



VALUE ENGINEERING REPORT

**SR 21 (DeRenne Avenue) Corridor Improvements
City of Savannah
Chatham County
CSSTP-0008-00(358)(359)
PI Nos. 0008358; 0008359; and 0010236**

September 26, 2012

OWNERS:



City of Savannah
Traffic Engineering Department
P.O. Box 1027
Savannah, GA 31402



Georgia Department of Transportation
600 West Peachtree Street
Atlanta, GA 30308

VALUE ENGINEERING CONSULTANT:



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VALUE ENGINEERING STUDY

SR 21 Corridor Improvements
City of Savannah
Chatham County
Project No. CSSTP-0008-00(358)(359)
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Disclaimer

This Value Engineering (VE) report presents recommendations for consideration by the design team for alternate methods of completing the current design that may be acceptable to both the design team and the owner. In most cases, each recommendation contains a cost estimate to help evaluate each recommendation on a cost effective basis including both capital and life cycle costs. These estimates are generated whenever possible using the design team's best estimate of cost and mark-ups for quantities and/or unit costs for items proposed to be changed. Using this method, a comparison can be made of the cost estimates for each item by evaluating the original design concept against the proposed change in the VE recommendation. The VE recommendation cost estimates are developed based on the information provided by the design team during the study. At this stage of design, and considering the limited time available for a VE study, the costs should be considered as order of magnitude costs only and do not reflect the final design estimated costs or actual construction costs. The difference in the original design concept and proposed VE recommendation reflects the potential cost change that may be considered by decision makers.

Finally, the VE recommendations and associated cost estimates are for consideration by only the design team and owner. The VE team does not make decisions as to which, if any, of the recommendations are incorporated into the project design. A decision to incorporate a VE recommendation is the responsibility of the design team. Also, the VE recommendations do not have to be accepted as presented in the VE study report. The recommendations should be considered a concept that can be improved and/or modified by the design team to result in a design modification that is mutually acceptable to the design team, project sponsor, owner and GDOT.

EXECUTIVE SUMMARY

Executive Summary

VALUE ENGINEERING STUDY

SR 21 Corridor Improvements CSSTP-0008-00(358)(359) PI Nos. 0008358; 0008359; and 0010236 September 10-13, 2012

Introduction

This value engineering effort includes a four day study on the concept level design for improvements to the SR 21 (DeRenne Avenue Corridor) in the City of Savannah. Included are three projects that will be studied as part of this effort. The total corridor is defined as extending west of the signalized intersection DeRenne Ave and Montgomery Street (along I-516) eastward along DeRenne Avenue (GA 21) through the intersection with Abercorn Street (GA 204) to the ramp intersections with the Harry S. Truman Parkway. The eastern limit of the study area is where DeRenne Ave. intersects the H.S. Truman Parkway and mainline traffic volumes drop appreciably from an AADT of 32,000 vpd to under 15,000 vpd. The needs for the western segment (from west of Mildred St. through Abercorn Street) include severe congestion, intersection delay, poor access management and challenging accommodations for pedestrians. The needs for the eastern portion (from Abercorn to the Parkway) are poor access management, challenging accommodations for pedestrians and no accommodations for bicycles.

The improvements include the western portion under PI 0008358. This encompasses a new roadway connection to I-516 (the Boulevard concept) continuing along the alignment of a widened Hampstead Ave. (four lane divided section with multiuse path) to a realignment of White Bluff Road. The improvements include elevation of the inbound travel lanes over reconfigured access to Hunter Army Airfield and elevation of the outbound lanes over I-516/DeRenne Avenue. Montgomery Street will be removed south of DeRenne. Estimates for this portion of the project are \$59.1 million including escalation and contingencies.

Project PI 0010236 includes DeRenne Ave improvements from Mildred Street to SR 204 (Abercorn Street) and this project will work in conjunction with PI 0008358 described above. Included is improvements to access management with the closing of mid block median breaks; optimizing the interchange configurations at Montgomery Street; White Bluff Avenue and Abercorn Street to reflect changes caused by PI 0008358; and incorporation of enhanced pedestrian accommodations at the intersections and along the corridor. The estimated cost of this portion of the project is \$3.5 million.

PI 0008359 includes East DeRenne from Abercorn to the Parkway. This portion is on the National Highway System. Work includes improved access management by converting an existing two way left turn lane to a raised planted median; optimizing the intersection configuration with Waters Avenue by restriping; developing a parallel bicycle facility utilizing DeRenne Drive; and incorporating enhanced pedestrian accommodations at the signalized

intersections and along the corridor. The estimated cost of this portion of the project is \$6.5 million.

The total estimated construction cost at this early concept design stage for all three packages is \$69.2 million including inflation and contingencies. These are based on estimates prepared by the design team of Kimley Horn and Associates as included in the Draft Concept Report dated May 25, 2012. The study took place September 10-13, 2012, at the Georgia DOT Headquarters in Atlanta using a four-person VE team.

This report presents the Team's recommendations and all back-up information, for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. The **Appendix** includes a complete record of the Team's activities and findings. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

Considerations

Several considerations / constraints were presented to the VE team to consider when developing their recommendations. The constraints were: avoid the historical districts of Kensington Park - Groveland and Fairway Oaks-Greenway; the land obtained from Hunter Army Base at the north end of the Boulevard was negotiated with the intent of recouping additional land for the base from the south end of the Boulevard; the intent is to restore East DeRenne Avenue to a "Boulevard" status thus expending a large amount for landscaping.

Results Obtained

The VE team focused their efforts on the high cost items of the project. Using function analysis and brain storming techniques, the team generated 24 ideas with 19 identified for additional evaluation as possible recommendations or design considerations. The VE team developed fourteen recommendations and one design consideration for consideration by the design team. The Summary of Potential Cost Savings table listed later in this section lists these ideas. The last column of that table indicates a potential savings summary for the entire study which amounts to \$7,967,000. A detailed write-up of each recommendation is contained in the respective portion of this report. A summary of the recommendations follows.

Recommendation Highlights

West DeRenne / Hampstead Ave. Connector (Boulevard Concept)

Idea 58-1: Replace proposed right of way with parallel right of way plus a construction easement.

This idea reduces right of way costs by replacing right of way areas with less costly easement purchases where feasible.

The total potential savings is \$350,000

Idea 58-3: Eliminate the first span and last 1.5 spans of curved bridge. Expand use of MSE walls.

This concept reduces the length of Bridge #1 by expanding the use of MSE walls at the beginning and end of the structure while maintaining a MSE wall height of 20 feet or less. This results in a bridge length savings of 279 feet from the original 697 feet in length.

The total potential savings is \$1,439,000

Idea 58-4: Construct Boulevard at grade and Montgomery St. (2 -12 foot lanes with sidewalks both sides) over Boulevard.

This proposal includes constructing the Boulevard at grade and placing Montgomery St. (2-12 foot lanes with sidewalks both sides) over the Boulevard. This results in reducing bridge area and thus costs by going from an original bridge (Boulevard over Montgomery) of 110 ft. by 87.25 ft. to a revised bridge of 180 ft. X 40 ft.

The total potential savings is \$1,691,000

Idea 58-5. Change Boulevard and Hunter Army Base interchange to at grade intersection with signalization.

This proposal includes using an at-grade signalized intersection to provide the proposed traffic movements. Proper control of the signalization timing should provide acceptable queuing on the ramp from I-516. This would result in substantial right of way savings as well as eliminating Bridge #2 and associated MSE walls.

The total potential savings \$4,398,000

Idea 58-6: Maximize profile gradients.

This recommendation proposes to increase the profile grades from the existing 4% to 5.5% which is still under the maximum of 6% allowed per the Concept Report. This would therefore result in savings in embankment and retaining wall costs.

The total potential savings is \$818,000

Idea 58-9.0. Reduce median width along Hampstead Avenue.

This concept proposes reducing the median width on Hampstead from 16 to 4 feet wide. No turn movements are allowed in this area therefore a median width of 4 ft. for separation only should be adequate. This reduces the construction cost for the median as well as the right of way costs. Impacts along Hampstead would also be reduced where the neighborhood is sensitive to the project.

The total potential savings is \$422,000

Idea 58-9.1. Reduce median width along the connector.

This idea also reduces the median from 20 to 4 feet in along the connector from Sta. 200+00 to Sta. 231+00. There are no requirements for left turns until White Bluff Road is reached. This again saves both right of way and median construction cost.

The total potential savings is \$785,000

Idea 58-10. Shift Boulevard alignment east of Montgomery Street.

This concept revises the alignment along Hampstead further south and at a slight skew to minimize damages along the northern side of Hampstead. The southern side has fewer residences and more open space to adjust the alignment. Adjusting the eastern tangent also improves impacts on Hunter Army Base and improves connector alignment.

Potential savings is \$68,000

Idea 58-11. Narrow the outside shoulder to 4 feet from 8 feet on Bridge #1.

This idea proposes reducing the shoulder width on the bridge thus reducing bridge cost. Per AASHTO, 4 foot shoulders are allowed on bridges in excess of 200 feet long.

Total potential savings is \$503,000

Idea 58-12. Shift local roundabout and keep Montgomery Street open between ramp roundabout and DeRenne Avenue.

Shifting the local roundabout 95 ft. to the west allows the two single lane roundabouts along Montgomery to be aligned and will provide a low speed, local street environment that will promote the quality of the neighborhoods. This proposal will also provide better accessibility from Hunter Army Base to the east and north of the intersection of DeRenne and Montgomery.

Savings potential is \$524,000

Idea 58-13. Reduce the inner travel lane width from 12 feet to 11 feet for Boulevard between I-516 and the Hunter Army Base Interchange.

Reducing the inner lane to 11 ft. complies with GDOT policy for this traffic and design speed. Retaining the outside 12 ft. lane for trucks is prudent as Hunter mentioned that this is the main entrance for trucks serving the base. Signage would direct truck traffic to the outside lane.

Total potential savings is \$356,000

East DeRenne – Abercorn to Harry S. Truman Parkway, PI #0008359

Idea 59-1. Reduce sidewalk width to 6 ft. in lieu of 8 ft. on both sides of the project.

Reducing the sidewalk width to 6 feet appears warranted considering the nature of this area on the north side of the project (more industrial and commercial) and on the south side of the project adjacent to DeRenne Drive – a low traffic local street that would appeal to pedestrians.

Potential project savings \$76,000

Idea 59-5. Use entire width of corridor for East DeRenne Street.

This is a Design Consideration showing an alternative concept of a “Grand Boulevard” for this section of roadway. The unique opportunity exists to use the entire width of existing right of way including DeRenne Drive which amounts to 130 feet. This would allow the construction of a 50 wide median which would allow for a linear park to be constructed including tree plantings, a multiuse trail and other possibilities. This would require revisiting by the City and design team and would add cost to the project, but it is offered for consideration by the design staff as an environmental and recreational improvement.

Potential cost increase of \$TBD

SR 21 (West DeRenne) from CS 346 (Montgomery) to SR 204 (Abercorn), PI #0010236

Idea 36-2. Reduce sidewalk width to 6 feet both sides.

Reducing the sidewalk to 6 ft. (above the standard of 5 ft.) allows for two additional feet outside the sidewalk for landscaping and plantings. Cost shown is for sidewalk construction only.

Total potential savings \$27,000

Idea 36-3. Reduce road width of southern leg of Montgomery Street at the DeRenne Intersection.

It appears the southern leg of Montgomery has some excessive width. Reducing this saves on construction and Right of way costs.

Total potential savings \$48,000

P.I. #0008358
West DeRenne / Hampstead Ave. Connector (Boulevard Concept)

SUMMARY OF POTENTIAL COST SAVINGS

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Savings in Combination with other VE proposals
58-2	Replace proposed right of way with parallel right of way plus a construction easement	700,000	350,000	350,000	-0-	350,000	50,000
58-3	Eliminate the first span and last 1.5 spans of curved bridge. Expand use of MSE walls.	5,199,000	3,760,000	1,439,000	-0-	1,439,000	1,439,000
58-4	Construct Boulevard at grade and Montgomery St. (2 -12 foot lanes with sidewalks both sides) over Boulevard.	2,707,000	1,016,000	1,691,000	-0-	1,691,000	-0-
58-5	Change Boulevard and Hunter Army Base interchange to at grade intersection with signalization	4,624,000	226,000	4,398,000	-0-	4,398,000	4,398,000
58-6	Maximize profile gradients	818,000	-0-	818,000	-0-	818,000	300,000
58-9.0	Reduce median width along Hampstead Avenue	422,000	-0-	422,000	-0-	422,000	-0-
58-9.1	Reduce median width along the connector	785,000	-0-	785,000	-0-	785,000	785,000

STUDY IDENTIFICATION

Study Identification

Project: SR 21 Corridor Improvements	Date: September 10-13, 2012
Location: City of Savannah, Chatham County	

VE Team Members

Name:	Title:	Organization:	Telephone:
George Obaranec, PE, CVS	Highway Design	AMEC	770-421-3346
Aruna Sastry, PE	Structures	Sastry Associates	678-336-9375
Peng Zhang, PE	Highway Design	AMEC	770-421-7053
David Wohlscheid, PE, CVS	VE Team Facilitator	AMEC	571-217-0808

Project Description

This value engineering effort includes a four day study on the concept level design for improvements to the SR 21 (DeRenne Avenue Corridor) in the City of Savannah. Included are three projects that will be studied as part of this effort. The improvements include the western portion under PI 0008358. This encompasses a new roadway connection to I-516 (the Boulevard concept) continuing along the alignment of a widened Hampstead Ave. (four lane divided section with multiuse path) to a realignment of White Bluff Road.

The center portion includes DeRenne Ave improvements from Mildred Street to SR 204 (Abercorn Street) to be performed under PI #0010236. Included is improvements to access management, improved intersection configurations and incorporation of enhanced pedestrian accommodations at the intersections and along the corridor.

The eastern portion performed under PI #0008359 includes improved access management by converting an existing two way left turn lane to a raised planted median; optimizing the intersection configuration with Waters Avenue by restriping; develop a parallel bicycle facility utilizing DeRenne Drive; and incorporate enhanced pedestrian accommodations at the signalized intersections and along the corridor.

The total project cost of all three is \$69.2 million including right of way, contingencies and inflation. The worksheets used in presenting the recommendations in this report also includes contingences and inflation as referenced by the markup shown of 50.71%.

Project Conditions and Constraints

Several considerations / constraints were presented to the VE team to consider when developing their recommendations. The constraints were:

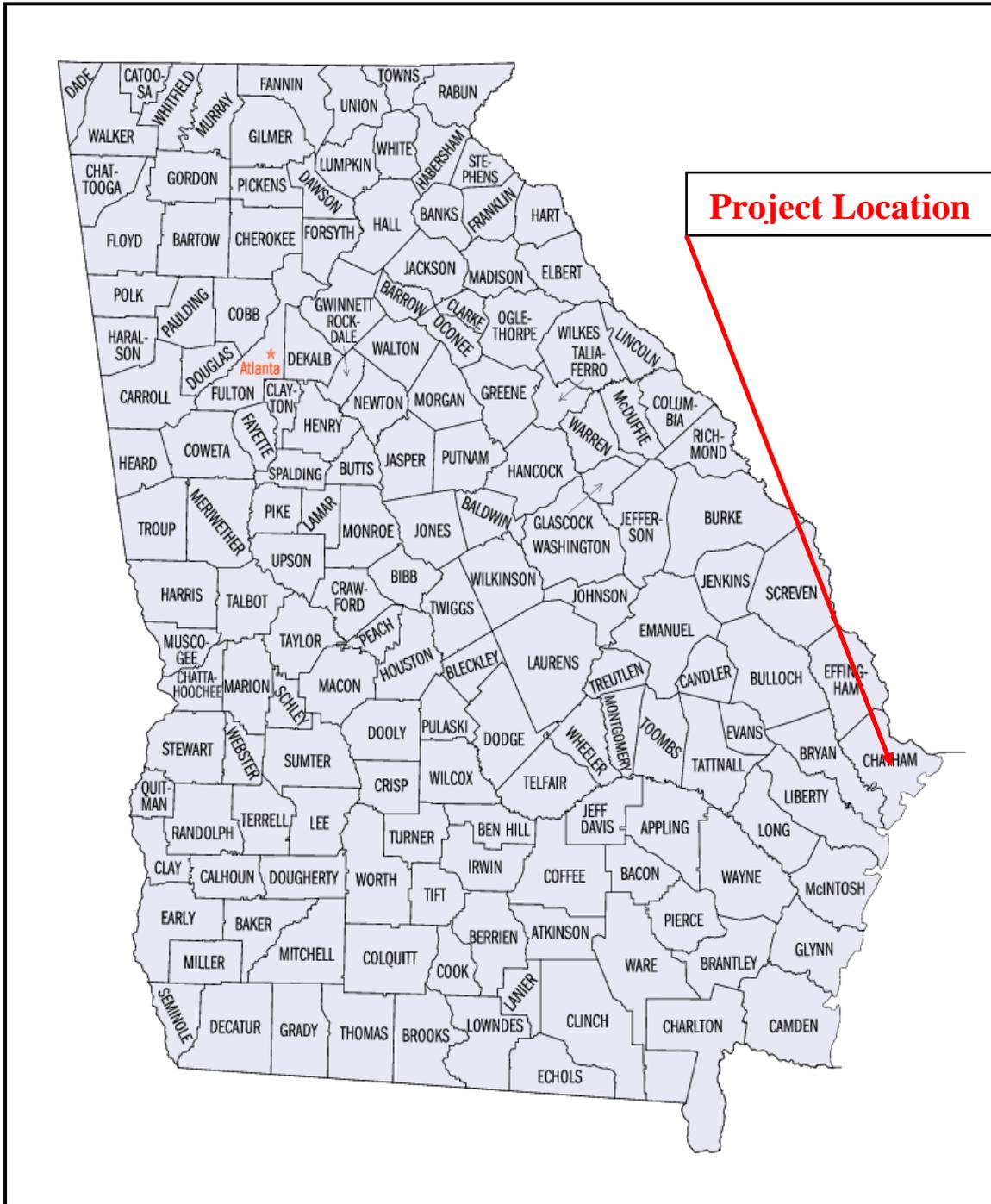
- avoid the historical districts of Kensington Park-Groveland and Fairway Oaks-Greenway;
- the land obtained from Hunter Army Base at the north end of the Boulevard was negotiated with the intent of recouping additional land for the base from the south end of the Boulevard;
- the intent is to restore East DeRenne Avenue to a “Boulevard” status thus expending a large amount for landscaping.

Project Design Briefing

The VE team received a detailed project briefing by Rob Hume, Fran McCutcheon West and David Stricklin of Kimley-Horn & Associates. The following comments were presented:

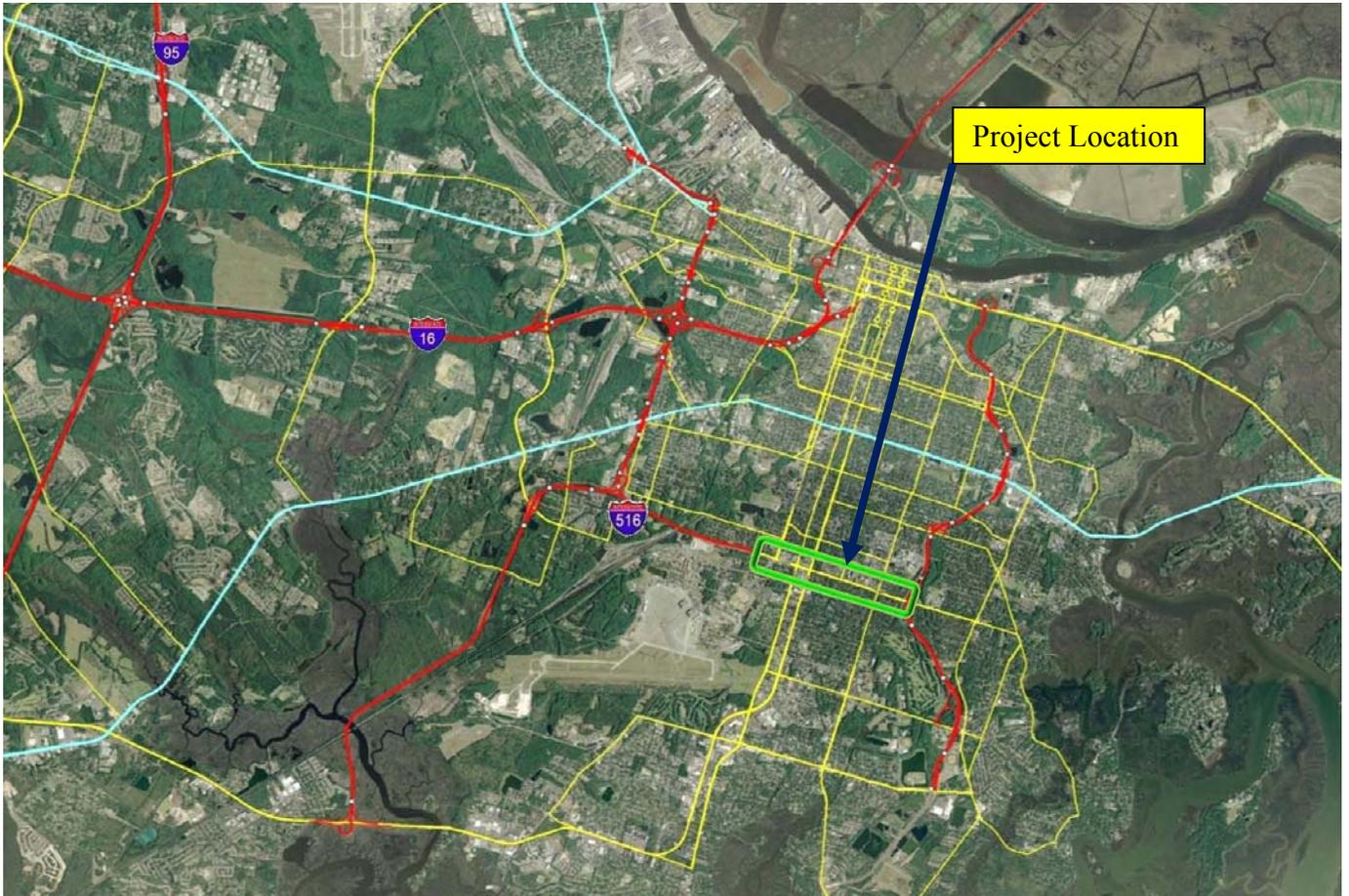
- The total project is divided in three areas in Savannah including the Boulevard, the West DeRenne portion and the East DeRenne portion.
- The project has been a long time (multi-year) effort by the City staff, local residents and the consultant.
- The main function of the project is to improve traffic flow. Major gridlock occurs along this corridor in the rush hour timeframes on a daily basis. Secondary project functions include improving aesthetics of the roadway through extensive landscaping; adding trail/bike routes; adding sidewalks; and improving access management.
- Projected 2030 design year traffic counts are 54,000 vpd on the western entrance and 31,000 vpd on the eastern side
- Traffic analysis was performed at each intersection on DeRenne
- Critical AM and PM movements and queues were determined
- Hunter Army Base is a critical partner in this effort. They have participated throughout the program and are an integral component in the solution to these problems.
- The two worst intersections were identified as Montgomery Street and White Bluff Road / Bull Street.
- Crash information was presented which correlated with the projections of deficit operations.
- A design Charette was performed with all stakeholders participating.
- The Charette generated two main options - - the Intersection option and the Boulevard concept
- The Boulevard concept was the choice presented as the preferred option and the one presented for analysis at this VE study
- The boulevard includes a new roadway connecting DeRenne and Hampstead with a separate interchange for Hunter Army Base
- Two bridges are included in the preferred option
- MSE walls are used in conjunction with the bridges to minimize right of way disturbances
- The programmed scheduled “Let Date” is 2017

Project Location Map

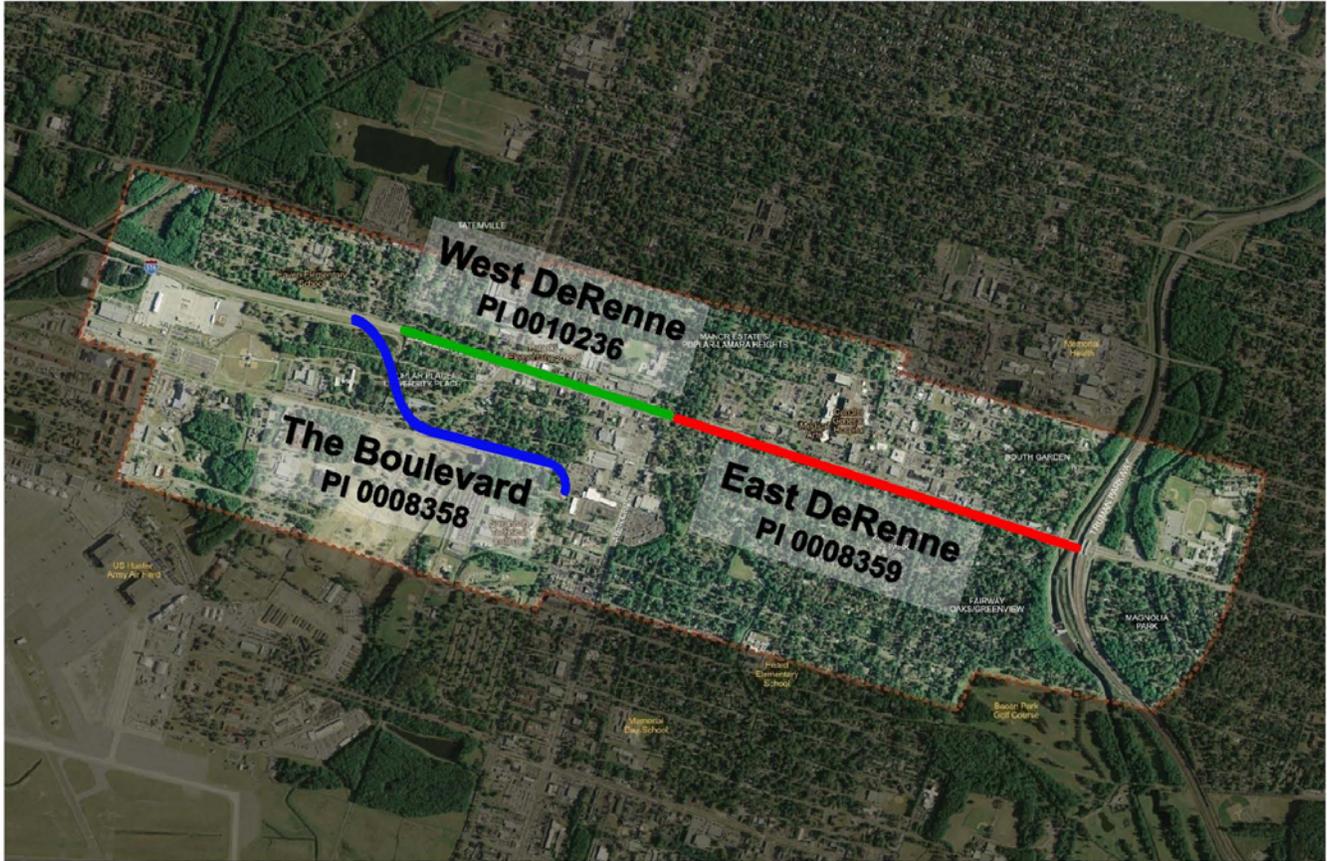


Project Vicinity

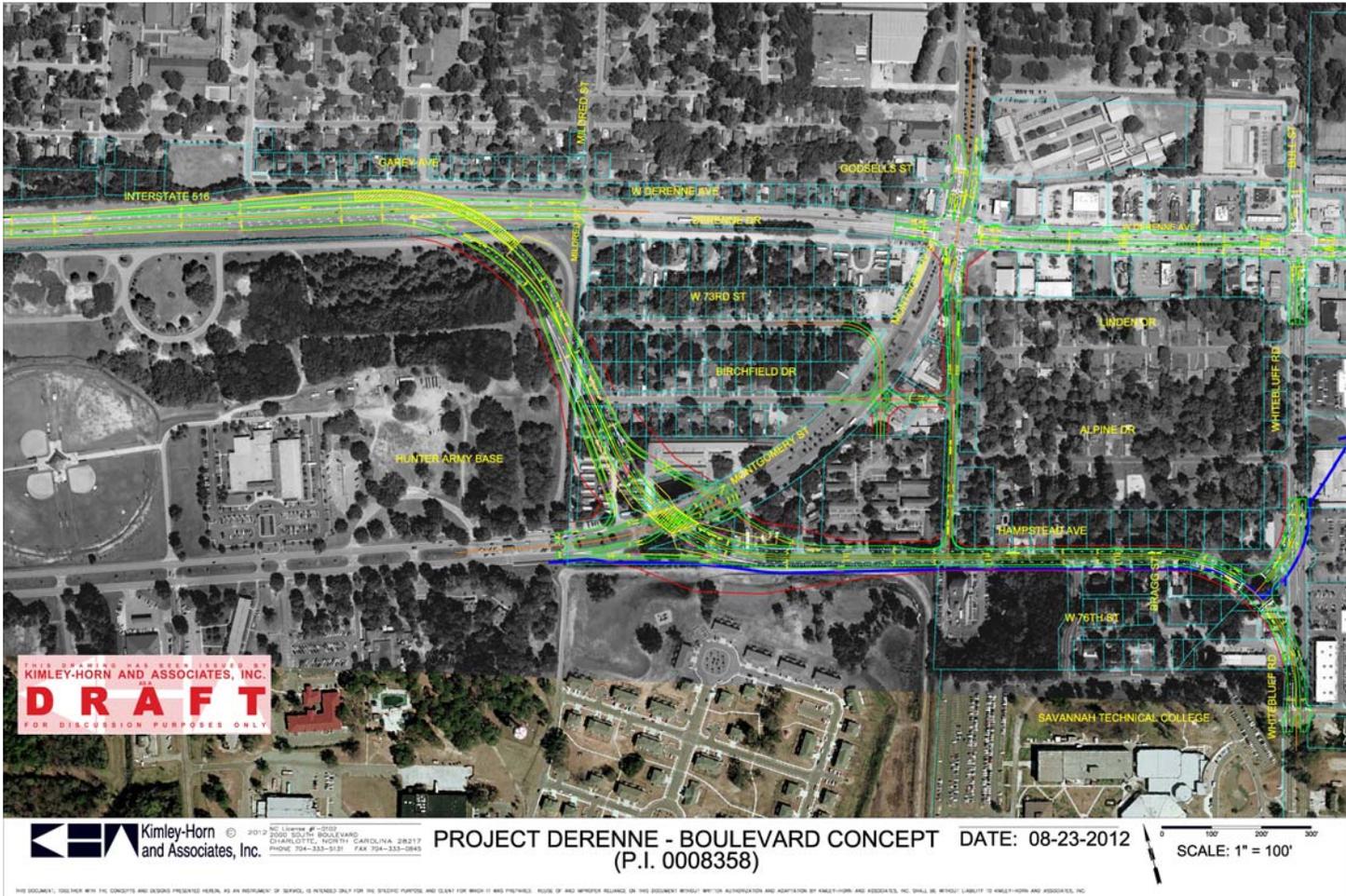
Savannah, GA



Project Division by PI Numbers



Boulevard Concept



East DeRenne Sheet 1



East DeRenne Sheet 2



East DeRenne Sheet 3



West DeRenne



VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-2	PAGE No.: 1 of 4	CREATIVE IDEA: Replace Proposed Right of Way with Parallel Right of Way and Construction Easement.
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Comp By: Peng Zhang Date: 9/12/2012 Checked By: GAO Date: 9/13/12

Original Concept:

Proposed right of way was set as per construction limits.

Proposed Change:

Set required right of way as parallel to construction centerline. Cover the construction limits plus additional 5 to 10 feet beyond the limits with construction and slope easement.

Justification:

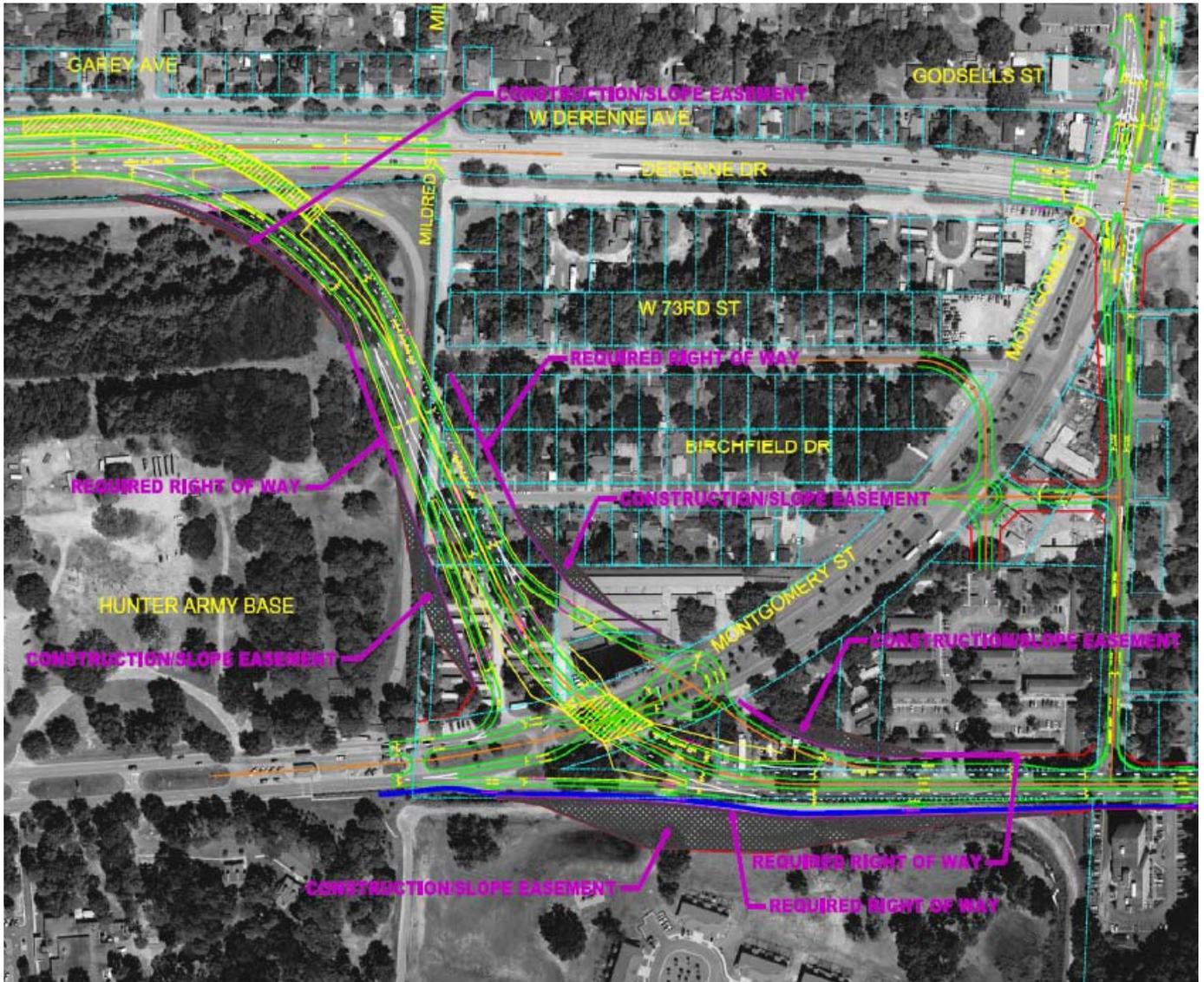
Construction and slope easements are generally cheaper than required right of way. It will reduce the total right of way acquisition cost for the Boulevard project.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	700,000		
- Proposed	350,000		
- Savings	350,000		350,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			350,000

SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-2
CLIENT: GDOT
Sheet 2 of 4



COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-2 CLIENT: GDOT		
					Sheet 3 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Unit s	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right of Way - Residential	S.F.	92958	5.00	464,790	0	5.00	
Construction/Slope Easement - Residential	S.F.	0	5.00		92958	2.50	232,395
SUBTOTAL				464,790			232,395
Markup	50.71%			235,695			117,848
TOTAL				700,485			350,243
TOTAL ROUNDED				700,000			350,000



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-2
CLIENT: GDOT
Sheet 4 of 4

Boulevard Section

Required Right of Way → Construction/Slope Easement

Area 1: 6481 S.F.

Area 2: 13027 S.F.

Area 3: 8829 S.F.

Area 4: 56796 S.F.

Area 5: 7825 S.F.

Total: 92958 S.F.

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-3	PAGE No.: 1 of 3	CREATIVE IDEA: Eliminate the first span and last 1 ½ spans of the curved bridge by extending the MSE walls and adding MSE walls at the end of the bridge.
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Comp By: AS Date: 9/12/12 Checked By: DCW Date: 9/12/12

Original Concept:

Construct westbound Boulevard PSC Bulb-Tee beam bridge (six spans) 41.25 ft. X 684 ft. long over I-516 expressway with MSE walls on either side of the bridge.

Proposed Change:

Construct westbound Boulevard PSC Bulb-Tee beam bridge 41.25 ft. X 418 ft. long (four spans) over I-516 expressway by extending MSE walls to the beginning of the bridge and adding MSE walls at the end of the bridge.

Justification:

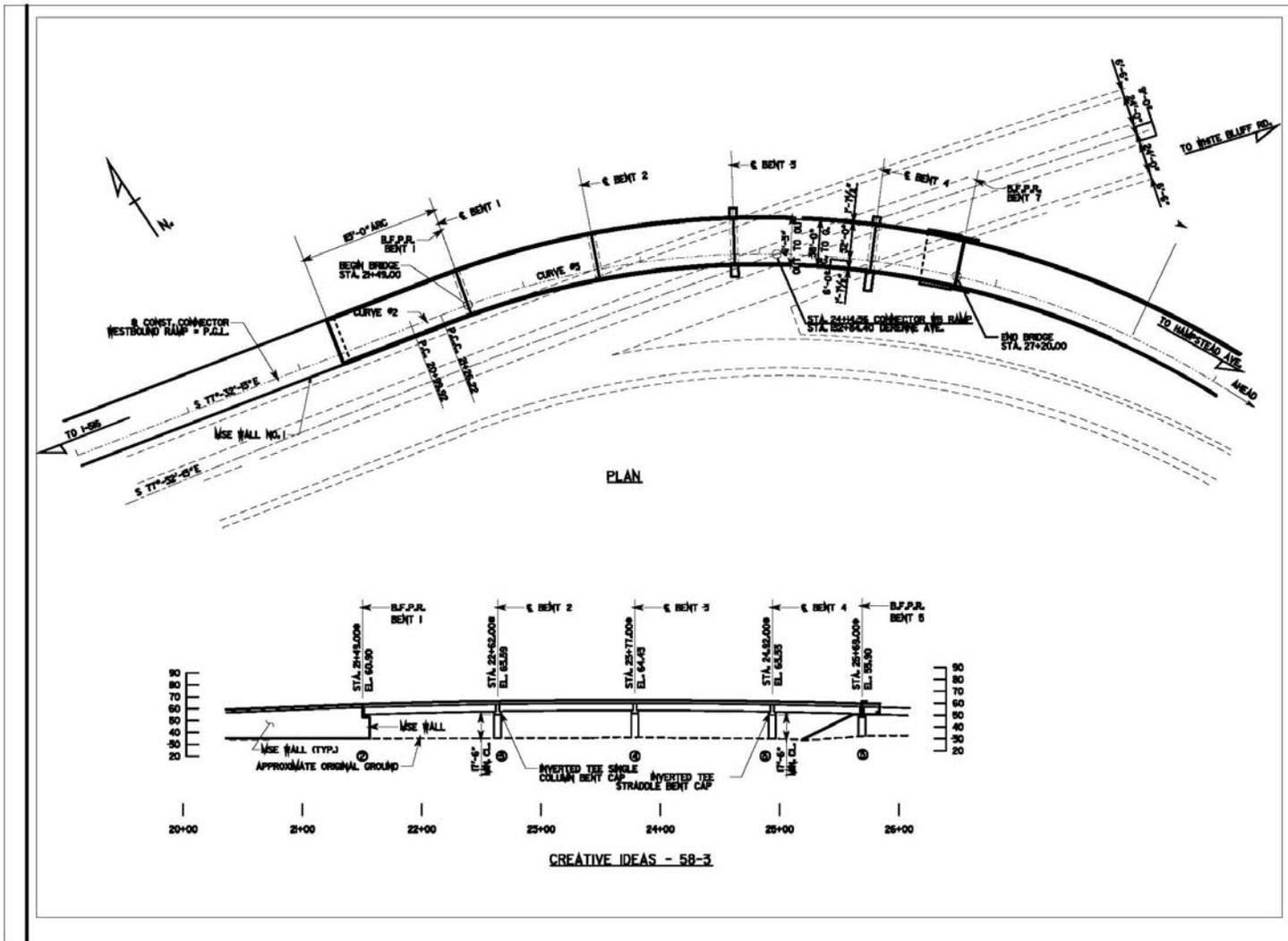
Extending the walls and moving the begin station of the bridge to Sta. 21+49.00; moving back the end station of the bridge to 25+67.00; and adding MSE walls at the end of the bridge will result in construction cost savings.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	5,199,000		
- Proposed	3,760,000		
- Savings	1,439,000		1,439,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			1,439,000

SKETCH

West DeRenne / Hampstead Ave. Connector
 PI No. 0008358

ITEM No.: 58-3
 Sheet 2 of 3



DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-4	PAGE No.: 1 of 4	CREATIVE IDEA: Construct Boulevard at grade and Montgomery Street over Boulevard. (Montgomery Street will be constructed with two lanes with sidewalks on both sides).
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Comp By: AS Date: 9/11/12 Checked By: DCW Date: 9/12/12

Original Concept:

Construct one span 110' X 87.25' Boulevard bridge (Bridge #2) over Montgomery Street with 16 ft. median.

This provides two 12 ft. travel lanes in each direction.

Proposed Change:

Construct Montgomery Street bridge (3-span bridge 45'-90-45' Type III PSC Beams) over Boulevard with two - 12' lanes and sidewalks (180 ft X 40 ft)

Justification:

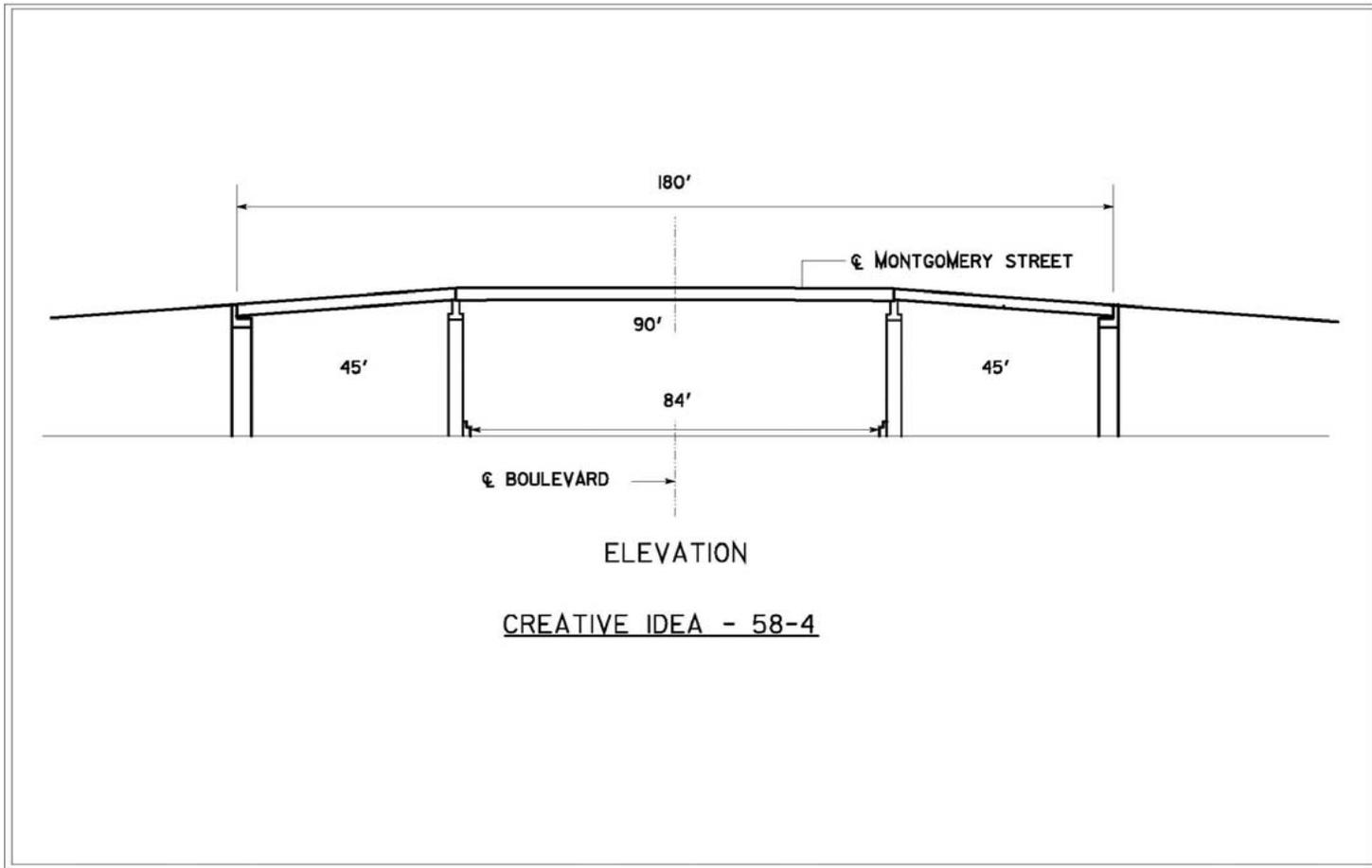
The above arrangement will result in construction savings. Also, the additional retaining walls around the boulevard bridge will be eliminated.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	2,707,000		
- Proposed	1,016,000		
- Savings	1,691,000		1,691,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			1,691,000

SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

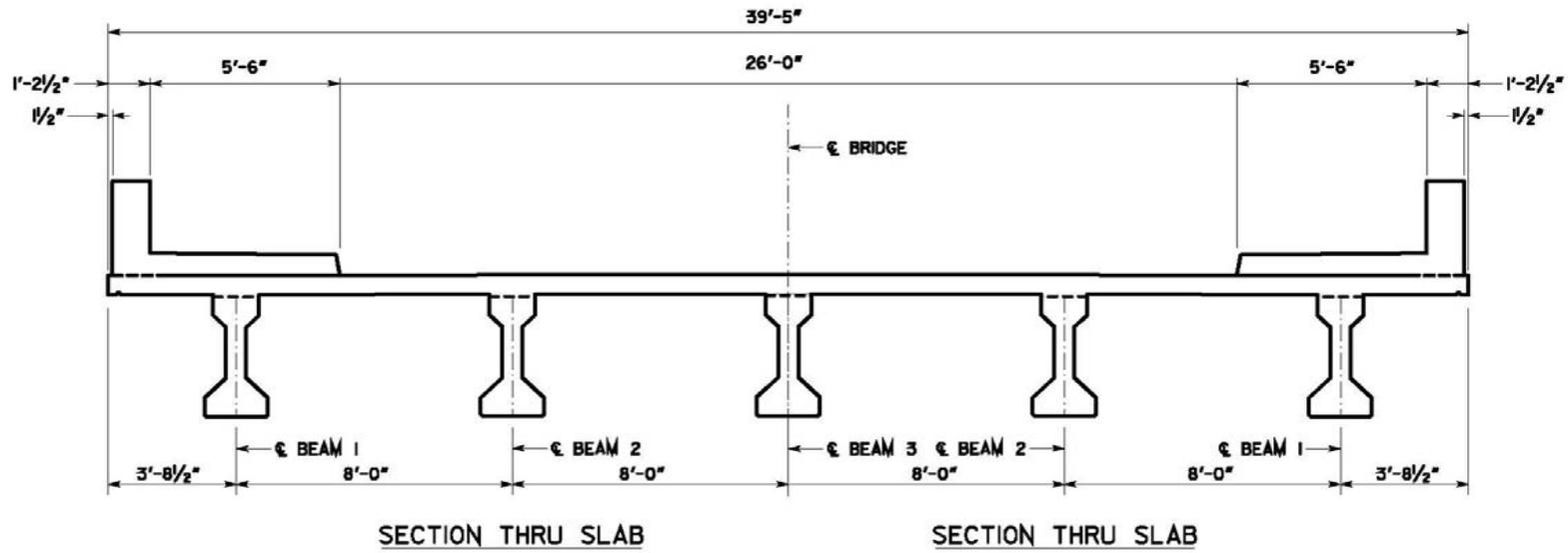
ITEM No. 58-4
CLIENT: GDOT
Sheet 2 of 4



SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-4
CLIENT: GDOT
Sheet 3 of 4



CREATIVE IDEA 58-4

COST WORKSHEET

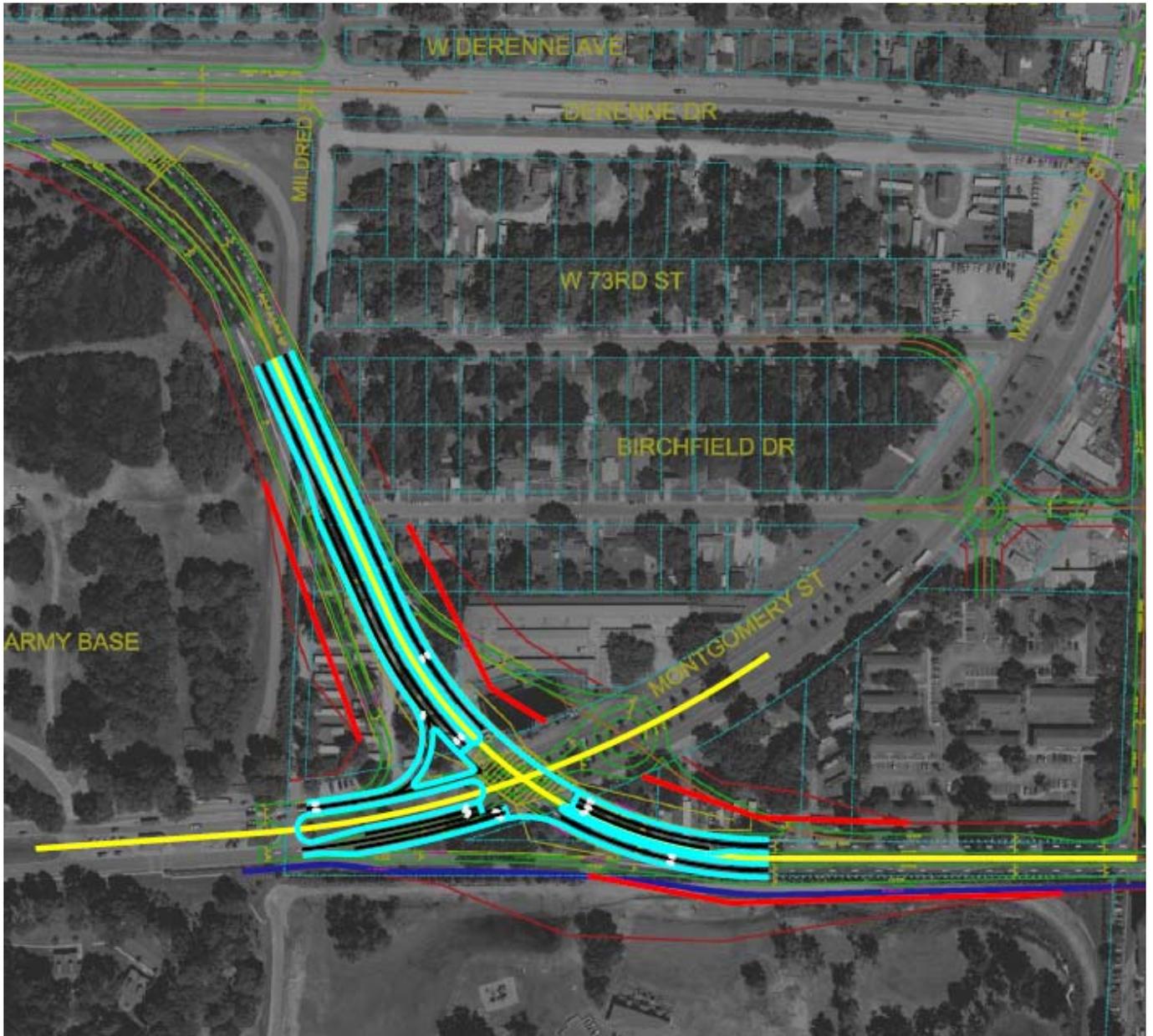
PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-4 CLIENT: GDOT Sheet 4 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Bridge #2 - 87.25' X 110' PSC BM BR.	SF	9,598	110	1,055,800			
ADDITIONAL RETAINING WALLS							
1100' X 20'	SF	22,000	33.66	740,520			
PROPOSED BRIDGE							
39.4167' X 180' PSC BM BRIDGE	SF				7,095	95.00	674,025
SUBTOTAL				1,796,320			674,025
Markup	50.71%			910,914			341,798
TOTAL				2,707,234			1,015,823
TOTAL ROUNDED				2,707,000			1,016,000



SKETCH

**West DeRenne / Hampstead Ave. Connector
PI No. 0008358**

ITEM N No.: 58-5
CLIENT: GDOT
Sheet 2 of 4



COST WORKSHEET

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right of Way - Residential	S.F.	92,403	5.00	462,015	0	5.00	
Right of Way - Commercial	S.F.	34,375	12.00	412,500	0	12.00	
Pavement	S.Y.	8,977	45.00	403,960	0	45.00	
Traffic Signal Installation	EA	-	150,000.00		1	150,000.00	150,000
Bridge #2 - 87.25'x110' PSC BM BR.	S.F.	9,598	110.00	1,055,780	0	110.00	
MSE Walls 1100'x20'	S.F.	22,000	33.36	733,920	0	33.36	
SUBTOTAL				3,068,175			150,000
Markup 50.71%				1,555,872			76,065
TOTAL				4,624,047			226,065
TOTAL ROUNDED				4,624,000			226,000



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-5
CLIENT: GDOT
Sheet 4 of 4

From Original to Proposed:

Right of way Reduction along Boulevard and Montgomery Street

Residential: Area 1: 13,581 S.F. Unit Price: \$5.00 per S.F.

Area 2: 17,980 S.F.

Area 3: 60,842 S.F.

Total Residential: $(13,581+17,980+60,842) = 92,403$ S.F.

Commercial: Area 1: 34,375 S.F. Unit Price: \$12.00 per S.F.

Pavement Reduction for Boulevard and Boulevard ramps:

Area 1: 19,865 S.F.

Area 2: 50,298 S.F.

Area 3: 10,629 S.F.

Total Pavement: $(19,865+50,298+10,629)/9 = 8,977$ S.Y. Unit Price: \$45 per S.Y.

Traffic Signalization:

A traffic signal is proposed at at-grade intersection of Boulevard and Montgomery Street. Unit Price: \$150,000 per signal.

Interchange Removal:

The Hunter interchange is proposed to be removed including the Bridge #2 and MSE retaining walls.

Bridge #2 – 87.25' x 110' PSC BM BR.

$87.25 \times 110 = 9,598$ S.F. Unit Price \$110 per S.F.

MSE walls: 1100 feet in length. Average height of wall is assumed at 20 feet. Unit price: \$33.36 per S.F.

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-6	PAGE No.: 1 of 3	CREATIVE IDEA: Maximize profile gradients
--------------------------	----------------------------	---

Comp By: GAO Date: 9-11-12 Checked By: DCW Date: 9-12-12

Original Concept:

Use 4% grades to establish grade separations

Proposed Change:

Maximize profile grades. 6% allowable based on Concept Report. This recommendation provides 5.5 % grades.

Justification:

Maximize and use the allowable profile grades to save construction costs and reduce impacts.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	818,000		
- Proposed	0		
- Savings	818,000		818,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			818,000

CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-6
CLIENT: GDOT
Sheet 3 of 3

Area 1 – Flyover structure:

Reduced earthwork; based on 5.5% gradient:

$$\frac{1}{2} (300+400) (10) + \frac{1}{2} (300+400) (8) = 3,500 + 2,800 = 6,300 \text{ sq ft}$$

Ramp template over Derenne; 60 ft wide, including ramps

$$6,300 \text{ sq ft} \times 60 \text{ ft} = 378,000 \text{ cu ft} = 14,000 \text{ CY}$$

Reduction in walls:

$$\frac{1}{2} (300 \text{ ft} \times 6 \text{ ft}) \times 2 \text{ sides} + \frac{1}{2} (300 \text{ ft} \times 4 \text{ ft}) \times 2 \text{ sides} = 1,800 + 1,200 = 3,000 \text{ sq ft}$$

Area 2 – Montgomery Street overpass:

Reduced earthwork; based on 5.5% gradient:

$$\frac{1}{2} (200+400) (7) + \frac{1}{2} (350+400) (8) = 2,100 + 4,400 = 6,500 \text{ sq ft}$$

Boulevard over Montgomery template; 110 ft wide, including ramps

$$6,500 \text{ sq ft} \times 110 \text{ ft} = 715,000 \text{ cu ft} = 26,481 \text{ CY}$$

Reduction in walls:

$$\frac{1}{2} (300 \text{ ft} \times 7 \text{ ft}) \times 2 \text{ sides} + \frac{1}{2} (300 \text{ ft} \times 8 \text{ ft}) \times 2 \text{ sides} = 2,100 + 2,400 = 4,500 \text{ sq ft}$$

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-9	PAGE No.: 1 of 3	CREATIVE IDEA: Reduce median width along Hampstead Avenue
--------------------------	----------------------------	---

Comp By: GAO Date: 9-12-12- Checked By: DCW Date: 9-12-12

Original Concept:

The current median width is 20 feet.

Proposed Change:

Reduce the median width to 4 feet

Justification:

Reducing the median width in this area will decrease construction and right of way costs as well as reduce the right of way impacts along Hampstead, where the neighborhood is sensitive to the project. Throughout this area, there will be no accommodations for turn movements therefore median width can be minimal, only for separation.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	422,000		
- Proposed	0		
- Savings	422,000		422,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			422,000

COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-9 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Median	SY	3733	30.00	111,990			
right of way	SF	33,600	5.00	168,000			
SUBTOTAL				279,990			0
Markup	50.71%			141,983			0
TOTAL				421,973			0
TOTAL ROUNDED				422,000			0



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-9
CLIENT: GDOT
Sheet 3 of 3

Median reduction: $20 - 4 = 16$ feet

Sta 210+00 to Sta 231+00 = $2,100 \text{ ft} \times 16 = 33,600 \text{ sq ft} = 3,733 \text{ sq yds}$

Assume cost of median at \$30 per sq yd

Comparable reduction in right of way:

Cost of Right of way; from data provided: residential cost \$5.00 per sq ft

DEVELOPMENT AND RECOMMENDATION PHASE

**West DeRenne / Hampstead Ave. Connector
PI No. 0008358**

IDEA No.: 58-9.1	PAGE No.: 1 of 3	CREATIVE IDEA: Reduce median width along the connector
----------------------------	----------------------------	--

Comp By: GAO Date: 9-11-12 Checked By: DCW Date: 9/12/12

Original Concept:

The current median width is 20 feet.

Proposed Change:

Reduce the median width to 4 feet along the connector alignment. There are no requirements for left turn movements until White Bluff Road

Justification:

Reducing the median width in this area will decrease construction and right of way costs as well as reduce the right of way impacts along Hampstead, where the neighborhood is sensitive to the project. Throughout this area, there will be no accommodations for turn movements therefore median width can be minimal, only for separation.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	785,000		
- Proposed	0		
- Savings	785,000		785,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			785,000

COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-9.1 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Median	SY	5,316	30.00	159,480	0		0
Right of way	SF	33,600	5.00	168,000	0		0
Bridge	SF	1,760	110.00	193,600	0		0
SUBTOTAL				521,080			0
Markup	50.71%			264,240			0
TOTAL				785,320			0
TOTAL ROUNDED				785,000			0



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-9.1
CLIENT: GDOT
Sheet 3 of 3

Median reduction: $20 - 4 = 16$ feet

Sta 200+00 to Sta 231+00; $3,100 \text{ ft} - 110 \text{ ft}$ (bridge length) = 2,990 ft

$2,990 \times 16 \text{ ft} = 47,840 \text{ sq ft} = 5,316 \text{ sq yds}$

Assume cost of median at \$30 per sq yd

Reduction in right of way:

Sta 210+00 to Sta 231+00; $2,100 \text{ ft} \times 16 = 33,600 \text{ sq ft}$

Cost of Right of way; from data provided: residential cost \$5.00 per sq ft

Bridge area reduction: $110 \text{ ft} \times 16 \text{ ft} = 1,760 \text{ sq ft}$

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-10	PAGE No.: 1 of 4	CREATIVE IDEA: Shift boulevard alignment east of Montgomery Street
---------------------------	----------------------------	--

Comp By: GAO Date: 9-12-12 Checked By: DCW Date: 9-13-12

Original Concept:

For the section of the connector/boulevard, east of Montgomery Street, construct a symmetric widening along Hampstead Avenue.

Proposed Change:

Shift the alignment along Hampstead further south and at a skew to minimize damages along the northern portion of Hampstead Avenue. The intent of the recommended alignment is to hold the location at the critical constraint point, at the intersection of Montgomery Street and the large building just south, approximate station 220 – 221 and shift the eastern tangent to the south. The analyzed alignment reflects an offset to the south of about 50 feet at station 229+00.

Justification:

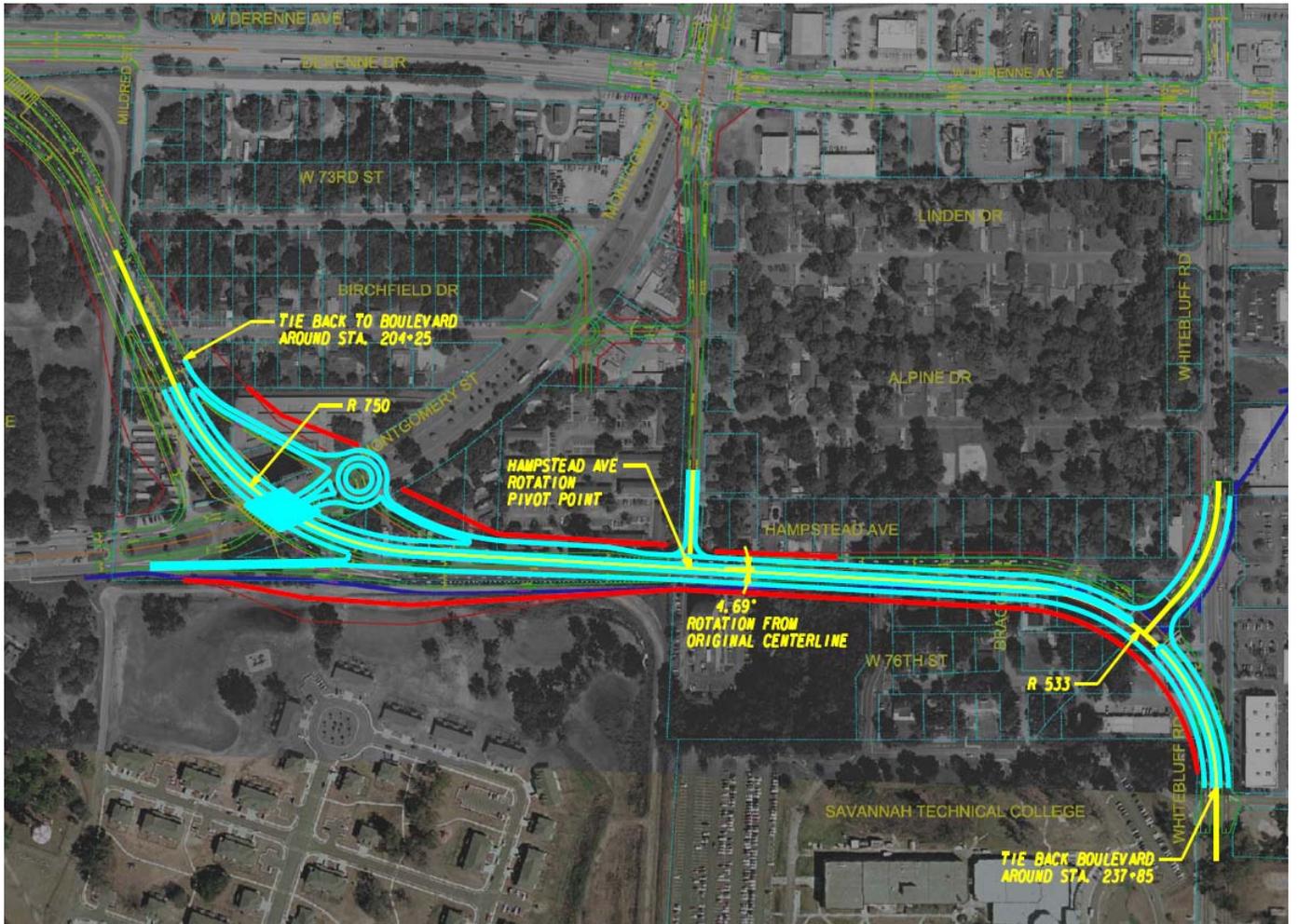
The proposed alignment, as currently shown will have significant impacts to both sides of Hampstead Avenue. On the southern section there are fewer residences and more open space to adjust the alignment. Also, shifting the eastern tangent could provide a larger curve for the overall connector alignment west of Montgomery Street, a better bridge crossing angle and additional property for negotiations with Hunter Army Base reducing impacts to base area and allowing longer queuing area into base.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	68,000		
- Proposed	0		
- Savings	68,000		68,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			68,000

SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

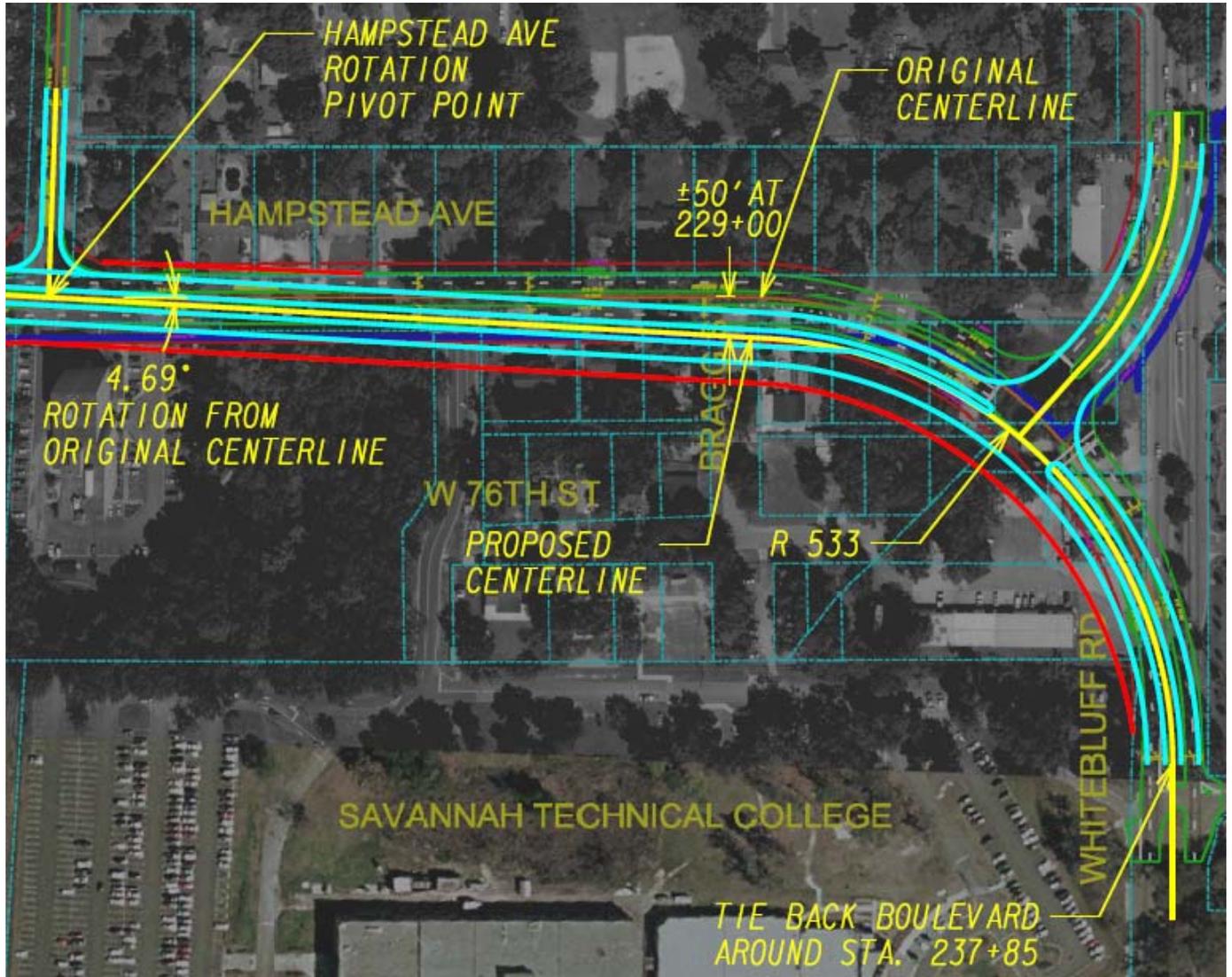
ITEM No.: 58-10
CLIENT: GDOT
Sheet 2 of 4



SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58.10
CLIENT: GDOT
Sheet 2a of 4



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-10
CLIENT: GDOT
Sheet 4 of 4

Right of Way savings; east section of Hampstead Avenue =
15 ft x 600 ft = 9,000 sq ft

Cost of Right of way; from data provided: residential cost \$5.00 per sq ft

DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-11	PAGE No.: 1 of 3	CREATIVE IDEA: Narrow the outside shoulder to 4 ft. from 8 ft.
---------------------------	----------------------------	--

Comp By: AS Date: 9/12/12 Checked By: DCW Date: 9/13/12

Original Concept:

Provide 8 ft. outside shoulder and 6 ft. inside shoulder for the ramp bridge #1.

Proposed Change:

Construct the Ramp Bridge with 4 ft. outside shoulder and 6 ft. inside shoulder

Justification:

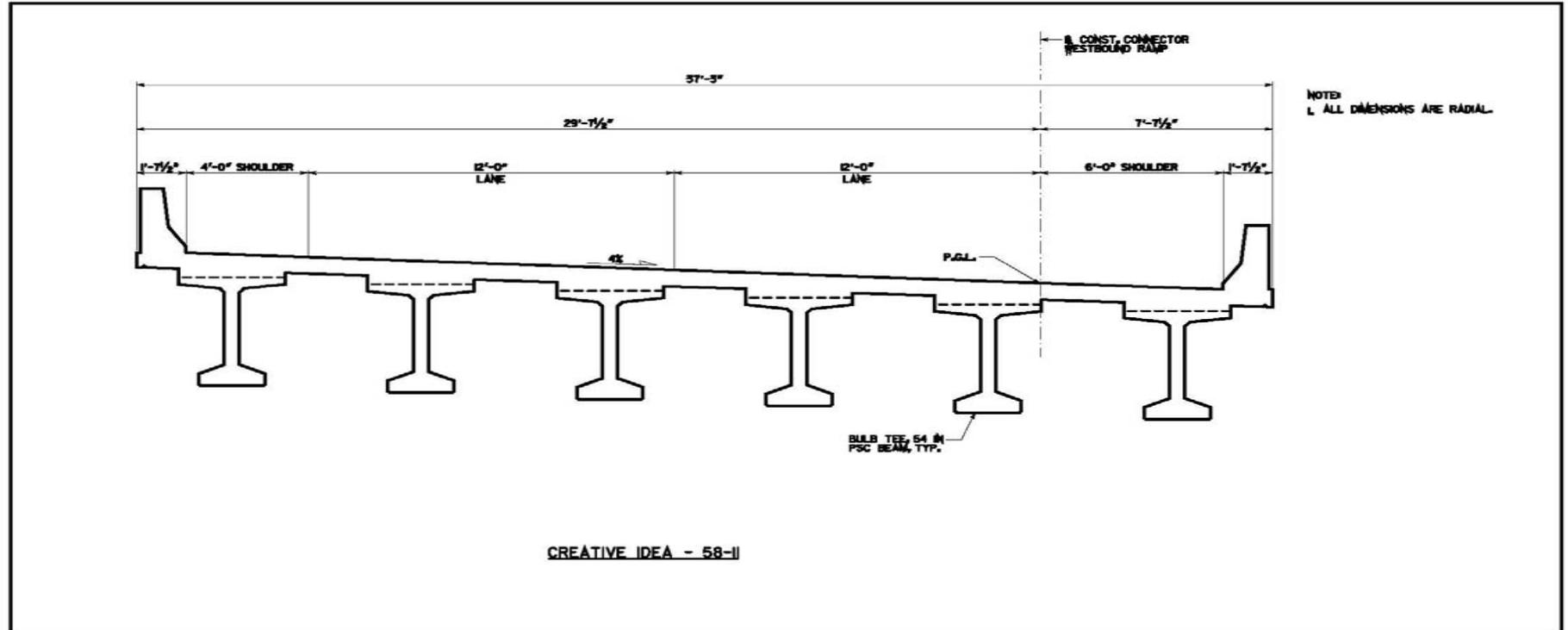
This bridge is more than 200 ft. long and reducing the shoulder from 8 ft. to 4 ft. will result in a cost saving. See AASHTO Geometric Design of Highways and Streets 2004 policy page 455 allowing 4 foot shoulders on bridges in excess of 600 feet.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	5,199,000		
- Proposed	4,696,000		
- Savings	503,000		503,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			503,000

SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-11
CLIENT: GDOT
Sheet 2 of 3



COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-11 CLIENT: GDOT Sheet 3 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
Bridge #1 - 41.25' X 697' PSC BM BR.	SF	28,751	120.00	3,449,800			
Proposed Bridge							
37.25' X 697' PSC BM BRIDGE	SF				25,963	120	3,115,590
SUBTOTAL				3,449,800			3,115,590
Markup	50.71%			1,749,394			1,579,916
TOTAL				5,199,194			4,695,506
TOTAL ROUNDED				5,199,000			4,696,000



DEVELOPMENT AND RECOMMENDATION PHASE

West DeRenne / Hampstead Ave. Connector PI No. 0008358

IDEA No.: 58-12	PAGE No.: 1 of 4	CREATIVE IDEA: Shift Local Roundabout & Keep Montgomery Street Open Between Ramp Roundabout and DeRenne Avenue.
---------------------------	----------------------------	---

Comp By: PZ Date: 9/11/2012 Checked By: DCW Date: 9/13/2012

Original Concept:

Remove pavement between Montgomery Street ramp roundabout and intersection at DeRenne Road. Construct Roger Woods Street from DeRenne Avenue to Hampstead Avenue. The local roundabout was proposed to connect West 73rd Street, Birchfield Drive to Roger Wood Street.

Proposed Change:

Move the local roundabout inside (95 feet to the west) the existing right of way on Montgomery Street. Use existing Montgomery Street to connect the ramp roundabout to the local roundabout and to the DeRenne Avenue intersection. Realign Birchfield Drive, Roger Wood Street and apartment entrance to the local roundabout. Potentially remove the traffic signal at Hampstead Avenue & Roger Wood Street.

Justification:

Right of way cost for Montgomery Street and Roger Wood Street improvements will be reduced. Aligning two single lane roundabouts along Montgomery Street will create a low-speed, local street environment, that will promote the quality of two historic neighborhoods of University Place and Poplar Place.

Keeping Montgomery Street open will provide better accessibility from Hunter Army Base to east and north of the intersection of Montgomery Street and DeRenne Avenue.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	617,000		
- Proposed	93,000		
- Savings	524,000		524,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			524,000

SKETCH

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-12
CLIENT: GDOT
Sheet: 2 of 4



COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-12 CLIENT: GDOT Sheet 3 of 4		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right of Way - Residential	S.F.	5148	5	25,740	0	5	
Right of Way - Commercial	S.F.	19488	12	233,856	0	12	
Pavement	S.Y.	-	45		1365	45	61,440
Traffic Signal Installation	EA	1	150,000	150,000	0	150,000	
SUBTOTAL				409,596			61,440
Markup	50.71%			207,706			31,156
TOTAL				617,302			92,596
TOTAL ROUNDED				617,000			93,000



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-12
CLIENT: GDOT
Sheet 4 of 4

From Original to Proposed:

Right of way Reduction along Montgomery Street, W. 73rd Street and Roger Wood Street

Residential: 5,148 S.F. Unit Price: \$5.00 per S.F.

Commercial: Area 1: 10,234 S.F. Unit Price: \$12.00 per S.F.

 Area 2: 9,254 S.F. Unit Price: \$12.00 per S.F.

Additional Pavement:

Along Montgomery Street:

Area 1: 27,861 S.F.

Area 2: 1,309 S.F.

Area 3: 10,993 S.F.

Pavement Reduction:

Along Roger Wood Street:

Area 1: 27,875 S.F.

Net Additional Pavement: $(27,861+1,309+10,993-27,875)/9 = 1,365$ S.Y. Unit Price: \$45 per S.Y.

Traffic Signalization:

The traffic signalization at intersection of Hampstead and Roger Wood Street will not be required under proposed scenario. Unit Price: \$150,000 per signal.

DEVELOPMENT AND RECOMMENDATION PHASE

**West DeRenne / Hampstead Ave. Connector
PI No. 0008358**

IDEA No.: 58-13	PAGE No.: 1 of 3	CREATIVE IDEA: Reduce the Inner Lane Width from 12 feet to 11 feet for Boulevard between I-516 and Hunter Interchange
---------------------------	----------------------------	---

Comp By: PZ Date: 9/11/12 Checked By: DCW Date: 9/13/12

Original Concept:

Two 12' lanes in each direction for Boulevard between I-516 and Hunter Interchange.

Proposed Change:

Reduce the inner lane width from 12 feet to 11 feet for this section of Boulevard. Provide advanced signs to direct heavy duty trucks to use the outer travel lane in each direction.

Justification:

Reducing the inner lane width to 11 feet would reduce the construction cost for pavement, earthwork, MSE walls and bridge.

Advanced signs will direct heavy duty trucks to use the outer travel lane. The 12 foot lane width will be sufficient for trucks to accommodate the horizontal and vertical alignment for this section of the Boulevard.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	356,000		
- Proposed	0		
- Savings	356,000		356,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			356,000

COST WORKSHEET

PROJECT: West DeRenne/Hampstead Ave Connector PI # 0008358					ITEM No.: 58-13 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
Right of Way - Residential	S.F.	3327	5.00	16,635	0		0
Bridge	S.F.	1588	120.00	190,560	0		0
Pavement	S.Y.	527	45.00	23,715	0		0
MSE Wall	S.F.	160	33.66	5,386	0		0
SUBTOTAL				236,296			0
Markup	50.71%			119,825			0
TOTAL				356,121			0
TOTAL ROUNDED				356,000			0



CALCULATIONS

West DeRenne / Hampstead Ave. Connector
PI No. 0008358

ITEM No.: 58-13
CLIENT: GDOT
Sheet 3 of 3

Boulevard westbound:

1 foot pavement reduction

Station: 15+00 to 20+36 536'

Station: 27+22 to 31+05 383'

Station: 200+00 to 208+38 838'

Station: 209+55 to 215+65 610'

Boulevard eastbound:

1 foot pavement reduction

Station: 20+00 to 29+29 929'

Station: 200+00 to 208+38 838'

Station: 209+55 to 215+65 610'

Total Pavement Reduction = 4744 SF = 527 SY

Bridge #1

2 feet bridge width reduction X 684 feet = 1368 SF

Bridge #2

2 feet bridge width reduction X 110 feet = 220 SF

Earthwork reduction is minimum

MSE Wall Reduction: 8' x 20' = 160 SF

Right of Way Reduction: $(536' + 383' + 838' + 610' + 610' + 350') \times 1' = 3327$ SF

DEVELOPMENT AND RECOMMENDATION PHASE

**East DeRenne from Abercorn St. to Harry S Truman Pkwy
PI No. 0008359**

IDEA No.: 59-1	PAGE No.: 1 of 3	CREATIVE IDEA: Reduce sidewalk width to 6 feet, both sides
--------------------------	----------------------------	--

Comp By: GAO Date: 9/11/12 Checked By: DCW Date: 9/12/12

Original Concept:

Provide 8 foot wide sidewalks, in addition to a shared path.

Proposed Change:

Reduce the sidewalk width to 6 feet on both sides.

Justification:

A 6 foot wide sidewalk is wider than the standard 5 foot width and will suffice in this area. The narrower sidewalk allows additional area outside the sidewalk for tree planting and will not require a design variance. If right of way width is a concern, negotiating with the local property owners for beautification is an alternate. Another solution is to reduce the planting strip from 4 to 2 feet.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	76,000		
- Proposed	0		
- Savings	76,000		76,000
FUTURE COST - Savings			0
TOTAL PRESENT WORTH SAVINGS			76,000

COST WORKSHEET

PROJECT: East DeRenne - Abercorn to H. S. Truman Pkwy. PI # 0008359					ITEM No.: 59-1 CLIENT: GDOT Sheet 2 of 3		
CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
ITEM	Units	No. Units	Cost/ Unit	Total Cost	No. Units	Cost/ Unit	Total Cost
concrete sidewalk	SY	2,667	19.02	50,726			
SUBTOTAL				50,726			0
Markup	50.71%			25,723			0
TOTAL				76,450			0
TOTAL ROUNDED				76,000			0



CALCULATIONS

East DeRenne from Abercorn St. to Harry S Truman Pkwy
PI No. 0008359

ITEM No.: 59-1
CLIENT: GDOT
Sheet 3 of 3

Reduce sidewalk width from 8 to 6 feet;

Station 626+00 to 686+00 = 6,000 feet

Total area; $2 \times 6,000 = 12,000$ sq ft X 2 sidewalks = $24,000$ sq ft = $2,667$ sq yds

DEVELOPMENT AND RECOMMENDATION PHASE

East DeRenne from Abercorn St. to Harry S Truman Pkwy PI No. 0008359

IDEA No.: 59-5	PAGE No.: 1 of 2	CREATIVE IDEA: DESIGN CONSIDERATION Use entire width of corridor for East DeRenne Street
--------------------------	----------------------------	--

Comp By: GAO Date: 9-12-12 Checked By: DCW Date: 9-13-12

Original Concept:

Use the existing roadway width, curb-to-curb, on DeRenne Avenue. Construct an 18 foot wide median and landscape improvements.

Proposed Change:

Use the entire right of way width, including DeRenne Drive, approximately 130 feet wide. This results with a 50 foot wide median.

Justification:

The intent of this project is for roadway beautification by implementing a boulevard section. In many instances, a wider median projects more of a boulevard feel. The 130 foot wide right of way will allow for a true boulevard effect, providing a 50 foot wide median for landscaping and the multi-use path. This will also allow tree plantings in the median without a design exception; greater than 22 foot offset for a design speed of 45 mph.

This recommendation will result in an overall project cost increase since the EB lanes will have to be completely newly constructed however the construction staging will be more readily facilitated since there is a wider right of way to accommodate the traffic.

This idea will also require eliminating the left turn openings at Frederick, Sutlive, Sanders and Rancer Streets although there are convenient spaces for left turns at the signalized crossings. This is a significant change in the nature of this roadway corridor however it is presented as an option for consideration for the overall beautification.

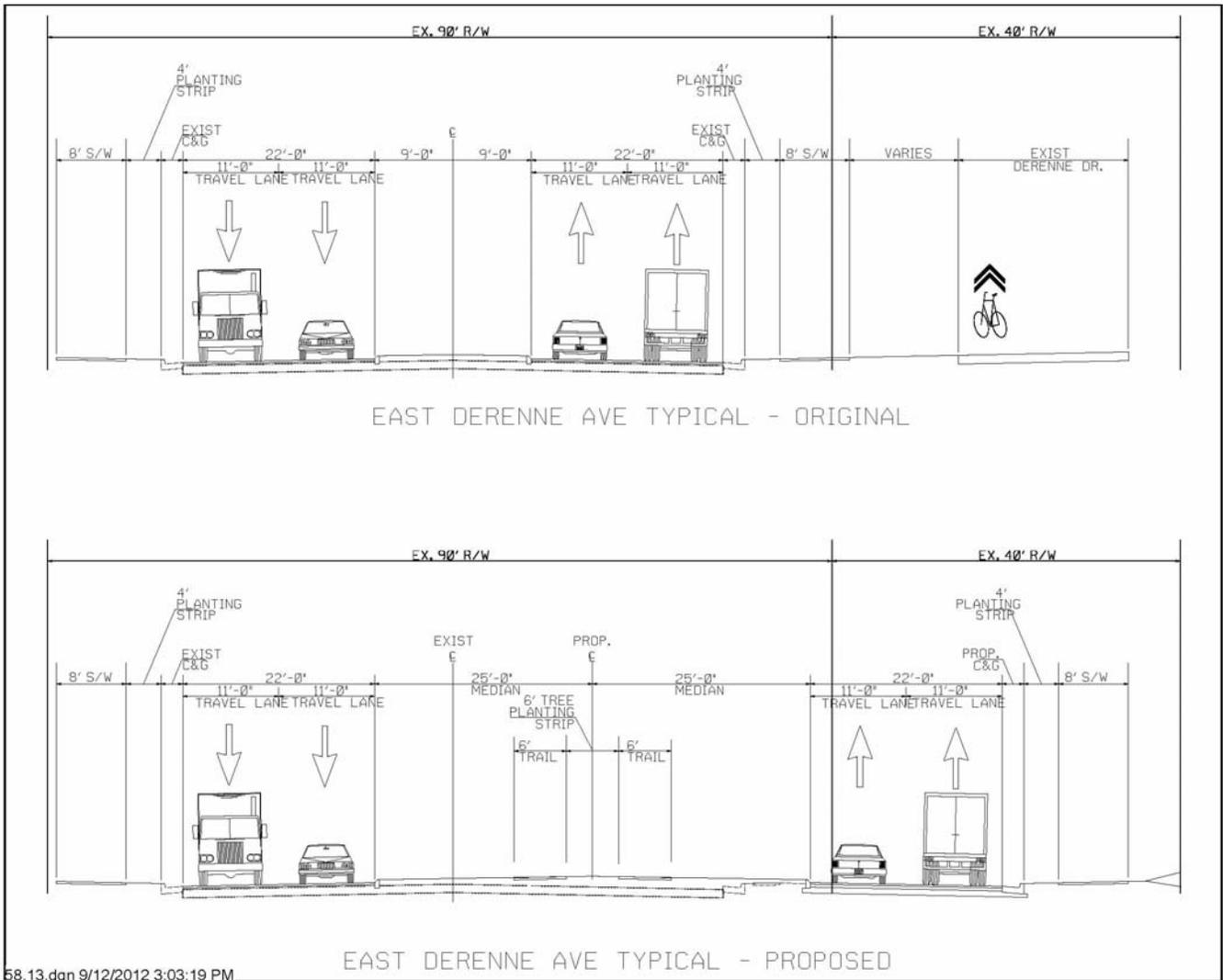
DESIGN CONSIDERATION

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original			
- Proposed			
- Savings			
FUTURE COST - Savings			
TOTAL PRESENT WORTH SAVINGS			N/A

SKETCH

East DeRenne from Abercorn St. to Harry S Truman Pkwy
PI No. 0008359

ITEM No.: 59-5
 CLIENT: GDOT
 Sheet 2 of 2



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DEVELOPMENT AND RECOMMENDATION PHASE

**SR 21 from CS 346 to SR 204
PI No. 0010236**

IDEA No.: 36-2	PAGE No.: 1 of 3	CREATIVE IDEA: Reduce sidewalk width to 6 feet, both sides
--------------------------	----------------------------	--

Comp By: GAO Date: 9/12/12 Checked By: DCW Date: 9/13/12

Original Concept:

Provide 8 foot wide sidewalks, in addition to a shared path.

Proposed Change:

Reduce the sidewalk width to 6 feet on both sides.

Justification:

A 6 foot wide sidewalk is wider than the standard 5 foot with and will suffice in this area. The narrower sidewalk allows additional area outside the sidewalk for tree planting and will not require a design variance. If right of way width is a concern, negotiating with the local property owners for beautification is an alternate. Another solution is to reduce the planting strip from 4 to 2 feet.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	27,000		
- Proposed	0		
- Savings	27,000		27,000
FUTURE COST - Savings			0
TOTAL PRESENT WORTH SAVINGS			27,000

CALCULATIONS

SR 21 from CS 346 to SR 204
PI No. 0010236

ITEM No.: 36-2
CLIENT: GDOT
Sheet 3 of 3

Reduce sidewalk width from 8 to 6 feet;

Station 604+00 to 625+00 = 2,100 feet

Total area; 2ft. x 2,100 ft. = 4,200 sq ft = X 2 sides = 8,400 sq ft = 933 sq yds

DEVELOPMENT AND RECOMMENDATION PHASE

**SR 21 from CS 346 to SR 204
PI No. 0010236**

IDEA No.: 36-3	PAGE No.: 1 of 4	CREATIVE IDEA: Reduce road width of southern leg of Montgomery Street
--------------------------	----------------------------	---

Comp By: GAO Date: 9-12-12 Checked By: DCW Date: 9/12/12

Original Concept:

Provide a striped area on the southern leg of the Montgomery Street intersection.

Proposed Change:

Eliminate the striped area on the southern leg of the Montgomery Road intersection.

Justification:

The southern leg of the Montgomery Street approach has excessive width. Reducing the roadway width will save construction and right of way costs.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	48,000		
- Proposed	0		
- Savings	48,000		48,000
FUTURE COST - Savings			0
TOTAL PRESENT WORTH SAVINGS			48,000

SKETCH

SR 21 from CS 346 to SR 204
PI No. 0010236

ITEM No.: 36-3
CLIENT: GDOT
Sheet 2 of 4



36.03.dgn 9/12/2012 4:10:08 PM

CALCULATIONS

SR 21 from CS 346 to SR 204
PI No. 0010236

ITEM No.: 36-3
CLIENT: GDOT
Sheet 4 of 4

Reduced right of way: $150 \text{ ft} \times 12 \text{ ft} = 1,800 \text{ sq ft}$

Cost of Right of way; from data provided: commercial cost \$12.00 per sq ft

Pavement reduction:

$150 \text{ ft} \times 12 \text{ ft} = 1,800 \text{ sq ft} = 200 \text{ sq yds}$

APPENDIX

VE STUDY SIGN-IN SHEET

Project No.: CSSTP-0008-00(358)(359) County: Chatham PI No.: 0008358, 0008359, Date: Sept. 10-13, 2012

* No project number for PI# 0010236 0010236*

Days

FIRST	LAST	NAME	DOT OFFICE OR COMPANY	PHONE NUMBER	EMAIL ADDRESS
✓	○	Lisa L. Myers	Engineering Services	404-631-1770	lmyers@dot.ga.gov
✓	✓	Matt Sanders	Engineering Services	404-631-1752	msanders@dot.ga.gov
✓	○	Melissa Harper	Construction	404-631-1971	mharper@dot.ga.gov
✓	○	Ken Werho	Traffic Operations	404-635-8144	kwerho@dot.ga.gov
✓	✓	David Moyer	Program Delivery	404-291-5880	dmoyer@dot.ga.gov
✓	✓	Mike Weiner	City of Savannah	912-651-6603	mweiner@savannahga.gov
✓	✓	George Obaranec	AMEC	770-421-3346	george.obaranec@amec.com
✓	✓	Dave Wohlscheid	AMEC	571-217-0808	david.wohlscheid@amec.com
✓	✓	Aruna Sastry	Sastry & Associates	678-366-9375	sast9375@bellsouth.net
✓	✓	Peng Zhang	AMEC	770-421-7053	peng.zhang@amec.com
✓	✓	Rob Hume	Kimley-Horn	704-954-7462	rob.hume@kimley-horn.com
✓	✓	David Stricklin	Kimley-Horn	904-419-8783	david.strcklin@kimley-horn.com
✓	✓	Fran McCutheon West	Kimley-Horn	704-302-6707	fran.west@kimley-horn.com
○	✓	Victor Dang	FHWA	404-562-3654	victor.dang@dot.gov
○	✓	Kevin Korth	FHWA	770-635-2104	kevin.d.korth@dot.gov
		<u>Via Video w/ Dist. #5:</u>			
✓	○	Brad Saxon	D5 Precon. Engineer	912-427-5715	bsaxon@dot.ga.gov

Check all that attend
 Did Not Attend
 14 Attended Project Overview (Day 1)
 12 Attended Project Presentation (Day 4)



Sources

Approving/Authorizing Persons

Name:	Position:	Telephone:
David Moyer	Project Manager – Program Delivery	404-291-5880
Brad Saxon	District Preconstruction Engineer	912-427-5715
Lisa Myers	State Project Review, Engineering Services Office	404-631-1770
Matt Sanders		404-631-1752

Personal Contacts

Name:	Telephone:	Notes:
Rob Hume	704-333-5131	Project Design Briefing, KHA
Fran West	704-333-5131	Project Design Briefing, KHA
Brad Saxon	912-427-5715	Project Design Briefing District #5
David Stricklin	404-419-8700	Project Design Briefing, KHA

Documents/Abstracts

Reference:	Reference:
Preliminary Plans	Roadway Cross Sections
Preliminary Cost Estimate	Preliminary Bridge Layout
Draft Project Concept Report	30 and 200 Scale Layouts
Project Traffic Data	ROW data and costs
Historic Resources Survey Report	

Cost Model #1**COST DISTRIBUTION**By
Decreasing Item Number**West DeRenne / Hampton Ave. Connector
PI# 0008358**

Element ID	Item Description	Basic Cost X \$1000	Cost inflated with contingencies X \$1000	%
1	Right of way	11,400	17,181	29%
2	Bridge #1	3,449	5,198	9%
3	AC Pavement	3,338	5,031	9%
4	Grading	3,100	4,672	8%
5	Utilities	3,045	4,589	8%
6	Landscaping	2,030	3,059	5%
7	Traffic Control	2,300	3,466	6%
8	Drainage	2,000	3,014	5%
9	Mobilization	1,500	2,261	4%
83% Cost Line				
10	Erosion Control	1,421	2,142	4%
11	Graded Agg. Base	1,232	1,857	3%
12	MSE Wall Face	1,145	1,726	3%
13	Bridge #2	1,056	1,591	3%
14	Concrete Side Barrier Ty 2	826	1,245	2%
15	Signs	406	612	1%
16	Traffic Signalization	375	565	1%
17	Conc. Curb and Gutter	318	479	1%
18	Traffic Barrier H	162	244	0%
19	Concrete Sidewalk	118	178	0%
20	Guardrail	24	36	0%
Costs developed using design team estimate dated 8/22/2012 for costs, inflation and contingencies.				
Total		\$39,245	\$59,146	100%

Cost Model #2

COST DISTRIBUTION

By
Decreasing Item Number

East DeRenne - Abercorn to H.S.Truman Pkwy
PI# 0008359

Element ID	Item Description	Basic Cost X \$1000	Cost inflated with contingencies X \$1000	%
1	Landscaping	1,704	2,568	39%
2	AC Paving	500	754	12%
3	Utilities	315	475	7%
4	Traffic Signalization	300	452	7%
5	Grading	268	404	6%
6	Traffic Control	200	301	5%
7	Easement Allowance	200	301	5%
81% Cost Line				
7	Concrete Curb and Gutter	191	288	4%
8	Signs	184	277	4%
9	Erosion Control	184	277	4%
10	Mobilization	105	158	2%
11	Graded Agg. Base	78	118	2%
12	Concrete Sidewalk	72	109	2%
13	Drainage	36	54	1%
Costs developed using design team estimate dated 5/22/2012 for costs, inflation and contingencies.				
Total		\$4,337	\$6,536	100%

Cost Model #3**COST DISTRIBUTION**

By
Decreasing Item Number

SR 21 from CS 346 to SR 204**PI# 0010236**

Element ID	Item Description	Basic Cost X \$1000	Cost inflated with contingencies X \$1000	%
1	AC Paving	524	790	22%
2	Landscaping	417	628	18%
3	Utilities	239	360	10%
4	Easement Allowance	200	301	9%
5	Drainage	170	256	7%
6	Traffic Signalization	150	226	6%
7	Traffic Control	130	196	6%
81% Cost Line				
7	Concrete Curb and Gutter	92	139	4%
8	Mobilization	87	131	4%
9	Grading	87	131	4%
10	Signs	84	127	4%
11	Erosion Control	84	127	4%
12	Graded Agg. Base	52	78	2%
13	Concrete Sidewalk	32	48	1%
Costs developed using design team estimate dated 5/22/2012 for costs, inflation and contingencies.				
Total		\$2,348	\$3,539	100%

PI# 0008358 West DeRenne / Hampton Avenue Connector

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
1.	Realign Boulevard to maximize use of right of way (ROW)	Increases bridge length, not cost effective	X
2.	Use parallel right of way and use slope easements in lieu of right of way		✓
3.	Eliminate one span in Bridge #1 by extending walls		✓
4.	Put Boulevard at grade and route Montgomery over thus reducing width of Bridge #2		✓
5.	Make Boulevard and Montgomery St. an at grade intersection w/signalization thus eliminating Bridge #2		✓
6.	Maximize profile gradients		✓
7.	Make Boulevard at grade; ramp eastbound DeRenne over Boulevard	Increases ROW takes on W. DeRenne	X
8.	Build DeRenne over Boulevard	See 58-7	X
9.	Reduce ROW along Hampstead Ave. by reducing median width		✓
10.	Realign eastern Boulevard south of Hampstead		✓
11.	Narrow outside shoulder on bridge to 4 feet		✓
12.	Shift local roundabout and keep Montgomery St. open for local access		✓
13.	Reduce inner lane to 11 foot width		✓
14.	For Bridge #1 use a steel bridge / flyover / extended MSE walls option		✓
✓ = Will be considered further; X = will be dropped; DC = design consideration –written for consideration by design team			

PI# 0008359 East DeReene – Abercorn to H.S. Truman Parkway

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
1.	Reduce sidewalk to 6 feet and use remaining space for increased planting strip		✓
2.	Increase outside lane to 12 feet wide from 11 feet wide	Easier for trucks	DC
3.	Reduce median width, maximize “Boulevarding” concept	See 59-5	✓
4.	Retain center turn lane, landscape on the outside	Closing up median should be done. See59-5	✓
5.	Widen road using entire frontage road; extend individual driveway access to street on south side		DC
✓ = Will be considered further; X = will be dropped; DC = design consideration –written for consideration by design team			



PI# 0010236 West DeRenne from Montgomery to Abercorn

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
1.	Reduce median width of DeRenne and add space to outside	Would increase side landscape strip	DC
2.	Use 6 foot sidewalks, landscape to the outside	See 36-1.	DC
3.	Reduce median width on Montgomery Street		✓
4.	Eliminate median work (leave as 5 lane) and landscape on outside	Closing up median should be done	X
5.	Convert DeRenne to 4 lane and add capacity to Boulevard	Not cost effective	X
✓ = Will be considered further; X = will be dropped; DC = design consideration –written for consideration by design team			

