.
- 2) **Significant re-design cost.** The additional P&E outlined above would require approximately \$329,641 in additional design fees.

*The cost savings estimated by the VE Team appear to be high according to our calculations. The following is a list of issues with the VE estimate:*

- **Bridge Savings:** Assuming alternative B-3 is rejected as requested above, there will be no savings on the bridge since the extra width is necessary for staging.
- **Phase 1 R/W:** The VE estimate assumed cost savings across the NPS property and the Paces Battle Apartment Complex. The land needed from the NPS will be transferred through a highway easement deed and is non-compensatory. The required R/W for Paces Battle (Parcel 5A) is needed for reconstruction of the culvert end and would not change due to shifting the shoulder break by one-foot. This accounts for nearly 50% of the property savings assumed by the VE team with phase 1.
- **Phase 2 R/W:** The VE estimate assumed two feet of R/W savings for the entire length of Phase 2 (Mount Paran Rd to Northgate Drive). The work proposed with phase 2 is either within existing right-of-way or is adjacent to property already owned by the state (parcel 1) for approx. 75% of the corridor, and would therefore have minimal R/W savings due to a reduced typical section.

*After correcting the above items, the cost savings with this alternative would be reduced to \$207,324 (see attached cost estimate worksheet). The cost to re-design and the delay to the schedule for phase 1 outweigh the benefit for this alternative.*

Final Disposition: **REJECT**





**Alternative R-2**

Description: Minimize the improvements to roadway leading to IBM North Entrance.

Cost savings: N/A

Response: *We agree. We will minimize reconstruction on the IBM North Entrance Drive during the preliminary design process for phase 2.*

Final Disposition: **ACCEPT**

**Alternative R-3**

Description: Leave right out only at the existing IBM South driveway.

Cost savings: N/A

Response: *We agree that maintaining egress at this location would benefit the IBM property and would not have a negative impact on either traffic flow or safety on the mainline.*

Final Disposition: **ACCEPT**

**Alternative R-4**

Description: Narrow shoulders by narrowing grass strips; provide 5 ft clear from edge of lane to the sidewalk.

Cost savings: \$1,083,330 (MA estimated cost savings: \$478,919 CST – \$329,641 DES = \$149,278)

Response: *The GDOT Design Policy Manual (section 6.6) recommends a 6-foot dimension from the back of curb to the proposed sidewalk. Reducing the shoulders would require the sidewalks to wrap around the valley gutters in order to meet the minimum 2% cross slope required by ADA. (See attached GA STD Detail A2). The resulting 'jagged' sidewalk alignment is less desirable aesthetically and for pedestrian movement (joggers, etc.). Shifting the sidewalks closer to the roadway is also less desirable for pedestrian safety.*

*The Cumberland Community Improvement District (CCID) also desires to add streetscaping/landscaping along this route in the future. Reducing the 6-foot strip that is currently proposed between the curb and the sidewalk to 2'-6" would limit landscaping options.*

*Changing the typical section would result in the following:*

- 1) **Schedule delay.** *The plan changes associated with this recommendation would delay the project schedule for phase 1 (PI 720125) by at least 6 months. Additional work would include revision to all roadway plans, with the exception of the roadway profiles, for a total of 233 drawings, re-design of the bridge and all retaining walls, a revised concept report, an additional PIOH, an additional preliminary field plan review (PFPR), an environmental re-evaluation, and a general revision to the right-of-way plans. Phase 1 of the project is currently scheduled to be let in FY 2010 (May 2010). This schedule cannot be met if the above additional work is required.*
- 2) **Significant re-design cost.** *The additional P&E outlined above would require approximately \$329,641 in additional design fees.*

*The cost savings estimated by the VE Team appear to be high according to our calculations. The following is a list of issues with the VE estimate:*

- **Bridge Savings:** *Assuming alternative B-3 is rejected as requested above, there will be no savings on the bridge since the extra width is necessary for staging.*
- **Phase 1 R/W:** *The VE estimate assumed cost savings across the NPS property and the Paces Battle Apartment Complex. The land needed from the NPS will be transferred through a highway easement deed and is non-compensatory. The required R/W for Paces Battle (Parcel 5A) is needed for reconstruction of the culvert end and would not change due to shifting the shoulder break. This accounts for nearly 50% of the property savings assumed by the VE team with phase 1.*
- **Phase 2 R/W:** *The VE estimate assumed seven feet of R/W savings for the entire length of Phase 2 (Mount Paran Rd to Northgate Drive). The work proposed with phase 2 is either within existing right-of-way or is*





adjacent to property already owned by the state (parcel 1) for approx. 75% of the corridor, and would therefore have minimal R/W savings due to a reduced typical section.  
After correcting the above items, the cost savings with this alternative would be reduced to \$478,919 (see attached cost estimate worksheet).

Final Disposition: **REJECT**

**Alternative S-1**

Description: Use asphalt concrete in lieu of cast-in-place concrete for the multi-use trail.  
Cost savings: \$244,732  
Response: Maintenance of utilities with the corridor (including Ga Power transmission lines, cable, fiber-optic, etc.) will result in maintenance vehicles often driving over the multi-use path. A thin, 2-inch, asphalt pavement section (as proposed by the VE team) would be frequently damaged by maintenance vehicles and would pose a danger to cyclists and pedestrians while awaiting repair.

Final Disposition: **REJECT**

**Alternative S-2**

Description: Eliminate the 5 ft sidewalk.  
Cost savings: \$138,639  
Response: This is a highly developed corridor with apartments, office complexes, and shopping on both sides of the roadway. Eliminating the five-foot sidewalk would require pedestrian traffic to either make multiple crossings over US 41 or walk along grass shoulders for trips between sites on the opposite side of the road from the proposed multi-use path. Either option is undesirable, especially for wheelchair traffic. This also violates current GDOT policy (Design Policy Manual – section 6.6) requiring sidewalks adjacent to all roadway sections with curb & gutter.

Final Disposition: **REJECT**

**Alternative S-3**

Description: Use asphalt concrete in lieu of cast-in-place concrete for the sidewalk.  
Cost savings: \$96,875  
Response: This would be undesirable for the same reasons noted under alternative S-1 above.

Final Disposition: **REJECT**

**Alternative CG-1**

Description: Use a 24-in-wide curb and gutter section in lieu of a 30-in-wide curb and gutter section and narrow the median from 8-ft-wide to 7-ft-wide thus narrowing the typical section by 2 ft.  
Cost savings: \$324,956 (MA estimated cost savings: \$79,968 CST – \$227,481 DES = -\$147,513)  
Response: A 24-inch wide curb & gutter section would provide a 1'-6" offset from the curb face to the edge of travel-way. This is allowable by the AASHTO green book, however, a 2-foot offset is preferred (green book page 322). A 24-inch wide gutter section would reduce the gutter capacity by 44% and would require additional catch basins to avoid undesirable gutter spread into the travel way.

*If the 30-inch curb & gutter is maintained, reducing the median width to 7-feet (measured between opposing edges of travel lanes) would result in a raised median section that is too narrow to construct a standard catch basin. The median basins would need to be replaced with drop inlets and grates extending into the travel way, which is recommended against by AASHTO (green book p.322).*

*The cost savings estimated by the VE Team appear to be high according to our calculations. The following is a list of issues with the VE estimate:*



- **Catch Basins:** As noted above, we are estimating that the VE alternative would require approx. 40% more catch basins than currently designed.
- **Phase 1 R/W:** The VE estimate assumed cost savings across the NPS property and the Paces Battle Apartment Complex. The land needed from the NPS will be transferred through a highway easement deed and is non-compensatory. The required R/W for Paces Battle (Parcel 5A) is needed for reconstruction of the culvert end and would not change due to shifting the shoulder break by one-foot. This accounts for nearly 50% of the property savings assumed by the VE team with phase 1.
- **Phase 2 R/W:** The VE estimate assumed two feet of R/W savings for the entire length of Phase 2 (Mount Paran Rd to Northgate Drive). The work proposed with phase 2 is either within existing right-of-way or is adjacent to property already owned by the state (parcel 1) for approx. 75% of the corridor, and would therefore have minimal R/W savings due to a reduced typical section.

After correcting the above items, the cost savings with this alternative would be reduced to \$79,968 (see attached cost estimate worksheet).

As with alternative R-1, changing the typical section would delay the schedule for Phase 1 by at least 6 months and would incur additional design fees of up to \$227,481. The delay to schedule and additional design fee outweigh the benefit for this alternative.

Final Disposition: **REJECT**

**Alternative D-1**

Description: Use HDPE pipe in lieu of concrete pipe for longitudinal drainage lines not under the pavement.

Cost savings: \$40,649

Response: Plastic pipe is allowed by GDOT's pipe materials chart for longitudinal, non-interstate and non-travel bearing storm drain pipes. This can be specified on the plans, however, the storm drain pipe pay item would remain the same.

Final Disposition: **ACCEPT**

**Alternative D-2**

Description: Use HDPE pipe in lieu of concrete pipe for longitudinal drainage lines under the pavement.

Cost savings: \$9,682

Response: Plastic pipe is not allowed by GDOT's pipe material chart under travel bearing sections.

Final Disposition: **REJECT**

If there are any questions concerning this information, or if any additional information is needed, please do not hesitate to contact me at 770-263-5945.

Thank you,

Brad Hale, P.E.  
Project Manager

cc: File 03500  
TDM, B Gratton, C. Kingsbury, B Hale (MAAA)  
David Jackson (Cobb DOT)  
Malaika Rivers (CCID)



# ALTERNATIVE B-1 CALCULATIONS

VE		BEAMS		Beam Premium 10¢/ft <sup>2</sup> per Unit Cost	
Span No.	Bin Type	Span Length	BRG To BRG	No. Bms	Total Cost
1	BT 72	130	128.83	14	\$ 391,857.89
2	BT 72	130	128.83	14	\$ 217.18
3	BT 72	130	128.83	14	\$ 217.18
4	BT 72	140	128.83	14	\$ 217.18
					\$ 1,073,470.33

Span	Slab	Span Length	Bridge Width	Total CY	Total Cost
1	7.875	130	128.83	782.56	\$ 283,428.21
2	7.875	130	128.83	782.56	\$ 283,428.21
3	7.875	130	128.83	782.56	\$ 283,428.21
4	7.875	140	128.83	782.56	\$ 283,428.21
					\$ 1,073,470.33

EDGE BEAM		PIERS		Total Cost	
Piers	WT Edge beam	No. Piers	No. spacings	Total CY	Total Cost
2	BT 63-BT 72 (lbs)	3	15	120.83	\$ 62,218.33
3	BT 72	3	15	120.83	\$ 782.39
4	BT 72	3	15	120.83	\$ 782.39
					\$ 270,946.00

WT End wall BT		Total CY		Total Cost	
End Bmt	No. End Bmts	No. Spacing	Total CY	Total Cost	Total Cost
1	12083	13	38.62	\$ 782.56	\$ 29,800.32
2	12083	13	38.62	\$ 782.56	\$ 29,800.32
					\$ 59,200.64

DIAPHRAGM		Total CY		Total Cost	
Span	WT Diaphragm BT	No. Spans	No. spacings	Total CY	Total Cost
1	4914	13	15.77	782.56	\$ 12,028.11
2	4914	13	15.77	782.56	\$ 12,028.11
3	4914	13	15.77	782.56	\$ 12,028.11
4	4914	13	15.77	782.56	\$ 12,028.11
					\$ 48,112.45

MAIN REINFORCEMENT		Total Lbs		Total Cost	
Span	Main Bar	Spacing	Rebar length	Total Lbs	Total Cost
1	#5	6.875	109.33	5808.21	\$ 0.82
2	#5	6.875	109.33	5808.21	\$ 0.82
3	#5	6.875	109.33	5808.21	\$ 0.82
4	#5	6.875	109.33	5808.21	\$ 0.82
					\$ 383,969.59

DIAPHRAGM REINFORCEMENT		Total Lbs		Total Cost	
Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	11	130	1241.12	\$ 0.82
2	#4	11	130	1241.12	\$ 0.82
3	#4	11	130	1241.12	\$ 0.82
4	#4	11	140	1573.39	\$ 0.82
					\$ 49,877.50

Notes: Additional rebar and labor intensive placement of almost 30% the amount of rebar. The beams will need to be designed with at least 8000-0200 psi all spiral. There are some premium without 10% more in unit price. May need heavier canvas for placement of beams. i.e. More expensive bidding price. Chansons is less than 14'-6" which is undesirable. 4 beams less to be placed. 20 Less Beading 1066 to be placed.

TOTALS		TOTALS		TOTALS	
Span	Bin Type	Span Length	BRG To BRG	No. Bms	Total Cost
1	BT 72	130	128.83	14	\$ 391,857.89
2	BT 72	130	128.83	14	\$ 217.18
3	BT 72	130	128.83	14	\$ 217.18
4	BT 72	140	128.83	14	\$ 217.18
					\$ 1,073,470.33

TOTALS		TOTALS		TOTALS	
Span	Slab	Span Length	Bridge Width	Total CY	Total Cost
1	7.875	130	128.83	782.56	\$ 283,428.21
2	7.875	130	128.83	782.56	\$ 283,428.21
3	7.875	130	128.83	782.56	\$ 283,428.21
4	7.875	140	128.83	782.56	\$ 283,428.21
					\$ 1,073,470.33

TOTALS		TOTALS		TOTALS	
Piers	WT Edge beam	No. Piers	No. spacings	Total CY	Total Cost
2	BT 63-BT 72 (lbs)	3	15	120.83	\$ 62,218.33
3	BT 72	3	15	120.83	\$ 782.39
4	BT 72	3	15	120.83	\$ 782.39
					\$ 270,946.00

TOTALS		TOTALS		TOTALS	
End Bmt	No. End Bmts	No. Spacing	Total CY	Total Cost	Total Cost
1	12083	13	38.62	\$ 782.56	\$ 29,800.32
2	12083	13	38.62	\$ 782.56	\$ 29,800.32
					\$ 59,200.64

TOTALS		TOTALS		TOTALS	
Span	WT Diaphragm BT	No. Spans	No. spacings	Total CY	Total Cost
1	4914	13	15.77	782.56	\$ 12,028.11
2	4914	13	15.77	782.56	\$ 12,028.11
3	4914	13	15.77	782.56	\$ 12,028.11
4	4914	13	15.77	782.56	\$ 12,028.11
					\$ 48,112.45

TOTALS		TOTALS		TOTALS	
Span	Main Bar	Spacing	Rebar length	Total Lbs	Total Cost
1	#5	6.875	109.33	5808.21	\$ 0.82
2	#5	6.875	109.33	5808.21	\$ 0.82
3	#5	6.875	109.33	5808.21	\$ 0.82
4	#5	6.875	109.33	5808.21	\$ 0.82
					\$ 383,969.59

TOTALS		TOTALS		TOTALS	
Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	11	130	1241.12	\$ 0.82
2	#4	11	130	1241.12	\$ 0.82
3	#4	11	130	1241.12	\$ 0.82
4	#4	11	140	1573.39	\$ 0.82
					\$ 49,877.50

Notes: Additional rebar and labor intensive placement of almost 30% the amount of rebar. The beams will need to be designed with at least 8000-0200 psi all spiral. There are some premium without 10% more in unit price. May need heavier canvas for placement of beams. i.e. More expensive bidding price. Chansons is less than 14'-6" which is undesirable. 4 beams less to be placed. 20 Less Beading 1066 to be placed.

TOTALS		TOTALS		TOTALS	
Span	Bin Type	Span Length	BRG To BRG	No. Bms	Total Cost
1	BT 72	130	128.83	14	\$ 391,857.89
2	BT 72	130	128.83	14	\$ 217.18
3	BT 72	130	128.83	14	\$ 217.18
4	BT 72	140	128.83	14	\$ 217.18
					\$ 1,073,470.33

# ALTERNATIVE B-1 CALCULATIONS (CONT.)

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span No.	Span Length	No. Bents	Total Length	SLF	Total Cost
1	180.00	18	2880.00	\$ 104.98	\$ 461,440.86
2	130.00	18	2340.00	\$ 191.39	\$ 448,221.78
3	130.00	18	2340.00	\$ 191.39	\$ 448,221.78
4	140.00	18	2520.00	\$ 190.89	\$ 480,642.42
				\$ 1,183.65	\$ 1,838,526.84

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Sub1	Span Length	Total CY	SLF	Total Cost
1	7.125	180	324.00	\$ 782.56	\$ 253,860.96
2	7.125	130	216.00	\$ 782.56	\$ 168,952.16
3	7.125	130	216.00	\$ 782.56	\$ 168,952.16
4	7.125	140	252.00	\$ 782.56	\$ 197,409.12
				\$ 3,184.28	\$ 971,655.05

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

WT Reinforced BT	No. Splices	No. Piers	Total CY	SLF	Total Cost
65-BT-72 (B3)	2	3	100.79	\$ 782.56	\$ 78,859.27
4002	2	3	100.79	\$ 782.56	\$ 78,859.27
4002	2	3	100.79	\$ 782.56	\$ 78,859.27
				\$ 2,317.71	\$ 231,777.81

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

WT Reinforced BT	No. Splices	No. Piers	Total CY	SLF	Total Cost
65-BT-72 (B3)	1	1	34.41	\$ 782.56	\$ 26,940.79
8188	1	1	34.41	\$ 782.56	\$ 26,940.79
				\$ 52,481.45	\$ 52,481.45

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

WT Reinforced BT	No. Splices	Total CY	SLF	Total Cost
65-BT-72 (B3)	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
			\$ 3,969.57	\$ 39,695.67

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

WT Reinforced BT	No. Splices	Total CY	SLF	Total Cost
65-BT-72 (B3)	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
3075	1	12.91	\$ 782.56	\$ 9,942.87
			\$ 3,969.57	\$ 39,695.67

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	Steady	Rubber Length	Span Length	YLB	Lbs/LF	Total Lbs	Total Cost
1	#6	7.5	100.33	130	200.0	1,453	182,890	\$ 21,146.82
2	#6	7.5	100.33	130	200.0	1,453	182,890	\$ 21,146.82
3	#6	7.5	100.33	140	224.0	1,453	182,890	\$ 21,146.82
4	#6	7.5	100.33	140	224.0	1,453	182,890	\$ 21,146.82
							61,055.57	\$ 7,328.16

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
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2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$ 428,613.60

Conc  
 Ratio BT 039793  
 107.26%  
 \$ 105.45

Span	Main Bar	No. of Bars	Span Length	Total Lbs	Total Cost
1	#4	6	130	887.58	\$ 106,509.60
2	#4	6	130	887.58	\$ 106,509.60
3	#4	6	130	887.58	\$ 106,509.60
4	#4	6	140	959.04	\$ 115,084.80
				3,531.24	\$

Weight Comparison

MA

By: QSJ Date: 8/25/2009

End Wall and Edge Beam Weight Calculation

Concrete unit weight = 150 pcf  
 Paving rest area = 80 in<sup>2</sup>  
 Bridge skew angle = 90.0000 deg  
 Beam spacing = 6.0833 ft

Beam spacing = 8.0833 ft

1. Interior End Wall, BT 65

Int beam height = 65 in  
 Int beam cross section area = 766 in<sup>2</sup>  
 Coping thickness = 4 in  
 Bearing thickness = 3 in  
 Distance from inside face of endwall to end of beam = 7 in  
 Int end wall thickness = 1.5 ft  
 Height of the endwall = 71.5 in  
 Length of the endwall = 6.083 ft  
 Weight of the end wall = 8.198 kips

1. Interior End Wall, BT 72

Int beam height = 72 in  
 Int beam cross section area = 767 in<sup>2</sup>  
 Coping thickness = 4 in  
 Bearing thickness = 3 in  
 Distance from inside face of endwall to end of beam = 7 in  
 Int end wall thickness = 1.5 ft  
 Height of the endwall = 78.5 in  
 Length of the endwall = 8.083 ft  
 Weight of the end wall = 12.405 kips

2. Diaphragm, BT 65

Int beam height = 65 in  
 Bot flange thickness = 8 in  
 Int beam area for diaphragm = 473 in<sup>2</sup>  
 Diaphragm thickness = 10 in  
 Height of the diaphragm = 55 in  
 Length of the diaphragm = 6.083 ft  
 Weight of the diaphragm = 3.075 kip

2. Diaphragm, BT 72

Int beam height = 72 in  
 Bot flange thickness = 6 in  
 Int beam area for diaphragm = 527 in<sup>2</sup>  
 Diaphragm thickness = 10 in  
 Height of the diaphragm = 64 in  
 Length of the diaphragm = 8.083 ft  
 Weight of the diaphragm = 4.931 kip

3. Edge Beam Weight, BT 65

Int beam height = 65 in  
 Int beam area for edge beam = 486 in<sup>2</sup>  
 Coping thickness = 4 in  
 Distance from inside face of edge beam to end of beam = 7 in  
 Edge beam thickness = 1 ft  
 Distance from bottom of edge beam to bottom of beam = 12.5 in  
 Height of the edge beam = 56.5 in  
 Length of the edge beam = 6.083 ft  
 Weight of the edge beam = 4.002 kip

3. Edge Beam Weight, BT 72

Int beam height = 72 in  
 Int beam area for edge beam = 539 in<sup>2</sup>  
 Coping thickness = 4 in  
 Distance from inside face of edge beam to end of beam = 7 in  
 Edge beam thickness = 1 ft  
 Distance from bottom of edge beam to bottom of beam = 10.5 in  
 Height of the edge beam = 65.5 in  
 Length of the edge beam = 8.083 ft  
 Weight of the edge beam = 6.291 kip

**US 41 Bridge Over the Chattahoochee River  
 GDOT P.I. No. 720125 and 0009410**

**Estimated Re-Design Costs  
 for VE Alternatives B-1 and/or B-3**

18-Sep-09

**MORELAND ALTOBELLI ASSOCIATES, INC.**

<b>1. Direct Labor (Specify)</b>				
<b>Personnel</b>	<b>Est Hours</b>	<b>Rate/Hr</b>	<b>Est. Cost (\$)</b>	<b>Totals</b>
<b>ENGINEERING</b>				
Principal		\$150.00		
Sr. Roadway Engineer		\$140.00		
Roadway Engineer		\$98.00		
Traffic Engineer		\$98.00		
Sr. Structural Engineer	48	\$140.00	\$6,720.00	
Structural Engineer	480	\$98.00	\$47,040.00	
Sr. Geotech Eng.		\$120.00		
Geotech Eng.		\$98.00		
<b>Subtotal</b>	<b>528</b>			<b>\$53,760.00</b>
<b>ENVIRONMENTAL</b>				
Sr. Environmental Planner		\$140.00		
Environmental Planner		\$75.00		
Environmental Technician		\$66.00		
<b>Subtotal</b>				
<b>SURVEYING</b>				
Survey Proj. Manager (RLS)		\$120.00		
Survey Technician		\$66.00		
Survey Crew (2 Man)		\$100.00		
<b>Subtotal</b>				
<b>SUPPORT STAFF</b>				
Design Technician	640	\$66.00	\$42,240.00	
Clerical		\$50.00		
Courier		\$50.00		
<b>Subtotal</b>	<b>640</b>			<b>\$42,240.00</b>
<b>Total Direct Labor</b>				<b>\$96,000.00</b>
<b>2. Other Direct Costs (Specify)</b>				
Plotting/Reproduction (PFPR)				
Travel/Mileage				
<b>Total Other Direct Costs</b>				
<b>3. Maximum Amount of Contract Proposal (1) + (2)</b>				<b>\$96,000.00</b>

US 41 Bridge Over the Chattahoochee River  
 GDOT P.L. No. 720125 and 0009410  
 18-Sep-09

MAN-HOUR ESTIMATE - VE ALT's B-1 and B-3												
Task Description	ENGINEERING						ENVIRONMENTAL			SUPPORT STAFF		
	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
PLANNING & ENVIRONMENTAL ENG.												
CE Re-evaluation												
Concept Report Revision												
Public Involvement												
Public Information Open House												
Response Letters												
Special Graphics												

TOTALS

PRELIMINARY ENGINEERING	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
Project Management												
Project Management / Administration												
Road Design												
Typical Sections												
Horizontal Geometry												
Roadway Profiles (Sidestreets)												
Intersection Sight Distance Calc's												
Superelevation Calculations												
Cross Sections												
Driveway Profiles												
Staging Plans												
R/W and Constr. ESMT Limits												
Traffic Design												
Signing and Marking Plans (Prelim)												
Signalization Plans												
Drainage Design / Hydrology												
Roadway Drainage Design												
Drainage Profiles												
Erosion Control												
BMP Plans (Per Stage)												
Sediment Basins (Calcs & Plans)												
Structural Design												
Retaining Wall Envelopes												
Preliminary Ret. Wall Design (Soil Nail)												
Bridge Design					48	480				640		
Preliminary Plan Preparation												
Cover, Index, General Notes												
Design Exception Reports												
Prelim. Cost Estimate												
Plan Reviews												
Quality Assurance Review(s)												
PFPR (Incl. Prep)												
Address Review Comments												
TOTALS					48	480				640		

R/W PLANS	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
R/W Plan Preparation												
CAICE R/W and ESMT Chains												
R/W and ESMT Tables												
Quality Assurance Review												
TOTALS												

GRAND TOTALS

48 480

640



Moreland Altobelli Associates, Inc.

	PAGE	1	OF	1
PROJECT	US41 Over The Chattahoochee River (Phase 1 and 2)	SHEET NO.	OF	
SUBJECT	Value Engineering Alternative R-1 Cost Savings	JOB NO.	3500	
	Calculations	MADE BY	VAJ	DATE 9/10/2009
		CHKD. BY	BMH	DATE 9/10/2009

**R-1**

**Phase 1 R/W Savings**

Parcel 9: Sta. 43+79 to 56+35 = 1256' x 1' = 1256 SF  
1256 sf x \$15/SF = \$18,975

Parcel 5A: No Savings - Culvert and wall work will remain in the same location.

Parcel 3,3A,4: No savings. NPS land to be donated.

Parcel 1A: 65+26 - 73+09 + 783' x 1' = 783 SF  
783 SF x \$15/SF = \$11,745

Parcel 2A: 67+52 - 71+58 = 406' x 1' = 406 sf  
406 SF x \$40/SF = \$16,240

**Net savings (R/W) = \$46,960**

**Condemnation Increase + Legal Cost (50%) = \$23,480**

**Market Appreciation (10%) = \$7,044**

**TOTAL R/W SAVINGS (PH 1) = \$77,484**

**Phase 2**

Parcel 2 IBM: 106 + (2913 - 2300) = 719' easement x 1' = 719 SF easement  
(Jamestown) 719 SF x \$5/SF = \$3,595  
R/W: 29+13 TO 39+30 = 1017' X 1' = 1017 SF R/W  
1017 SF x \$10/SF = \$10,170

Parcel 3 Agean Atl. Assoc.: 325 SF easement x \$5/SF = \$1,625 SF

Parcel 4 Trinity School: 39+30 to 43+75 = 445' x 1' = 445 SF of R/W  
445 SF x \$10/SF = \$4,450

**Net savings (R/W) = \$19,840**

**Standard GDOT Markup (148%) = \$29,363**

**TOTAL R/W SAVINGS (PH 2) = \$49,203**

# COST WORKSHEET



PROJECT:	<b>SR 3/US 41 FROM MOUNT PARAN ROAD TO PACES MILL ROAD</b>  <i>Fulton/Cobb Counties, Georgia</i>	ALTERNATIVE NO.  <b>R-1</b>  SHEET NO. <b>5 of 5</b>
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CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/UNIT	TOTAL	NO. OF UNITS	COST/UNIT	TOTAL
Phase I		<b>494 (OK)</b>					
Pavement Section	SY	<b>494</b>	52.80	26,083			
Earthwork, Striping, etc.	LS	LS	5,000.00	5,000			
Bridge Saved (see Alt. No. B-3)				<del>46,492</del>			
Subtotal				77,576	<b>31,083</b>		
Markup (10%)				7,758	<b>3,108</b>		
Right-of-way saved	SF	<del>5,042</del>	<del>11.65</del>	<del>58,739</del>			
Right-of-way markup 148%				86,935			
Right-of-way Phase I subtotal				<del>145,675</del>	<b>77,484</b>		
Total Phase I				<b>231,009</b>	<b>111,675</b>		
Phase II		<b>689 (OK)</b>					
Pavement Section	SY	<b>705</b>	52.80	37,224			
Earthwork, Drain, etc.	LS	1	5,000.00	5,000			
Subtotal				42,224			
Markup (10%)				4,222			
Right-of-way saved	SF	5,600	10.00	56,000			
Right-of-way markup 148% ✓				82,880			
Right-of-way Phase II subtotal				<del>138,880</del>	<b>49,203</b>		
Total Phase II				<del>185,226</del>	<b>95,649</b>		
Sub-total							
Mark-up at							
<b>TOTAL</b>				<del>416,335</del>			

**207,324**

**US 41 Bridge Over the Chattahoochee River  
 GDOT P.I. No. 720125 and 0009410**

**Estimated Re-Design Costs  
 for VE Alternatives R-1 and/or R-4**

18-Sep-09

**MORELAND ALTOBELLI ASSOCIATES, INC.**

<b>1. Direct Labor (Specify)</b>				
<b>Personnel</b>	<b>Est Hours</b>	<b>Rate/Hr</b>	<b>Est. Cost (\$)</b>	<b>Totals</b>
<b>ENGINEERING</b>				
Principal	6	\$150.00	\$900.00	
Sr. Roadway Engineer	183	\$140.00	\$25,620.00	
Roadway Engineer	1167	\$98.00	\$114,366.00	
Traffic Engineer	60	\$98.00	\$5,880.00	
Sr. Structural Engineer	114	\$140.00	\$15,960.00	
Structural Engineer	584	\$98.00	\$57,232.00	
Sr. Geotech Eng.		\$120.00		
Geotech Eng.		\$98.00		
<b>Subtotal</b>	<b>2108</b>			<b>\$219,958.00</b>
<b>ENVIRONMENTAL</b>				
Sr. Environmental Planner	21	\$140.00	\$2,940.00	
Environmental Planner	136	\$75.00	\$10,200.00	
Environmental Technician	8	\$66.00	\$528.00	
<b>Subtotal</b>	<b>165</b>			<b>\$13,668.00</b>
<b>SURVEYING</b>				
Survey Proj. Manager (RLS)		\$120.00		
Survey Technician		\$66.00		
Survey Crew (2 Man)		\$100.00		
<b>Subtotal</b>				
<b>SUPPORT STAFF</b>				
Design Technician	1416	\$66.00	\$93,456.00	
Clerical		\$50.00		
Courier		\$50.00		
<b>Subtotal</b>	<b>1416</b>			<b>\$93,456.00</b>
<b>Total Direct Labor</b>				<b>\$327,082.00</b>
<b>2. Other Direct Costs (Specify)</b>				
Plotting/Reproduction (PFPR)				\$2,387.00
Travel/Mileage				\$172.00
<b>Total Other Direct Costs</b>				<b>\$2,559.00</b>
<b>3. Maximum Amount of Contract Proposal (1) + (2)</b>				<b>\$329,641.00</b>

US 41 Bridge Over the Chattahoochee River  
 GDOT P.I. No. 720125 and 0009410  
 18-Sep-09

MAN-HOUR ESTIMATE - VE ALT's R-1 and R-4												
Task Description	ENGINEERING					ENVIRONMENTAL			SUPPORT STAFF			
	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
<b>PLANNING &amp; ENVIRONMENTAL ENG.</b>												
CE Re-evaluation							12	120	8			
Concept Report Revision		4	24									
<b>Public Involvement</b>												
Public Information Open House		5	5				5					
Response Letters		2					4	16				
Special Graphics		2	8								20	
<b>TOTALS</b>		<b>13</b>	<b>37</b>				<b>21</b>	<b>138</b>	<b>8</b>		<b>20</b>	

PRELIMINARY ENGINEERING												
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
<b>Project Management</b>												
Project Management / Administration	8	24										
<b>Road Design</b>												
Typical Sections			2								4	
Horizontal Geometry		8	80								200	
Roadway Profiles (Sidestreets)		2	32									
Intersection Sight Distance Calc's												
Superelevation Calculations			8									
Cross Sections		10	100								120	
Driveway Profiles			16									
Staging Plans			80								80	
RW and Constr. ESMT Limits		12	120								80	
<b>Traffic Design</b>												
Signing and Marking Plans (Prelim)				40								
Signalization Plans				20								
<b>Drainage Design / Hydrology</b>												
Roadway Drainage Design		8	120									
Drainage Profiles		8	120								40	
<b>Erosion Control</b>												
BMP Plans (Per Stage)		4	120								80	
<b>Sediment Basins (Calcs &amp; Plans)</b>												
<b>Structural Design</b>												
Retaining Wall Envelopes		4	40									
Preliminary Ret. Wall Design (Soil Nail)					8	80						
Bridge Design					48	480					640	
<b>Preliminary Plan Preparation</b>												
Cover, Index, General Notes			8								16	
Design Exception Reports												
Prelim. Cost Estimate		4	40				8					
<b>Plan Reviews</b>												
Quality Assurance Review(s)		40			40							
PFPR (Incl. Prep)		24	24		16							
Address Review Comments		8	80		2	16					80	
<b>TOTALS</b>	<b>6</b>	<b>156</b>	<b>960</b>	<b>60</b>	<b>114</b>	<b>584</b>					<b>1340</b>	

RW PLANS												
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Counter
RW Plan Preparation		4	40									40
CAICE RW and ESMT Chains			80									
RW and ESMT Tables		2	20									16
Quality Assurance Review		8										
<b>TOTALS</b>		<b>14</b>	<b>140</b>									<b>56</b>

**GRAND TOTALS**    6    163    1167    80    114    584    21    138    8    1416

Moreland Altobelli Associates, Inc.

PROJECT US41 Over Chattahoochee River (Phase 1 and 2)

SUBJECT Value Engineering

Alternative R-4 Cost Savings Calculations

PAGE

SHEET NO.

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DATE 9/14/2009

**R-4**

**Phase 1 R/W Savings**

Parcel 9:  $1256' \times 3.5' = 4396 \text{ SF} \times \$15/\text{SF} = \underline{\$65,940}$

Parcel 5A: No Savings - Culvert and wall work will be the same.

Parcel 3,3A,4: No savings. NPS land to be donated.

Parcel 1A:  $783' \times 3.5' = 2740.5 \text{ SF} \times \$15/\text{SF} = \underline{\$41,108}$

Parcel 2A:  $406' \times 3.5' = 1421 \text{ SF} \times \$40/\text{SF} = \$56,840$

**Net R/W savings (PH 1) = \$163,888**

**Condemnation Increase + Legal Cost (50%) = \$81,944**

**Market Appreciation (10%) = \$24,583**

**TOTAL R/W SAVINGS (PH 1) = \$270,415**

**Phase 2 R/W Savings**

Parcel 2 (IBM): esmts  $719' \times 3.5' = 2517 \text{ SF} \times \$5/\text{SF} = \$12,585$

R/W:  $1017' \times 3.5' = 3560 \text{ SF} \times \$10/\text{SF} = \$35,600$

Parcel 3 (Agean Alf. Assoc.): esmt  $325' \times 3.5' = 1138 \text{ SF} \times \$5/\text{SF} = \underline{\$5690}$

Parcel 4 (Trinity School): R/W  $445' \times 3.5' = 1558 \text{ SF} \times \$10/\text{SF} = \underline{\$15,580}$

**Net R/W savings (PH 2) = \$69,455**

**Standard GDOT Markup (148%) = \$102,793**

**TOTAL R/W SAVINGS (PH 2) = \$172,248**

# COST WORKSHEET



PROJECT:	<b>SR 3/US 41 FROM MOUNT PARAN ROAD TO PACES MILL ROAD</b>  <i>Fulton/Cobb Counties, Georgia</i>	ALTERNATIVE NO.	<b>R-4</b>
		SHEET NO.	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
<b>Phase I</b>							
Pavement Section Earthwork	CY	2,852	4.50	12,834			
Bridge Saved (see A.L. No. B-3)				<del>46,492</del>			
Subtotal				<del>59,326</del>	12,834		
Markup (10%)				5,933	1,283		
Right-of-way saved	SF	<del>17,647</del>	<del>11.65</del>	205,588			
Right-of-way markup 148%				<del>304,268</del>			
Right-of-way Phase I subtotal				589,855	270,415		
Total Phase I				<del>575,114</del>	284,532		
<b>Phase II</b>							
Earthwork	CY	4,472	4.50	20,124			
Markup (10%)				2,015			
Subtotal				22,139			
Right-of-way saved	SF	<del>19,600</del>	<del>10.00</del>	196,000			
Right-of-way markup 148%				<del>290,080</del>			
Right-of-way Phase I subtotal				486,080	172,246		
Total Phase II				<del>508,216</del>	194,387		
Sub-total							
Mark-up at							
<b>TOTAL</b>					1,083,330		

\$478,919

# COST WORKSHEET



PROJECT:	SR 3/US 41 FROM MOUNT PARAN ROAD TO PACES MILL ROAD <i>Fulton/Cobb Counties, Georgia</i>	ALTERNATIVE NO.	CG-1
		SHEET NO.	4 of 4

CONSTRUCTION ITEM		ORIGINAL ESTMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Phase I							
30 in curb and gutter	LF	4,518	16.15	72,966			
24 in curb and gutter	LF				4,518	16.09	72,695
Asphalt Pavement	SY	318	51.80	16,472			
Subtotal Phase I				89,438	171,113		72,695
Mark up for E&C @ 10%				8,944	17,111		7,269
Total Phase I Construction				98,382	188,224		79,964
Right of Way	SP	3,042	11.65	58,739			
Mark up for ROW				86,934			
Total Phase I ROW				145,673	77,484		
Catch Basins	EA	33	2,475	81,675	46	2,475	113,850
Phase II							
30 in curb and gutter	LF	1,579	16.15	25,501			
24 in curb and gutter	LF				1,579	16.09	25,406
Asphalt Pavement	SY	384	51.80	19,891			
Subtotal Phase II				45,392	161,717		25,406
Mark up for E&C @ 10%				4,539	16,172		2,341
Total Phase II Construct				49,931	177,889		27,747
Right of Way	SP	5,600	10.00	56,000			
Mark up for ROW				82,880			
Total Phase I ROW				138,880	49,203		
Catch Basins	EA	47	2,475	116,325	66	2,475	163,350
				492,800			412,832
Sub-total				432,867			107,911
Mark-up at				Included			Included
TOTAL				432,867			107,911

492,800

412,832

NET COST SAVINGS = \$79,968

**US 41 Bridge Over the Chattahoochee River  
 GDOT P.I. No. 720125 and 0009410**

**Estimated Re-Design Costs  
 for VE Alternative CG-1**

18-Sep-09

**MORELAND ALTOBELLI ASSOCIATES, INC.**

<b>1. Direct Labor (Specify)</b>				
<b>Personnel</b>	<b>Est Hours</b>	<b>Rate/Hr</b>	<b>Est. Cost (\$)</b>	<b>Totals</b>
<b>ENGINEERING</b>				
Principal	6	\$150.00	\$900.00	
Sr. Roadway Engineer	183	\$140.00	\$25,620.00	
Roadway Engineer	1167	\$98.00	\$114,366.00	
Traffic Engineer	60	\$98.00	\$5,880.00	
Sr. Structural Engineer	22	\$140.00	\$3,080.00	
Structural Engineer	104	\$98.00	\$10,192.00	
Sr. Geotech Eng.		\$120.00		
Geotech Eng.		\$98.00		
<b>Subtotal</b>	<b>1536</b>			<b>\$160,038.00</b>
<b>ENVIRONMENTAL</b>				
Sr. Environmental Planner	21	\$140.00	\$2,940.00	
Environmental Planner	136	\$75.00	\$10,200.00	
Environmental Technician	8	\$66.00	\$528.00	
<b>Subtotal</b>	<b>165</b>			<b>\$13,668.00</b>
<b>SURVEYING</b>				
Survey Proj. Manager (RLS)		\$120.00		
Survey Technician		\$66.00		
Survey Crew (2 Man)		\$100.00		
<b>Subtotal</b>				
<b>SUPPORT STAFF</b>				
Design Technician	776	\$66.00	\$51,216.00	
Clerical		\$50.00		
Courier		\$50.00		
<b>Subtotal</b>	<b>776</b>			<b>\$51,216.00</b>
<b>Total Direct Labor</b>				<b>\$224,922.00</b>
<b>2. Other Direct Costs (Specify)</b>				
Plotting/Reproduction (PFPR)				\$2,387.00
Travel/Mileage				\$172.00
<b>Total Other Direct Costs</b>				<b>\$2,559.00</b>
<b>3. Maximum Amount of Contract Proposal (1) + (2)</b>				<b>\$227,481.00</b>

US 41 Bridge Over the Chattahoochee River  
 GDOT P.I. No. 720125 and 0008410  
 18-Sep-09

MAN-HOUR ESTIMATE - VE ALT CG-1												
Task Description	ENGINEERING						ENVIRONMENTAL			SUPPORT STAFF		
	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
<b>PLANNING &amp; ENVIRONMENTAL ENG.</b>												
CE Re-evaluation							12	120	8			
Concept Report Revision		4	24									
<b>Public Involvement</b>												
Public Information Open House		5	5				5					
Response Letters		2					4	16				
Special Graphics		2	8							20		
<b>TOTALS</b>		<b>13</b>	<b>37</b>				<b>21</b>	<b>136</b>	<b>8</b>	<b>20</b>		

PRELIMINARY ENGINEERING												
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
<b>Project Management</b>												
Project Management / Administration	6	24										
<b>Road Design</b>												
Typical Sections			2								4	
Horizontal Geometry		8	80								200	
Roadway Profiles (Sidesstreets)		2	32									
Intersection Sight Distance Calc's												
Superelevation Calculations			8									
Cross Sections		10	100								120	
Driveway Profiles			16									
Staging Plans			80								80	
R/W and Constr. ESMT Limits		12	120								80	
<b>Traffic Design</b>												
Signing and Marking Plans (Prelim)				40								
Signalization Plans				20								
<b>Drainage Design / Hydrology</b>												
Roadway Drainage Design		8	120									
Drainage Profiles		8	120								40	
<b>Erosion Control</b>												
BMP Plans (Per Stage)		4	120								80	
Sediment Basins (Calcs & Plans)												
<b>Structural Design</b>												
Retaining Wall Envelopes		4	40									
Preliminary Ret. Wall Design (Soil Nail)					8	80						
Bridge Design												
<b>Preliminary Plan Preparation</b>												
Cover, Index, General Notes			8								16	
Design Exception Reports												
Prelim. Cost Estimate		4	40			8						
<b>Plan Reviews</b>												
Quality Assurance Review(s)		40			4							
PFPR (Incl. Prep)		24	24		8							
Address Review Comments		8	80		2	16					80	
<b>TOTALS</b>	<b>6</b>	<b>156</b>	<b>990</b>	<b>60</b>	<b>22</b>	<b>104</b>					<b>700</b>	

R/W PLANS												
Task Description	Principal	Sr. Roadway Engineer	Roadway Engineer	Traffic Engineer	Sr. Structural Engineer	Structural Engineer	Sr. Env. Planner	Env. Planner	Env. Technician	CAD Operator	Clerical	Courier
R/W Plan Preparation		4	40								40	
CAICE R/W and ESMT Chains			80									
R/W and ESMT Tables		2	20								16	
Quality Assurance Review		8										
<b>TOTALS</b>	<b>14</b>	<b>140</b>									<b>56</b>	

**GRAND TOTALS**      6    183    1157    60    22    104    21    136    8    776